Application for a
Simple Air Contaminant Discharge Permit

Arcimoto

Eugene, Oregon

Prepared for:

Lane Regional Air Protection Agency

November 5, 2021

BRIDGEWATER GROUP, INC.

Contents

Tables

Figures

1.0 Introduction

Arcimoto is proposing to build a manufacturing facility for ultra-efficient electric vehicles. The facility will be located at 311 Chambers Street in Eugene, Oregon 97402. A site location map is provided in Figure 1-1 and a site plan is provided in Figure 1-2.

The manufacturing process involves the machining, coating and assembly of parts. Emissions from the facility will be below the significant emission rates making the facility well suited for a Simple Air Contaminant Discharge Permit (ACDP).

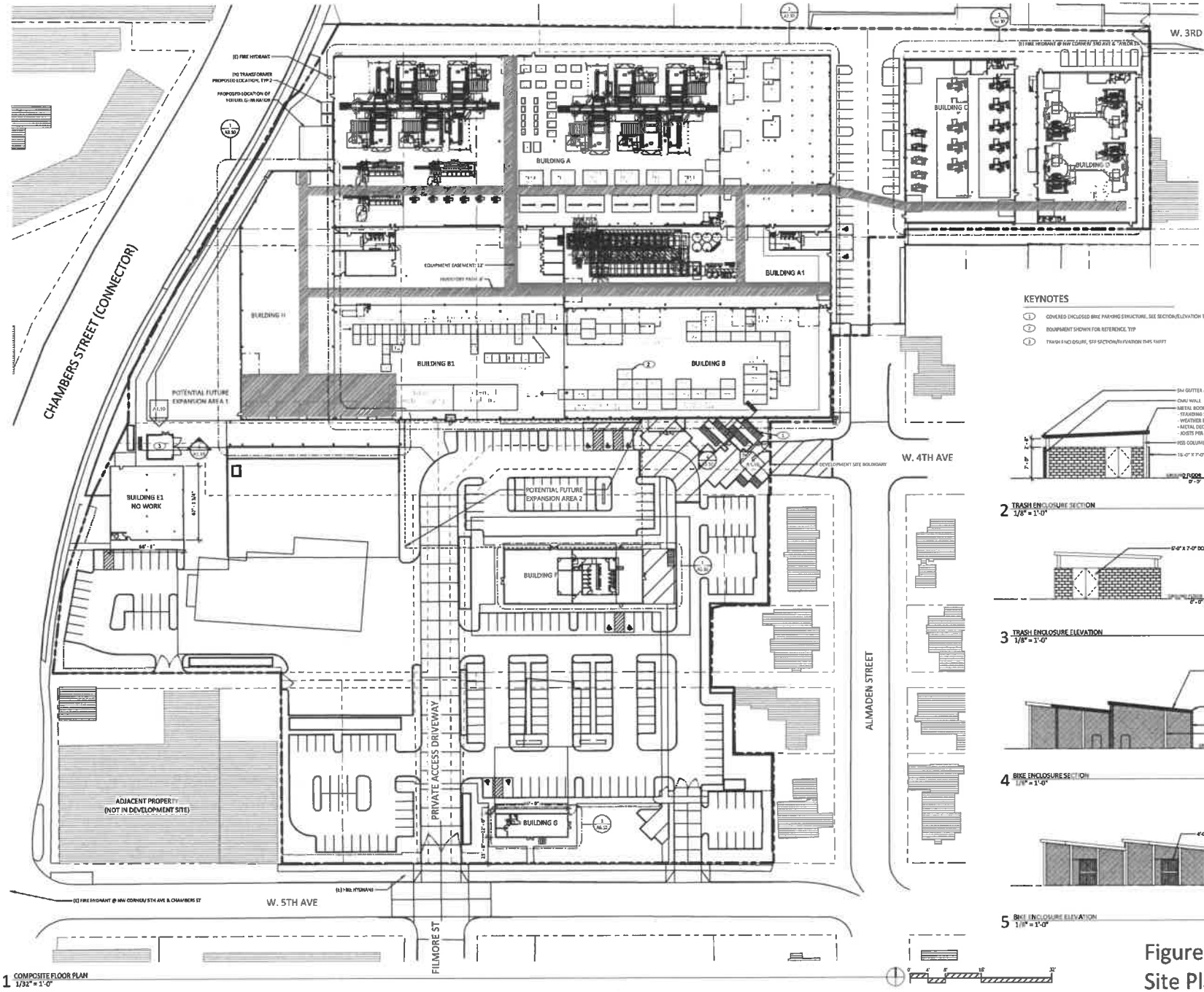
The evaluation of the facility's health risk under the Cleaner Air Oregon (CAO) program [OAR 340-245-0050] demonstrates that the facility risk levels are below the Source Permit Levels for New Sources identified in OAR 340-245-8010 Table 1. The health risk evaluation is part of the application for a CAO permit that is submitted as a separate document from this ACDP application.

The Lane Regional Air Protection Agency (LRAPA) forms for the ACDP application are provided in Appendix A.

Arcimoto Project Address: 311 Chambers St

Imagery ©2021 Landsat / Copernicus, Maxar Technologies, State of Oregon, Map data ©2021 1000 ft

Figure 1-1
Site Location



1 COMPOSITE FLOOR PLAN
1/32" = 1'-0"

Figure 1-2
Site Plan

GMA ARCHITECTS
860 West Park Avenue / Suite 200
Eugene / Oregon / 97401
p 541.484.9292
gma-arch.com

NOT FOR CONSTRUCTION

ARCIMOTO rAMP
311 CHAMBERS ST, EUGENE, OR, 97402
SCHEMATIC DESIGN

JOB NO: 2331
ISSUE DATE: 30 APRIL 21

COMPOSITE FLOOR PLAN

A1.10
SD SET

2.0 Process Information

2.1 Process Overview

The Arcimoto project to manufacture electric vehicles will take place inside existing buildings at the site identified in Figure 1-2. As shown in the process flow diagram in Figure 2-1, the production processes can be divided into fabrication, welding, coating line, coating oven and assembly.

Fabrication

Fabrication steps consist of machining metal parts. Some of the machining steps including milling and laser cutting operations. The laser cutting will be performed by laser cutting machines that are fully enclosed with an integrated filtration system as part of each laser cutting machine. After passing through the filtration system, air from the laser cutters is vented back into the building. Because of the low emission nature of the operations and the way air is handled, machining and cutting activities are not included as part of the ACDP application.

Welding

Parts welding will be conducted at welding stations. Six gas metal arc welding (GMAW) stations will be located under three hoods (two welding stations per hood) that vent welding fumes away from the operators into one cartridge filtration system. Air from the cartridge filter is recirculated back into the building and is not vented to the outside.

The main welding fume control system components include the capture hoods, a central fan, and a cartridge filter bank with MERV 11 rated cartridge filters. The filter bank is designed to house 24 filters and will be monitored using differential pressure. An electronic control system in the filter bank monitors airflow rates in and out of the filters and will signal a cleaning pulse if needed. An automatic cleaning cycle also is set. Self-cleaning is performed during maintenance downtime. Information extracted from the engineering quote and manufacturer brochure on the welding fume control system are provided in Appendix B.

Coating Line

The coating line is made up of several stages that operate in series. In the stages prior to electrocoating the parts with a gray primer, the parts must be cleaned and conditioned. After coating, the parts are rinsed and sent to an oven for curing. The process flow diagrams for the coating line are shown in Figures 2-2 and 2-3.

The parts are rinsed, cleaned with an alkaline solution, rinsed, conditioned/pretreated, and rinsed again before being coated. There are two options for the cleaning and pretreatment stages, one is a 'zinc pretreat' and one is a 'nano pretreat'. The 'zinc pretreat' option (Figure 2-2) has one more chemical conditioning process stage than the 'nano pretreat' option (Figure 2-3). Different chemicals are used in the

conditioner/pretreat stages in each option. Technical information on the chemicals listed in the process flow diagrams for each pretreatment chemical is included in Appendix C. The decision for which option will be used has not be made so both options are presented in this application.

Each stage of the coating line is an open top tank (also called a bath) where the parts are dipped into the liquid, removed and conveyed to the next stage. The first two stages are heated using 0.9 MM Btu/hr natural gas-fired heaters. Combustion gases from each heater will be exhausted through a stack without comingling with any process exhaust.

The coating will be applied using an electrocoating (ecoat) process. Technical information on the coating is presented in Appendix D. The part is dipped into an open top tank containing the electrically charged coating. Electrocoating is a process by which electrically charged particles are deposited out of a water suspension to coat a conductive part. The film thickness of the coating onto the part depends on the amount of voltage applied. Maximum expected epoxy coating usage is estimated to be 44,610 gallons/year. The coating is a mixture of resin, pigment, water and a flow additive. After the coating is applied, the parts are rinsed in the final rinse stages before being conveyed to the coating oven.

All stages of the coating line are inside a single enclosure room. Air from the enclosure room is exhausted through a single stack. Information extracted from the engineering quote that describes the coating line and coating oven are provided in Appendix E.

Coating Oven

Parts from the Coating Line will enter a bake oven for curing the coating. The coating oven is direct fired using a natural gas-fired burner to heat the oven. The burner will have a maximum firing rate of 4 MM Btu/hr.

The design cure time for each part is 39 minutes at a 375 °F temperature. The maximum oven operating temperature is 450 °F. There are three exhaust stacks for the oven, one at the front end, one at the back end and one in the middle. Volatiles from curing the coating and combustion gases from the burner are exhausted through the three coating oven stacks.

After the parts are coated, cured and cooled, they are assembled and shipped.

Supporting Activities

In addition to the main processes, there are other activities that will be in operation at the facility. There will be a natural gas-fired back-up condensing boiler used to heat water for the process. The boiler will be operated on a limited basis, will have a maximum firing capacity of 1.6 MM Btu/hr and be located in Building C.

In Building F there will be two hot water heaters used for domestic hot water supply. Each hot water heater will have a 0.16 MM Btu/hr natural gas-fired burner.

Building heating will be supplied using natural gas-fired infrared radiant heaters each with a 0.2 MM Btu/hr firing capacity. The 27 heaters will be spread throughout the facility.

Inside the coating line room will be two water storage tanks and three enclosed maintenance tanks (two-5000 gal and one-6000 gal capacities). During maintenance/cleaning of the coating line stage baths, the liquid in the bath will be transferred into one of the maintenance tanks for holding while the maintenance is being performed. After maintenance is complete, the liquid will be transferred back into the coating line bath. Most of the time, these maintenance tanks will be empty and are not to be included in the ACDP.

2.2 Inventory of Air Emission Sources

The inventory of air emissions sources at the Arcimoto facility is presented in Table 2-1.

Table 2-1: Inventory of Air Emission Sources

Source	ID	Emission Point ID	Description
Pretreatment Heater Stage 2	H2	EX3	Natural gas-fired burner on Stage 2 of the coating line- 0.9 MM Btu/hr
Coating Oven-Burner	H3	EX4	Natural gas-fired burner for oven- 4.0 MM Btu/hr
Coating Oven	CO1	EX5, EX6	Bake oven used to cure coating
Coating Line	CL1	EX1	Series of dip tanks including pretreatment cleaning baths and ecoating dip tank prior to coating oven
Welding	W1	W1	Welding stations vented to a cartridge filter into a building
Back-up Condensing Boiler in Bldg. C	B1	B1	Natural gas-fired boiler- 1.6 MM Btu/hr
Bldg. F Domestic Hot Water Heaters	B2	B2	2 Natural gas-fired hot water heaters- each at 0.16 MM Btu/hr
Pretreatment Heater Stage 1	H1	EX2	Natural gas-fired heater on Stage 1 of the coating line- 0.9 MM Btu/hr
Infrared Radiant Heating Units	H4	H4A, H4B, H4C, H4F	27 Natural gas-fired heaters spread throughout the facility- each at 0.2 MM Btu/hr

A figure showing the location of emission points at the facility is provided as Figure 2-4. Figure 2-5 shows the land use zones around the property relative to the emission points.

In the list of emission sources in Table 2-1 there are several natural gas-fired units that meet the criteria as being categorically insignificant activities (CIA) [LRAPA Section 12-005]:

- Burn only natural gas
- Each unit has a maximum firing rate of less than 2.0 MM Btu/hr

- Cumulative emissions of any criteria pollutant for all units in the CIA group are less than the de minimis emission threshold (i.e., NOx emissions < 1 ton/yr - See emission summary in Table 3-11)

The list of natural gas-fired categorically insignificant activities that are a subset of the air emission sources is presented in Table 2-2.

Table 2-2: Categorically Insignificant Activities

Source	ID	Emission Point ID	Description
Back-up Condensing Boiler in Bldg. C	B1	B1	Natural gas-fired boiler- 1.6 MM Btu/hr
Bldg. F Domestic Hot Water Heaters	B2	B2	2 Natural gas-fired hot water heaters- each at 0.16 MM Btu/hr
Pretreatment Heater Stage 1	H1	EX2	Natural gas-fired heater on Stage 1 of the coating line- 0.9 MM Btu/hr
Infrared Radiant Heating Units	H4	H4A, H4B, H4C, H4F	27 Natural gas-fired heaters spread throughout the facility- each at 0.2 MM Btu/hr

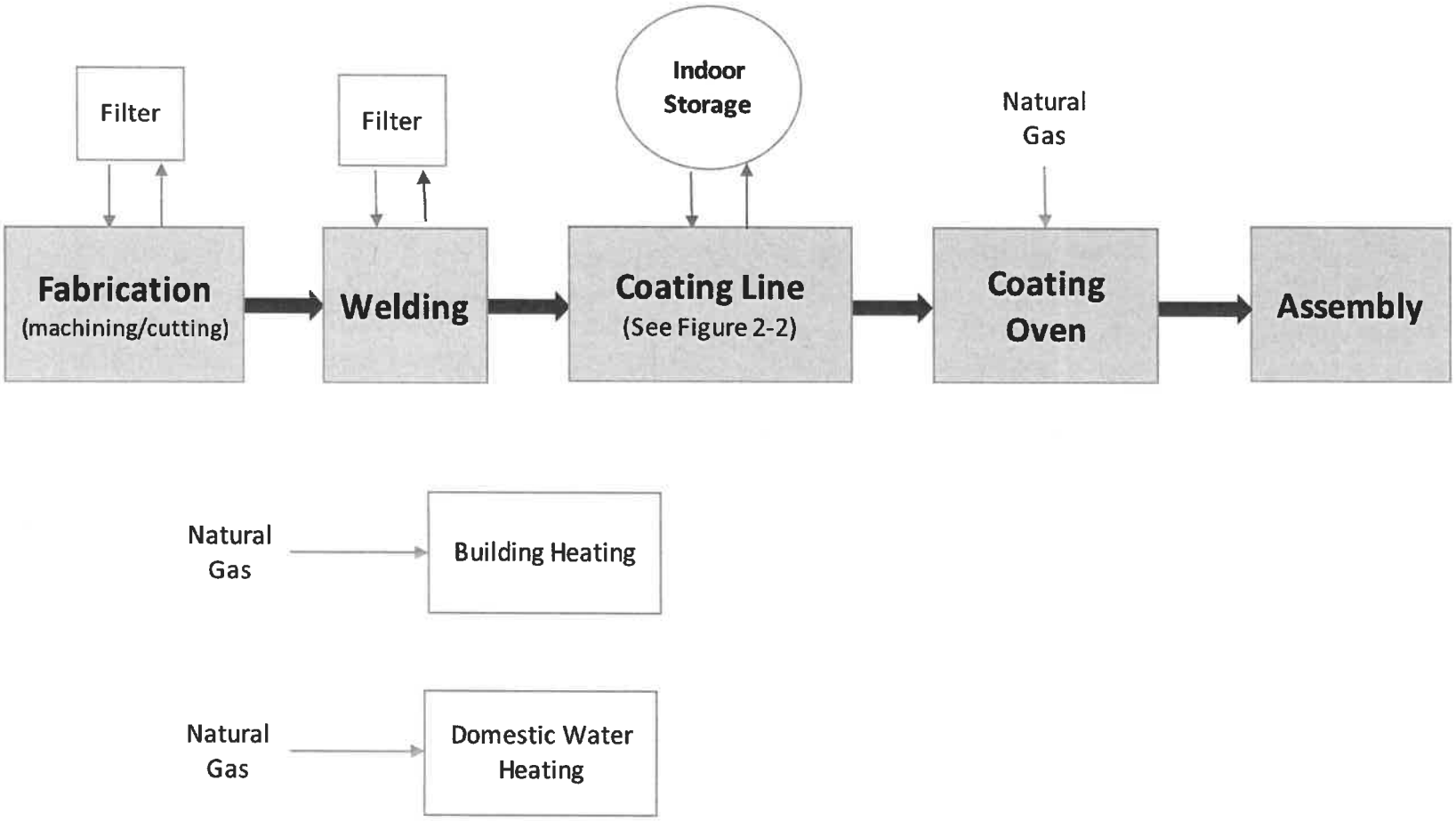
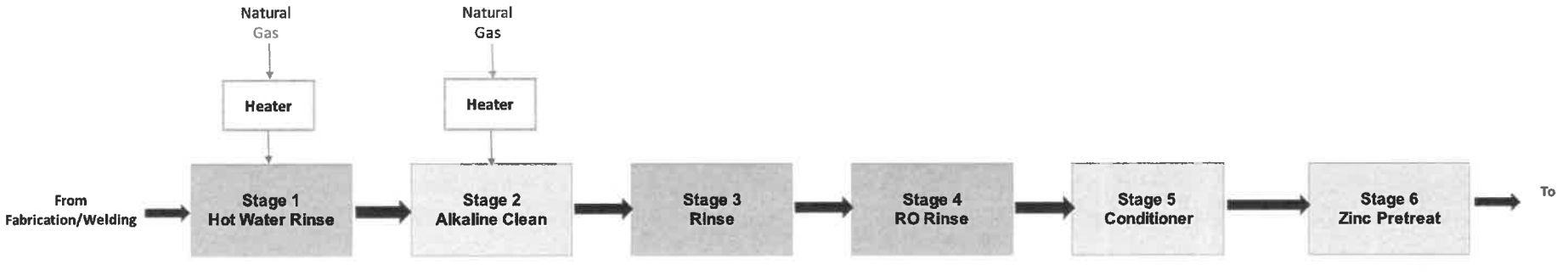
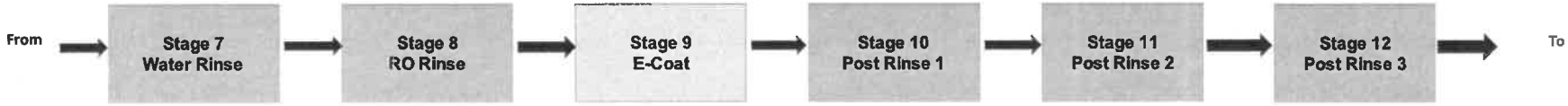


Figure 2-1
Process Flow Diagram
Arcimoto
Eugene, OR

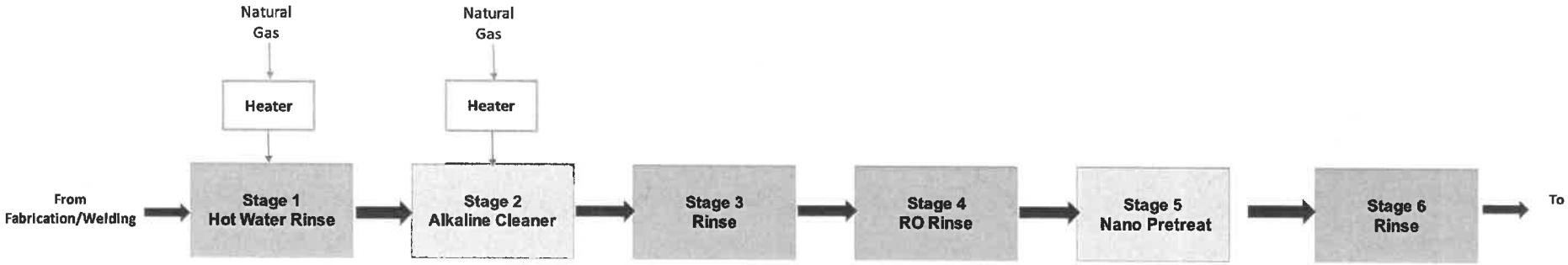


Process Type:	Immersion	Process Type:	Immersion	Process Type:	Immersion	Process Type:	Immersion	Process Type:	Immersion	Process Type:	Immersion
Chems:	Water	Chems:	Bonderite NP-2	Chems:	Water	Chems:	RO Water	Chems:	Prepalene X	Chems:	Bonderite 3410
Current	None	Current	None	Current	None	Current	None	Current	None	Current	None
Temp	150 oF	Temp	150 oF	Temp	Ambient	Temp	Ambient	Temp	Ambient	Temp	140 oF

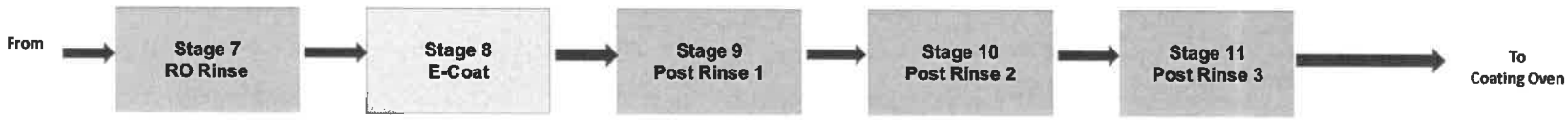


Process Type:	Immersion	Process Type:	Electrolytic	Process Type:	Immersion	Process Type:	Immersion	Process Type:	Immersion	Process Type:	Immersion
Chems:	Water	Chems:	RO Water	Chems:	Coating	Chems:	E-coat permeate	Chems:	E-coat permeate	Chems:	E-coat permeate
Current	None	Current	None	Current	400 amps	Current	None	Current	None	Current	None
Temp	Ambient	Temp	Ambient	Temp	85 oF	Temp	Ambient	Temp	Ambient	Temp	Ambient

Figure 2-2
Coating Line Process Flow Diagram- Zinc Pretreat
Arcimoto
Eugene, OR



Process Type:	Immersion		Process Type:	Immersion		Process Type:	Immersion		Process Type:	Immersion		Process Type:	Immersion		Process Type:	Immersion
Chems:	Water		Chems:	Bonderite NP-2		Chems:	Water		Chems:	RO Water		Chems:	Bonderite M-NT2		Chems:	Water
Current	None		Current	None		Current	None		Current	None		Current	Mixer Agitated		Current	None
Temp	150 oF		Temp	150 oF		Temp	Ambient		Temp	Ambient		Temp	Ambient		Temp	Ambient



Process Type:	Immersion		Process Type:	Electrolytic		Process Type:	Immersion		Process Type:	Immersion		Process Type:	Immersion	
Chems:	RO Water		Chems:	Coating		Chems:	E-coat permeate		Chems:	E-coat permeate		Chems:	E-coat permeate	
Current	None		Current	400 amps		Current	None		Current	None		Current	None	
Temp	Ambient		Temp	85 oF		Temp	Ambient		Temp	Ambient		Temp	Ambient	

Figure 2-3
Coating Line Process Flow Diagram- Nano Pretreat
Arcimoto
Eugene, OR

Figure 2-4
Emission Point Locations

Figure 2-5
Land Use

3.0 Emissions

3.1 Source Emissions

Sources of regulated air pollutants at the Arcimoto facility were presented in Table 2-1. Emission estimates for each emission source are included in following tables:

Table 3-1: Pretreatment Stage 2 Burner (H2)
Table 3-2: Coating Oven Burner (H3)
Table 3-3: Coating Oven (CO1)
Table 3-4: Coating Line (CL1)
Table 3-5: Welding (W1)
Table 3-6: Back-up Condensing Boiler (B1)
Table 3-7: Building F Domestic Water Heaters (B2)
Table 3-8: Pretreatment Stage 1 Burner (H1)
Table 3-9: IR Heaters (H4)

Each table includes information on the operating parameters; like hours of operation, coating usage and chemical type, used to estimate emissions for that source.

- Emissions for the burners (H2 and H3) were calculated assuming the burner operated at maximum firing rate every hour all year long.

- It is expected that a maximum of 44,610 gallons/yr of coating will be used at the site. This coating quantity is comprised of 32,354 gal/yr of resin and 12,256 gal/yr of pigment. The resin and pigment have different VOC contents and chemical composition so emissions were calculated for each and then summed for the total source emission. A small quantity of flow additive will be used as needed to balance the coating composition. Emissions from the flow additive were added to the total source emission rate.

- The VOC emission estimate for the Coating Oven (CO1) was estimated assuming that 100% of the VOC in the coating was emitted during curing. All of the possible VOC emissions in the coating were allocated to the coating oven. To avoid double counting, no VOC emissions were allocated to the coating line (CL1) even though the coating bath will have some VOC emissions.

- TAC emissions were calculated for both the coating oven and coating line sources based on the chemicals used in the coating and pretreatment baths. It was assumed that 100% of TACs in the coating were emitted from the coating oven plus a fraction of the TAC emissions were emitted from the coating line, resulting in a double counting of total TAC emissions.

- Welding emissions were calculated using the estimated maximum quantity of welding electrode that will be used. Fumes from welding will be captured (95% efficiency), sent through a cartridge filter (99% efficiency), and cleaned air returned into the building. The capture and control of welding emissions was estimated to be 94% effective.

3.2 Plant Site Emissions

The summary of total annual emissions from the sources to be included in the ACDP is presented in Table 3-10. Emissions of nitrogen oxides (NOx), carbon monoxide (CO) and volatile organic compounds (VOC) each are less than the significant emission rate for that pollutant. Particulate matter (PM/PM10/PM2.5), sulfur dioxide (SO2), and greenhouse gas (CO2e) emissions are less than the de minimis thresholds for those pollutants. Based on these plant site totals, the facility qualifies for a Simple ACDP.

Hazardous air pollutant (HAP) emissions are much less than 1 ton/yr indicating that the facility will fit into the area source category for HAPs. Emissions of CAO-listed toxic air contaminants (TACs) will be addressed in the health risk evaluation under the CAO application.

Emissions from the natural gas-fired categorically insignificant activities are listed in Table 3-11. The total emissions from this group of activities are less than the de minimis thresholds for those pollutants demonstrating that the group qualifies for CIA status.

Table 3-1: Emissions from Pretreatment Heater Stage 2 (H2)

Number of units	1	
Rating	0.9	MMBtu/hr
HHV Natural Gas	1,020	Btu/ft3
Max. Daily Operating Hours	24	
Max. Annual Operating Hours	8760	
Expected Max. Annual Operating %	100%	
Max. Annual Natural Gas Usage	7884.0	MMBtu/yr
Max. Annual Natural Gas Usage	7.7	MMCF/yr

Total Fuel Usage

Annual Natural Gas Usage	7884.0	MMBtu/yr
Annual Natural Gas Usage	7.7	MMCF/yr
Daily Natural Gas Usage	0.02	MMCF/day

Criteria Pollutants(1)		
Pollutant	Emission Factor (lb/MMCF)	Emission Rate (tpy)
NOx	100	0.386
CO	84	0.325
VOC	5.5	0.0213
PM/PM10/PM2.5	2.5	0.0097
SO2	2.6	0.0100

(1) Emission factor from ODEQ, AQ-EF05

Greenhouse Gases(2)		
Pollutant	Emission Factor (kg/MMBtu)	Emission Rate (tpy)
CO2e	53.1148	461.60

(2) Emission factor from EPA, 40 CFR Part 98, Subpart C

Toxic Air Contaminants (TACs)(3)				
Pollutant	CAS	Emission Factor (lb/MMCF)	Daily Emissions (lb/day)	Annual Emissions (lb/yr)
Benzene	71-43-2	0.008	0.00017	0.062
Formaldehyde	50-00-0	0.017	0.00036	0.131

Toxic Air Contaminants (TACs)(3)				
Pollutant	CAS	Emission Factor (lb/MMCF)	Daily Emissions (lb/day)	Annual Emissions (lb/yr)
Polycyclic aromatic hydrocarbons (PAHs)	401	0.0001	0.00000	0.001
Benzo[a]pyrene	50-32-8	0.0000012	0.00000	0.000
Naphthalene	91-20-3	0.0003	0.00001	0.002
Acetaldehyde	75-07-0	0.0043	0.00009	0.033
Acrolein	107-02-8	0.0027	0.00006	0.021
Ammonia	7664-41-7	3.2	0.06776	24.734
Arsenic and compounds	7440-38-2	0.0002	0.00000	0.002
Barium and compounds	7440-39-3	0.0044	0.00009	0.034
Beryllium and compounds	7440-41-7	0.000012	0.00000	0.000
Cadmium and compounds	7440-43-9	0.0011	0.00002	0.009
Chromium VI, chromate and dichromate particulate	18540-29-9	0.0014	0.00003	0.011
Cobalt and compounds	7440-48-4	0.000084	0.00000	0.001
Copper and compounds	7440-50-8	0.00085	0.00002	0.007
Ethyl benzene	100-41-4	0.0095	0.00020	0.073
Hexane	110-54-3	0.0063	0.00013	0.049
Lead and compounds	7439-92-1	0.0005	0.00001	0.004
Manganese and compounds	7439-96-5	0.00038	0.00001	0.003
Mercury and compounds	7439-97-6	0.00026	0.00001	0.002
Molybdenum trioxide	1313-27-5	0.00165	0.00003	0.013
Nickel compounds, insoluble	365	0.0021	0.00004	0.016
Selenium and compounds	7782-49-2	0.000024	0.00000	0.000
Toluene	108-88-3	0.0366	0.00078	0.283
Vanadium (fume or dust)	7440-62-2	0.0023	0.00005	0.018
Xylene (mixture), including m-xylene, o-xylene, p-xylene	1330-20-7	0.0272	0.00058	0.210
Zinc and compounds	7440-66-6	0.029	0.00061	0.224
Total TACs			0.07	25.94

(3) TAC Emission Factors from ODEQ ATEI Combustion Emission Factor Tool: WebFIRE/ AP-42 Section 1.4 (metals); SCAQMD AB2588 - Default Emission Factors for Fuel Combustion, Table B-1

Table 3-2: Emissions from Coating Oven Burner (H3)

Number of units	1	
Rating	4.0	MMBtu/hr
HHV Natural Gas	1,020	Btu/ft3
Max. Daily Operating Hours	24	
Max. Annual Operating Hours	8760	
Expected Max. Annual Operating Capacity	100%	
Max. Annual Natural Gas Usage	35040.0	MMBtu/yr
Max. Annual Natural Gas Usage	34.4	MMCF/yr

Total Fuel Usage

Annual Natural Gas Usage	35040.0	MMBtu/yr
Annual Natural Gas Usage	34.4	MMCF/yr
Daily Natural Gas Usage	0.09	MMCF/day

Criteria Pollutants(1)		
Pollutant	Emission Factor (lb/MMCF)	Emission Rate (tpy)
NOx	100	1.718
CO	84	1.443
VOC	5.5	0.0945
PM/PM10/PM2.5	2.5	0.0429
SO2	2.6	0.0447

(1) Emission factor from ODEQ, AQ-EF05

Greenhouse Gases(2)		
Pollutant	Emission Factor (kg/MMBtu)	Emission Rate (tpy)
CO2e	53.1148	2051.56

(2) Emission factor from EPA, 40 CFR Part 98, Subpart C

Toxic Air Contaminants (TACs)(3)				
Pollutant	CAS	Emission Factor (lb/MMCF)	Daily Emissions (lb/day)	Annual Emissions (lb/yr)
Benzene	71-43-2	0.008	0.00075	0.275
Formaldehyde	50-00-0	0.017	0.00160	0.584

Toxic Air Contaminants (TACs)(3)				
Pollutant	CAS	Emission Factor (lb/MMCF)	Daily Emissions (lb/day)	Annual Emissions (lb/yr)
Polycyclic aromatic hydrocarbons (PAHs)	401	0.0001	0.00001	0.003
Benzo[a]pyrene	50-32-8	0.0000012	0.00000	0.000
Naphthalene	91-20-3	0.0003	0.00003	0.010
Acetaldehyde	75-07-0	0.0043	0.00040	0.148
Acrolein	107-02-8	0.0027	0.00025	0.093
Ammonia	7664-41-7	3.2	0.30118	109.929
Arsenic and compounds	7440-38-2	0.0002	0.00002	0.007
Barium and compounds	7440-39-3	0.0044	0.00041	0.151
Beryllium and compounds	7440-41-7	0.000012	0.00000	0.000
Cadmium and compounds	7440-43-9	0.0011	0.00010	0.038
Chromium VI, chromate and dichromate particulate	18540-29-9	0.0014	0.00013	0.048
Cobalt and compounds	7440-48-4	0.000084	0.00001	0.003
Copper and compounds	7440-50-8	0.00085	0.00008	0.029
Ethyl benzene	100-41-4	0.0095	0.00089	0.326
Hexane	110-54-3	0.0063	0.00059	0.216
Lead and compounds	7439-92-1	0.0005	0.00005	0.017
Manganese and compounds	7439-96-5	0.00038	0.00004	0.013
Mercury and compounds	7439-97-6	0.00026	0.00002	0.009
Molybdenum trioxide	1313-27-5	0.00165	0.00016	0.057
Nickel compounds, insoluble	365	0.0021	0.00020	0.072
Selenium and compounds	7782-49-2	0.000024	0.00000	0.001
Toluene	108-88-3	0.0366	0.00344	1.257
Vanadium (fume or dust)	7440-62-2	0.0023	0.00022	0.079
Xylene (mixture), including m-xylene, o-xylene, p-xylene	1330-20-7	0.0272	0.00256	0.934
Zinc and compounds	7440-66-6	0.029	0.00273	0.996
Total TACs			0.32	115.30

(3) TAC Emission Factors from ODEQ ATEI Combustion Emission Factor Tool: WebFIRE/ AP-42 Section 1.4 (metals); SCAQMD AB2588 - Default Emission Factors for Fuel Combustion, Table B-1

Table 3-3: Emissions from Coating Oven (CO1)

Coating Use Information

Annual Coating* Usage	44,610	gal/yr
Resin	32,354	gal/yr
Pigment	12,256	gal/yr
Flow additive	100	gal/yr

* 2.64 gal resin to 1 gal pigment

Operating Hours	8760	hr/yr
	24	hr/day

Coating Emissions

Criteria Pollutant

		AquaEC 5100			
Pollutant	**Coating Component**	**VOC content lb/gal**	**Daily Emission lb/day**	**Annual Emission lb/yr**	**Annual Emission tpy**
VOC	Resin	0.45	39.89	14,559.30	7.28
	Pigment	2.25	75.55	27,576.00	13.79
	Flow Additive	7.47	2.05	747.00	0.37
Total VOC					21.44

Toxic Air Contaminants (TACs)

Coating Component	**Chemical**	**CAS**	**Wt Percent in Component**	**Density (lb/gal)**	**Emission (lb/hr)**	**Emission (lb/day)**	**Emission (lb/yr)**
Resin	1-methoxy-2-propanol	107-98-2	3.0%	8.76	0.97	23.29	8,499.72
Pigment	butan-2-ol	78-92-2	6.4%	11.35	1.02	24.39	8,903.34
Pigment	2-butoxyethanol	111-76-2	1.8%	11.35	0.29	6.86	2,504.06
Flow Additive	2-butoxyethanol	111-76-2	50.0%	7.46	0.04	1.02	373.22
				Total TAC from Coating Oven	2.32	55.56	20,280.34

Table 3-4: Emissions from Coating Line Baths (CL1)

Pretreatment Baths

Emission estimates are based on EPA's AP-42 (Chapter 12.20.2) equation 4 as follows (See Note 1):

$$E = \frac{1.9\,\sigma}{R_b}\left[\frac{(1 - 2a + 9a^3)^{0.5} + (a - 1)}{(1 + 3a) - (1 - 2a + 9a^3)^{0.5}}\right]^{0.5}$$

where:

E = Emission factor in grains/cubic foot of aeration air;
σ = Surface tension of bath, in pounds force per foot (lb_f/ft);
R_b = Average bubble radius, in inches;
$a = 0.072\,R_b^2/\sigma$

Operating Hrs	8760 hrs/yr
	24 hr/day

Toxic Air Contaminants (TACs)

Pretreat Option	Tank Process Name	Tank #	Additive	Additive Concentration in Bath (gal/100 gal)	Additive Density (lb/gal)	Chemical/TAC Pollutant	CAS (See Note 2)	Chemical Weight % in Additive	Chemical Concentration (lb/gal)	Surface Tension, σ (lb_f/ft)	Average Bubble Radius, R_b (Inches)	Factor, a (0.072 R_b^2/σ)	Tank Liquid Emission Rate (grains/ft^3-aeration air)	Aeration Rate (cfm/ft^2)	Tank Surface Area (ft^2)	Tank Liquid Emission Rate (lb/hr)	Chemical Emission Rate (lb/hr)	Chemical Emission Rate (lb/day)	Chemical Emission Rate (lb/yr)
Zinc Option	Alkaline Clean	Stage 2	Bonderite NP-2	3		no TACs	--										0	0	0
	Conditioner	Stage 5	Prepalene X	0.26	9.61	zinc orthophosphate	7440-66-6	30%	0.0075	0.0048	0.05	0.0375	0.0367	10	59	0.1854	0.00017	0.0040	1.46
	Zinc Pretreat	Stage 6	Bonderite 3410	3.4	11.26	zinc dihydrogen phosphate	7440-66-6	20%	0.0766	0.0048	0.05	0.0375	0.0367	10	59	0.1854	0.00170	0.0409	14.91
	Zinc Pretreat	Stage 6	Bonderite 3410	3.4	11.26	nickel nitrate	7440-02-0	10%	0.0383	0.0048	0.05	0.0375	0.0367	10	59	0.1854	0.00085	0.0204	7.46
	Zinc Pretreat	Stage 6	Bonderite 3410	3.4	11.26	phophoric acid	7664-38-2	5%	0.0191	0.0048	0.05	0.0375	0.0367	10	59	0.1854	0.00043	0.0102	3.73
	Zinc Pretreat	Stage 6	Bonderite 3410	3.4	11.26	zinc nitrate	7440-66-6	5%	0.0191	0.0048	0.05	0.0375	0.0367	10	59	0.1854	0.00043	0.0102	3.73
	Zinc Pretreat	Stage 6	Bonderite 3410	3.4	11.26	hydrogen fluoride	7664-39-3	1%	0.0038	0.0048	0.05	0.0375	0.0367	10	59	0.1854	0.00009	0.0020	0.75
	Zinc Pretreat	Stage 6	Bonderite M-AD 131	0.042		no TACs	--										0	0	0
	Zinc Pretreat	Stage 6	Bonderite M-AD 700	0.042		no TACs											0	0	0
	Zinc Pretreat	Stage 6	Bonderite C-IC 2520	1	8.84	nitric acid	7697-37-2	10%	0.0088	0.0048	0.05	0.0375	0.0367	10	59	0.1854	0.00020	0.0047	1.72
																Zinc Pretreat Option Total TACs	0.00366	0.0878	32.03

Pretreat Option	Tank Process Name	Tank #	Additive	Additive Concentration in Bath (gal/100 gal)	Additive Density (lb/gal)	Chemical/TAC Pollutant	CAS (See Note 2)	Chemical Weight % in Additive	Chemical Concentration (lb/gal)	Surface Tension, σ (lb_f/ft)	Average Bubble Radius, R_b (Inches)	Factor, a (0.072 R_b^2/σ)	Tank Liquid Emission Rate (grains/ft^3-aeration air)	Aeration Rate (cfm/ft^2)	Tank Surface Area (ft^2)	Tank Liquid Emission Rate (lb/hr)	Chemical Emission Rate (lb/hr)	Chemical Emission Rate (lb/day)	Chemical Emission Rate (lb/yr)
Nano Option	Alkaline Clean	Stage 2	Bonderite NP-2	3		no TACs	--										0	0	0
	Nano Pretreat	Stage 5	Bonderite M-NT2	4	8.51	ammonium nitrate	6482-52-2	1%	0.0034	0.0048	0.05	0.0375	0.0367	10	59	0.1854	0.00008	0.0018	0.66

Notes

Note 1: Non aerated, non electrolytic tanks not containing volatile organic solvents are assummed to have negligible emissions as indicated in EPA's "The Metal Finishing Facility Risk Screening Tool (MFFRST): Technical Documentation and User's Guide" (EPA/600/R-01/057), July, 2001, pg 2-33. To be conservative, emissions from the pretreatment immersion bath tanks were estimated using the EPA equation for electroplating emissions even though emissions should be negligible.

Note 2: Where additives contained zinc- or nickel- based chemicals, the chemicals were assumed to fall under the CAS for zinc or nickel compounds if the CAS for the chemical was not on the DEQ list of air toxics.

Electrocoating Stage (Stage 8 or Stage 9 in coating line depending on Pretreatment option used)

Operating Hours	8760 hr/yr
	24 hr/day

Using EPA emission equation from EIIP Volume II, Chapter 6- Semiconductor MFG, Equation 6.5-5, page 6.5-6 and -7:

$$Wx = (MWx * K * A * Pvapx)/(R*T)$$

where:

Wx = Evaporation rate of pollutant x (lb/sec)
MWx = molecular weight of pollutant x (lb/lb-mole)
K = gas phase mass transfer coefficient (ft/sec)= $0.00438 * U^{0.78} * (18/MWx)^{1/3}$
U = wind speed (mph)
A - surface area (square ft)
Pvapx - vapor pressure of pollutant x (psia)
R = ideal gas constant= 10.73
T = Temperature (oR)

Toxic Air Contaminants (TACs)

AquaEC 5100 Coating Component	Chemical/TAC Pollutant	CAS	Chemical Weight % in component	Chemical Molecular Weight (MW)	U-Wind Speed (mph)	K (ft/sec)	A-Surface Area (ft2)	P vapx (psia)	R (psia-ft3/oR-lb-mole)	T-Temperature (oR)	W (lb/sec)	Chemical Emission (lb/hr)	Chemical Emission (lb/day)	Chemical Emission (lb/yr)	
Resin	1-methoxy-2-propanol	107-98-2	3.0%	90.12	1.7	0.00388	65	0.228	10.73	544.67	2.6566E-05	0.10	2.30	837.80	
Pigment paste	2-butanol	78-92-2	6.4%	74.12	1.7	0.00414	65	0.232	10.73	544.67	5.062E-05	0.18	4.37	1,596.36	
Pigment paste	2-butoxyethanol	111-76-2	1.8%	118.17	1.7	0.00354	65	0.0149	10.73	544.67	1.248E-06	0.0045	0.11	39.36	412.57
Flow additive	2-butoxyethanol	111-76-2	50.0%	Assume all TAC in flow additive comes off in coating bath								0.043	1.02	373.22	
										Total TACs from Ecoat bath		0.32	7.80	2,846.73	

Table 3-5: Emissions from Welding (W1)

Operating Information

Type of Welding Process	GMAW	(Gas Metal Arc Welding)
Electrode Type	E70S	
Annual Electrode Consumption	48,000	lb/yr
Daily Electrode Consumption	288	lb/day
Overall Hood capture and Cartridge Filter efficiency	94%	(95% capture, 99% control)

Criteria Pollutants

Pollutant	Emission Factor(1) (lb/1000 lb electrode)	Controlled lb/1000 lb electrode	Emission Rate (tpy)
PM10	5.2	0.312	0.007

(1) AP-42 Table 12.19-1

Toxic Air Contaminants (TACs)

Pollutant	CAS	lb/1000 lb electrode (2)	Controlled lb/1000 lb electrode	Daily Emissions (lb/day)	Annual Emissions (lb/yr)
Chromium VI, chromate and dichromate particulate	18540-29-9	0.001	6E-05	0.00002	0.003
Cobalt and compounds	7440-48-4	0.001	6E-05	0.00002	0.003
Manganese and compounds	7439-96-5	0.318	0.01908	0.00550	0.916
Nickel and compounds, insoluble	365	0.001	6E-05	0.00002	0.003
Total TACs				0.006	0.92

(2) AP-42 Table 12.19-2 (converted from units of 0.1 lb/1000 lb electrode)

Note: Chromium compounds are HAPs but not TACs. AP-42 emission factor for Cr(VI), and ODEQ TAC is "ND"

Table 3-6: Emissions from Backup Condensing Boiler (B1)

Number of units	1	
Rating	1.6	MMBtu/hr
HHV Natural Gas	1,020	Btu/ft3
Max. Daily Operating Hours	24	
Max. Annual Operating Hours	8760	
Expected Max. Annual Operating Capacity	4%	
Max. Annual Natural Gas Usage	560.6	MMBtu/yr
Max. Annual Natural Gas Usage	0.5	MMCF/yr

Total Fuel Usage		
Annual Natural Gas Usage	560.6	MMBtu/yr
Annual Natural Gas Usage	0.5	MMCF/yr
Daily Natural Gas Usage	0.04	MMCF/day

Criteria Pollutants(1)

Pollutant	Emission Factor (lb/MMCF)	Emission Rate (tpy)
NOx	100	0.027
CO	84	0.023
VOC	5.5	0.0015
PM/PM10/PM2.5	2.5	0.0007
SO2	2.6	0.0007

(1) Emission factor from ODEQ, AQ-EF05

Greenhouse Gases(2)

Pollutant	Emission Factor (kg/MMBtu)	Emission Rate (tpy)
CO2e	53.1148	32.82

(2) Emission factor from EPA, 40 CFR Part 98, Subpart C

Toxic Air Contaminants (TACs)(3)

Pollutant	CAS	Emission Factor (lb/MMCF)	Daily Emissions (lb/day)	Annual Emissions (lb/yr)
Benzene	71-43-2	0.008	0.00030	0.004
Formaldehyde	50-00-0	0.017	0.00064	0.009
Polycyclic aromatic hydrocarbons (PAHs)	401	0.0001	0.00000	0.000
Benzo[a]pyrene	50-32-8	0.0000012	0.00000	0.000
Naphthalene	91-20-3	0.0003	0.00001	0.000
Acetaldehyde	75-07-0	0.0043	0.00016	0.002
Acrolein	107-02-8	0.0027	0.00010	0.001
Ammonia	7664-41-7	3.2	0.12047	1.759
Arsenic and compounds	7440-38-2	0.0002	0.00001	0.000
Barium and compounds	7440-39-3	0.0044	0.00017	0.002
Beryllium and compounds	7440-41-7	0.000012	0.00000	0.000
Cadmium and compounds	7440-43-9	0.0011	0.00004	0.001
Chromium VI, chromate and dichromate pa	18540-29-9	0.0014	0.00005	0.001
Cobalt and compounds	7440-48-4	0.000084	0.00000	0.000
Copper and compounds	7440-50-8	0.00085	0.00003	0.000
Ethyl benzene	100-41-4	0.0095	0.00036	0.005
Hexane	110-54-3	0.0063	0.00024	0.003
Lead and compounds	7439-92-1	0.0005	0.00002	0.000
Manganese and compounds	7439-96-5	0.00038	0.00001	0.000
Mercury and compounds	7439-97-6	0.00026	0.00001	0.000
Molybdenum trioxide	1313-27-5	0.00165	0.00006	0.001
Nickel compounds, insoluble	365	0.0021	0.00008	0.001
Selenium and compounds	7782-49-2	0.000024	0.00000	0.000
Toluene	108-88-3	0.0366	0.00138	0.020
Vanadium (fume or dust)	7440-62-2	0.0023	0.00009	0.001
Xylene (mixture), including m-xylene, o-xyl	1330-20-7	0.0272	0.00102	0.015
Zinc and compounds	7440-66-6	0.029	0.00109	0.016
Total TACs			0.13	1.84

(3) TAC Emission Factors from ODEQ ATEI Combustion Emission Factor Tool: WebFIRE/ AP-42 Section 1.4 (metals); SCAQMD AB2588 - Default Emission Factors for Fuel Combustion, Table B-1

De minimis emission levels are 1.0 tpy for each criteria pollutant and 2,756 tpy for greenhouse gases per OAR 340-200-0020(39). Aggregate expected actual annual emissions from these units are below these levels and the equipment is categorically insignificant per LRAPA 12-005.

Table 3-7: Emissions from Building F Hot Water Heaters (B2)

# of units	2	
Rating	0.16	MMBtu/hr
HHV Natural Gas	1,020	Btu/ft3
Max. Daily Operating Hours	24	
Max. Annual Operating Hours	8760	
Expected Max. Annual Operating Capacit	6%	
Max. Annual Natural Gas Usage	168.2	MMBtu/yr
Max. Annual Natural Gas Usage	0.2	MMCF/yr

Total Fuel Usage

Annual Natural Gas Usage	168.2	MMBtu/yr
Annual Natural Gas Usage	0.2	MMCF/yr
Daily Natural Gas Usage	0.01	MMCF/day

Criteria Pollutants(1)		
Pollutant	Emission Factor (lb/MMCF)	Emission Rate (tpy)
NOx	100	0.0082
CO	84	0.0069
VOC	5.5	0.00045
PM/PM10/PM2.5	2.5	0.00021
SO2	2.6	0.00021

(1) Emission factor from ODEQ, AQ-EF05

Greenhouse Gases(2)		
Pollutant	Emission Factor (kg/MMBtu)	Emission Rate (tpy)
CO2e	53.1148	9.85

(2) Emission factor from EPA, 40 CFR Part 98, Subpart C

Toxic Air Contaminants (TACs)(3)				
Pollutant	CAS	Emission Factor (lb/MMCF)	Daily Emissions (lb/day)	Annual Emissions (lb/yr)
Benzene	71-43-2	0.008	0.00006	0.001
Formaldehyde	50-00-0	0.017	0.00013	0.003
Polycyclic aromatic hydrocarbons (PAHs)	401	0.0001	0.00000	0.000

Toxic Air Contaminants (TACs)(3)				
Pollutant	CAS	Emission Factor (lb/MMCF)	Daily Emissions (lb/day)	Annual Emissions (lb/yr)
Benzo[a]pyrene	50-32-8	0.0000012	0.00000	0.000
Naphthalene	91-20-3	0.0003	0.00000	0.000
Acetaldehyde	75-07-0	0.0043	0.00003	0.001
Acrolein	107-02-8	0.0027	0.00002	0.000
Ammonia	7664-41-7	3.2	0.02409	0.528
Arsenic and compounds	7440-38-2	0.0002	0.00000	0.000
Barium and compounds	7440-39-3	0.0044	0.00003	0.001
Beryllium and compounds	7440-41-7	0.000012	0.00000	0.000
Cadmium and compounds	7440-43-9	0.0011	0.00001	0.000
Chromium VI, chromate and dichromate	18540-29-9	0.0014	0.00001	0.000
Cobalt and compounds	7440-48-4	0.000084	0.00000	0.000
Copper and compounds	7440-50-8	0.00085	0.00001	0.000
Ethyl benzene	100-41-4	0.0095	0.00007	0.002
Hexane	110-54-3	0.0063	0.00005	0.001
Lead and compounds	7439-92-1	0.0005	0.00000	0.000
Manganese and compounds	7439-96-5	0.00038	0.00000	0.000
Mercury and compounds	7439-97-6	0.00026	0.00000	0.000
Molybdenum trioxide	1313-27-5	0.00165	0.00001	0.000
Nickel compounds, insoluble	365	0.0021	0.00002	0.000
Selenium and compounds	7782-49-2	0.000024	0.00000	0.000
Toluene	108-88-3	0.0366	0.00028	0.006
Vanadium (fume or dust)	7440-62-2	0.0023	0.00002	0.000
Xylene (mixture), including m-xylene, o-x	1330-20-7	0.0272	0.00020	0.004
Zinc and compounds	7440-66-6	0.029	0.00022	0.005
Total TACs			0.03	0.55

(3) TAC Emission Factors from ODEQ ATEI Combustion Emission Factor Tool: WebFIRE/ AP-42 Section 1.4 (metals); SCAQMD AB2588 - Default Emission Factors for Fuel Combustion, Table B-1

De minimis emission levels are 1.0 tpy for each criteria pollutant and 2,756 tpy for greenhouse gases per OAR 340-200-0020(39). Aggregate expected actual annual emissions from these units are below these levels and the equipment is categorically insignificant per LRAPA 12-005.

Table 3-8: Emissions from Pretreatment Heater Stage 1 (H1)

Number of units	1	
Rating	0.9	MMBtu/hr
HHV Natural Gas	1,020	Btu/ft3
Max. Daily Operating Hours	24	
Max. Annual Operating Hours	8760	
Expected Max. Annual Operating Capacity	100%	
Max. Annual Natural Gas Usage	7884.0	MMBtu/yr
Max. Annual Natural Gas Usage	7.7	MMCF/yr

Total Fuel Usage		
Annual Natural Gas Usage	7884.0	MMBtu/yr
Annual Natural Gas Usage	7.7	MMCF/yr
Daily Natural Gas Usage	0.02	MMCF/day

Criteria Pollutants(1)		
Pollutant	Emission Factor (lb/MMCF)	Emission Rate (tpy)
NOx	100	0.386
CO	84	0.325
VOC	5.5	0.0213
PM/PM10/PM2.5	2.5	0.0097
SO2	2.6	0.0100

(1) Emission factor from ODEQ, AQ-EF05

Greenhouse Gases(2)		
Pollutant	Emission Factor (kg/MMBtu)	Emission Rate (tpy)
CO2e	53.1148	461.60

(2) Emission factor from EPA, 40 CFR Part 98, Subpart C

Toxic Air Contaminants (TACs)(3)				
Pollutant	CAS	Emission Factor (lb/MMCF)	Daily Emissions (lb/day)	Annual Emissions (lb/yr)
Benzene	71-43-2	0.008	0.00017	0.062
Formaldehyde	50-00-0	0.017	0.00036	0.131
Polycyclic aromatic hydrocarbons (PAHs)	401	0.0001	0.00000	0.001
Benzo[a]pyrene	50-32-8	0.0000012	0.00000	0.000
Naphthalene	91-20-3	0.0003	0.00001	0.002
Acetaldehyde	75-07-0	0.0043	0.00009	0.033

Toxic Air Contaminants (TACs)(3)				
Pollutant	CAS	Emission Factor (lb/MMCF)	Daily Emissions (lb/day)	Annual Emissions (lb/yr)
Acrolein	107-02-8	0.0027	0.00006	0.021
Ammonia	7664-41-7	3.2	0.06776	24.734
Arsenic and compounds	7440-38-2	0.0002	0.00000	0.002
Barium and compounds	7440-39-3	0.0044	0.00009	0.034
Beryllium and compounds	7440-41-7	0.000012	0.00000	0.000
Cadmium and compounds	7440-43-9	0.0011	0.00002	0.009
Chromium VI, chromate and dichromate pa	18540-29-9	0.0014	0.00003	0.011
Cobalt and compounds	7440-48-4	0.000084	0.00000	0.001
Copper and compounds	7440-50-8	0.00085	0.00002	0.007
Ethyl benzene	100-41-4	0.0095	0.00020	0.073
Hexane	110-54-3	0.0063	0.00013	0.049
Lead and compounds	7439-92-1	0.0005	0.00001	0.004
Manganese and compounds	7439-96-5	0.00038	0.00001	0.003
Mercury and compounds	7439-97-6	0.00026	0.00001	0.002
Molybdenum trioxide	1313-27-5	0.00165	0.00003	0.013
Nickel compounds, insoluble	365	0.0021	0.00004	0.016
Selenium and compounds	7782-49-2	0.000024	0.00000	0.000
Toluene	108-88-3	0.0366	0.00078	0.283
Vanadium (fume or dust)	7440-62-2	0.0023	0.00005	0.018
Xylene (mixture), including m-xylene, o-xyl	1330-20-7	0.0272	0.00058	0.210
Zinc and compounds	7440-66-6	0.029	0.00061	0.224
Total TACs			0.07	25.94

(3) TAC Emission Factors from ODEQ ATEI Combustion Emission Factor Tool: WebFIRE/ AP-42 Section 1.4 (metals); SCAQMD AB2588 - Default Emission Factors for Fuel Combustion, Table B-1

De minimis emission levels are 1.0 tpy for each criteria pollutant and 2,756 tpy for greenhouse gases per OAR 340-200-0020(39). Aggregate expected actual annual emissions from these units are below these levels and the equipment is categorically insignificant per LRAPA 12-005.

Table 3-9: Emissions from Infrared Heaters (H4)

Number of units	27	
Rating	0.2	MMBtu/hr
HHV Natural Gas	1,020	Btu/ft3
Max. Daily Operating Hours	24	
Max. Annual Operating Hours	8760	
Expected Max. Annual Operating Capacit	13%	
Max. Annual Natural Gas Usage	6149.5	MMBtu/yr
Max. Annual Natural Gas Usage	6.0	MMCF/yr

Total Fuel Usage

Annual Natural Gas Usage	6149.5	MMBtu/yr
Annual Natural Gas Usage	6.0	MMCF/yr
Daily Natural Gas Usage	0.13	MMCF/day

Criteria Pollutants(1)		
Pollutant	Emission Factor (lb/MMCF)	Emission Rate (tpy)
NOx	100	0.3
CO	84	0.3
VOC	5.5	0.02
PM/PM10/PM2.5	2.5	0.008
SO2	2.6	0.01

(1) Emission factor from ODEQ, AQ-EF05

Greenhouse Gases(2)		
Pollutant	Emission Factor (kg/MMBtu)	Emission Rate (tpy)
CO2e	53.1148	360.05

(2) Emission factor from EPA, 40 CFR Part 98, Subpart C

Toxic Air Contaminants (TACs)(3)				
Pollutant	CAS	Emission Factor (lb/MMCF)	Daily Emissions (lb/day)	Annual Emissions (lb/yr)
Benzene	71-43-2	0.008	0.00102	0.048
Formaldehyde	50-00-0	0.017	0.00216	0.102
Polycyclic aromatic hydrocarbons (PAHs)	401	0.0001	0.00001	0.001

Toxic Air Contaminants (TACs)(3)				
Pollutant	CAS	Emission Factor (lb/MMCF)	Daily Emissions (lb/day)	Annual Emissions (lb/yr)
Benzo[a]pyrene	50-32-8	0.0000012	0.00000	0.000
Naphthalene	91-20-3	0.0003	0.00004	0.002
Acetaldehyde	75-07-0	0.0043	0.00055	0.026
Acrolein	107-02-8	0.0027	0.00034	0.016
Ammonia	7664-41-7	3.2	0.40659	19.293
Arsenic and compounds	7440-38-2	0.0002	0.00003	0.001
Barium and compounds	7440-39-3	0.0044	0.00056	0.027
Beryllium and compounds	7440-41-7	0.000012	0.00000	0.000
Cadmium and compounds	7440-43-9	0.0011	0.00014	0.007
Chromium VI, chromate and dichromate	18540-29-9	0.0014	0.00018	0.008
Cobalt and compounds	7440-48-4	0.000084	0.00001	0.001
Copper and compounds	7440-50-8	0.00085	0.00011	0.005
Ethyl benzene	100-41-4	0.0095	0.00121	0.057
Hexane	110-54-3	0.0063	0.00080	0.038
Lead and compounds	7439-92-1	0.0005	0.00006	0.003
Manganese and compounds	7439-96-5	0.00038	0.00005	0.002
Mercury and compounds	7439-97-6	0.00026	0.00003	0.002
Molybdenum trioxide	1313-27-5	0.00165	0.00021	0.010
Nickel compounds, insoluble	365	0.0021	0.00027	0.013
Selenium and compounds	7782-49-2	0.000024	0.00000	0.000
Toluene	108-88-3	0.0366	0.00465	0.221
Vanadium (fume or dust)	7440-62-2	0.0023	0.00029	0.014
Xylene (mixture), including m-xylene, o-x	1330-20-7	0.0272	0.00346	0.164
Zinc and compounds	7440-66-6	0.029	0.00368	0.175
Total TACs			0.43	20.23

(3) TAC Emission Factors from ODEQ ATEI Combustion Emission Factor Tool: WebFIRE/ AP-42 Section 1.4 (metals); SCAQMD AB2588 - Default Emission Factors for Fuel Combustion, Table B-1

De minimis emission levels are 1.0 tpy for each criteria pollutant and 2,756 tpy for greenhouse gases per OAR 340-200-0020(39). Aggregate expected actual annual emissions from these units are below these levels and the equipment is categorically insignificant per

Table 3-10: Plant Site Emission Summary

Pollutant		Emission Sources					
		Pretreatment Heater Stage 2 (H2)	Coating Oven-Burner (H3)	Coating Oven (CO1)	Coating Line Baths (CL1)*	Welding (W1)	Emission Total
NOx	Tons/yr	0.386	1.72				2.10
CO	Tons/yr	0.325	1.44				1.77
VOC	Tons/yr	0.021	0.09	21.44			21.56
PM/PM10/PM2.5	Tons/yr	0.010	0.04			0.007	0.06
SO2	Tons/yr	0.010	0.04				0.05
CO2e	Tons/yr	461.60	2,051.56				2,513.16
Hazardous Air Pollutants	lb/yr	0.91	4.06	0.00	0.75	0.92	6.64
Toxic Air Contaminants	lb/yr	25.94	115.30	20,280.34	2,846.73	0.92	23,269.23

* 100% VOC in coating calculated as being emitted from Coating Oven

Table 3-11: Emission Summary for Natural Gas-Fired Categorically Insignificant Activities

Pollutant		Natural Gas-Fired Categorically Insignificant Activities (CIA)				
		Back-up Condensing Boiler (B1)	Building F Domestic Hot Water Heaters (B2)	Pretreatment Heater Stage 1 (H1)	Infrared Radiant Heating Units (H4)	CIA Emissions Total
NOx	Tons/yr	0.027	0.008	0.386	0.301	0.72
CO	Tons/yr	0.023	0.007	0.325	0.253	0.61
VOC	Tons/yr	0.002	0.0005	0.021	0.017	0.04
PM/PM10/PM2.5	Tons/yr	0.001	0.0002	0.010	0.008	0.02
SO2	Tons/yr	0.001	0.0002	0.010	0.008	0.02
CO2e	Tons/yr	32.82	9.85	461.60	360.05	864.32

4.0 Regulatory Review

The following is a brief overview of the substantive air quality related regulatory requirements applicable to the facility.

4.1 LRAPA Regulations

The facility must comply with applicable provisions in the LRAPA regulations. Those requirements include but are not limited to the following regulations:

Title 32- Emission Standards

Section 32-010: Visible Air Contaminant Limitations
Section 32-015: Particulate Emission Limitations
Section 32-050: Concealment or Masking of Emissions prohibited
Section 32-055: Particulate Fallout Limitation
Section 32-090: Other Emissions

Title 49- Nuisance Control Requirements

Section 49-010: Nuisance Prohibited

4.2 Categorically Insignificant Activities

Categorically Insignificant Activities (CIA) are emission sources and activities that are not required to be listed in the ACDP. There are other activities that will be conducted at the facility that fall under the CIA definition [LRAPA Section 12-005], in addition to the natural gas-fired units identified in Table 2-2. Some of these activities may include:

- Motor vehicle operation (B)
- Office activities (E)
- Food service activities (F)
- Janitorial activities (G)
- Personal care (H)
- Groundskeeping (I)
- Instrument calibration (L)
- Maintenance and repair shop (M)
- Ventilation equipment (O)
- Refrigeration systems (P)
- Temporary construction (R)
- Warehouse activities (S)
- Pretreatment of municipal water (Y)
- Process raw water filtration systems (CC)
- Fire suppression (EE)
- Routine repair and replacement of equipment (GG)

- Electric motors (HH)
- Emissions from wastewater discharges (NN)
- Paved surfaces (RR)
- Boiler blowdown (YY)

4.3 Federal Surface Coating Regulations

The U.S. Environmental Protection Agency has promulgated thirteen National Emission Standards for Hazardous Air Pollutants (NESHAPs) for surface coating operations at major and area sources of HAPs. As previously indicated the Arcimoto facility will be a non-major, i.e., area source of HAPs. In general, the area source surface coating NESHAPs apply to operations that use methylene chloride for paint stripping or use coatings that contain one of the five metal HAPs chromium, lead, nickel, manganese or cadmium. Arcimoto is not proposing to use these materials and the Federal NESHAPs do not apply.

Appendix A- LRAPA Forms

LRAPA

FORM AQ101
ADMINISTRATIVE INFORMATION **ANSWER SHEET**

FOR LRAPA USE ONLY	
Permit Number: 200058	Type of Application:
Application No: 67477	RNW ☐ MOD ☐ NEW ☑ EXT ☐
Date Received : 11.5.2021	
	Check No. Amount $

1. Company	2. Facility Location
Legal Name: Arcimoto, Inc.	Name: Arcimoto
Mailing Address: 2034 W. 2nd Avenue	Street Address: 311 Chambers St
City, State, Zip Code: Eugene, OR, 97402	City, County, Zip Code: Eugene, Lane County, 97402
Number of employees (corporate):	Number of employees (facility):
3. Facility Contact Person	**4. Industrial Classification Code(s)**
Name: Tim Hynen	Primary SIC and NAICS: 3751 SIC/ 336991 NAICS
Title: Director of Manufacturing	Secondary SIC and NAICS:
Telephone number: 503-899-3402	**5. Other LRAPA Permits**
Fax. number:	
e-mail address: timh@arcimoto.com	

6. Permit Action*:

- [X] New Simple ACDP
- [ ] New Construction ACDP
- [ ] New Standard ACDP
- [ ] New Standard ACDP (PSD/NSR)
- [ ] Renewal of an existing permit without changes (include form AQ403 for Standard ACDPs)
- [ ] Renewal of an existing permit with changes (include form AQ403 for Standard ACDPs)
- [ ] Modification of existing permit

7. Signature

I hereby apply for permission to discharge air contaminants in Lane County, Oregon, as stated or described in this application, and certify that the information contained in this application and the schedules and exhibits appended hereto, are true and correct to the best of my knowledge and belief.

JESSE FITTIPALDI
Name of official (Printed or Typed)

CHIEF STRATEGY OFFICER
Title of official and phone number 541.337.6672

Signature of official

11-02-2021
Date

*Applicable fees will be assessed after LRAPA receives the application. Please contact LRAPA for fee questions.

8. Contact List:

Company Information:

Legal Name:	Other company name (if different than legal name):
Arcimoto, Inc.	

Site Contact Person: *(A person who deals with LRAPA staff about equipment related problems or issues.)*

Name:	Telephone number:
Tim Hynen	503-899-3402
Title: Director of Manufacturing	E-mail address: timh@arcimoto.com

Facility Contact Person: *(A person involved with all environmental issues at the facility although they may be housed at a different site.)*

Name:	Telephone number:
same	
Title:	E-mail address:

Mailing Contact Person: *(A person for which the company would like all agency communications directed.)*

Name:	Telephone number:
same	
Title:	E-mail address:

Invoice Contact Person: *(If other than the site contact person, a valid contact information to which invoices and communications related to resolving invoice questions can be directed.)*

Name:	Telephone number:
same	
Title:	E-mail address:

SUBMIT TWO COPIES OF THE COMPLETED APPLICATION TO:

Lane Regional Air Protection Agency
1010 Main Street
Springfield, OR 97477
(541) 736-1056

FACILITY DESCRIPTION

Facility Name: Arcimoto Permit Number: TBD

1. Description of facility and processes:

See Section 2 of the ACDP application.

3. Attach plot plan.

4. Attach process flow diagram.

5. Attach a city map or drawing showing the facility location.

Facility Name: Arcimoto Permit Number: TBD

1.	Device name	Coating Oven
2.	Device ID number	CO1
3.	Does the device currently exist at the facility? [yes/no]	No
4.	Date installation/construction commenced	TBD
5.	Date installed	TBD
6.	Emissions control equipment? [yes/no; if yes, complete an appropriate series AQ300 form]	No
7.	Manufacturer	ThermaTron X

8. Process description:

Oven to be used to cure coating on metal parts

See Section 2 and Appendix E of the application

9.	Material throughput rates	type of material	coating on parts
		lbs/hr (maximum capacity)	
		lbs/yr (projected maximum)	

10. Describe heat source:

4.0 MM Btu/hr natural gas-fired burner. Burner is Device ID H3

11.	Fuel information:	type/grade	natural gas
		introduction method (describe)	direct fired
		amount used per day or hour (maximum design capacity)	4 MM Btu/hr
		amount used per year (maximum projected)	34.4 MM cf/yr
		sulfur content of oil or coal fuels (% by weight)	

SURFACE COATING INFORMATION

Facility Name: Arcimoto Permit Number: TBD

General Information:

1. Materials being coated (list): electric vehicle metal parts

2. Describe the coating equipment: Coating Line (CL1) has many dip tanks; Pretreatment and conditioning dip tanks; Electrocoating dip tank

3. Type of paint guns (list): NA

4. How many paint booths? When were they or will they be installed?

Paint Booth ID	Date installed
No paint booths	

5. Are powder coatings or other special coating processes used? (describe): Yes. Electrocoating process will be used. See Section 2 of the application for more details.

6. Are there any pollution controls? if yes, complete an appropriate AQ300 series form and list the ID numbers here: No

7. Capture efficiency (%) and basis: NA

8. Source test results:
   - Date: NA
   - Inlet concentration (ppm):
   - Outlet concentration (ppm):
   - Mass emissions rate (lb/hr):
   - Destruction efficiency (%):

9. Describe equipment cleaning operations and list solvents: Coating Line dip tanks cleaned out during maintenance

10.	How are waste materials handled and disposed of?	wastewater filtration system
11.	Describe any odor or nuisance complaints	NA
12.	Are there boilers at the facility? If yes, complete form AQ208 and list the identification numbers here	Boiler at facility are CIA and not part of coating line.
13.	Are there curing or drying ovens? If yes, complete form AQ206 and list the identification numbers here	Yes. Coating Oven (CO1)
14.	Are there any sources of particulate emissions? Describe fugitive emission sources here. Otherwise complete an appropriate AQ200 series form.	No
15.	Operating Schedule:	
	Projected maximum hours/day	24
	Projected maximum days/week	7
	Projected maximum weeks/year	8760

POTENTIAL TO EMIT:

1.	Uncontrolled VOC PTE	21.4	tons/yr
2.	Controlled VOC PTE	21.4	tons/yr
3.	Are the controls an integral part of the operations or do the controls have efficiency alarms? (yes or no)	NA	
4.	Most recent highest actual VOC emissions (year and amount)	NA	tons/yr
5.	Is the facility a major source of VOC emissions? (yes or no)	No	
6.	Controlled single HAP PTE	< 1	tons/yr
7.	Controlled combined HAP PTE	<1	tons/yr
8.	Is the facility a major source of HAP emissions? (yes or no)	No	
9.	Were there any changes in chemical usage or equipment changes in the last 5 years? (If so, see instructions)	NA	

NSPS, NESHAP APPLICABILITY:

1. Are any of the following NSPS requirements applicable to the facility? (enter yes or no)

a.	Surface Coating of Metal Furniture (if yes, complete questions 2-4 below for Surface Coating of Metal Furniture NSPS Information)	No
b.	Automobile and Light Duty Truck Surface Coating	No
c,	Tape and Label Surface Coating	No
d.	Industrial Surface Coating: Large Appliances	No
e.	Metal Coil Surface Coating	No
f.	Beverage Can Surface Coating Industry	No
g.	Flexible Vinyl and Urethane Coating and Printing	No
h.	Industrial Surface Coating: Surface Coating of Plastic Parts for Business Machines (if yes, complete questions 17 & 18)	No
i.	Polymeric Coating of Supporting Substrates Facilities	No

Surface Coating of Metal Furniture NSPS Information:

2. List specific paint lines or paint booths that have been constructed, modified, or reconstructed since 11/28/80 and the date installed. NA

3. What was the highest annual volume of coating used, as applied, over the past 2 years _____ gallons/year

4. What is the projected maximum annual volume of coating to be used, as applied, during the next 5 years _____ gallons/year

5. As applied coating information:

Coating name	Projected daily quantity used (as applied), gal.	Coating weight, #/gal.	VOC content, as applied, #/gal.	Solids content, as applied, #/gal	Transfer efficiency	Capture Efficiency	Destruction Efficiency

Industrial Surface Coating: Surface Coating of Plastic Parts for Business Machines NSPS Information:

6. List specific paint lines or paint booths that have been constructed, modified, or reconstructed since 11/28/80 and the date installed. NA

7. As applied coating information:

Coating name	Coating type	Coating weight, #/gal.	VOC content, as applied, #/gal.	Solids content, as applied, #/gal	Transfer efficiency	Capture Efficiency	Destruction Efficiency

8. Are any of the following NESHAP requirements applicable to the facility? (enter yes or no)

a. Hard and Decorative Chromium Electroplating and Chromium Anodizing — No
b. Halogenated Solvent Cleaning — No
c, Magnetic Tape Operations — No
d. Aerospace Manufacturing and Rework Facilities — No
e. Shipbuilding and Ship Repair Operations — No
f. Wood Furniture Manufacturing Operations — No

Facility Name: Arcimoto Permit Number: TBD

Process Information

1. ID Number: H3
2. Descriptive name: Coating Oven Burner
3. Existing or future? Future
4. Date commenced: TBD
5. Date installed/completed: TBD
6. Description of process:

This unit is a natural gas-fired burner on the Coating Oven(CO1)

See Section 2 of the application for more informaton

Operating Schedule

7. Seasonal or year-round? Year-round
8. Batch or continuous operation? continuous
9. Projected maximum hours/day 24
10. Projected maximum hours/year 8760
11. Process/device capacity:

	Short term capacity		Annual usage	
Raw materials	amount	units	amount	units
natural gas	4.0	MM Btu/hr	34.4	MM cf/yr
Products				
	na			

12. Control device(s) (yes/no?) If yes, provide the ID number and complete and attached the applicable series AQ300 form(s). No control device

Facility Name: Arcimoto Permit Number: TBD

Process Information

1. ID Number: H2
2. Descriptive name: Pretreatment Stage 2 Heater
3. Existing or future?: Future
4. Date commenced: TBD
5. Date installed/completed: TBD

6. Description of process:

This unit is a natural gas-fired heater on the Stage 2 bath in the Coating Line (CL1)

See Section 2 of the application for more informaton

Operating Schedule

7. Seasonal or year-round?: Year-round
8. Batch or continuous operation?: continuous
9. Projected maximum hours/day: 24
10. Projected maximum hours/year: 8760
11. Process/device capacity:

	Short term capacity		Annual usage	
Raw materials	amount	units	amount	units
natural gas	0.9	MM Btu/hr	7.7	MM cf/yr
Products				
	na			

12. Control device(s) (yes/no?) If yes, provide the ID number and complete and attached the applicable series AQ300 form(s). No control device

Facility Name: Arcimoto Permit Number: TBD

Process Information

1. ID Number: W1
2. Descriptive name: Welding
3. Existing or future? Future
4. Date commenced: TBD
5. Date installed/completed: TBD

6. Description of process:

Facility will have gas metal arc welding stations with fume hoods and cartridge filter control

See Section 2 of the application for more informaton

Operating Schedule

7. Seasonal or year-round? Year-round
8. Batch or continuous operation? continuous
9. Projected maximum hours/day: 24
10. Projected maximum hours/year: 8760
11. Process/device capacity:

Raw materials	Short term capacity amount	Short term capacity units	Annual usage amount	Annual usage units
E70S electrode	288	lb/day	48,000	lb/yr
Products				
	na			

12. Control device(s) (yes/no?) If yes, provide the ID number and complete and attached the applicable series AQ300 form(s). Yes, a cartridge filter (CF1) control device

Facility Name: Arcimoto Permit Number: TBD

1.	Control Device ID	CF1		
2.	Process/Device(s) Controlled	Welding (W1)		
3.	Year installed	TBD		
4.	Manufacturer/Model No.	Statiflex, FB-24		
5.	Control Efficiency(%)	99% MERV 11		
6.	Type of cleaning mechanism and frequency	Pulse cleaning		
7.	Design inlet gas flow rate (acfm)	13,920 cfm max		
8.	Number of bags	24 cartridges		
9.	Design air-to-cloth ratio	na		
10.	Design pressure drop (inches of water)	TBD		
11.	Inlet gas pretreatment? (yes/no) If yes, list control device ID and complete a separate control device form	No		

PLANT SITE EMISSIONS DETAIL SHEET
CURRENT/FUTURE OPERATIONS

FORM AQ402
ANSWER SHEET

Facility Name: Arcimoto

Permit Number: TBD

1. Emissions Point	Production Rates		4. Pollutant	Emissions Factors			Emissions	
	2. Short-term (Specify units)	3. Annual (Specify units)		5. Short-term	6. Long-term	7. Reference(s)	8. Short-term (Specify units)	9. Annual (tons/year)
	See Section 3 of the application, Tables 3-1 through 3-11 for emission estimates							
Example	200 tons of rock/hr	400,000 tons	PM	0.04 lb/ton	0.04 lb/ton	DEQ	8.0 lb/hr	8.0

Facility Name: Arcimoto Permit Number: TBD

Emissions Data

1. Emissions Point	2. Annual Production Rate (specify units)	3. Pollutant	4. Emission Factor	5. EF reference	6. Annual Emissions (tons/yr)
	See Section 3 of the application, Tables 3-1 through 3-10 for HAP emission estimates				

Applications for Standard ACDPs must also include the most recent Toxics Release Inventory report, if applicable (see instructions).

State of Oregon Department of Environmental Quality

Land Use Compatibility Statement

What is a Land Use Compatibility Statement?

A LUCS is a form developed by DEQ to determine whether a DEQ permit or approval will be consistent with local government comprehensive plans and land use regulations.

Why is a LUCS required?

DEQ and other state agencies with permitting or approval activities that affect land use are required by Oregon law to be consistent with local comprehensive plans and have a process for determining consistency. DEQ activities affecting land use and the requirement for a LUCS may be found in Oregon Administrative Rules (OAR) Chapter 340, Division 18.

When is a LUCS required?

A LUCS is required for nearly all DEQ permits and certain approvals of plans or related activities that affect land use prior to issuance of a DEQ permit or approval. These permits and activities are listed in section 1.D on p. 2 of this form. A single LUCS can be used if more than one DEQ permit or approval is being applied for concurrently.

Permit modifications or renewals also require a LUCS when any of the following applies:

1. Physical expansion on the property or proposed use of additional land;
2. Alterations, expansions, improvements or changes in method or type of disposal at a solid waste disposal site as described in OAR 340-093-0070(4)(b);
3. A significant increase in discharges to water;
4. A relocation of an outfall outside of the source property; or
5. Any physical change or change of operation of an air pollutant source that results in a net significant emission rate increase as defined in OAR 340-200-0020.

How to complete a LUCS:

Step	Who does it?	What happens?
1.	Applicant	Applicant completes Section 1 of the LUCS and submits it to the appropriate city or county planning office.
2.	City or County Planning Office	City or county planning office completes Section 2 of the LUCS to indicate whether the activity or use is compatible with the acknowledged comprehensive plan and land use regulations, attaches written findings supporting the decision of compatibility, and returns the signed and dated LUCS to the applicant.
3.	Applicant	Applicant submits the completed LUCS and any supporting information provided by the city or county to DEQ along with the DEQ permit application or approval request.

Where to get help:

For questions about the LUCS process, contact the DEQ staff responsible for processing the permit or approval. DEQ staff may be reached at 1-800-452-4011 (toll-free, inside Oregon) or 503-229-5630. For general questions, please contact DEQ land use staff listed on our Land Use CompatibilityStatement page online.

Cultural resources protection laws:

Applicants involved in ground-disturbing activities should be aware of federal and state cultural resources protection laws. ORS 358.920 prohibits the excavation, injury, destruction, or alteration of an archeological site or object or removal of archeological objects from public and private lands without an archeological permit issued by the State Historic Preservation Office. 16 USC 470, Section 106, National Historic Preservation Act of 1966 requires a federal agency, prior to any undertaking, to take into account the effect of the undertaking that is included on or eligible for inclusion in the National Register. For further information, contact the State Historic Preservation Office at 503-378-4168, ext. 232.

Land Use Compatibility Statement

Section 1 – To be completed by the applicant	
1A. Applicant Name: Arcimoto	1B. Project Name: Arcimoto Private Improvements
Contact Name: Jesse Fittipaldi	Physical Address: W 5th Ave and Filmore St
Mailing Address: 2034 W 2nd Ave	City, State, Zip: Eugene, OR 97402
City, State, Zip: Eugene, OR 97402	Tax Lot #: 13000, 2500, 2000, 1700 17-04-36-12
Telephone: 541-683-6293	Township: Range: Section: and 17-04-25-43
Tax Account #:	Latitude: 44.054475
	Longitude: -123.117244

1C. Describe the project, include the type of development, business, or facility and services or products provided (attach additional information if necessary):

Building demolition, new building addition(s), new AC and concrete paving, new stormwater system and new parking lot for Arcimoto rAMP site development.

1D. Check the type of DEQ permit(s) or approval(s) being applied for at this time.

- ☐ Air Quality Notice of Construction
- ☐ Air Contaminant Discharge Permit
- ☐ Air Quality Title V Permit
- ☐ Air Quality Indirect Source Permit
- ☐ Parking/Traffic Circulation Plan
- ☐ Solid Waste Land Disposal Site Permit
- ☐ Solid Waste Treatment Facility Permit
- ☐ Solid Waste Composting Facility Permit (includes Anaerobic Digester)
- ☐ Conversion Technology Facility Permit
- ☐ Solid Waste Letter Authorization Permit
- ☐ Solid Waste Material Recovery Facility Permit
- ☐ Solid Waste Energy Recovery Facility Permit
- ☐ Solid Waste Transfer Station Permit
- ☐ Waste Tire Storage Site Permit
- ☐ Pollution Control Bond Request
- ☐ Hazardous Waste Treatment, Storage or Disposal Permit
- ☐ Clean Water State Revolving Fund Loan Request
- ☐ Wastewater/Sewer Construction Plan/ Specifications (includes review of plan changes that require use of new land)
- ☐ Water Quality NPDES Individual Permit
- ☐ Water Quality WPCF Individual Permit (for onsite construction-installation permits use the DEQ Onsite LUCS form)
- ☑ Water Quality NPDES Stormwater General Permit (1200-A, 1200-C, 1200-CA, 1200-COLS, and 1200-Z)
- ☐ Water Quality General Permit (all general permits, except 600, 700-PM, 1700-A, and 1700-B when they are mobile)
- ☐ Water Quality 401 Certification for federal permit or license

This application is for: ☐ Permit Renewal ☑ New Permit ☐ Permit Modification ☐ Other:

Section 2 – To be completed by city or county planning official	
Applicant name: Arcimoto	Project name: Arcimoto Improvements

Instructions: Written findings of fact for all local decisions are required; written findings from previous actions are acceptable. For uses allowed outright by the acknowledged comprehensive plan, DEQ will accept written findings in the form of a reference to the specific plan policies, criteria, or standards that were relied upon in rendering the decision with an indication of why the decision is justified based on the plan policies, criteria, or standards.

2A. The project proposal is located: ☑ Inside city limits ☐ Inside UGB ☐ Outside UGB

2B. Name of the city or county that has land use jurisdiction (the legal entity responsible for land use decisions for the subject property or land use): City of Eugene

2C. ☑ This project is not within the jurisdiction of any other land use, zoning, or planning entity
☐ This project is also within the jurisdiction of the following land use, zoning, or planning entity _____

2D. Is the activity allowed under Measure 49 (2007)? ☑ No, Measure 49 is not applicable ☐ Yes, if yes, then check one:

☐ Express; approved by DLCD order #:

☐ Conditional; approved by DLCD order #:

☐ Vested; approved by local government decision or court judgment docket or order #:

2E. Is the activity a composting facility?
☑ No ☐ Yes; Senate Bill 462 (2013) notification requirements have been met.

2F. Is the activity or use compatible with your acknowledged comprehensive plan as required by OAR 660-031?
Please complete this form to address the activity or use for which the applicant is seeking approval (see 1.C on the previous page). If the activity or use is to occur in multiple phases, please ensure that your approval addresses the phases described in 1C. For example, if the applicant's project is described in 1C. as a subdivision and the LUCS indicates that only clearing and grading are allowed outright but does not indicate whether the subdivision is approved, DEQ will delay permit issuance until approval for the subdivision is obtained from the local planning official.

☐ The activity or use is specifically exempt by the acknowledged comprehensive plan; explain:

☐ Yes, the activity or use is pre-existing nonconforming use allowed outright by (provide reference for local ordinance):

☑ Yes, the activity or use is allowed outright by (provide reference for local ordinance):
EC 9.2450 allows manufacturing of motor vehicles permitted outright.

☐ Yes, the activity or use received preliminary approval that includes requirements to fully comply with local requirements; findings are attached.

☐ Yes, the activity or use is allowed; findings are attached.

☐ No, see 2D. above, activity or use allowed under Measure 49; findings are attached.

☐ No, (complete below or attach findings for noncompliance and identify requirements the applicant must comply with before compatibility can be determined):
Relevant specific plan policies, criteria, or standards:

Provide the reasons for the decision:

Additional comments (attach additional information as needed):
The owner has the ability to adjust individual standards through an adjustment process. This does not impact the permitted outright use.

Planning Official Signature: Mike McKerrow	Title: Land Use Analyst
Print Name: Mike McKerrow	Telephone #: 541-682-5288 Date: 5/18/21

If necessary, depending upon city/county agreement on jurisdiction outside city limits but within UGB:

Planning Official Signature:	Title:
Print Name:	Telephone #: Date:

Alternative formats

DEQ can provide documents in an alternate format or in a language other than English upon request. Call DEQ at 800-452-4011 or email deqinfo@deq.state.or.us.

Appendix B – Welding Fume Control Information

LOW VAC CENTRAL SYSTEM

ARCIMOTO **05/08/2018**

Quote No. 20398955_R1

QTY	PRODUCT NUMBER	PRODUCT DESCRIPTION
4	AD1234-96	**FUME HOOD, MODULAR 2m x 4m KIT** *INCLUDES THE FOLLOWING:* *- MAIN FRAME 2M(6.56FT) X 4M(13.12FT)* *- CORNER SET* *- CORNER COVER SET* *- CONNECTION FLANGE* *- ROOF PANEL COVERS* *- EYE BOLTS FOR CEILING MOUNTING* *- 3 ROLL(S) OF ORANGE-RED CURTAIN - ENOUGH MATERIAL IS INCLUDED SO THE CURTAIN WILL HANG DOWN 4FT AROUND THE ENTIRE HOOD IF EACH STRIP IS CUT TO THE SAME LENGTH.* *THE RECOMMENDED EXTRACTION CAPACITY FOR THIS HOOD IS 2334cfm TO 3789cfm. CFM'S OUTSIDE THIS RANGE CAN CAUSE DAMAGE TO THE HOOD OR CAUSE EXTRACTION PROBLEMS. PLEASE CONSULT THE USER MANUAL FOR PROPER INSTALLATION INFORMATION.* *HOOD DOES NOT ALLOW FOR OVERHEAD ACCESS.* *ASSEMBLY REQUIRED.*
8	S28367-18	**MANUAL DAMPER 12", MD12** *THE MD12 MANUAL DAMPER IS USED TO CONTROL OR "TUNE" THE EXTRACTION AIR VOLUME PER DUCT DROP IN A MULTIPLE DROP SYSTEM. THE MD12 HAS A DIAMETER OF 12 INCHES AND IS MOUNTED IN THE DUCT DROP, CLOSEST TO THE CENTRAL/MAIN DUCT.*
6	S28058-52	**MOD HOOD, LEG 3.5M (11.48FT)** *ALLOWS MODULAR HOOD TO BE FLOOR MOUNTED. REQUIRES FLOOR MOUNTING SET (S28058-28). LEGS ARE CUTTABLE IN THE FIELD TO DIFFERENT LENGTHS.* *TWO AND THREE COMPARTMENT MODULAR HOODS ALSO REQUIRE CORNER REINFORCEMENT (S28058-50).*
4	S28058-28	**MOD HOOD, FLOOR MOUNTING SET, 4PERSET** *MOUNTING PLATE AND HARDWARE FOR FASTENING MODULAR HOOD LEGS TO THE FLOOR.*
4	AD1389-8	**LED LIGHT KIT, HOOD, 120VAC, 2 BAR** *LED LIGHT KIT FOR USE UNDER EXTRACTION HOOD. TWO LIGHT BARS*

ARE CONNECTED IN SERIES USING A 6 FT. CASCADE CABLE.

KIT INCLUDES:

(2) S26508-19 - LED UTILITY LIGHT BAR, 4 FT., 120 VAC, 6500 LM
(1) S26508-20 - POWER CABLE, 10 FT. WITH NEMA 5-15 PLUG
(2) S26508-21 - MOUNTING CLIP SET (4/SET)
(1) S21118-58 - ENCLOSURE, PUSHBUTTON, 1 HOLE
(1) S21130-59 - TWO-POSITION ON/OFF SELECTION SWITCH
(1) S26508-13 # INTERCONNECTING CABLE, 6 FT.

ASSEMBLY REQUIRED.

4 S28367-6 **AUTOMATIC DAMPER, 14 IN, AD14**

THE AD14 AUTOMATIC DAMPER IS USED IN A FULLY CONTROLLED FUME EXTRACTION SYSTEM. IT IS 14" DIAMETER. THE AD14 WILL AUTOMATICALLY OPEN/CLOSE IN 8 SECONDS. IT IS CONNECTED TO THE CONTROL BOX AND OPERATES AT 24VAC.

1 XCUSTOM_ITEM **CANTILEVER HOOD/DUCT SUPPORT**

1 M18464-10 **SE20000RI, 22KW EXTRACTION FAN, RIGHT**

THE 22KW (30 HP) MOTOR AND FAN ARE ENCLOSED IN A METAL SOUND ABSORBING BOX (SAB), WHICH HAS A REMOVABLE INSPECTION COVER FOR EASY INTERIOR ACCESS AND IS LINED WITH SPECIAL ACOUSTIC MATERIAL FOR QUIETER OPERATION. THE FAN IS MOUNTED ON SHOCK ABSORBERS TO MINIMIZE VIBRATIONS. INPUT POWER IS 460VAC/3PH/60HZ.

1 AD1283-45KIT **ENV, POWERFLEX 400, 30HP ENCLOSED SYSTEM**

VARIABLE FREQUENCY DRIVE (VFD) AND LINE REACTOR INSTALLED IN WALL-MOUNT STEEL ENCLOSURE. VFD ADJUSTS FAN SPEED BASED ON AIRFLOW (CFM) DEMAND. LINE REACTOR PROTECTS VFD FROM VOLTAGE SPIKES AND OTHER TRANSIENTS ON THE INCOMING POWER. ENCLOSURE INCLUDES SINGLE DOOR WITH QUARTER-TURN LATCHES AND EMERGENCY STOP BUTTON LOCATED IN CENTER OF DOOR. REQUIRES 460V/3PH/60HZ INPUT POWER.

3 S23384-61 **ENV, CONTROL BOX W/ TOGGLE**

THIS UL-RATED CONTROL BOX IS USED IN CONJUNTION WITH AN AUTOMATIC (MOTORIZED) DAMPER PROVIDING THE STATION OPERATOR THE ABILITY TO TURN ON/OFF AIRFLOW TO A DOWNFLEX 100-NF OR MODULAR HOOD. THE CENTRAL EXHAUST FAN WILL RAMP UP OR DOWN AS NEEDED BASED ON WHETHER THE SWITCH IS IN THE ON OR OFF POSITION.

1	AD1389-2	**ENV, PRESSURE DIFFERENTIAL KIT**

SYSTEMS WITH FILTRATION
THIS DEVICE MONITORS THE SATURATION LEVEL OF THE FILTER CARTRIDGES AND ADJUSTS THE AIR VOLUME RATE BASED ON A PREDETERMINED SETPOINT. AS THE FILTER CARTRIDGES BECOME SATURATED, THE VARIABLE FREQUENCY DRIVE ADJUSTS THE FAN SPEED TO MAINTAIN THE REQUIRED AIR VOLUME DETERMINED BY THE AIR VOLUME SETPOINT.

SYSTEMS WITHOUT FILTRATION
THIS DEVICE MONITORS THE PRESSURE IN THE DUCT AND WILL ADJUST THE SPEED OF THE FAN TO MAINTAIN THE SETPOINT. FOR EXAMPLE; OPENING OR CLOSING THE DAMPER IN THE END OF THE EXTRACTION ARM WILL CAUSE THE FAN SPEED TO INCREASE OR DECREASE ACCORDINGLY.

1	S23385-37	**IF 15 - INTERFACE CONTROL**

THE IF 15 INTERFACE CONTROLLER IS USED ON A FULLY CONTROLLED CENTRAL FUME EXTRACTION SYSTEM WITH UP TO 15 ARMS CONNECTED TO THE SYSTEM. THE IF 15 INTERFACE IS WIRED WITHIN THE SYSTEM, BETWEEN THE CONTROL BOX AND THE CENTRAL FAN VARIABLE FREQUENCY DRIVE.

THE IF 15 CONVERTS THE SIGNALS OF THE ARC SENSORS (AST) THAT ARE MOUNTED WITHIN THE HOOD AT THE END OF EACH EXTRACTION ARM. IT USES A mA SIGNAL FROM EACH ARM AND IS THEN COMMUNICATED TO THE FAN FREQUENCY CONTROLLER THUS CONTROLLING THE EXTRACTION VOLUME OF THE SYSTEM.

THE IF 15 IS SELF-ENCLOSED AND GETS ITS VOLTAGE SUPPLY OF 24VAC FROM ANY ONE OF THE EXTRACTION ARM CONTROL BOXES.

1	XCUSTOM_ITEM	**ENV, SF20000 FAN STAND**
1	S23281-43	**SAS 630 - STRAIGHT SILENCER**

THE SAS 630 STRAIGHT SILENCER IS INSTALLED ON THE OUTLET SIDE OF THE CENTRAL FAN AND REDUCES THE NOISE LEVEL OF THE EXHAUSTED AIR. THE DUCT DIAMETER IS 24.8", THE OUTER DIAMETER IS 34.6", AND THE OVERALL LENGTH IS 47.2".

1	S23281-44	**SAS 630 - ELBOW 90 DEGREE SILENCER**

THE SAS 630 ELBOW 90 DEGREE SILENCER IS INSTALLED ON THE OUTLET SIDE OF THE CENTRAL FAN AND REDUCES THE NOISE LEVEL OF THE EXHAUSTED AIR. THE DUCT DIAMETER IS 24.8" AND THE OUTER DIAMETER IS 34.6".

1 L16480-140 **STATIFLEX FB-24/V-STD/CPR**

THE STATIFLEX FB-24/V-STD/CPR IS DESIGNED TO FILTER A MAXIMUM OF 13920 CFM OF AIR. THIS AIRFLOW CAPACITY COMBINED WITH SELF-CLEANING TECHNOLOGY OFFERS AN ECONOMICAL SOLUTION FOR WELDING FUME FILTRATION.

THE SELF-CLEANING CYCLE IS TRIGGERED USING A PRESSURE DIFFERENTIAL SWITCH WHICH MONITORS THE PRESSURE DROP ACROSS THE FILTER CARTRIDGES. UNIFORM, HIGH ENERGY BURSTS OF COMPRESSED AIR ARE PULSED THROUGH EACH FILTER CARTRIDGE, PROVIDING LONGER FILTER LIFE AND LOWER OPERATING COSTS.

INCLUDES FILTER BANK AND DUST DRUMS. UNIT REQUIRES DRY OIL-FREE COMPRESSED AIR AND ELECTRICAL POWER SUPPLY.

1 S23273-6 **ENV, CLEANING CONTROL BOX, PRESSURE**

THE CONT-C24 OFFERS THE TOP OF THE LINE CLEANING AVAILABLE. THIS UNIT MONITORS FILTER PRESSURE TO ENSURE CLEANING IS ONLY DONE WHEN IT IS NECESSARY. THIS REDUCES COMPRESSED AIR USAGE AND ENSURES MAXIMUM FILTER LIFE.

24 KP3370-1 **FILTER, STATIFLEX FILTER BANK, MERV 11**

MERV 11-RATED FILTER CARTRDIGE FOR THE STATIFLEX FILTER BANK.

1 AD1321-100 **SYSTEM ENGINEERING SUPPORT**

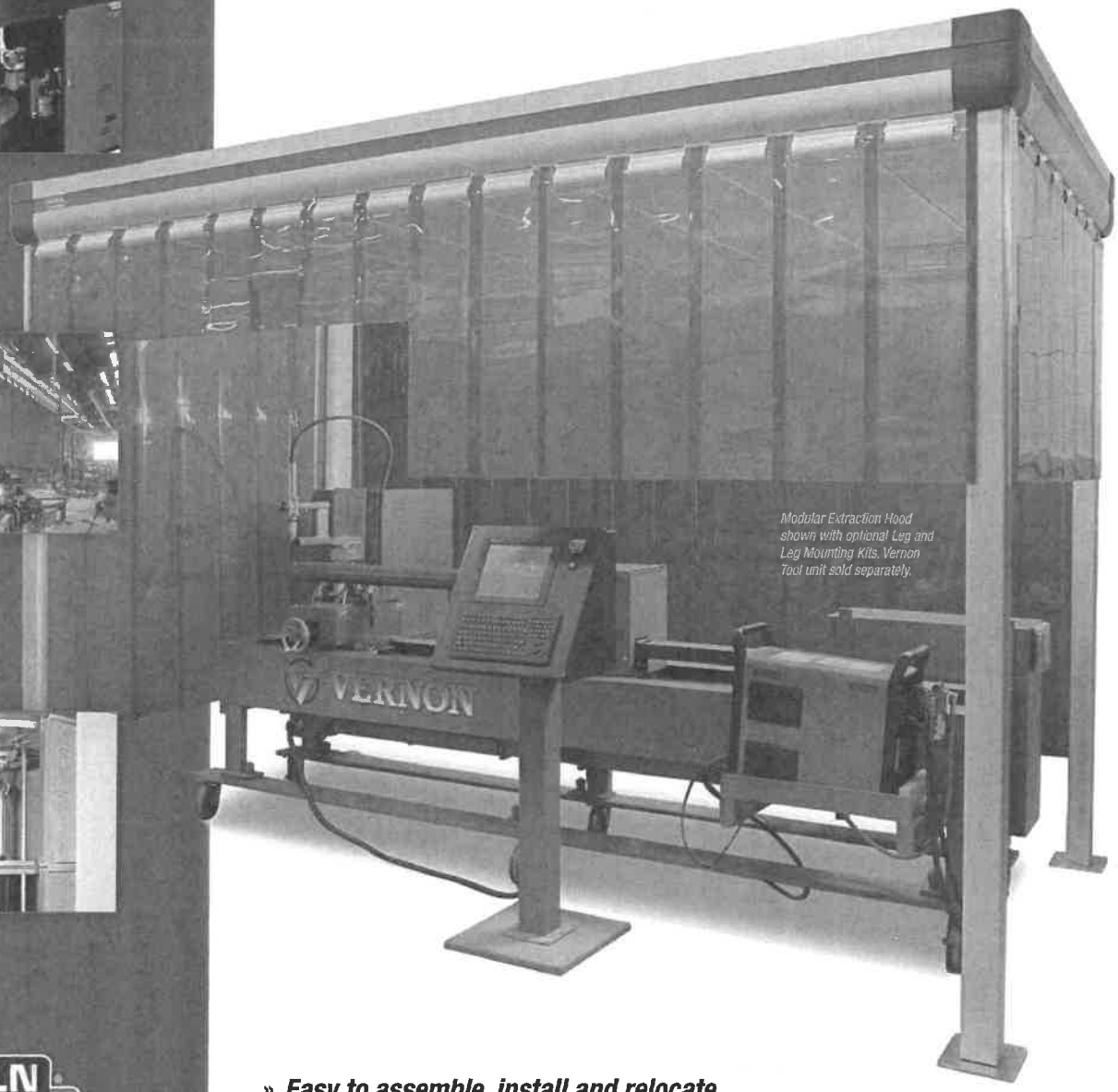
INCLUDES ENGINEERING AND INSTALLATION PHONE SUPPORT FOR THE ELECTRICAL AND MECHANICAL CONTRACTORS.

LINCOLN ELECTRIC DOES NOT PROVIDE THE SPIRAL DUCTWORK NOR THE INSTALLATION OF THE SYSTEM -- UNLESS OTHERWISE QUOTED AND PURCHASED -- WHICH INCLUDES AND IS NOT LIMITED TO ANY HVAC COMPONENTS, ELECTRICAL CONNECTIONS, EQUIPMENT MOUNTING AND COMPRESSED AIR CONNECTIONS.

LINCOLN ELECTRIC WILL PROVIDE A PICTORIAL REPRESENTATION OF THE DUCTING DIAMETERS AND LAYOUT UPON REQUEST, PROVIDED LINCOLN ELECTRIC RECEIVES A COPY OF THE FACILITY LAYOUT FROM THE CUSTOMER. ANY DETAILED DRAWINGS, PE STAMPS, OR PERMITS WILL BE THE RESPONSIBILITY OF THE MECHANICAL/ELECTRICAL INSTALLER AND/OR CUSTOMER.

Welding Fume Extraction Hood Solutions

WELD FUME CONTROL AND FILTRATION IN A FLEXIBLE, ATTRACTIVE PACKAGE



Modular Extraction Hood shown with optional Leg and Leg Mounting Kits. Vernon Tool unit sold separately.

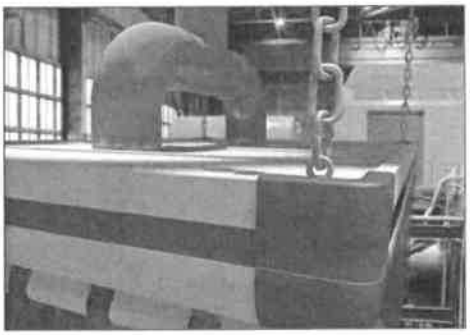
LINCOLN ELECTRIC

WELD FUME CONTROL

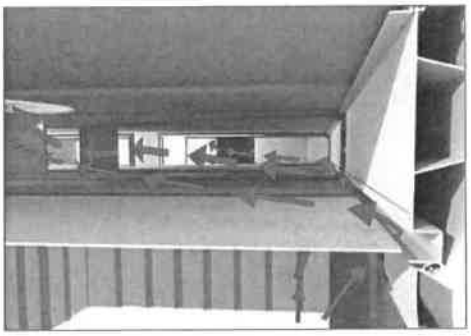
- ***Easy to assemble, install and relocate***
- ***Double-panel roof configuration***
- ***Innovative perimeter pull technology***

Modular Extraction Hood

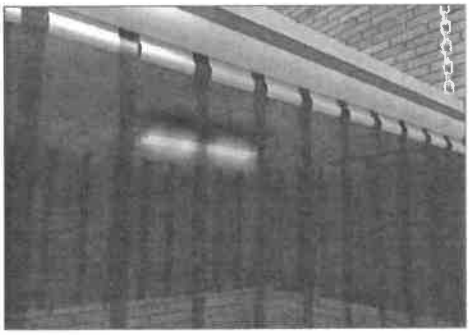
AN INNOVATIVE AND FLEXIBLE SOLUTION TO EFFICIENT WELD FUME CONTROL



Suspension lugs are a simple and easy way to suspend the Modular Extraction Hood from a ceiling.



Innovative double panel roof design acts as a baffle, deflector plate and spark arrestor.



Curtain strips create an isolated work zone, helping to contain sparks and control airflow direction.

COMBINING INNOVATION AND SIMPLICITY, THE LINCOLN ELECTRIC MODULAR EXTRACTION HOOD PROVIDES A FLEXIBLE AND EFFICIENT OPTION FOR WELD FUME EXTRACTION IN A WORK ZONE WITH AUTOMATED EQUIPMENT.

The Modular Extraction Hood is an easy to install, customizable enclosure that helps provide a cleaner work environment for a variety of industrial processes. Designed and built to Lincoln's rugged and dependable standards, these units are ideal for robotic and hard automation applications.

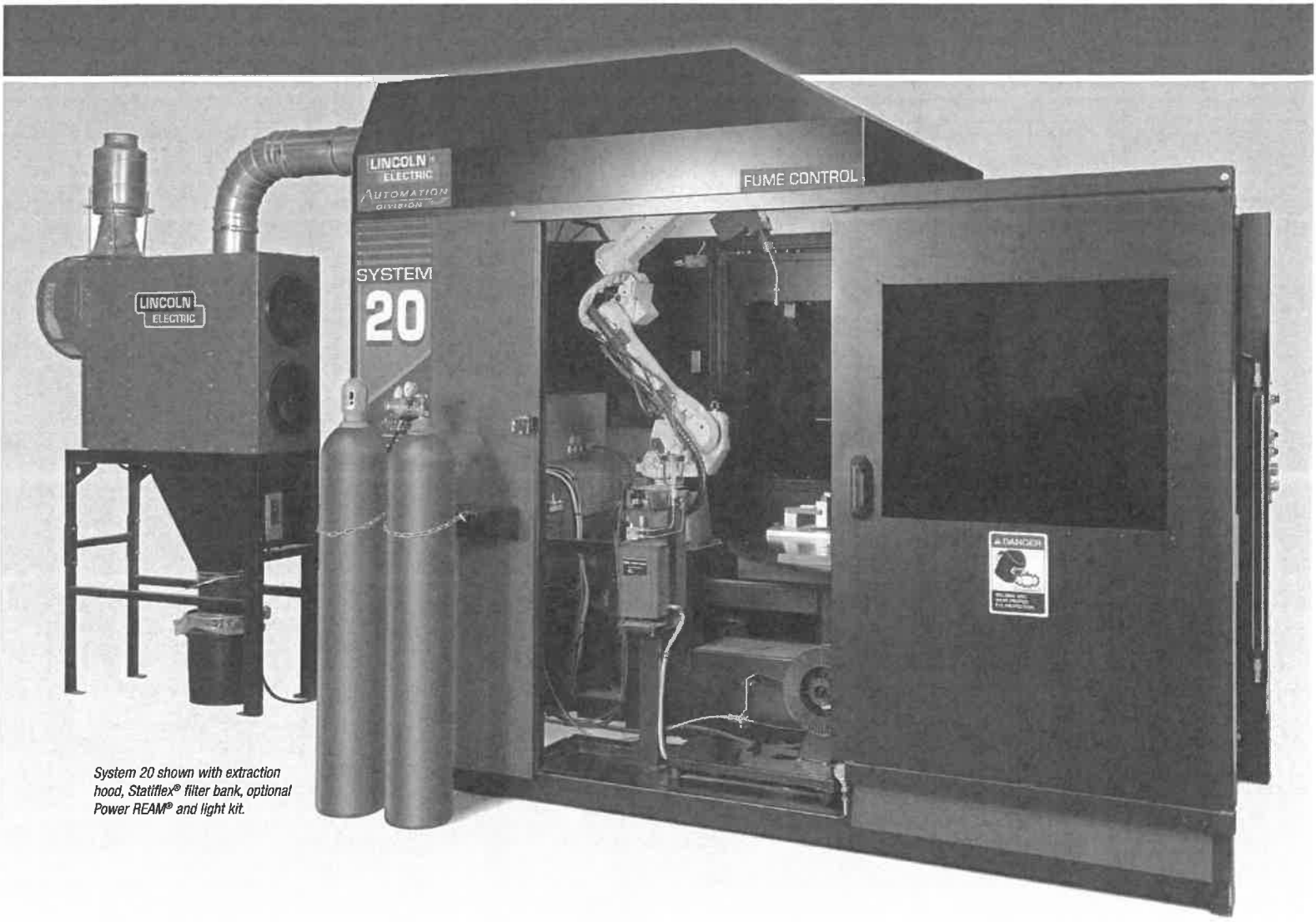
The Modular Extraction Hood is a reliable and practical solution to contain and extract welding, cutting, arc gouging and grinding fume from the work environment.

PROCESSES

The Modular Extraction Hood is appropriate for use with the following industrial welding and cutting processes: Stick, TIG, MIG, Flux-Cored, Plasma Cutting, Arc Gouging, Grinding[1]

For applications in which a worker is inside the work zone, exhaust at the arc or a respirator may be necessary.

[1] *Not suitable when grinding aluminum, magnesium or other materials which may produce explosive dust.*



System 20 shown with extraction hood, Statiflex® filter bank, optional Power REAM® and light kit.

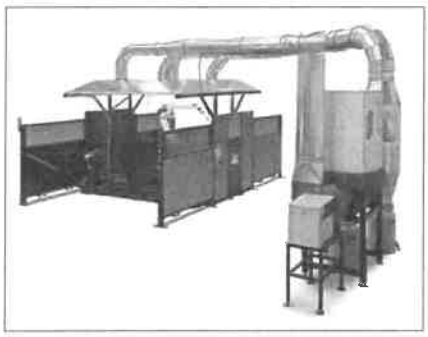
Formed Extraction Hood

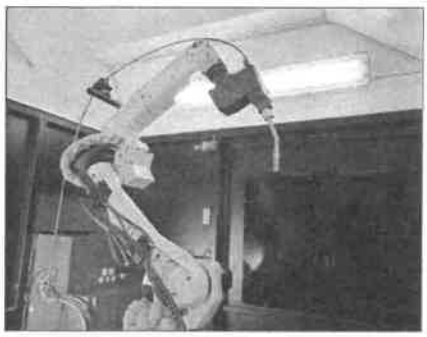
SLEEK AND EFFECTIVE SOLUTION TO ROBOTIC CELL FUME EXTRACTION

Pre-designed Structure – Custom formed design provides a smooth, secure fit for every Lincoln Electric robotic welding cell.

Durable Construction – Rugged aluminum framework, built to withstand the high volume production environment of robotic welding applications.

Enhanced Features – Optional interior lighting kit improves visibility for work observation and in-cell maintenance.





Statiflex® Filtration System

QUALITY, SELF CLEANING FILTRATION SOLUTIONS IDEAL FOR A VARIETY OF WELDING APPLICATIONS

Lincoln Electric Statiflex® Filtration systems set the standard in compact, high performance filtration solutions. Designed to work in tandem with Lincoln Electric Extraction Hood systems, the Statiflex® offers powerful and efficient filtration to produce clean, superior air quality in a variety of working environments.

Innovative Design – Multi-flow technology disperses air evenly throughout filters, allowing for efficient, higher volume air flow through each filter.

Superior Filtration – Statiflex® filtration systems offer MERV 16 rated filter cartridges, providing the highest rated self-cleaning filters on the market.

Self-Cleaning – Pulse amplified technology cleans dirty filters through uniform, high energy bursts of air pulsed through each cartridge, providing longer filter life and lower operating costs.

Efficient Controls – Pressure differential switch activates cleaning only when needed, creating lowered energy costs, less maintenance, and extended filter life.

User Friendly – Compact design and quick connect ductwork provides straightforward assembly and installation with a convenient collection bin for easy particulate removal.

STATIFLEX® FILTER BANK

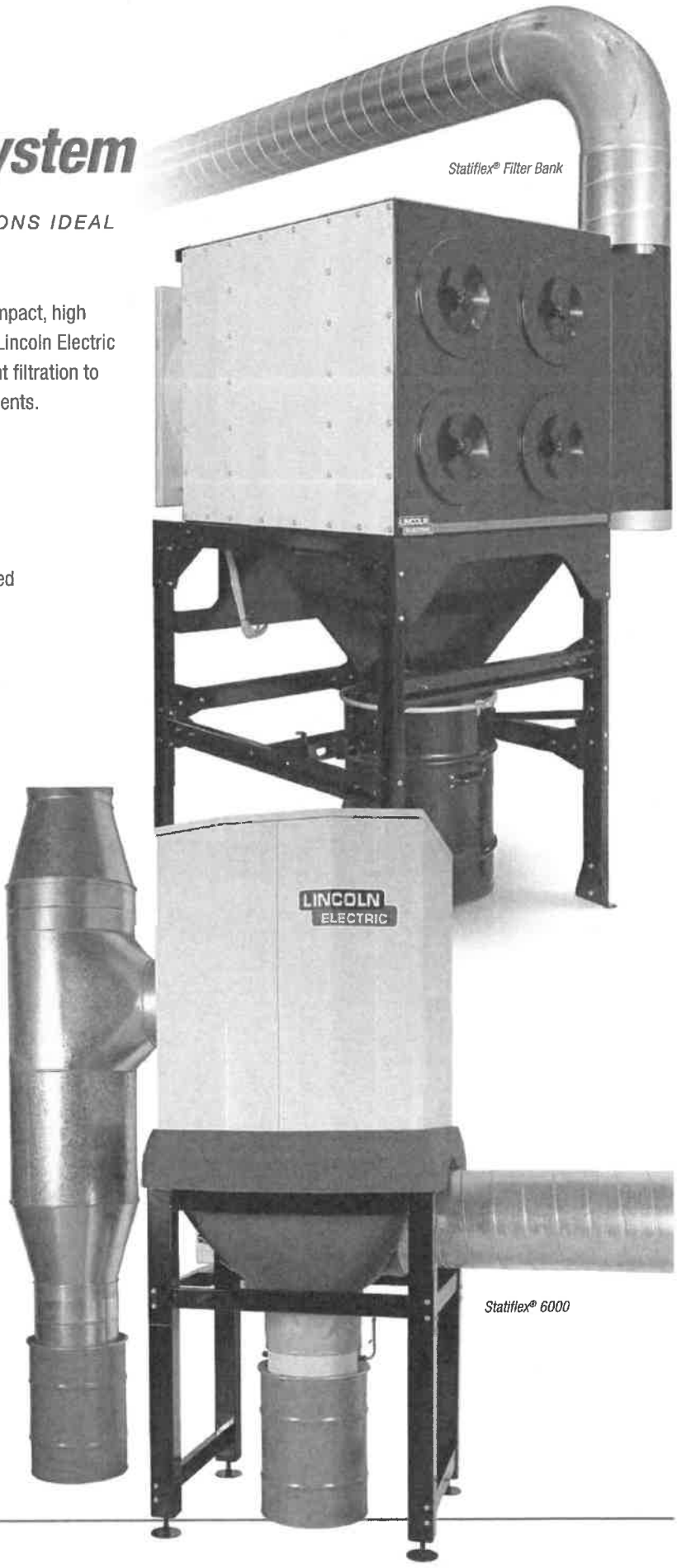
Unit includes filter bank, filters, fan, cleaning controls, starter controls and dust drum.

- User supplies electrical power, compressed air and duct work
- Assembly required
- Sizes ranging from 2 to 48 banks
- Fan sizes 5 – 15 horsepower for extraction hood applications

STATIFLEX® 6000 FILTRATION SYSTEM

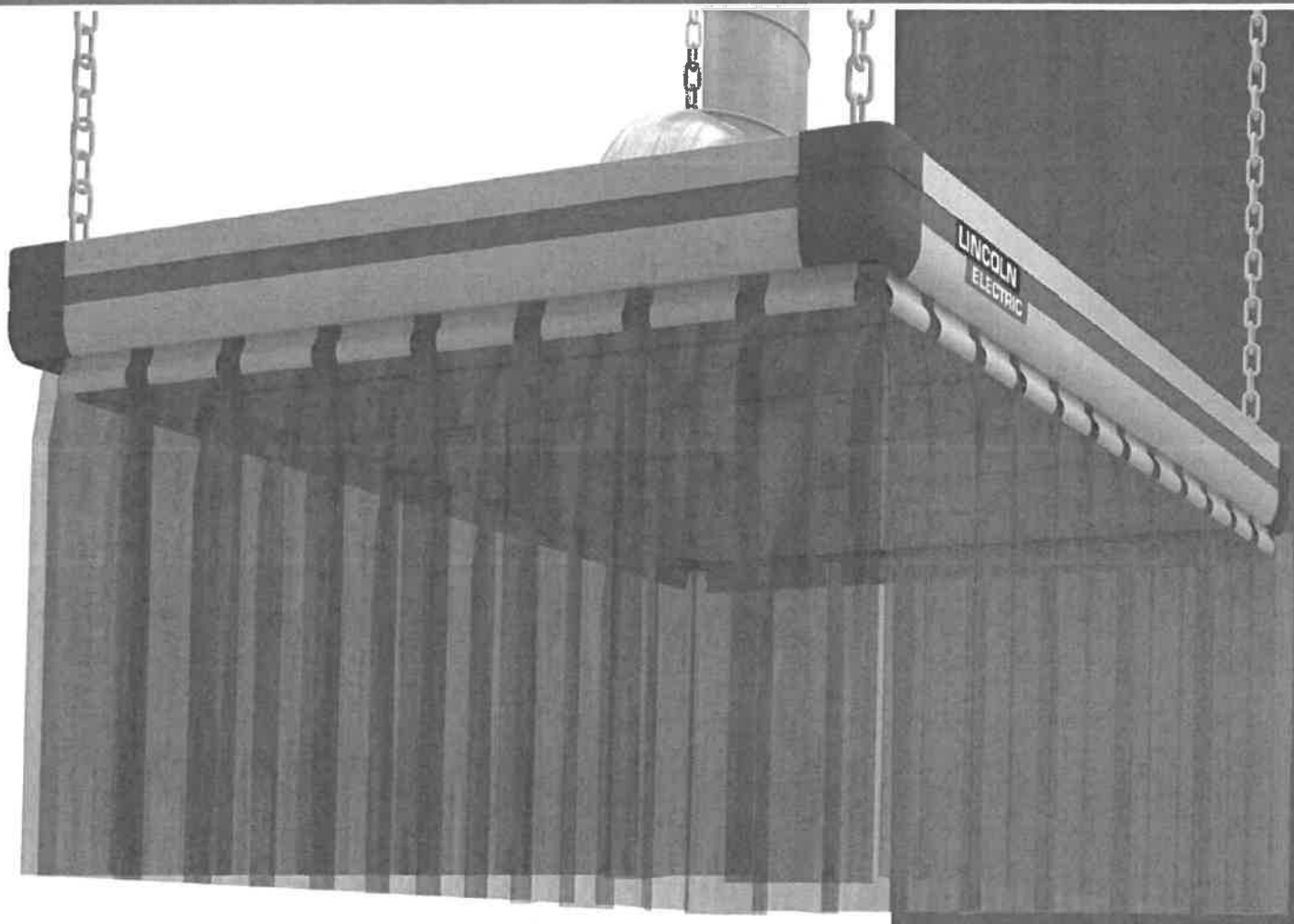
Unit includes pre separator, filters, fan, cleaning controls, starter controls and dust drum.

- User supplies electrical power, compressed air and duct work
- Limited assembly required



Statiflex® Filter Bank

Statiflex® 6000



KEY FEATURES

Modular Construction – Customizable modular framework provides a lightweight aluminum structure that is easy to assemble, install and maintain.

Flexible Setup – Installation with standard suspension lugs or an optional leg mounting kit allows for alternative setup options for robotic, hard automation and other applications.

Innovative Design – Double paneled roof creates an integrated safety feature, acting as a built in spark arrestor, deflection plate and in-line baffle.

Efficient Extraction – The Lincoln Electric perimeter pull technology provides a wide extraction area that prevents escaping fumes and provides maximum fume control in the work zone with lower overall airflow rates.

Enclosed Protection – Supplied curtain strips create an isolated work zone, helping to contain sparks and control airflow direction.

MODULAR HOOD

Kit includes: side frames, roof panels, corner mounting brackets and covers, lifting hooks, connection flange, curtain brackets and enough curtain strip for installing 4 ft. lengths around the perimeter of the hood.

- User supplies the duct work
- Assembly required
- Sizes ranging from 3.28 ft. x 4.92 ft. to 18.04 ft. x 18.04 ft. (1 m x 1.5 m to 5.5 m x 5.5 m)

FEATURES:

- **RotaPulsePlus™ Automatic Filter Cleaning System.**
  Each time the system is switched off, an automatic cleaning cycle takes place. During this cycle, both filter cartridges are cleaned by compressed air jets from the RotaPulsePlus™ system. The particulate is deposited in the drum beneath the filter.
- **Perimeter pull:** reduces required airflow with innovative design, including a built-in spark arrestor.

BENEFITS:

- **Cleaner work environment:** reduce dust and dirt in operator and surrounding work areas
- **Low cost installation:** free standing or supported from ceiling
- **Custom engineered** to meet facility and application requirements
- **Easy installation:** modular design for ease of assembly
- **Low noise level:** will not contribute to increased noise levels

LINCOLN ELECTRIC
WELD FUME CONTROL

WELDING FUME EXTRACTION HOOD SOLUTIONS TECHNICAL DATA:

- *Power: Control box: 115 V, 1 phase; Fan units: 460 V, 3 phase; Fan sized for correct CFM/Airflow: 5 – 15 horsepower*
- *Dimensions (Filter and fan): H x W x D: 213.6 x 47.2 x 96 in (5245 x 1200 x 2438 mm)*
- *Weight: 1764 lbs (800 kg)*
- *Maximum noise level: 68 dB(A) according to ISO 3746*
- *Operating temperatures: Minimum: 68 degrees Fahrenheit (20 degrees Celsius), Maximum: 113 degrees Fahrenheit (45 degrees Celsius)*
- *Drum Capacity: 26 gallons (100 liters)*
- *Operating Temperatures: Minimum - 41°F (5°C); Nominal - 68°F (20°C); Maximum - 113°F (45°C)*

The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV limits.

CUSTOMER ASSISTANCE POLICY

The business of The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to www.lincolnelectric.com for any updated information.

The Lincoln Electric Company
Automation Division

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Cleveland, Ohio 44117-2522 USA

(216) 383-2667

WeldFumeControl@LincolnElectric.com

www.LincolnWeldFumeControl.com

Appendix C – Pretreatment Chemical Information

Revision Number: 001.0

Issue date: 12/03/2014

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: BONDERITE C-AK NP-2
Product type: Cleaners for Industrial Application
Restriction of Use: None identified
Company address:
Henkel Corporation
One Henkel Way
Rocky Hill, Connecticut 06067

IDH number: 1980888
Item number: 1980888
Region: United States
Contact information:
Telephone: (860) 571-5100
MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW	
DANGER:	CAUSES SEVERE SKIN BURNS AND EYE DAMAGE.

HAZARD CLASS	HAZARD CATEGORY
SKIN CORROSION	1B
SERIOUS EYE DAMAGE	1

PICTOGRAM(S)

Precautionary Statements

Prevention: Do not breathe vapors, mist, or spray. Wash thoroughly after handling. Wear protective gloves, eye protection, and face protection.

Response: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to remove. Continue rinsing. Immediately call a poison control center or physician. Wash contaminated clothing before reuse.

Storage: Store locked up.

Disposal: Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

2 % of the mixture consists of ingredient(s) of unknown acute toxicity.

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Percentage*

No chemicals on DEQ air toxics list

None of chemicals on DEQ list

Sodium silcate	1344-09-8	5 - 10
Potassium hydroxide	1310-58-3	1 - 5
Sodium nitrate	7631-99-4	1 - 5

* Exact percentage is a trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation: If symptoms are experienced, remove source of contamination or move victim to fresh air. If symptoms develop and persist, get medical attention.

Skin contact: For skin contact, flush with large amounts of water. Seek immediate medical attention. Remove contaminated clothing and footwear.

Eye contact: In case of contact with the eyes, rinse immediately with plenty of water for 15 minutes, and seek immediate medical attention.

Ingestion: Get medical attention. DO NOT induce vomiting unless directed to do so by medical personnel. Give one to two glasses of water or milk. Never give anything by mouth to a victim who is unconscious or is having convulsions.

Symptoms: See Section 11.

5. FIRE FIGHTING MEASURES

Extinguishing media: Use media appropriate for surrounding material.

Special firefighting procedures: Wear full protective clothing. Wear self-contained breathing apparatus.

Unusual fire or explosion hazards: This product is an aqueous mixture which will not burn.

Hazardous combustion products: Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Wear appropriate protective equipment and clothing during clean-up. Block any potential routes to water systems.

Clean-up methods: Absorb spill with inert material. Shovel material into appropriate container for disposal.

7. HANDLING AND STORAGE

Handling: Prevent contact with eyes, skin and clothing. Do not breathe vapor and mist. Wash thoroughly after handling. For industrial use only.

Storage: For safe storage, store between 0 °C (32°F) and 49 °C (120.2 °F)
Keep container tightly closed and in a cool, well-ventilated place away from incompatible materials. Thaw and mix thoroughly if frozen.

For information on product shelf life, please review labels on container or check the Technical Data Sheet.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Sodium silcate	None	None	None	None
Potassium hydroxide	2 mg/m3 Ceiling	None	None	None
Sodium nitrate	None	None	None	None

Engineering controls: Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapors or mists generated from the handling of this product.

Respiratory protection: If ventilation is not sufficient to effectively prevent buildup of aerosols, mists or vapors, appropriate NIOSH/MSHA respiratory protection must be provided.

Eye/face protection: Wear chemical goggles; face shield (if splashing is possible).

Skin protection: Chemical resistant, impermeable gloves. Gloves should be tested to determine suitability for prolonged contact. Use of impervious apron and boots are recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid
Color: Water white
Odor: Surfactant
Odor threshold: Not available.
pH: 13.6
Vapor pressure: Not determined
Boiling point/range: > 100 °C (> 212°F) calculated
Melting point/ range: Not determined
Specific gravity: 1.14
Vapor density: Not determined
Flash point: Not applicable
Flammable/Explosive limits - lower: Not applicable
Flammable/Explosive limits - upper: Not applicable
Autoignition temperature: Not applicable
Evaporation rate: Not available.
Solubility in water: Complete
Partition coefficient (n-octanol/water): Not determined
VOC content: 3 % (calculated)
Viscosity: 9 mPa.s
Decomposition temperature: Not available.

10. STABILITY AND REACTIVITY

Stability: Stable at normal conditions.

Hazardous reactions: Will not occur.

Hazardous decomposition products: Upon decomposition, this product may yield oxides of nitrogen and ammonia, carbon dioxide, carbon monoxide and other low molecular weight hydrocarbons.

Incompatible materials: This product reacts with acids.

Reactivity: Not available.

Conditions to avoid: None identified.

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure: Skin, Inhalation, Eyes

Potential Health Effects/Symptoms

Inhalation: Mists, vapors or liquid may cause severe irritation or burns.
Skin contact: Corrosive to the skin. Contact with the skin or mucous membranes may cause severe irritation and burns.
Eye contact: This product is severely irritating to the eyes and may cause irreversible damage including burns and blindness.
Ingestion: This product may produce corrosive damage to the gastrointestinal tract if it is swallowed.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Sodium silcate	Oral LD50 (RAT) = 1,100 - 1,600 mg/kg Oral LD50 (RAT) = 1.1 g/kg	Corrosive, Irritant
Potassium hydroxide	Oral LD50 (RAT) = 273 mg/kg Oral LD50 (RAT) = 1.23 g/kg	Corrosive, Irritant
Sodium nitrate	Oral LD50 (RAT) = 1,267 mg/kg Oral LD50 (RABBIT) = 1,600 mg/kg Oral LD50 (RABBIT) = 1,955 mg/kg Oral LD50 (RABBIT) = 2,680 mg/kg	Blood, Central nervous system, Corrosive, Gastrointestinal, Irritant

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Sodium silcate	No	No	No
Potassium hydroxide	No	No	No
Sodium nitrate	No	No	No

12. ECOLOGICAL INFORMATION

Ecological information: Because of the high pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Follow all local, state, federal and provincial regulations for disposal. This product contains a chelating agent.

Hazardous waste number: This product, if discarded directly, would be a characteristic RCRA corrosive waste (D002).

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name: Potassium hydroxide, solution
Hazard class or division: 8
Identification number: UN 1814
Packing group: II
DOT Hazardous Substance(s): Potassium hydroxide

International Air Transportation (ICAO/IATA)

Proper shipping name:	Potassium hydroxide solution
Hazard class or division:	8
Identification number:	UN 1814
Packing group:	II

Water Transportation (IMO/IMDG)

Proper shipping name:	POTASSIUM HYDROXIDE SOLUTION
Hazard class or division:	8
Identification number:	UN 1814
Packing group:	II

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status:	All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12 (b) Export Notification:	None above reporting de minimis
CERCLA/SARA Section 302 EHS:	None above reporting de minimis
CERCLA/SARA Section 311/312:	Immediate Health, Delayed Health
CERCLA/SARA Section 313:	This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). Sodium nitrate (CAS# 7631-99-4).
CERCLA Reportable quantity:	Potassium hydroxide (CAS# 1310-58-3) 1,000 lbs. (454 kg)
California Proposition 65:	This product contains a chemical known in the State of California to cause cancer. This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Canada Regulatory Information

CEPA DSL/NDSL Status:	All components are listed on or are exempt from listing on the Canadian Domestic Substances List.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: First issue.

Prepared by: John DiCerbo, Sr. Regulatory Affairs Specialist

Issue date: 12/03/2014

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Henkel Corporation

CERTIFIED PRODUCT DATA SHEET

(Properties of materials "as supplied" by the manufacturer)

Manufacturer's Name:	HENKEL CORPORATION	Date: 12/02/2016
Customer's Material Code:		
Product I. D. Name/Number:		
Product Description:	BONDERITE C-AK NP-2	
Person Preparing Data Sheet / Phone Number:		

LB/GAL VOC less water: 0.00

LB/GAL solids: 1.99 GRM/L solids: 25.10

A.	Density (Dc)s:	9.51	lbs./gal.				ASTM D1475	X
B.	Total Volatiles (Wv)s:	79.07	Weight Percent	83.75	Volume Percent		other (2)	
C.	Water Content (Ww)s:	79.05	Weight Percent	83.75	Volume Percent		ASTM D2369	
D.	Organic Volatiles (Wo)s: Excluding Exempts	0.02	Weight Percent	0.02	Volume Percent		other (2a)	X
	Organic Volatiles (Wo)s: Including Exempts	0.02	Weight Percent	0.02	Volume Percent			
E.	Nonvolatile Content (Wn)s:	20.93	Weight Percent	16.21	Volume Percent		ASTM D3792	
F.	Total HAP Content (HAP)s:	0.00	Weight Percent				ASTM D4017	
G.	Total VHAP Content (Wn)s:	0.00	Weight Percent	0.00	Volume Percent		other (2b)	X

H. Constituents (List all VOC's, HAP's (3), SARA 313 Chemicals)

List Method Used: Formulation [X] Method 311 [ ]

VOC, HAP, SARA 313 Ingredients	VOC	HAP	SARA 313	CAS Number	Target Weight Percent Volatiles	Target Weight Percent Non-Volatiles	Density (lbs./gal.)
Na-nitrate			Y	7631-99-4		2.00	18.86
Totals: --------->						2.00	

(1) The subscript "s" denotes each value is for the ink or coating "as supplied" by the manufacturer.
(2) Explain the other method used in an attachment to this form.
(2a) 105 °C +/- 1 °C 1-3 hrs 1 gram +/- 0.1. (2b) Typically not applicable. D3792 or D4017 are used when required.
(3) HAP must be reported if present at 0.1 % or greater. VHAP = Volatile HAP

Revision Number: 004.1

Issue date: 12/19/2017

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: BONDERITE C-IC 2520 ACID DEOXIDIZER known as DEOXIDINE 2520
IDH number: 693244
Product type: Cleaner
Restriction of Use: None identified
Region: United States
Company address:
Henkel Corporation
One Henkel Way
Rocky Hill, Connecticut 06067
Contact information:
Telephone: +1 (860) 571-5100
MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW	
DANGER:	CAUSES SEVERE SKIN BURNS AND EYE DAMAGE.

HAZARD CLASS	HAZARD CATEGORY
SKIN CORROSION	1B
SERIOUS EYE DAMAGE	1

PICTOGRAM(S)

Precautionary Statements

Prevention: Do not breathe vapors, mist, or spray. Wash thoroughly after handling. Wear protective gloves, eye protection, and face protection.

Response: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison control center or physician. Wash contaminated clothing before reuse.

Storage: Store locked up.

Disposal: Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Percentage*
Nitric acid	7697-37-2	5 - 10

* Exact percentages may vary or are trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation: If mist or vapor of this product is inhaled, remove person immediately to fresh air. Seek medical attention if symptoms develop or persist.

Skin contact: Remove contaminated clothing and footwear. For skin contact, flush with large amounts of water. Seek immediate medical attention.

Eye contact: In case of contact with the eyes, rinse immediately with plenty of water for 15 minutes, and seek immediate medical attention.

Ingestion: Immediate medical treatment necessary. DO NOT induce vomiting unless directed to do so by medical personnel. Give one to two glasses of water or milk. Never give anything by mouth to a victim who is unconscious or is having convulsions.

Symptoms: See Section 11.

Notes to physician: If cyanosis is severe, intravenous injection of methylene blue, 1 mg/kg body weight, may be of value.

5. FIRE FIGHTING MEASURES

Extinguishing media: Use media appropriate for surrounding material.

Special firefighting procedures: Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

Unusual fire or explosion hazards: This product is an aqueous mixture which will not burn.

Hazardous combustion products: Irritating and toxic gases or fumes may be released during a fire.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Wear appropriate personal protective equipment. Do not allow product to enter sewer or waterways.

Clean-up methods: Absorb spill with inert material. Shovel material into appropriate container for disposal. Dispose of according to Federal, State and local governmental regulations.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin and clothing. Do not take internally. Wash thoroughly after handling. Do not breathe gas/fumes/vapor/spray.

Storage: Keep container tightly closed and in a cool, well-ventilated place away from incompatible materials. Do not freeze.

For information on product shelf life, please review labels on container or check the Technical Data Sheet.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Nitric acid	2 ppm TWA 4 ppm STEL	2 ppm (5 mg/m3) PEL	None	None

Engineering controls:

Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapors or mists generated from the handling of this product.

Respiratory protection:

If ventilation is not sufficient to effectively prevent buildup of aerosols, mists or vapors, appropriate NIOSH/MSHA respiratory protection must be provided. Respirators should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard (29 CFR 1901.134) and ANSI's standard for respiratory protection (Z88.2-1992). A written respiratory protection program, including provisions for medical certification, training, fit-testing, exposure assessments, maintenance, inspection, cleaning, and convenient, sanitary storage, must be implemented. If concentrations are below the TLV and/or PEL, a NIOSH approved disposable dust/mist respirator may be used for personal comfort. For concentrations above the TLV and/or PEL but less than 10 times these limits, a NIOSH approved half-face piece respirator equipped with dust-mist cartridges may be used. For concentrations greater than 10 times the TLV and/or PEL, consult the NIOSH respirator decision logic found in Publication No.87-116 or ANSI Z88.2-1992. Note: ANSI Z88.2-1992 requires the use of a HEPA filter if the particle size distribution of the contaminant is unknown. WARNING! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Eye/face protection:

Wear chemical goggles; face shield (if splashing is possible).

Skin protection:

Chemical resistant, impermeable gloves. The use of butyl rubber gloves is recommended. The use of polyvinyl chloride gloves is recommended. The use of neoprene gloves is recommended. Use of impervious apron and boots are recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Liquid
Color:	Colorless, light brown
Odor:	Acrid
Odor threshold:	Not available.
pH:	< 2
Vapor pressure:	Not applicable
Boiling point/range:	> 200 °F (> 93.3 °C) calculated
Melting point/ range:	Not determined
Specific gravity:	1.03 - 1.06
Vapor density:	Not applicable
Flash point:	Not applicable
Flammable/Explosive limits - lower:	Not applicable
Flammable/Explosive limits - upper:	Not applicable
Autoignition temperature:	Not applicable
Flammability:	Not applicable
Evaporation rate:	Not determined
Solubility in water:	Complete
Partition coefficient (n-octanol/water):	Not determined
VOC content:	0 % (calculated)
Viscosity:	Not available.
Decomposition temperature:	Not available.

10. STABILITY AND REACTIVITY

Stability: Stable at normal conditions.

Hazardous reactions: Will not occur.

Hazardous decomposition products: Decomposes with heat to produce oxides of nitrogen.

Incompatible materials: Keep away from oxidizing agents, strongly alkaline materials, and strongly acidic materials in order to avoid exothermic reactions. Organic materials.

Reactivity: Not available.

Conditions to avoid: Store away from incompatible materials.

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure: Skin, Inhalation, Eyes

Potential Health Effects/Symptoms

Inhalation: Mists, vapors or liquid may cause severe irritation or burns. Inhalation of vapors may cause moderate to severe respiratory tract irritation. This product may be harmful by inhalation.

Skin contact: Contact with liquid may produce severe skin irritation including redness, inflammation and chemical burns.

Eye contact: This product is severely irritating to the eyes and may cause irreversible damage including burns and blindness.

Ingestion: This product may produce corrosive damage to the gastrointestinal tract if it is swallowed. Ingestion of corrosive acids may result in moderately severe burns to mouth and esophagus with more severe burns and damage to the stomach. This product may cause methemoglobinemia characterized by a reduction in oxygen carrying capacity of the blood with symptoms including headache, dizziness, flushed face, fatigue, nausea, vomiting, drowsiness, stupor, tremors, uneven heart action, coma and rarely death.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Nitric acid	Inhalation LC50 (Rat, 4 h) = 65 mg/l	Irritant, Corrosive, Lung, Teeth

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Nitric acid	No	No	No

12. ECOLOGICAL INFORMATION

Ecological information: Because of the low pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal:	Follow all local, state, federal and provincial regulations for disposal.
Hazardous waste number:	This product, if discarded directly, would be a characteristic RCRA corrosive waste (D002).

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name:	Nitric acid
Hazard class or division:	8
Identification number:	UN 2031
Packing group:	II
DOT Hazardous Substance(s):	Nitric acid

International Air Transportation (ICAO/IATA)

Proper shipping name:	Nitric acid
Hazard class or division:	8
Identification number:	UN 2031
Packing group:	II

Water Transportation (IMO/IMDG)

Proper shipping name:	NITRIC ACID
Hazard class or division:	8
Identification number:	UN 2031
Packing group:	II

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status:	All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12 (b) Export Notification:	None above reporting de minimis
CERCLA/SARA Section 302 EHS:	Nitric acid (CAS# 7697-37-2).
CERCLA/SARA Section 311/312:	Immediate Health
CERCLA/SARA Section 313:	This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). Nitric acid (CAS# 7697-37-2).
CERCLA Reportable quantity:	Nitric acid (CAS# 7697-37-2) 1,000 lbs. (454 kg)
California Proposition 65:	No California Proposition 65 listed chemicals are known to be present.

Canada Regulatory Information

CEPA DSL/NDSL Status:	All components are listed on or are exempt from listing on the Canadian Domestic Substances List.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: New Safety Data Sheet format.

Prepared by:	Jennifer Mckay, Regulatory Affairs Specialist
Issue date:	12/19/2017

DISCLAIMER: The data contained herein are furnished for information only and are believed to be reliable. However, Henkel Corporation and its affiliates ("Henkel") does not assume responsibility for any results obtained by persons over whose methods Henkel has no control. It is the user's responsibility to determine the suitability of Henkel's products or any production methods mentioned herein for a particular purpose, and to adopt such precautions as may be advisable for the protection of property and persons against any hazards that may be involved in the handling and use of any Henkel's products. In light of the foregoing, Henkel specifically disclaims all warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, arising from sale or use of Henkel's products. Henkel further disclaims any liability for consequential or incidental damages of any kind, including lost profits.

Revision Number: 004.0

Issue date: 09/11/2014

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: BONDERITE M-AD 131 ACCELERATOR known as ACCELERATOR 131

IDH number: 594605

Product type: Additive

Restriction of Use: None identified

Region: United States

Company address:
Henkel Corporation
One Henkel Way
Rocky Hill, Connecticut 06067

Contact information:
Telephone: (860) 571-5100
MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER: TOXIC IF SWALLOWED.
CAUSES SKIN IRRITATION.
CAUSES SERIOUS EYE IRRITATION.
MAY CAUSE DROWSINESS OR DIZZINESS.

HAZARD CLASS	HAZARD CATEGORY
ACUTE TOXICITY ORAL	3
SKIN IRRITATION	2
EYE IRRITATION	2A
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE	3

PICTOGRAM(S)

Precautionary Statements

Prevention: Avoid breathing vapors, mist, or spray. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear eye and face protection. Wear protective gloves.

Response: IF SWALLOWED: Immediately call a physician or poison control center. IF ON SKIN: Wash with plenty of soap and water. IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to remove. Continue rinsing. Call a poison control center or physician if you feel unwell. Rinse mouth. If skin irritation occurs: Get medical attention. If eye irritation persists: Get medical attention. Take off contaminated clothing.

Storage: Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal: Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Percentage*
Sodium nitrite	7632-00-0	30 - 60

* Exact percentage is a trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation: If mist or vapor of this product is inhaled, remove person immediately to fresh air. Seek medical attention if symptoms develop or persist.

Skin contact: Remove contaminated clothing and footwear. Immediately wash skin thoroughly with soap and water. If symptoms develop and persist, get medical attention.

Eye contact: In case of contact with the eyes, rinse immediately with plenty of water for 15 minutes, and seek immediate medical attention.

Ingestion: Get immediate medical attention. Do not induce vomiting. Never give anything by mouth to a victim who is unconscious or is having convulsions.

Symptoms: See Section 11.

Notes to physician: Treat symptomatically and supportively.If cyanosis is severe, intravenous injection of methylene blue, 1 mg/kg body weight, may be of value.

5. FIRE FIGHTING MEASURES

Extinguishing media: Use media appropriate for surrounding material.

Special firefighting procedures: Wear full protective clothing. Wear self-contained breathing apparatus.

Unusual fire or explosion hazards: If evaporated to dryness, solid residue is an oxidizing agent and may cause spontaneous ignition of combustible materials.

Hazardous combustion products: Irritating and toxic gases or fumes may be released during a fire.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Wear appropriate protective equipment and clothing during clean-up. Do not allow product to enter sewer or waterways.

Clean-up methods: Absorb spill with inert material. Shovel material into appropriate container for disposal. Dispose of according to Federal, State and local governmental regulations.

7. HANDLING AND STORAGE

Handling:

Avoid contact with eyes, skin and clothing. Avoid breathing vapors or mists of this product. For industrial use only. Do not take internally. Wash thoroughly after handling. Do not mix this product with material which contain AMINES. NITROSAMINE may be formed.

Storage:

For safe storage, store between 4.4 °C (39.9 °F) and 37.8 °C (100°F) Keep container tightly closed and in a cool, well-ventilated place away from incompatible materials. Store away from acids, ammonium compounds, and reducing agents,particularly cyanides, thiocyanides and thiosulfates. Sodium nitritemay react with organic amines to form nitrosamines.

For information on product shelf life, please review labels on container or check the Technical Data Sheet.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Sodium nitrite	None	None	None	2 mg/m3 TWA Respirable fraction.

Engineering controls:

Use general ventilation and use local exhaust, where possible, in confined or enclosed spaces.

Respiratory protection:

If ventilation is not sufficient to effectively prevent buildup of aerosols, mists or vapors, appropriate NIOSH/MSHA respiratory protection must be provided. Air purifying respirators must use N, R, or P series filters. The filter must be NIOSH classification 95, 99, or 100. Protection provided by air-purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known; or any other circumstances where air purifying respirators may not provide adequate protection.

Eye/face protection:

Wear safety glasses; chemical goggles (if splashing is possible).

Skin protection:

Wear impervious gloves for prolonged contact. Gloves should be tested to determine suitability for prolonged contact. Recommend using Nitrile gloves. Neoprene gloves.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Liquid
Color:	Yellow
Odor:	Odorless
Odor threshold:	Not available.
pH:	7.0 - 8.0
Vapor pressure:	Not determined
Boiling point/range:	> 210 °F (> 98.9 °C)
Melting point/ range:	-12 °C (10.4 °F)
Specific gravity:	1.30 - 1.32
Vapor density:	Not determined
Flash point:	Not applicable
Flammable/Explosive limits - lower:	Not applicable
Flammable/Explosive limits - upper:	Not applicable
Autoignition temperature:	Not determined
Evaporation rate:	Not determined
Solubility in water:	Complete
Partition coefficient (n-octanol/water):	Not available.
VOC content:	0 % (calculated)
Viscosity:	Not available.
Decomposition temperature:	Not available.

10. STABILITY AND REACTIVITY

Stability: Stable at normal conditions.

Hazardous reactions: None under normal processing.

Hazardous decomposition products: Irritating and/or toxic fumes and gases may be emitted upon the product's decomposition. Decomposes with heat to produce oxides of nitrogen.

Incompatible materials: This product may react with ammonium compounds and reducing agents,particularly cyanides, thiocyanates and thiosulfates. Sodium nitrite may react with organic amines to form nitrosamines. This product reacts with acids to produce oxides of nitrogen. If evaporated to dryness, dry residue is combustible. Keep away from heat, spark and flame. Dry residues of sodium nitrite and sodium thiosulfate explode upon heating.

Reactivity: Not available.

Conditions to avoid: This product is an OXIDIZING AGENT - avoid contact with organic material.

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure: Skin, Inhalation, Eyes

Potential Health Effects/Symptoms

Inhalation: This product may be harmful by inhalation. This product is irritating to the respiratory system.
Skin contact: This product may cause irritation to the skin. This product may discolor the skin. A component in this product may be absorbed through the skin, especially if skin is damaged.
Eye contact: This product may cause irritation to the eyes.
Ingestion: This product may be fatal if it is swallowed. This product may cause methemoglobinemia characterized by a reduction in oxygen carrying capacity of the blood with symptoms including headache, dizziness, flushed face, fatigue, nausea, vomiting, drowsiness, stupor, tremors, uneven heart action, coma and rarely death.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Sodium nitrite	Oral LD50 (RAT) = 85 mg/kg Oral LD50 (RABBIT) = 186 mg/kg Inhalation LC50 (RAT, 4 h) = 5.5 mg/l	Blood, Central nervous system, Mutagen, Vascular

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Sodium nitrite	No	No	No

12. ECOLOGICAL INFORMATION

Ecological information: Toxic to aquatic organisms

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal:	Dispose of according to Federal, State and local governmental regulations.
Hazardous waste number:	Material, if discarded, is not expected to be a characteristic hazardous waste under RCRA. Wastes must be tested using methods described in 40 CFR Part 261 to determine if it meets applicable definitions of hazardous wastes.

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name:	Toxic liquid, inorganic, n.o.s. (Sodium nitrite)
Hazard class or division:	6.1
Identification number:	UN 3287
Packing group:	III
DOT Hazardous Substance(s):	Sodium nitrite

International Air Transportation (ICAO/IATA)

Proper shipping name:	Toxic liquid, inorganic, n.o.s. (Sodium nitrite)
Hazard class or division:	6.1
Identification number:	UN 3287
Packing group:	III

Water Transportation (IMO/IMDG)

Proper shipping name:	TOXIC LIQUID, INORGANIC, N.O.S. (Sodium nitrite)
Hazard class or division:	6.1
Identification number:	UN 3287
Packing group:	III
Additional information:	IMDG-Code: Segregation group 12- Nitrites and their mixtures

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status:	All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12 (b) Export Notification:	Sodium nitrite (CAS# 7632-00-0).
CERCLA/SARA Section 302 EHS:	None above reporting de minimis
CERCLA/SARA Section 311/312:	Immediate Health
CERCLA/SARA Section 313:	This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). Sodium nitrite (CAS# 7632-00-0). Sodium nitrate (CAS# 7631-99-4).
CERCLA Reportable quantity:	Sodium nitrite (CAS# 7632-00-0) 100 lbs. (45.4 kg)
California Proposition 65:	No California Proposition 65 listed chemicals are known to be present.

Canada Regulatory Information

CEPA DSL/NDSL Status:	All components are listed on or are exempt from listing on the Canadian Domestic Substances List.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: New Safety Data Sheet format.

Prepared by: Cheryl Neason, Regulatory Affairs Specialist

Issue date: 09/11/2014

DISCLAIMER: The data contained herein are furnished for information only and are believed to be reliable. However, Henkel Corporation and its affiliates ("Henkel") does not assume responsibility for any results obtained by persons over whose methods Henkel has no control. It is the user's responsibility to determine the suitability of Henkel's products or any production methods mentioned herein for a particular purpose, and to adopt such precautions as may be advisable for the protection of property and persons against any hazards that may be involved in the handling and use of any Henkel's products. In light of the foregoing, Henkel specifically disclaims all warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, arising from sale or use of Henkel's products. Henkel further disclaims any liability for consequential or incidental damages of any kind, including lost profits.

Revision Number: 007.2

Issue date: 03/26/2018

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: BONDERITE M-AD 700 NEUTRALIZER ADDITIVE known as PARCO NEUTRALIZER 700

IDH number: 593930

Product type: Additive

Restriction of Use: None identified

Company address:
Henkel Corporation
One Henkel Way
Rocky Hill, Connecticut 06067

Region: United States

Contact information:
Telephone: +1 (860) 571-5100
MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW	
WARNING:	CAUSES SERIOUS EYE IRRITATION.

HAZARD CLASS	HAZARD CATEGORY
EYE IRRITATION	2A

PICTOGRAM(S)

Precautionary Statements

Prevention: Wash affected area thoroughly after handling. Wear eye and face protection.

Response: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage: Not prescribed

Disposal: Not prescribed

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Percentage*
Ammonium bicarbonate	1066-33-7	5 - 10

* Exact percentages may vary or are trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation: If mist or vapor of this product is inhaled, remove person immediately to fresh air. Seek medical attention if symptoms develop or persist.

Skin contact: Immediately wash skin thoroughly with soap and water. If symptoms develop and persist, get medical attention.

Eye contact: In case of contact with the eyes, rinse immediately with plenty of water for 15 minutes, and seek immediate medical attention.

Ingestion: Get immediate medical attention. Do not induce vomiting.

Symptoms: See Section 11.

Notes to physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Extinguishing media: Use media appropriate for surrounding material.

Special firefighting procedures: Wear full protective clothing. Wear self-contained breathing apparatus.

Unusual fire or explosion hazards: This product is an aqueous mixture and although it will exhibit a flash point, it will not support combustion.

Hazardous combustion products: Irritating and toxic gases or fumes may be released during a fire.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Wear appropriate protective equipment and clothing during clean-up.

Clean-up methods: Absorb spill with inert material. Shovel material into appropriate container for disposal. Dispose of according to Federal, State and local governmental regulations.

7. HANDLING AND STORAGE

Handling: Avoid skin and eye contact. Wash thoroughly after handling. Avoid breathing vapors or mists of this product. Provide adequate ventilation. Do not take internally. For industrial use only.

Storage: Keep container tightly closed and in a cool, well-ventilated place away from incompatible materials.

For information on product shelf life, please review labels on container or check the Technical Data Sheet.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Ammonium bicarbonate	None	None	None	None

Engineering controls:	Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapors or mists generated from the handling of this product.
Respiratory protection:	If ventilation is not sufficient to effectively prevent buildup of aerosols, mists or vapors, appropriate NIOSH/MSHA respiratory protection must be provided. Respirators should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard (29 CFR 1901.134) and ANSI's standard for respiratory protection (Z88.2-1992). A written respiratory protection program, including provisions for medical certification, training, fit-testing, exposure assessments, maintenance, inspection, cleaning, and convenient, sanitary storage, must be implemented. If concentrations are below the TLV and/or PEL, a NIOSH approved disposable dust/mist respirator may be used for personal comfort. For concentrations above the TLV and/or PEL but less than 10 times these limits, a NIOSH approved half-face piece respirator equipped with dust-mist cartridges may be used. For concentrations greater than 10 times the TLV and/or PEL, consult the NIOSH respirator decision logic found in Publication No.87-116 or ANSI Z88.2-1992. Note: ANSI Z88.2-1992 requires the use of a HEPA filter if the particle size distribution of the contaminant is unknown. WARNING! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Eye/face protection:	Wear chemical goggles; face shield (if splashing is possible).
Skin protection:	Chemical resistant, impermeable gloves. Gloves should be tested to determine suitability for prolonged contact. Suitable glove materials may include: Nitrile gloves. Neoprene gloves.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Liquid
Color:	Colorless
Odor:	Ammonia
Odor threshold:	Not available.
pH:	8.0
Vapor pressure:	Not determined
Boiling point/range:	> 210 °F (> 98.9 °C)
Melting point/range:	Not available.
Specific gravity:	1.0 - 1.1
Vapor density:	Not determined
Flash point:	Not applicable
Flammable/Explosive limits - lower:	Not applicable
Flammable/Explosive limits - upper:	Not applicable
Autoignition temperature:	Not applicable
Flammability:	Not applicable
Evaporation rate:	Not determined
Solubility in water:	Complete
Partition coefficient (n-octanol/water):	Not available.
VOC content:	0 % (calculated)
Viscosity:	Not available.
Decomposition temperature:	Not available.

10. STABILITY AND REACTIVITY

Stability: Stable at normal conditions.

Hazardous reactions: Will not occur.

Hazardous decomposition products: Upon decomposition, this product may yield oxides of nitrogen and ammonia, carbon dioxide, carbon monoxide and other low molecular weight hydrocarbons.

Incompatible materials: This product reacts with acids.

Reactivity: Not available.

Conditions to avoid: Store away from incompatible materials.

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure: Skin, Inhalation, Eyes

Potential Health Effects/Symptoms

Inhalation: Inhalation of vapors or mists of the product may be irritating to the respiratory system.
Skin contact: Prolonged and/or repeated skin contact with this product may cause irritation/dermatitis.
Eye contact: This product may cause irritation to the eyes.
Ingestion: Ingestion of large amounts may produce gastrointestinal disturbances including irritation, nausea, and diarrhea.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Ammonium bicarbonate	None	Central nervous system, Corrosive, Endocrine, Irritant, Kidney, Liver, Lung, Respiratory

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Ammonium bicarbonate	No	No	No

12. ECOLOGICAL INFORMATION

Ecological information: Not available.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Dispose of according to Federal, State and local governmental regulations.

Hazardous waste number: Material, if discarded, is not expected to be a characteristic hazardous waste under RCRA.

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

International Air Transportation (ICAO/IATA)

Proper shipping name:	Not regulated
Hazard class or division:	None
Identification number:	None
Packing group:	None

Water Transportation (IMO/IMDG)

Proper shipping name:	Not regulated
Hazard class or division:	None
Identification number:	None
Packing group:	None

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status:	All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12 (b) Export Notification:	None above reporting de minimis
CERCLA/SARA Section 302 EHS:	None above reporting de minimis.
CERCLA/SARA Section 311/312:	Immediate Health
CERCLA/SARA Section 313:	This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). Ammonium bicarbonate (CAS# 1066-33-7).
California Proposition 65:	No California Proposition 65 listed chemicals are known to be present.

Canada Regulatory Information

CEPA DSL/NDSL Status:	All components are listed on or are exempt from listing on the Canadian Domestic Substances List.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: This Safety Data Sheet contains changes from the previous version in Section(s): 2

Prepared by: Regulatory Affairs

Issue date: 03/26/2018

DISCLAIMER: The data contained herein are furnished for information only and are believed to be reliable. However, Henkel Corporation and its affiliates ("Henkel") does not assume responsibility for any results obtained by persons over whose methods Henkel has no control. It is the user's responsibility to determine the suitability of Henkel's products or any production methods mentioned herein for a particular purpose, and to adopt such precautions as may be advisable for the protection of property and persons against any hazards that may be involved in the handling and use of any Henkel's products. In light of the foregoing, Henkel specifically disclaims all warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, arising from sale or use of Henkel's products. Henkel further disclaims any liability for consequential or incidental damages of any kind, including lost profits.

Revision Number: 002.0

Issue date: 10/23/2015

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: BONDERITE M-NT 2
Product type: Product for the conversion treatment of metals
Restriction of Use: None identified
Company address:
Henkel Corporation
One Henkel Way
Rocky Hill, Connecticut 06067

IDH number: 2012083
Region: United States
Contact information:
Telephone: +1 (860) 571-5100
MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WARNING: CAUSES SKIN IRRITATION.
CAUSES SERIOUS EYE IRRITATION.

HAZARD CLASS	HAZARD CATEGORY
SKIN IRRITATION	2
EYE IRRITATION	2A

PICTOGRAM(S)

Precautionary Statements

Prevention: Wash thoroughly after handling. Wear eye and face protection. Wear protective gloves.
Response: IF ON SKIN: Wash with plenty of water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If skin irritation occurs: Get medical attention. If eye irritation persists: Get medical attention. Take off contaminated clothing.
Storage: Not prescribed
Disposal: Not prescribed

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Percentage*
Ammonium nitrate	6484-52-2	0.1 - 1
Hexafluorozirconic acid	12021-95-3	0.1 - 1

* Exact percentage is a trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation:	If mist or vapor of this product is inhaled, remove person immediately to fresh air. Seek medical attention if symptoms develop or
Skin contact:	For skin contact, flush with large amounts of water. Seek immediate medical attention.
Eye contact:	In case of contact with the eyes, rinse immediately with plenty of water for 15 minutes, and seek immediate medical attention.
Ingestion:	Seek medical advice.
Symptoms:	See Section 11.

5. FIRE FIGHTING MEASURES

Extinguishing media:	Use media appropriate for surrounding material.
Special firefighting procedures:	Wear full protective clothing. Wear self-contained breathing apparatus.
Unusual fire or explosion hazards:	This product is an aqueous mixture which will not burn.
Hazardous combustion products:	Irritating and toxic gases or fumes may be released during a fire.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions:	Prevent further leakage or spillage if safe to do so. Wear appropriate personal protective equipment.
Clean-up methods:	Absorb spill with inert material. Shovel material into appropriate container for disposal. Dispose of according to Federal, State and local governmental regulations.

7. HANDLING AND STORAGE

Handling:	Avoid contact with eyes, skin and clothing. Avoid breathing mists or aerosols of this product. Wash thoroughly after handling. Do not take internally. For industrial use only.
Storage:	For safe storage, store between 0 °C (32°F) and 50 °C (122°F) Keep container tightly closed and in a cool, well-ventilated place away from incompatible materials. Thaw and mix thoroughly if frozen. Supplier recommends that this product be stored with a vented bung.

For information on product shelf life, please review labels on container or check the Technical Data Sheet.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Ammonium nitrate	None	None	None	None
Hexafluorozirconic acid	2.5 mg/m3 TWA (as F) 5 mg/m3 TWA (as Zr) 10 mg/m3 STEL (as Zr)	5 mg/m3 PEL (as Zr) 2.5 mg/m3 PEL (as F) 2.5 mg/m3 TWA Dust.	None	None

Engineering controls: Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapors or mists generated from the handling of this product.

Respiratory protection: If ventilation is not sufficient to effectively prevent buildup of aerosols, mists or vapors, appropriate NIOSH/MSHA respiratory pro

Eye/face protection: Wear chemical goggles; face shield (if splashing is possible).

Skin protection: Chemical resistant, impermeable gloves. Gloves should be tested to determine suitability for prolonged contact. Use of impervious apron and boots are recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Clear, slightly turbid
Color:	Water white
Odor:	almost odorless
Odor threshold:	Not available.
pH:	< 2
Vapor pressure:	Not determined
Boiling point/range:	Not determined
Melting point/ range:	Not determined
Specific gravity:	0.99 - 1.02
Vapor density:	Not determined
Flash point:	Not determined
Flammable/Explosive limits - lower:	Not available.
Flammable/Explosive limits - upper:	Not available.
Autoignition temperature:	Not determined
Evaporation rate:	Not available.
Solubility in water:	Complete Aqueous solution
Partition coefficient (n-octanol/water):	Not determined
VOC content:	Not determined
Viscosity:	Not available.
Decomposition temperature:	Not available.

10. STABILITY AND REACTIVITY

Stability: Stable at normal conditions.

Hazardous reactions: Will not occur.

Hazardous decomposition products: May liberate hydrogen fluoride. Decomposes with heat to produce oxides of nitrogen.

Incompatible materials: This product may react with strong alkalies.

Reactivity: Not available.

Conditions to avoid: None identified.

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure: Skin, Inhalation, Eyes

Potential Health Effects/Symptoms

Inhalation: This product may cause slight irritation to the respiratory system.
Skin contact: This product may cause irritation to the skin. Prolonged or repeated contact may w orsen irritation.
Eye contact: Not expected to cause injury. Eye contact may cause mild irritation.
Ingestion: No significant adverse effects are expected upon ingestion of the product. Ingestion of large amounts may produce gastrointestinal disturbances including irritation, nausea, and diarrhea.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Ammonium nitrate	Oral LD50 (RAT) = 2,217 mg/kg Oral LD50 (RAT) = 4,500 mg/kg Oral LD50 (RAT) = 2,800 mg/kg Inhalation LC50 (RAT, 4 h) = > 88.8 mg/l	Irritant, Kidney
Hexafluorozirconic acid	None	No Records

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Ammonium nitrate	No	No	No
Hexafluorozirconic acid	No	No	No

12. ECOLOGICAL INFORMATION

Ecological information: No data available.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Follow all local, state, federal and provincial regulations for disposal.

Hazardous waste number: This product, if discarded directly, w ould be a characteristic RCRA corrosive w aste (D002).

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to an y package/configuration.

U.S. Department of Transportation Ground (49 CFR)
Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

International Air Transportation (ICAO/IATA)
Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

Water Transportation (IMO/IMDG)
Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status:	All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12 (b) Export Notification:	None above reporting de minimis
CERCLA/SARA Section 302 EHS:	None above reporting de minimis
CERCLA/SARA Section 311/312:	Immediate Health, Delayed Health
CERCLA/SARA Section 313:	None above reporting de minimis
California Proposition 65:	No California Proposition 65 listed chemicals are known to be present.

Canada Regulatory Information

CEPA DSL/NDSL Status:	All components are listed on or are exempt from listing on the Canadian Domestic Substances List.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: New Safety Data Sheet format.

Prepared by: John DiCerbo, Sr. Regulatory Affairs Specialist

Issue date: 10/23/2015

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Revision Number: 003.3

Issue date: 01/13/2021

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: BONDERITE M-ZN 3410 MU ZINC PHOSPHATE known as BONDERITE 3410 MAKEUP

IDH number: 594677

Product type/use: Coating

Restriction of Use: None identified

Region: United States

Company address:
Henkel Corporation
One Henkel Way
Rocky Hill, Connecticut 06067

Contact information:
Telephone: +1 (860) 571-5100
MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER:

CONTAINS FLUORIDES. MAY CAUSE DELAYED BURNS (NOT IMMEDIATELY PAINFUL OR VISIBLE)! LONG TERM EXPOSURE TO FLUORIDES OVER YEARS MAY CAUSE FLUOROSIS!
HARMFUL IF SWALLOWED OR IN CONTACT WITH SKIN.
CAUSES SEVERE SKIN BURNS AND EYE DAMAGE.
MAY CAUSE AN ALLERGIC SKIN REACTION.
MAY CAUSE ALLERGY OR ASTHMA SYMPTOMS OR BREATHING DIFFICULTIES IF INHALED.
MAY CAUSE RESPIRATORY IRRITATION.
SUSPECTED OF CAUSING GENETIC DEFECTS.
MAY CAUSE CANCER.
MAY DAMAGE FERTILITY OR THE UNBORN CHILD.
CAUSES DAMAGE TO ORGANS THROUGH PROLONGED OR REPEATED EXPOSURE.

HAZARD CLASS	HAZARD CATEGORY
ACUTE TOXICITY ORAL	4
ACUTE TOXICITY DERMAL	4
SKIN CORROSION	1C - Corrosive
SERIOUS EYE DAMAGE	1
RESPIRATORY SENSITIZATION	1
SKIN SENSITIZATION	1
GERM CELL MUTAGENICITY	2
CARCINOGENICITY	1A
REPRODUCTIVE TOXICITY	1B
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE	3
SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE	1

PICTOGRAM(S)

Precautionary Statements

Prevention:

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe vapors, mist, or spray. Wash affected area thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves, clothing, eye and face protection. In case of inadequate ventilation wear respiratory protection.

Response:

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical attention. If skin irritation or rash occurs: Get medical attention. Wash contaminated clothing before reuse.

Storage:

Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal:

Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Percentage*
Zinc dihydrogen phosphate	13598-37-3	10 - 20
Nickel nitrate	13138-45-9	5 - 10
fluorosilicic acid	16961-83-4	1 - 5
Phosphoric acid	7664-38-2	1 - 5
Zinc nitrate	7779-88-6	1 - 5
Hydrogen fluoride	7664-39-3	0.1 - 1

* Exact percentages may vary or are trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation:

If mist or vapor of this product is inhaled, remove person immediately to fresh air. Seek medical attention if symptoms develop or persist. If breathing is difficult, give oxygen. Trained personnel should administer 2.5% calcium gluconate through a nebulizer for 20 minutes.

Skin contact:

Remove contaminated clothing and footwear while rinsing the affected area with large amounts of running water for at least 15 minutes. GET IMMEDIATE MEDICAL ATTENTION. If iced solution of 0.13% aqueous Benzalkonium Chloride (Zephiran) or 2.5% calcium gluconate gel is available, rinsing may be limited to 5 minutes, with the soak solution or gel applied as soon as the rinsing is stopped. Gloves should be worn when applying the gel to prevent transfer of HF and secondary burns. If using calcium gluconate gel, it should be continuously re-applied and massaged into the affected area until pain has been relieved for at least 30 minutes. If Benzalkonium Chloride (Zephiran) or calcium gluconate gel is not available, rinsing must continue until medical treatment is provided.

Eye contact:

Immediately flush affected eye with large amounts of gently flowing water or 0.9% sterile saline solution for at least 15 minutes. Hold eyelid wide open. Get immediate medical attention. Eye flushing should continue during transportation to a doctor.

Ingestion: Get immediate medical attention. Do not induce vomiting. Attempt immediate administration of a fluoride binding substance: milk, chewable calcium carbonate tablets or 4-8 ounces (120-240 ml) of milk of magnesia or a liquid antacid. Avoid large amounts of liquid as it may induce vomiting. Never give anything by mouth to an unconscious person.

Symptoms: See Section 11.

Notes to physician: If cyanosis is severe, intravenous injection of methylene blue, 1 mg/kg body weight, may be of value. Treatment of hypocalcemia associated with corrosive fluoride compounds exposure may be corrected by intravenous calcium gluconate or calcium chloride. Treatment of hypomagnesemia may be corrected by intravenous magnesium sulfate.

5. FIRE FIGHTING MEASURES

Extinguishing media: Use media appropriate for surrounding material.

Special firefighting procedures: Wear full protective clothing. Wear self-contained breathing apparatus.

Unusual fire or explosion hazards: This product is an aqueous mixture which will not burn.

Hazardous combustion products: Irritating and toxic gases or fumes may be released during a fire.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Wear appropriate protective equipment and clothing during clean-up.

Clean-up methods: Absorb spill with inert material. Shovel material into appropriate container for disposal. Dispose of according to Federal, State and local governmental regulations.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Avoid breathing vapors or mists of this product. Do not take internally. For industrial use only.

Storage: Keep container tightly closed and in a cool, well-ventilated place away from incompatible materials. Manufacturer recommends storing above 4.4 °C (40 °F). Thaw and mix thoroughly if frozen.

For information on product shelf life, please review labels on container or check the Technical Data Sheet.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Zinc dihydrogen phosphate	None	None	None	None
Nickel nitrate	0.1 mg/m3 TWA (as Ni) Inhalable fraction.	1 mg/m3 PEL (as Ni)	None	None
fluorosilicic acid	None	None	None	None
Phosphoric acid	3 mg/m3 STEL 1 mg/m3 TWA	1 mg/m3 PEL	None	None
Zinc nitrate	None	None	None	None
Hydrogen fluoride	2 ppm Ceiling (as F) 0.5 ppm TWA (as F) (SKIN) (as F)	2.5 mg/m3 PEL (as F) 3 ppm TWA	None	None

Engineering controls: Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapors or mists generated from the handling of this product.

Respiratory protection:	If ventilation is not sufficient to effectively prevent buildup of aerosols, mists or vapors, appropriate NIOSH/MSHA respiratory protection must be provided.
Eye/face protection:	Wear chemical goggles; face shield (if splashing is possible).
Skin protection:	Chemical resistant, impermeable gloves. Gloves should be tested to determine suitability for prolonged contact. Use of impervious apron and boots are recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Liquid
Color:	green
Odor:	mild
Odor threshold:	Not available.
pH:	< 2.5
Vapor pressure:	Not determined
Boiling point/range:	> 212 °F (> 100°C)
Melting point/ range:	Not available.
Specific gravity:	1.3 - 1.4
Vapor density:	Not determined
Flash point:	Not determined
Flammable/Explosive limits - lower:	Not applicable
Flammable/Explosive limits - upper:	Not applicable
Autoignition temperature:	Not applicable
Flammability:	Not applicable
Evaporation rate:	Not available.
Solubility in water:	Complete
Partition coefficient (n-octanol/water):	Not available.
VOC content:	Not applicable
Viscosity:	Not available.
Decomposition temperature:	Not available.

10. STABILITY AND REACTIVITY

Stability:	Stable at normal conditions.
Hazardous reactions:	Will not occur.
Hazardous decomposition products:	May liberate hydrogen fluoride.
Incompatible materials:	Alkalis.
Reactivity:	This product may react with strong alkalies. This material will react with glass, concrete, certain metals, silica containing materials, rubber, leather, and many organics.
Conditions to avoid:	Store away from incompatible materials.

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure: Skin, Inhalation, Eyes

Potential Health Effects/Symptoms

Inhalation:	Mists, vapors or liquid may cause severe irritation or burns. Contains fluorides. Exposure to fluorides over years may cause fluorosis.
Skin contact:	Corrosive to the skin. Contact with the skin or mucous membranes may cause severe irritation and burns. Following skin exposure to this product, the sensation of irritation or pain may be delayed. This product contains a component that may cause allergic skin reactions. A component in this product may be absorbed through the skin, especially if skin is damaged.
Eye contact:	This product is severely irritating to the eyes and may cause irreversible damage including burns and blindness.
Ingestion:	Ingestion of corrosive acids may result in moderately severe burns to mouth and esophagus with more severe burns and damage to the stomach.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Zinc dihydrogen phosphate	None	Blood, Central nervous system, Corrosive, Endocrine, Gastrointestinal, Immune system, Irritant, Kidney, Metabolic, Pancreas, Respiratory
Nickel nitrate	None	Allergen, Blood, Cardiac, Central nervous system, Corrosive, Developmental, Immune system, Irritant, Kidney, Liver, Lung, Mutagen, Reproductive, Respiratory, Sensory, Some evidence of carcinogenicity, Vascular
fluorosilicic acid	Oral LD50 (Rat) = 430 mg/kg	Blood, Central nervous system, Corrosive, Carcinogen, Gastrointestinal tract, Irritant, Kidney, Metabolic, Muscle, Teeth, Less weight gain and food intake.
Phosphoric acid	Oral LD50 (Rat) = 1,530 mg/kg Dermal LD50 (Rabbit) = 2,740 mg/kg	Irritant, Corrosive
Zinc nitrate	Oral LD50 (Rat) = 1,400 mg/kg Oral LD50 (Mouse) = 241.3 mg/kg Oral LD50 (Rat) = 1,558.7 mg/kg	Blood, Cardiac, Central nervous system, Corrosive, Endocrine, Gastrointestinal tract, Immune system, Irritant, Kidney, Metabolic, Pancreas, Respiratory, Vascular
Hydrogen fluoride	None	Allergen, Blood, Bone Marrow, Cardiac, Central nervous system, Corrosive, Irritant, Kidney, Liver, Lung, Muscle, Nervous System, Respiratory, Teeth

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Zinc dihydrogen phosphate	No	No	No
Nickel nitrate	Known To Be Human Carcinogen.	Group 1	No
fluorosilicic acid	No	No	No
Phosphoric acid	No	No	No
Zinc nitrate	No	No	No
Hydrogen fluoride	No	No	No

12. ECOLOGICAL INFORMATION

Ecological information: Toxic to aquatic organisms

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Dispose of according to Federal, State and local governmental regulations. This chemical contains heavy metals. This chemical contains phosphates.

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name:	Corrosive liquid, acidic, inorganic, n.o.s. (Phosphoric acid, Fluorosilicic acid)
Hazard class or division:	8
Identification number:	UN 3264
Packing group:	III
DOT Hazardous Substance(s):	Nickel nitrate, Hydrofluoric acid

International Air Transportation (ICAO/IATA)

Proper shipping name:	Corrosive liquid, acidic, inorganic, n.o.s. (Phosphoric acid, Fluorosilicic acid)
Hazard class or division:	8
Identification number:	UN 3264
Packing group:	III

Water Transportation (IMO/IMDG)

Proper shipping name:	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Phosphoric acid, Fluorosilicic acid)
Hazard class or division:	8
Identification number:	UN 3264
Packing group:	III

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status:	All components are listed as active or are exempt from listing on the Toxic Substances Control Act (TSCA) inventory.
TSCA 12 (b) Export Notification:	None above reporting de minimis
CERCLA/SARA Section 302 EHS:	Hydrogen fluoride (CAS# 7664-39-3).
CERCLA/SARA Section 311/312:	Immediate Health, Delayed Health
CERCLA/SARA Section 313:	This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). Zinc dihydrogen phosphate (CAS# 13598-37-3). Zinc nitrate (CAS# 7779-88-6). Nickel nitrate (CAS# 13138-45-9).
CERCLA Reportable quantity:	Nickel nitrate (CAS# 13138-45-9) 100 lbs. (45.4 kg) Hydrogen fluoride (CAS# 7664-39-3) 100 lbs. (45.4 kg)
California Proposition 65:	This product contains a chemical known in the State of California to cause cancer.

Canada Regulatory Information

CEPA DSL/NDSL Status:	All components are listed on or are exempt from listing on the Canadian Domestic Substances List.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: 4

Prepared by: Product Safety and Regulatory Affairs

Issue date: 01/13/2021

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Revision Number: 002.5

Issue date: 10/28/2020

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PREPALENE X
Product type/use: Surface pretreatment
Restriction of Use: None identified
Company address:
Henkel Corporation
One Henkel Way
Rocky Hill, Connecticut 06067

IDH number: 687530
Item number: 687530
Region: United States
Contact information:
Telephone: +1 (860) 571-5100
MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW	
WARNING:	CAUSES SKIN IRRITATION. CAUSES SERIOUS EYE IRRITATION.

HAZARD CLASS	HAZARD CATEGORY
SKIN IRRITATION	2
EYE IRRITATION	2A

PICTOGRAM(S)

Precautionary Statements

Prevention: Wash affected area thoroughly after handling. Wear protective gloves, eye protection, and face protection.
Response: IF ON SKIN: Wash with plenty of water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If skin irritation occurs: Get medical attention. If eye irritation persists: Get medical attention. Take off contaminated clothing.
Storage: Not prescribed
Disposal: Not prescribed

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Percentage*
Zinc orthophosphate	7779-90-0	20 - 30
Carboxymethyl cellulose, sodium salt	9004-32-4	1 - 5

* Exact percentages may vary or are trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation: If inhaled, immediately remove the affected person to fresh air. If symptoms develop and persist, get medical attention.

Skin contact: Immediately wash skin thoroughly with soap and water. If symptoms develop and persist, get medical attention.

Eye contact: In case of contact with the eyes, rinse immediately with plenty of water for 15 minutes, and seek immediate medical attention.

Ingestion: Get immediate medical attention. Do not induce vomiting.

Symptoms: See Section 11.

Notes to physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Extinguishing media: Use media appropriate for surrounding material.

Special firefighting procedures: Wear full protective clothing. Wear self-contained breathing apparatus.

Unusual fire or explosion hazards: This product is an aqueous mixture which will not burn.

Hazardous combustion products: Irritating and toxic gases or fumes may be released during a fire.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Wear appropriate protective equipment and clothing during clean-up. Do not allow product to enter sewer or waterways.

Clean-up methods: Absorb spill with inert material. Shovel material into appropriate container for disposal. Dispose of according to Federal, State and local governmental regulations.

7. HANDLING AND STORAGE

Handling: Prevent contact with eyes, skin and clothing. Do not breathe vapor and mist. Wash thoroughly after handling. Do not take internally. For industrial use only.

Storage: For safe storage, store between 4.4 °C (39.9 °F) and 37.8 °C (100°F) Keep the container tightly closed and in a cool, well-ventilated place. Protect from freezing.

For information on product shelf life, please review labels on container or check the Technical Data Sheet.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Zinc orthophosphate	None	None	None	None
Carboxymethyl cellulose, sodium salt	None	None	None	None

Engineering controls: Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapors or mists generated from the handling of this product.

Respiratory protection: If ventilation is not sufficient to effectively prevent buildup of aerosols, mists or vapors, appropriate NIOSH/MSHA respiratory protection must be provided.

Eye/face protection: Wear chemical goggles; face shield (if splashing is possible).

Skin protection: Chemical resistant, impermeable gloves. Use of impervious apron and boots are recommended. Suitable glove materials may include: Butyl rubber gloves. Nitrile gloves. Neoprene gloves.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Liquid
Color:	White
Odor:	Mild
Odor threshold:	Not available.
pH:	7.0 - 8.0
Vapor pressure:	Not determined
Boiling point/range:	> 93.3 °C (> 199.9 °F)calculated
Melting point/ range:	Not determined
Specific gravity:	1.06 - 1.26 at 15.56 °C (60.01 °F)
Vapor density:	Not determined
Flash point:	> 93.4 °C (> 200.12 °F) calculated; Aqueous solution
Flammable/Explosive limits - lower:	Not determined
Flammable/Explosive limits - upper:	Not determined
Autoignition temperature:	Not determined
Flammability:	Not applicable
Evaporation rate:	Not determined
Solubility in water:	Disperses in water as a suspension
Partition coefficient (n-octanol/water):	Not determined
VOC content:	0 % EPA Method 24
Viscosity:	Not available.
Decomposition temperature:	Not available.

10. STABILITY AND REACTIVITY

Stability: Stable at normal conditions.

Hazardous reactions: Will not occur.

Hazardous decomposition products: Irritating and/or toxic fumes and gases may be emitted upon the product's decomposition.

Incompatible materials: None identified.

Reactivity: Not available.

Conditions to avoid: Do not expose to extreme hot or cold temperatures.

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure: Skin, Inhalation, Eyes, Ingestion

Potential Health Effects/Symptoms

Inhalation:	Inhalation of vapors or mists of the product may be irritating to the respiratory system.
Skin contact:	This product is irritating to the skin.
Eye contact:	Causes serious eye irritation.
Ingestion:	May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Harmful if swallowed.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Zinc orthophosphate	None	Irritant, Immune system
Carboxymethyl cellulose, sodium salt	None	Allergen, Respiratory

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Zinc orthophosphate	No	No	No
Carboxymethyl cellulose, sodium salt	No	No	No

12. ECOLOGICAL INFORMATION

Ecological information: Do not empty into drains / surface water / ground water.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Dispose of according to Federal, State and local governmental regulations.

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name:	Not regulated
Hazard class or division:	None
Identification number:	None
Packing group:	None

International Air Transportation (ICAO/IATA)

Proper shipping name:	Environmentally hazardous substance, liquid, n.o.s. (Zinc phosphate)
Hazard class or division:	9
Identification number:	UN 3082
Packing group:	III

Water Transportation (IMO/IMDG)

Proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Zinc phosphate)
Hazard class or division:	9
Identification number:	UN 3082
Packing group:	III
Marine pollutant:	Zinc phosphate

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status:	All components are listed as active or are exempt from listing on the Toxic Substances Control Act (TSCA) inventory.
TSCA 12 (b) Export Notification:	None above reporting de minimis
CERCLA/SARA Section 302 EHS:	None above reporting de minimis.
CERCLA/SARA Section 311/312:	Immediate Health
CERCLA/SARA Section 313:	This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). Zinc orthophosphate (CAS# 7779-90-0).
California Proposition 65:	This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. This product contains a chemical known in the State of California to cause cancer.

Canada Regulatory Information

CEPA DSL/NDSL Status:	Contains one or more components listed on the Non-Domestic Substances List. All other components are listed on or are exempt from listing on the Domestic Substances List. Components listed on the NDSL must be tracked by all Canadian Importers of Record as required by Environment Canada. They may be imported into Canada in limited quantities. Please contact Regulatory Affairs for additional details.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: This Safety Data Sheet contains changes from the previous version in Section(s): 14

Prepared by: Regulatory Affairs

Issue date: 10/28/2020

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Appendix D – Coating Information

Product Bulletin

AquaEC™ 5100 Gray
Cationic Electrocoat

Specification: Weather resistant

Chemistry: Acrylic

Color: Gray

Components:	**Resin Feed RESL-00061**	**Pigment Paste 629-2251**	**Flow Additive 4045-5100**
Weight Per Gallon (lbs.)	8.76	11.20	7.47
% Weight Solids	38.00	51.27	0.00
% Weight Solvent	2.00	9.44	100.00
% Weight Water	60.00	39.29	0.00
% Volume Solids	36.12	31.51	0.00
% Volume Solvent	3.20	15.47	100.00
% Volume Water	60.68	53.02	0.00
Solvent Weight per Gallon (lbs.)	5.48	6.92	7.47
% Resin Solids	100.00	27.52	0.00
% Pigment Solids	n/a	72.48	0.00
VOC (lbs./gal) – RACT (NSPS)	0.45 (0.49)	2.25 (3.36)	7.47

Resin/Pigment Feed Ratio: 2.64 to 1
Mixed Gallon VOC/RACT (lbs./gal.): 1.01
Mixed Gallon VOC/NSPS (lbs/gal. ACS): 1.20

Bath Gallon Wt.: 8.71 (@ 16% NV and 35 P/B)

NSPS is VOC lb per gallon of Applied Coating Solids (ACS)

Film Thickness: 1.5 – 2.0 mil. or 38 – 50 µm

Smoothness: 20 – 30 µinches

Normal Bake: 20 minutes Metal Temperature @ 338° F (170°C)
See Technical Support Group for Cure Window

Recommended Bath Operating Parameters

pH	4.8 – 5.8	Conductivity	800 – 1500 µS/cm
% Weight Solids	15 – 17	MEQ Acid	20 – 30 MEQ/100 g NV
% P/B	31 – 39 (34 Nom)	Temperature	80 – 98° F

AXALTA

AquaEC™ Electrodeposition Primers

SAFETY DATA SHEET

Section 1. Identification

Product identifier : 4045-5100

Product name : Flow Control Additive (Acrylic)

Date of issue : 9/2/2021

Version : 1

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Solvent.

Uses advised against : Not for sale to or use by consumers.

Supplier's details : Axalta Coating Systems, LLC
Two Commerce Square,
2001 Market Street
Suite 3600
Philadelphia, PA 19109
USA

Product information 855-6AXALTA

Emergency telephone number : (CHEMTREC) - 800-424-9300

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 4
ACUTE TOXICITY (oral) - Category 4
ACUTE TOXICITY (dermal) - Category 3
SKIN CORROSION - Category 1B
SERIOUS EYE DAMAGE - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H227 - Combustible liquid.
H302 - Harmful if swallowed.
H311 - Toxic in contact with skin.
H314 - Causes severe skin burns and eye damage.

Precautionary statements

Prevention : P280 - Wear protective gloves, protective clothing and eye or face protection.
P210 - Keep away from flames and hot surfaces. No smoking.
P270 - Do not eat, drink or smoke when using this product.
P264 - Wash thoroughly after handling.

Section 2. Hazards identification

Response : P304 + P310 - IF INHALED: Immediately call a POISON CENTER or doctor.
P301 + P310, P330, P331 - IF SWALLOWED: Immediately call a POISON CENTER or doctor. Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353, P310 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Immediately call a POISON CENTER or doctor.
P363 - Wash contaminated clothing before reuse.
P302 + P312, P352 - IF ON SKIN: Call a POISON CENTER or doctor if you feel unwell. Wash with plenty of water.
P305 + P351 + P338, P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

Storage : P403 + P235 - Store in a well-ventilated place. Keep cool.

Disposal : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
2-hexyloxyethanol	≥50 - ≤75	112-25-4
2-butoxyethanol	≥50 - <55	111-76-2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes severe burns. Toxic in contact with skin.

Ingestion : Harmful if swallowed.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Section 5. Fire-fighting measures

Specific hazards arising from the chemical : Combustible liquid. In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Section 7. Handling and storage

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Storage code : IIIA

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
2-hexyloxyethanol	None.
2-butoxyethanol	**ACGIH TLV (United States, 1/2021).** TWA: 20 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989). Absorbed through skin.** TWA: 25 ppm 8 hours. TWA: 120 mg/m³ 8 hours. **NIOSH REL (United States, 10/2020). Absorbed through skin.** TWA: 5 ppm 10 hours. TWA: 24 mg/m³ 10 hours. **OSHA PEL (United States, 5/2018). Absorbed through skin.** TWA: 50 ppm 8 hours. TWA: 240 mg/m³ 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Section 8. Exposure controls/personal protection

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/ or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Clear.

Odor : Not available.

Odor threshold : Not available.

pH : Not applicable.

Melting point : Not applicable.

Boiling point : 168 to 208.5°C (334.4 to 407.3°F)

Flash point : Closed cup: 71°C (159.8°F)

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Lower: 1.1%
Upper: 10.6%

Vapor pressure : 0.053 kPa (0.4 mm Hg)

Section 9. Physical and chemical properties

Vapor density : Not available.

Density : 0.895 g/cm³

Solubility : Soluble in the following materials: cold water.

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : 220°C (428°F)

Decomposition temperature : Not applicable.

Viscosity : Dynamic: 15 mPa·s (15 cP)
Kinematic: 17 mm²/s (17 cSt)

Flow time (ISO 2431) : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
2-hexyloxyethanol	LD50 Dermal	Rabbit	720 mg/kg	-
	LD50 Oral	Rat	830 mg/kg	-
2-butoxyethanol	LD50 Dermal	Rat	2010 mg/kg	-
	LD50 Oral	Rat	917 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
2-hexyloxyethanol	Skin - Mild irritant	Rabbit	-	500 mg	-
2-butoxyethanol	Eyes - Moderate irritant	Rabbit	-	24 hours 100 mg	-
	Skin - Mild irritant	Rabbit	-	500 mg	-

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Section 11. Toxicological information

Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
2-butoxyethanol	-	3	-

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes severe burns. Toxic in contact with skin.

Ingestion : Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Section 11. Toxicological information

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	871.33 mg/kg
Dermal	870.33 mg/kg
Inhalation (vapors)	22 mg/l

Section 12. Ecological information

There are no data available on the product itself. The product should not be allowed to enter drains or watercourses waterways.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification	IMDG	IATA
UN number	UN1760	UN1760	UN1760	UN1760	UN1760
UN proper shipping name	Corrosive liquids, n.o.s. (2-hexyloxyethanol)	CORROSIVE LIQUID, N.O.S. (2-hexyloxyethanol)	LIQUIDO CORROSIVO, N. E.P. (2-hexyloxyethanol)	CORROSIVE LIQUID, N.O.S. (2-hexyloxyethanol)	Corrosive liquid, n. o.s. (2-hexyloxyethanol)
Transport hazard class(es)	8 	8 	8 	8 	8 
Packing group	II	II	II	II	II
Environmental hazards	No.	No.	No.	No.	No.

Additional information

DOT Classification : **Limited quantity** Yes.
Packaging instruction Exceptions: 154. Non-bulk: 202. Bulk: 242.
Quantity limitation Passenger aircraft/rail: 1 L. Cargo aircraft: 30 L.
Special provisions B2, IB2, T11, TP2, TP27

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.40-2.42 (Class 8).
Explosive Limit and Limited Quantity Index 1
Passenger Carrying Road or Rail Index 1
Special provisions 16

Mexico Classification : **Special provisions** 274

IMDG : **Emergency schedules** F-A, S-B
Special provisions 274

IATA : **Quantity limitation** Passenger and Cargo Aircraft: 1 L. Packaging instructions: 851. Cargo Aircraft Only: 30 L. Packaging instructions: 855. Limited Quantities - Passenger Aircraft: 0.5 L. Packaging instructions: Y840.
Special provisions A3, A803

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

The actual shipping description for this product may vary based several factors including, but not limited to, the volume of material, size of the container, mode of transport and use of exemptions or exceptions found in the applicable regulations. The information provided in Section 14 is one possible shipping description for this product. Consult your shipping specialist or supplier for appropriate assignment information.

Section 15. Regulatory information

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 304 RQ

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : FLAMMABLE LIQUIDS - Category 4
ACUTE TOXICITY (oral) - Category 4
ACUTE TOXICITY (dermal) - Category 3
SKIN CORROSION - Category 1B
SERIOUS EYE DAMAGE - Category 1

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	2-hexyloxyethanol 2-butoxyethanol	112-25-4 111-76-2	≥50 - ≤75 ≥50 - <55
Supplier notification	2-hexyloxyethanol 2-butoxyethanol	112-25-4 111-76-2	≥50 - ≤75 ≥50 - <55

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

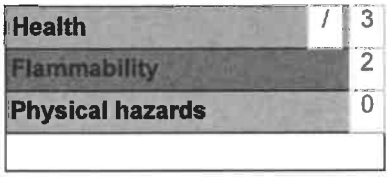
Inventory list

Canada : All components are listed or exempted.

United States : All components are listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

History

Section 16. Other information

Date of issue : 9/2/2021

Version : 1

Product stewardship and regulatory compliance.

Key to abbreviations : ATE = Acute Toxicity Estimate
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Indicates information that has changed from previously issued version.

Notice to reader

This product is intended for industrial use only.

Safety Data Sheet (SDS) content is believed to be accurate as of its issue date, but is subject to change as new information is received by Axalta Coatings Systems, LLC or any of its subsidiaries or affiliates (Axalta). This SDS may incorporate information that has been provided to Axalta by its suppliers. Users should ensure that they are referring to the most current version of the SDS. Users are responsible for following the precautions identified in this SDS. It is the users' responsibility to comply with all laws and regulations applicable to the safe handling, use, and disposal of the product.

Users of Axalta products should read all relevant product information prior to use, and make their own determination as to the suitability of the products for their intended use. Except as otherwise required by applicable law, AXALTA MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The information on this SDS relates only to the specific product identified in Section 1, Identification, and does not relate to its possible use in combination with any other material or in any specific process. If this product is to be used in combination with other products, Axalta encourages you to read and understand the SDS for all products prior to use.

SAFETY DATA SHEET

Section 1. Identification

Product identifier : 629-2251

Product name : Acrylic Med Gray Pig. Feed - AquaECTM)5100

Date of issue : 8/27/2021

Version : 1

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Coating component.

Uses advised against : Not for sale to or use by consumers.

Supplier's details : Axalta Coating Systems, LLC
Two Commerce Square,
2001 Market Street
Suite 3600
Philadelphia, PA 19109
USA

Product information 855-6AXALTA

Emergency telephone number : (CHEMTREC) - 800-424-9300

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SERIOUS EYE DAMAGE - Category 1
SKIN SENSITIZATION - Category 1
GERM CELL MUTAGENICITY - Category 2
CARCINOGENICITY - Category 2
TOXIC TO REPRODUCTION - Category 1B
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 1
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H317 - May cause an allergic skin reaction.
H318 - Causes serious eye damage.
H341 - Suspected of causing genetic defects.
H351 - Suspected of causing cancer.
H360 - May damage fertility or the unborn child.
H370 - Causes damage to organs.
H372 - Causes damage to organs through prolonged or repeated exposure.

Section 2. Hazards identification

Precautionary statements

Prevention : P201 - Obtain special instructions before use.
P280 - Wear protective gloves, protective clothing and eye or face protection.
P260 - Do not breathe vapor.
P270 - Do not eat, drink or smoke when using this product.

Response : P308 + P311 - IF exposed: Call a POISON CENTER or doctor.
P363 - Wash contaminated clothing before reuse.
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P333 + P313 - If skin irritation or rash occurs: Get medical advice or attention.
P305 + P351 + P338, P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

Storage : Not applicable.

Disposal : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number	on TAC list?
titanium dioxide	≥10 - ≤25	13463-67-7	no
butan-2-ol	≤6.4	78-92-2	yes
dibutyltin oxide	≤4.4	818-08-6	no
2-butoxyethanol	≤1.8	111-76-2	yes
Poly(oxy-1,2-ethanediyl), α-[3-[3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4- hydroxyphenyl] -1-oxopropyl]-ω -hydroxy-	≤3	104810-48-2	no
Poly (oxy-1,2- ethanediyl), α-[3-[3-(2H -benzotriazol -2-yl)-5- (1,1-dimethylethyl) -4- hydroxy phenyl] -1-oxopropyl] - ω -[3 - [3 - (2H - benzotriazol-2-yl) -5- (1,1-dimethylethyl) -4-hydroxyphenyl] -1-oxopropoxy]-	≤3	104810-47-1	no
l-(+)-lactic acid	≤1.6	79-33-4	no

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of

Section 4. First aid measures

inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Causes damage to organs following a single exposure if inhaled.

Skin contact : Causes damage to organs following a single exposure in contact with skin. May cause an allergic skin reaction.

Ingestion : Causes damage to organs following a single exposure if swallowed.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
stomach pains
reduced fetal weight
increase in fetal deaths
skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Section 4. First aid measures

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
sulfur oxides
metal oxide/oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Storage code : IIIB

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
titanium dioxide	**ACGIH TLV (United States, 1/2021).** TWA: 10 mg/m³ 8 hours. **OSHA PEL 1989 (United States, 3/1989).** TWA: 10 mg/m³ 8 hours. Form: Total dust **OSHA PEL (United States, 5/2018).** TWA: 15 mg/m³ 8 hours. Form: Total dust
butan-2-ol	**OSHA PEL 1989 (United States, 3/1989).** TWA: 100 ppm 8 hours. TWA: 305 mg/m³ 8 hours. **ACGIH TLV (United States, 1/2021).**

Section 8. Exposure controls/personal protection

	TWA: 100 ppm 8 hours. TWA: 303 mg/m³ 8 hours. **NIOSH REL (United States, 10/2020).** TWA: 100 ppm 10 hours. TWA: 305 mg/m³ 10 hours. STEL: 150 ppm 15 minutes. STEL: 455 mg/m³ 15 minutes. **OSHA PEL (United States, 5/2018).** TWA: 150 ppm 8 hours. TWA: 450 mg/m³ 8 hours.
dibutyltin oxide	**ACGIH TLV (United States, 1/2021). Absorbed through skin.** TWA: 0.1 mg/m³, (as Sn) 8 hours. STEL: 0.2 mg/m³, (as Sn) 15 minutes. **NIOSH REL (United States, 10/2020). Absorbed through skin.** TWA: 0.1 mg/m³, (as Sn) 10 hours. **OSHA PEL (United States, 5/2018).** TWA: 0.1 mg/m³, (as Sn) 8 hours. **OSHA PEL 1989 (United States, 3/1989). Absorbed through skin.** TWA: 0.1 mg/m³, (measured as Sn) 8 hours. Form: Organic
2-butoxyethanol	**ACGIH TLV (United States, 1/2021).** TWA: 20 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989). Absorbed through skin.** TWA: 25 ppm 8 hours. TWA: 120 mg/m³ 8 hours. **NIOSH REL (United States, 10/2020). Absorbed through skin.** TWA: 5 ppm 10 hours. TWA: 24 mg/m³ 10 hours. **OSHA PEL (United States, 5/2018). Absorbed through skin.** TWA: 50 ppm 8 hours. TWA: 240 mg/m³ 8 hours.
Poly(oxy-1,2-ethanediyl), α-[3-[3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4- hydroxyphenyl] -1-oxopropyl]-ω - hydroxy-	None.
Poly (oxy-1,2- ethanediyl), α-[3-[3-(2H -benzotriazol -2-yl)-5-(1,1- dimethylethyl) -4- hydroxy phenyl] -1-oxopropyl] - ω - [3 - [3 - (2H -benzotriazol-2-yl) -5- (1,1-dimethylethyl) -4-hydroxyphenyl] -1-oxopropoxy]-	None.
l-(+)-lactic acid	None.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Section 8. Exposure controls/personal protection

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Gray.

Odor : Not available.

Odor threshold : Not available.

pH : Not applicable.

Melting point : Not applicable.

Boiling point : 98 to 3000°C (208.4 to 5432°F)

Flash point : Closed cup: 93.889°C (201°F)

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Lower: 1.4%
Upper: 9.8%

Section 9. Physical and chemical properties

Vapor pressure : 1.3 kPa (10.1 mm Hg)

Vapor density : Not available.

Density : 1.361 g/cm³

Solubility : Soluble in the following materials: cold water.

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : 201°C (393.8°F)

Decomposition temperature : Not applicable.

Viscosity : Not available.

Flow time (ISO 2431) : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : No specific data.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
butan-2-ol	LC50 Inhalation Gas.	Rat	8000 ppm	4 hours
	LC50 Inhalation Vapor	Rat	48500 mg/m³	4 hours
	LD50 Oral	Rat	2054 mg/kg	-
dibutyltin oxide	LD50 Oral	Rat	44900 µg/kg	-
2-butoxyethanol	LD50 Dermal	Rat	2010 mg/kg	-
	LD50 Oral	Rat	917 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
butan-2-ol	Eyes - Severe irritant	Rabbit	-	0.1 Ml	-
dibutyltin oxide	Eyes - Severe irritant	Rabbit	-	100 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
2-butoxyethanol	Eyes - Moderate irritant	Rabbit	-	24 hours 100 mg	-
	Skin - Mild irritant	Rabbit	-	500 mg	-

Sensitization

Not available.

Section 11. Toxicological information

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
titanium dioxide	-	2B	-
2-butoxyethanol	-	3	-

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
butan-2-ol	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
dibutyltin oxide	Category 1	-	-

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
dibutyltin oxide	Category 1	-	-

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Causes damage to organs following a single exposure if inhaled.

Skin contact : Causes damage to organs following a single exposure in contact with skin. May cause an allergic skin reaction.

Ingestion : Causes damage to organs following a single exposure if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Section 11. Toxicological information

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
stomach pains
reduced fetal weight
increase in fetal deaths
skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : Causes damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : Suspected of causing genetic defects.

Teratogenicity : May damage the unborn child.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : May damage fertility.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	2436.91 mg/kg
Dermal	65793.82 mg/kg
Inhalation (gases)	149968.08 ppm
Inhalation (vapors)	731.38 mg/l

Section 12. Ecological information

There are no data available on the product itself. The product should not be allowed to enter drains or watercourses waterways.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification	IMDG	IATA
UN number	UN3082	UN3082	UN3082	UN3082	UN3082
UN proper shipping name	Environmentally hazardous substance, liquid, n.o.s.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	SUBSTANCIA LIQUIDA POTENCIALMENTE PELIGROSA PARA EL MEDIO AMBIENTE, N.E. P. (PAINT)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PAINT)	Environmentally hazardous substance, liquid, n.o.s. (PAINT)
Transport hazard class(es)	9 	9 	9 	9 	9 
Packing group	III	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	Yes.	Yes.

Additional information

DOT Classification : Non-bulk packages of this product are not regulated as hazardous materials unless transported by inland waterway. This product is not regulated as a hazardous material when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of §§ 173.24 and 173.24a.
Limited quantity Yes.
Packaging instruction Exceptions: 155. Non-bulk: 203. Bulk: 241.
Special provisions 8, 146, 173, 335, IB3, T4, TP1, TP29

Section 14. Transport information

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.43-2.45 (Class 9), 2.7 (Marine pollutant mark).
Non-bulk packages of this product are not regulated as dangerous goods when transported by road or rail.
Explosive Limit and Limited Quantity Index 5
Special provisions 16, 99

Mexico Classification : The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.
Special provisions 274, 331, 335

IMDG : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.
Emergency schedules F-A, S-F
Special provisions 274, 335, 969

IATA : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.
Quantity limitation Passenger and Cargo Aircraft: 450 L. Packaging instructions: 964. Cargo Aircraft Only: 450 L. Packaging instructions: 964. Limited Quantities - Passenger Aircraft: 30 kg. Packaging instructions: Y964.
Special provisions A97, A158, A197

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

The actual shipping description for this product may vary based several factors including, but not limited to, the volume of material, size of the container, mode of transport and use of exemptions or exceptions found in the applicable regulations. The information provided in Section 14 is one possible shipping description for this product. Consult your shipping specialist or supplier for appropriate assignment information.

Section 15. Regulatory information

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 304 RQ

SARA 304 RQ : 3185322036.1 lbs / 1446136204.4 kg [280697111.4 gal / 1062554154.6 L]

SARA 311/312

Classification : SERIOUS EYE DAMAGE - Category 1
SKIN SENSITIZATION - Category 1
GERM CELL MUTAGENICITY - Category 2
CARCINOGENICITY - Category 2
TOXIC TO REPRODUCTION - Category 1B
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 1
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

SARA 313

Section 15. Regulatory information

	Product name	CAS number	%
Form R - Reporting requirements	butan-2-ol 2-butoxyethanol	78-92-2 111-76-2	≤6.4 ≤1.8
Supplier notification	butan-2-ol 2-butoxyethanol	78-92-2 111-76-2	≤6.4 ≤1.8

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

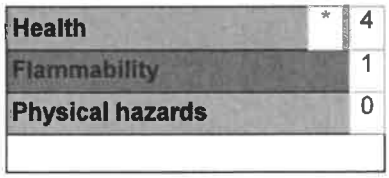
Inventory list

Canada : At least one component is not listed.

United States : All components are listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

History

Date of issue : 8/27/2021

Version : 1

Product stewardship and regulatory compliance.

Key to abbreviations : ATE = Acute Toxicity Estimate
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Indicates information that has changed from previously issued version.

Section 16. Other information

Notice to reader

This product is intended for industrial use only.

Safety Data Sheet (SDS) content is believed to be accurate as of its issue date, but is subject to change as new information is received by Axalta Coatings Systems, LLC or any of its subsidiaries or affiliates (Axalta). This SDS may incorporate information that has been provided to Axalta by its suppliers. Users should ensure that they are referring to the most current version of the SDS. Users are responsible for following the precautions identified in this SDS. It is the users' responsibility to comply with all laws and regulations applicable to the safe handling, use, and disposal of the product.

Users of Axalta products should read all relevant product information prior to use, and make their own determination as to the suitability of the products for their intended use. Except as otherwise required by applicable law, AXALTA MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The information on this SDS relates only to the specific product identified in Section 1, Identification, and does not relate to its possible use in combination with any other material or in any specific process. If this product is to be used in combination with other products, Axalta encourages you to read and understand the SDS for all products prior to use.

SAFETY DATA SHEET

Section 1. Identification

Product identifier : AquaEC 5100

Product name : AquaEC™ 5100 Resin Feed

Date of issue : 7/5/2021

Version : 3

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Coating component.

Uses advised against : Not for sale to or use by consumers.

Supplier's details : Axalta Coating Systems, LLC
Two Commerce Square,
2001 Market Street
Suite 3600
Philadelphia, PA 19109
USA

Product information 855-6AXALTA

Emergency telephone number : (CHEMTREC) - 800-424-9300

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN IRRITATION - Category 2
SKIN SENSITIZATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : H315 - Causes skin irritation.
H317 - May cause an allergic skin reaction.
H373 - May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

Prevention : P280 - Wear protective gloves.
P260 - Do not breathe vapor.
P264 - Wash thoroughly after handling.

Section 2. Hazards identification

Response : P314 - Get medical advice or attention if you feel unwell.
P362 + P364 - Take off contaminated clothing and wash it before reuse.
P363 - Wash contaminated clothing before reuse.
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P333 + P313 - If skin irritation or rash occurs: Get medical advice or attention.

Storage : Not applicable.

Disposal : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Hexane, 1,6-diisocyanato-, homopolymer, Me Et ketone oxime-blocked	≥10 - ≤25	85940-94-9
1-methoxy-2-propanol	≤3	107-98-2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention following exposure or if feeling unwell. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention following exposure or if feeling unwell. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Section 4. First aid measures

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store between the following temperatures: 5 to 30°C (41 to 86°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Storage code : IIIB

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Hexane, 1,6-diisocyanato-, homopolymer, Me Et ketone oxime-blocked	None.
1-methoxy-2-propanol	**ACGIH TLV (United States, 3/2020).** TWA: 50 ppm 8 hours. TWA: 184 mg/m³ 8 hours. STEL: 100 ppm 15 minutes. STEL: 369 mg/m³ 15 minutes. **OSHA PEL 1989 (United States, 3/1989).** TWA: 100 ppm 8 hours. TWA: 360 mg/m³ 8 hours. STEL: 150 ppm 15 minutes. STEL: 540 mg/m³ 15 minutes. **NIOSH REL (United States, 10/2016).** TWA: 100 ppm 10 hours. TWA: 360 mg/m³ 10 hours. STEL: 150 ppm 15 minutes. STEL: 540 mg/m³ 15 minutes.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : White.

Odor : Not available.

Odor threshold : Not available.

pH : 3.8 to 5.3

Melting point : Not applicable.

Boiling point : Not applicable.

Flash point : Closed cup: 101°C (213.8°F) [Product does not sustain combustion.]

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : 1.9 kPa (14.4 mm Hg)

Vapor density : Not available.

Density : 1.05 g/cm^3

Solubility : Soluble in the following materials: cold water.

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : 270°C (518°F)

Decomposition temperature : Not applicable.

Viscosity : Dynamic: >718 mPa·s (>718 cP)
Kinematic: >6.84 cm^2/s (>684 cSt)

Flow time (ISO 2431) : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : No specific data.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Hexane, 1,6-diisocyanato-, homopolymer, Me Et ketone oxime-blocked	LD50 Dermal	Rat	2670 mg/kg	-
	LD50 Oral	Rat	2010 mg/kg	-
1-methoxy-2-propanol	LD50 Dermal	Rabbit	13 g/kg	-
	LD50 Oral	Rat	6600 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
1-methoxy-2-propanol	Skin - Mild irritant	Rabbit	-	500 mg	-

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
1-methoxy-2-propanol	Category 3	-	Narcotic effects

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Hexane, 1,6-diisocyanato-, homopolymer, Me Et ketone oxime-blocked	Category 2	-	-

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Section 11. Toxicological information

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : May cause damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	18272.73 mg/kg
Dermal	24272.73 mg/kg

Section 12. Ecological information

There are no data available on the product itself. The product should not be allowed to enter drains or watercourses waterways.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-	-
Transport hazard class(es)	-	-	-	-	-
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

The actual shipping description for this product may vary based several factors including, but not limited to, the volume of material, size of the container, mode of transport and use of exemptions or exceptions found in the applicable regulations. The information provided in Section 14 is one possible shipping description for this product. Consult your shipping specialist or supplier for appropriate assignment information.

Section 15. Regulatory information

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 304 RQ

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : SKIN IRRITATION - Category 2
SKIN SENSITIZATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

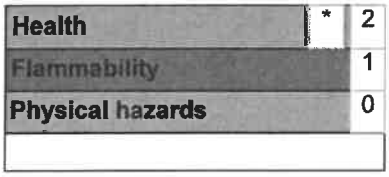
Inventory list

Canada : At least one component is not listed.

United States : All components are listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



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National Fire Protection Association (U.S.A.)

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

History

Date of issue : 7/5/2021

Version : 3

Product stewardship and regulatory compliance.

Key to abbreviations : ATE = Acute Toxicity Estimate
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)

Section 16. Other information

UN = United Nations

Indicates information that has changed from previously issued version.

Notice to reader

This product is intended for industrial use only.

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Appendix E– Coating System Design Information

THERMA-TRON-X, INC.

INDUSTRIAL FINISHING SYSTEMS I WATER AND WASTEWATER TREATMENT SOLUTIONS
HEAT PROCESSING EQUIPMENT I MATERIAL HANDLING INNOVATIONS

April 14, 2021

ARCIMOTO
2034 W. 2nd Ave.
Eugene, OR 97402

Attention: Mr. Tim Hynen

Subject: Electrocoat System Budget Quotation # W21003

Dear Mr.: Hynen

Per your request, I am sending this budget quotation for an SST electrocoat system for coating various metal parts in your new plant. The layout as shown on drawing W21003 is for an SST system with a 7-stage zirconium pretreatment, and a cathodic e-coat with three stage post rinse.

The SST system proposed herein is designed to process 20 loads/hour. Up to 320 square feet of parts can be placed on each load, up to the maximum weight capacity of 1,200 lbs. per load bar for parts, racks and TTX load bars. The system design part envelope is 4'-0" long x 6'-0" high x 10'-0" wide.

UTILITIES REQUIRED:

Power:	480 Volts, 3 Phase, 60 Hz.
Control:	120 Volts, 1 Phase, 60 Hz.
Heat Source:	Natural Gas
Compressed Air:	80 PSIG
RO Water:	50 PSIG Minimum

CONNECTED LOADS:

The following utility capacities are submitted for preliminary information only and should not be used for final design purposes. Drawings will be submitted indicating capacities and approximate locations of final connections upon completion of engineering.

480V Electric: Total disconnect combined sizing of * amps for * FLA. Operating might be 80% of FLA. (* estimate to follow).

Natural Gas: 5,800,000 BTU/HR total burner connected load not operating load which will be less.

Compressed Air: 200 CFM nominal.

Water: 30 GPM feed for RO system, 80 GPM when periodically filling process tanks.

Sewer: 20 GPM maximum.

PROCESS SEQUENCE:

Load Size: WIDE	4'-0" Long
	6'-0" High
	10'-0" Wide
Wide Loads/Cycle	One (1)
Load Size: NARROW	1'-9" Long
	6'-0" High
	10'-0" Wide
Narrow Loads/Cycle	Two (2)
Cycles/hour:	Twenty (20)
Surface Area (Parts)	300 Sq. Ft./Cycle
Surface Area (Parts)	6,000 Sq. Ft./ Hr.
Weight (Parts + Hangers + Load Bars)	1,200 Lbs./Cycle
Weight (Parts + Hangers + Load Bars)	24,000 Lbs./Hr.
Coating Thickness	1.0 mil

PROCESS SEQUENCE:

Tank	Description
	Shift out of Oven
	Load/Unload (Carts)
	Load Bar Transfer
1	Immersion Hot Water Rinse 120 Sec. @ 150 F
2	Immersion Alkaline Clean 120 Sec. @ 150 F
3	Immersion Water Rinse 120 Sec. @ Ambient
4	Immersion RO Rinse 120 Sec. @ Ambient
5	Immersion Nano Conversion Coating 120 Sec. @ Ambient
6	Immersion Water Rinse 120 Sec. @ Ambient
7	Immersion RO Rinse 120 Sec. @ Ambient
8	Immersion Electrocoat 120 Sec. @ 85 F
9	Immersion Post Rinse 1, 120 Sec. @ Ambient
10	Immersion Post Rinse 2, 120 Sec. @ Ambient
11	Immersion Post Rinse 3, 120 Sec. @ Ambient
	Drip-Off 1, 3 Min.
	Drip-Off 2, 3 Min. (Shift into Oven)
	ED Cure 39 Min. @ 375 F

SYSTEM SCOPE:

Seven (7) Stage Pretreatment System

- Immersion processing
- 304 stainless steel tank construction on all stages
- Double welded tank construction
- All tanks continuously sloped to a drain sump
- All iron vertical pump on stages 1 & 2
- Stainless steel mixers on all remaining stages
- 304 SS immersion burner tube systems stages 1 & 2
- Bag filters on stages 1 & 2
- Schedule 40 black iron pipe on stages 1 & 2
- Automatic chemical feed for stages 2 and 5
- Cartridge filtration for stage 5
- Oil separator for stage 2
- Counterflow water conservation arrangement
- Stainless steel enclosure around tank section with tempered glass windows along both sides of the tank system. Windows are also removable to allow

full access to all the tanks when necessary, from platforms as shown on layout
- Lighting inside of enclosure provides good visibility of parts during coating process
- Exhaust system in enclosure provides vapor collection for improved plant environment

One (1) Cathodic Epoxy Electrocoat System
- 4,600-gallon tank volume
- 120 second coating time @ 20 loads per hour
- Rectifier sized for 400 amps @ 400 Volts
- Rectifier sized for a maximum design film build of 1.0 mil
- One (1) set stainless steel flushable anodes @ 5.0 amps/sq.ft.
- Epoxy/fiberglass lined stainless steel electrocoat tank
- Stainless steel wetted vertical ultrafilter pump with tank eductor system for paint agitation
- One TTX (1) ultrafiltration system with two (2) 8" cartridge and three (3) bag filters
- Schedule 80 PVC piping
- Automatic paint feed system including pneumatic pumps, hose and filter/regulator for two (2) component paint
- Automatic chilled water paint cooling system including 34.8-ton air cooled chiller, external plate and frame heat exchanger, controls and all interconnecting piping
- Automatic paint level control
- Stainless steel enclosure around tank section with tempered glass windows along both sides of the tank system. Windows are also removable to allow full access to all the tanks when necessary, from platforms as shown on layout
- Lighting inside of enclosure provides good visibility of parts during coating process
- E-coat storage system, includes one (1) 5,300-gallon tank, transfer pump and interconnecting piping including bag filtration
- Auto voltage control

One (1) Three (3) Stage Post Rinse System
- Immersion permeate rinsing
- 304 stainless steel tanks
- Stainless steel mixers on all three immersion permeate stages
- One (1) Bag filter per stage
- Gravity counterflow system to e-coat tank
- Two (2) drip off stations
- Stainless steel enclosure around tank section with tempered glass windows along both sides of the tank system. Windows are also removable to allow full access to all the tanks when necessary, from platforms as shown on layout

- Lighting inside of enclosure provides good visibility of parts during coating process

Electrocoat Bake Oven
- 39-minute cure @ 375°F
- 450°F maximum operating temperature
- TTX designed burner box with recirculation fans and burner assembly
- High circulation rate with uniform temperature gradient
- Remote start-stop station
- Caulked panel joints
- Side entry and exit
- Interior aluminized overhead steel ductwork
- 6" Insulated oven panels with aluminized steel interior and exterior skins
- Remote start-stop station
- Structural steel supports

SST Conveyor
- Stainless steel track above the pretreatment tanks
- Two horizontal indexing devices
- Process lift device over tanks
- Two oven side shift devices
- Hydraulic operation
- PLC control system
- Slide-rails included
- SST load bars included to fill SST system

Automatic Transfer Device
- Transfers uncoated product from the cart to the SST
- Transfers electrocoated product from the SST to the cart

Cart Prototype
- One (1) manual push prototype cart to interface with SST and SST load bars

Holding Tanks & Collection Systems
- One (1) sumpless collection system consisting of a 2" cast iron AODP with 2" diameter PVC & CPVC transfer piping for transferring alkaline solutions between process tanks and the alkaline holding tank
- One (1) sumpless collection system consisting of a 2" polypropylene AODP with 2" diameter PVC & CPVC transfer piping for transferring acidic solutions between process tanks and the pretreatment acidic holding tank
- One (1) sumpless collection system consisting of a 1" polypropylene AODP with 1.5" diameter PVC transfer piping for transferring e-coat waste solutions to the e-coat waste holding tank
  - One (1) 5,000-gallon poly alkaline holding tank
  - One (1) 5,000-gallon poly acidic/phosphate holding tank
  - One (1) 500-gallon poly e-coat waste tank

One (1) Continuous Waste Treatment System
- 20 GPM continuous system
- Tanks, level controls, and transfer pumps
- Chemical feed tanks, clarifier, & filter press
- Treat for pH (9 - 9.5), suspended solids, oils, & metals
- Mechanical and electrical installation
- Effluent per Federal Regulations
- Platform with stairs

One (1) Single Pass RO Water Treatment System
- TTX single pass 20 GPM RO system for use with feed water **under** 600 micromhos. TTX will need water analysis from supplier of water to the RO system for final design of RO system
- Provides high quality, low conductivity water required for e-coat operations
- 70% recovery rate
- Anti-scalant injection feed system eliminates need for a water softener
- 4,000-gallon polyethylene holding tank for water storage that will be used to feed the system
- Re-pressurization pump and 2" diameter PVC distribution piping system with UV light