

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

A161463413

FACILITY: Barnes Aerospace		SRN / ID: A1614
LOCATION: 5300 AURELIUS RD, LANSING		DISTRICT: Lansing
CITY: LANSING		COUNTY: INGHAM
CONTACT: Vivian Rowles , EHS Manager		ACTIVITY DATE: 06/29/2022
STAFF: Michelle Luplow	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Inspection to determine compliance with PTI No. 495-85B		
RESOLVED COMPLAINTS:		

Inspected by: Michelle Luplow

Barnes Aerospace Personnel Present:

Vivian Rowles, Health, Safety and Environmental Manager (vrowles@barnesaero.com)

Purpose

Conduct an announced, scheduled onsite compliance inspection of Barnes Aerospace to determine compliance with PTI 495-85B for alkaline and acidic metal parts cleaning processes, and 494-85 for a vapor degreaser.

Barnes Aerospace was last inspected July 2015.

Facility Background

Barnes Aerospace is primarily engaged in the manufacturing of components for the aviation industry. Metal blanks (99% titanium, 1% stainless steel) are heated and formed in presses. A spray coating is applied to the part prior to forming so that it will release from the mold. The formed parts go through alkaline and acidic dip processes to clean and treat the metal.

The alkaline and acid cleaning operations predominantly run 24 hours per day, 5 days per week. The alkaline bath is heated, whereas the acid bath operates at room temperature. The alkaline bath is maintained at its heated temperature 7 days per week for energy efficiency purposes.

Barnes Aerospace does not currently have any emergency generators onsite; however, they plan to install a natural gas-fired backup generator as exempt by quarter 4 of 2022 or quarter 1 of 2023.

I will request that PTI 494-85 be voided because Barnes Aerospace no longer has a vapor degreaser.

Inspection

I arrived at Barnes Aerospace at approximately 8:00 a.m. on June 29, 2022 and met with V. Rowles.

Table 1 contains a list of all permitted and exempt equipment which were verified during the inspection.

Table 1. Equipment located onsite

Equipment	Description	Control Device	PTI/Exemption	Compliance
EUALKSCBR Model HFS-102-16K (water scrubber)	Alkaline cleaning process for metal parts. 6 tanks	15,750 cfm Packed bed scrubber	495-85B	Compliance
EUACIDSCBR Model HFS-105-22K-R (water & NaOH scrubber)	Acid cleaning process for metal parts. 6 tanks	22,650 cfm Packed bed scrubber	495-85B	Compliance
8 Tooling Stations	Metal polishing/grinding processes with hand-held pneumatic tools	Wet dust collector (machining table with water control), exhausts to in-plant environment.	Rule 285(2)(I)(vi) (B)	Compliance
Metal machining processes	Bandsaws and 6 CNC machines (milling), lathing, deburring	NA	Rule 285(2)(I)(vi) (B)	Compliance
2 Coating booths	Spray booths used to apply a mold release agent	Fabric filter control	Rule 287(2)(c)	See "Exemptions Discussion"
Forming ovens	Electric ovens and associated dies and forms aka "Hot Form Presses"	NA	Rule 282(2)(a)(1)	See "Exemptions Discussion"

4 Shot blasting stations	<p>Shot blasting units using aluminum oxide as a blasting material.</p> <p>Units were not operating during inspection</p>	Baghouse to in-plant environment	Rule 285(2)(l)(vi)(B)	Compliance
Welding	stick and seam welding stations	NA	Rule 285(2)(i)	Compliance
Parts Washer	<p>One 5' x 2' parts washer (air/vapor interface 10 ft²)</p> <p>Unit uses Barsol D-660</p> <p>Installed in 2012; Operating instructions are present on the unit.</p>	NA	Rule 281(2)(h)	Compliance
2 Natural gas-fired Boilers	<p>Superior Fire tube boilers.</p> <p>Model #: GMS-1600-LP-HEP</p> <p>Manufacture date: 2020</p> <p>Heat Input Capacity: 1,650,000 Btu/hr</p> <p>Units are used to heat the water for the alkaline cleaning process.</p>	NA	Rule 282(2)(b)(i)	Compliance
Dry Ice blasting machine	Uses dry ice (CO ₂) to freeze off the carbon component of the lubricating oil.	NA	Rule 290 TBD	TBD, see "Exempti Discussion"
	Titanium/steel metal stamping	NA	Rule 285(2)(l)(i)	Compliance

3 Metal Stamping Machines				
2 electric Heat treat furnaces	Used to change the hardness of the metal materials	NA	Rule 282(2)(a)(i)	Compliance
Miscellaneous cleanup activities	Use of isopropyl alcohol, acetone, toluene and methylpropyl ketone for various cleanup activities	NA	Rule 290	See "Exemptions Discussion"

PTI 495-85B

Permit for a metal parts alkaline cleaning process consisting of 6 tanks (EUALKSCRBR) and a metal parts acid cleaning process also consisting of 6 tanks (EUACIDSCRBR). The emissions from the alkaline and acid cleaning processes each have their own packed bed scrubber system to control emissions. EUALKSCRBR and EUACIDSCRBR are contained under flexible group ID "FGALKACIDSCRBS."

FGALKACIDSCRBS

There are no Emission Limits, Material Limits, or Testing/Sampling requirements for this flexible group at this time.

Process/Operational Limits, Monitoring & Recordkeeping

Barnes Aerospace shall not operate FGALKACIDSCRBS unless the associated packed bed scrubber systems for the alkaline and acid cleaning lines are installed, maintained and operated in a satisfactory manner, including maintaining the pressure drop across each of the scrubber systems per manufacturer specifications; maintaining the liquid flow rate as specified by the manufacturer; and maintaining the pH level of the acid packed bed scrubber according to the manufacturer.

I reviewed the manufacturer operating specifications for each packed bed scrubber system. Tables 2 and 3 contain the operating parameters for liquid flow rate and pressure drop, based on the manufacturer's recommendations. Note that the manufacturer does not specify an operating range, nor whether the operating value is the "low" or "high" of an operating range. For documentation purposes, AQD has labeled these as the "high" operating value. The pH appropriate operating range is not specified by the manufacturer. V. Rowles said that the pH is kept between 5 and 10.

Table 2. Alkaline (EUALKSCRBR) Packed Bed Scrubber operating ranges and actual readings

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Alkaline Scrubber	Low	High	Alarm Setting	Actual (during inspection)
Liquid Flow (recirculation) rate (gpm)	NA	72	NA	87.75 (9:31 a.m.)
Pressure Drop (in. H ₂ O)	NA	1.25	1.25	0.4

Table 3. Acid (EUACIDCRBR) Packed Bed Scrubber operating ranges and actual readings

Acid Scrubber	Low	High	Alarm Setting	Actual (during inspection)
Liquid Flow (recirculation) rate (gpm)	NA	192	NA	204.8 (9:31 a.m.)
pH	5	10	NA	3.5
Pressure Drop (in. H ₂ O)	NA	2.0	2.0	1.1

V. Rowles provided additional manufacturer's recommendations (Table 4) for flow rate operating ranges for both scrubbers. According to V. Rowles, these ranges were set early on when the manufacturer of these systems was still in business. She stated these (high-high and low-low) are the flow rate ranges they are using to ensure the scrubbers are properly operating. She said Pro-MEC will visit the site in July to replace the scrubber packings and at that time she will confirm with them the optimum operating range for each scrubber system's flow rate, to reconcile the differences between the manufacturer's operating values and the values in Table 4.

Table 4. Flow Rate Acceptable Ranges

Flow Rate Acceptable Ranges	Alkaline (gpm)	Acid (gpm)
High-High	145	300

High	120	250
Low	30	150
Low-Low	20	100
Flow Rates (recorded on 6/29/22)	87.75	204.8

During the inspection, the pH, pressure drop, and recirculation flow rates were all within the established operating ranges provided by V. Rowles.

Records for pH, pressure drop, and recirculation flow rates to the scrubbers were requested and reviewed for Jan – June 2022. Flow rates on each scrubber and the pH on the acid scrubber are recorded every 5 seconds via computer program, meeting the requirement to record the flow rate and pH daily. Pressure drop is not continuously monitored or continuously recorded, nor is it required by the permit that these data be continuous. Pressure drops on the scrubbers are recorded on a daily basis by hand. Daily monitoring/recording is done by hooking the pressure drop hose to the meter to get a reading. Without the hose installed on the meter, readings cannot be taken. Barnes Aerospace staff explained that they keep this line disconnected to ensure the lines will not freeze and that it has been this way since 2018. The system will be upgraded in July 2022 to monitor pressure drop digitally, thereby allowing Barnes Aerospace to monitor and record the pressure drop continuously.

The records indicate multiple instances where the pH, acid scrubber flow rate and alkaline scrubber flow rate were outside the established operating parameters. Table 5 contains the dates that these instances occurred.

Table 5. pH, Acid Scrubber Flow and Alkaline Scrubber Flow dates when operating outside range

pH	Acid Scrubber Flow	Alkaline Scrubber Flow
1/4/22	2/10 – 2/11/22	2/24/22
1/19/22	2/14 – 2/17/22	4/26/22
2/7/22	2/19 – 3/5/22	5/2/22
2/28/22	3/7 – 3/8/22	

3/3/22	4/16/22	
3/5/22		
3/17/22		
3/28 – 3/29/22		
6/3 – 6/5/22		
6/10 – 6/12/22		

A post-inspection call was made with Barnes Aerospace to discuss these data on 7/18/22.

Discussion: Acid Scrubber pH

In all pH instances, the pH dropped below the “low” of the operating range (5). V. Rowles said that the January 4 and March 17 drops in pH were the result of calibrations. She said Barnes Aerospace believes the remainder of the pH drops were the result of delays in response to the dosing to keep pH levels within the 5 – 10 operating range. As discussed under “Rule 912” of this report, Barnes Aerospace is upgrading their dosing system, which they believe will address this issue. Future inspections will be necessary to determine if the pH out-of-operating-range situations have been addressed with the system upgrades.

Discussion: Acid & Alkaline Scrubber Flow Rate

All acid and alkaline scrubber flow rates outside the operating range noted in Table 4 were below the “low-low” end of the range.

For these instances, V. Rowles said Barnes Aerospace has had consistent issues with the flow rate sensors: the flow is being maintained, but the flow rate sensor malfunctions and does not read the flow. Barnes Aerospace believes Phase 3 of their upgrading plan will address this issue: redundant flow sensors will be installed so that in the event one sensor malfunctions, the backup sensor will continue to monitor the flow. She said that in addition to Phase 3, Barnes Aerospace has also implemented a more robust preventative maintenance plan on these sensors: sensors will be cleaned on a quarterly basis. V. Rowles said that prior to implementing this cleaning schedule (first cleaning was in April/May 2022) the sensors were only cleaned when something in the system malfunctioned. I requested that these preventative maintenance measures be included in the MAP/PMP (See “Rule 912” of this report).

Rule 912

In addition to these noted instances, Barnes Aerospace notified AQD of Rule 912 exceedances in April and June 2022. Water flow loss in excess of 2 hours for both the acid and alkaline scrubbers was documented in April and June. The written report required under Rule 912 was received in a timely manner and describes the issue as a disruption of the flow to both scrubbers due to pH sensors tripping the Level 3 Alarm (pH was less than the 5.5 –

10.5 range allowed in the wastewater discharge permit). Wastewater entering the pH adjustment tank tripped the sensor, which automatically shuts down all discharge valves (to prevent noncompliance with Barnes Aerospace's wastewater discharge permit), as well as all water supply lines to the scrubbers to prevent overflow. Per the written report, Barnes Aerospace has established phases for correcting this issue to prevent a reoccurrence: 1) train employees to ensure all alarms are acknowledged in a timely manner 2) Upgrade the acid and alkaline lines with an acid dosing system that adjusts the pH in a more efficient and effective manner 3) Reprogram the water supply logic to ensure that water supply to the scrubbers goes uninterrupted in the event of a Level 3 alarm (Phase 2 of the upgrading process – planned for September 8, 2022).

During the inspection, V. Rowles and I discussed Barnes Aerospace's need for a Malfunction Abatement Plan/Preventative Maintenance Plan for the two scrubber systems. The tentative deadline for submitting this plan is August 30, 2022, which will include addressing the manufacturer's recommendations for pH, flow rate and pressure drop operating ranges on each scrubber. I brought to V. Rowles attention that the pH range of 5-10 that they are operating at should be investigated, as proper operation of an acid scrubber that uses recirculation water typically would have pH operating ranges at 7 and above. I requested that they investigate this further with their scrubber system contractor to establish and appropriate pH range for optimum scrubber operation and to include this range in the MAP/PMP.

Exemptions Discussion

Coating booths

Barnes Aerospace operates two coating booths under exemption Rule 287(2)(c). Records for 2022 (Jan – May) were provided. Records indicate that all coating usages during this time period were no more than 70 gallons per month, and therefore it appears Barnes Aerospace is meeting the exemption requirement of using no more than 200 gallons of coating per month per coating line (booth). Each booth is considered its own separate coating line, therefore each booth is allowed to operate with up to 200 gallons per month.

Rule 287(2)(c) also requires that the filters are installed, maintained, and operating properly. During the inspection I noted some of the filters were not installed properly: gaps were noted around some of the filter squares. I brought this to V. Rowles attention. V. Rowles sent a follow-up email noting that the Supervisor has been made aware of the filter issue and that the current status of the filters has been corrected.

Formkote T-50 is the mold release agent/coating Barnes Aerospace predominantly uses in these booths. It contains up to 90 wt% total HAP (toluene, xylene, ethyl benzene); 75 wt% is toluene. Some quick calculations conducted on AQD's part suggest that if 200 gallons of T-50 is used per month per booth, 14.4 tons toluene per year would be emitted for both booths combined, which exceeds the major source threshold of 10 tons per year for HAPs. AQD has requested that Barnes Aerospace submit a Potential to Emit (PTE) demonstration for all HAPs facility-wide. A determination will be made upon the PTE submittal whether this facility is a major source of HAPs and therefore eligible for a Title V ROP.

Miscellaneous Cleanup

Barnes Aerospace uses isopropyl alcohol, acetone, toluene, methylethyl ketone and methylpropyl ketone for various cleanup activities. Barnes Aerospace has proposed to conduct these miscellaneous cleanup activities under exemption Rule 290.

The total emissions from all noncarcinogenic VOC's is limited to 1,000 lb/month. Records were supplied for January – June 2022. The highest total VOC emissions from the miscellaneous cleanup activities was 152 lbs. Barnes Aerospace appears to be meeting the Rule 290 exemption requirements at this time.

Dry Ice Machine

Dry ice (CO₂) is used to freeze off the carbon component of the lubricating oil from the mold forms. This equipment is likely installed under Rule 290; however, the company has yet to submit records under Rule 290 to demonstrate that CO₂ equivalent emissions are less than 6,250 tons per month.

Forming Ovens with Mold Release

The forming ovens are used to mold metal. A mold release agent is applied to the molds prior to metal forming processes. The forming ovens appear to be exempt per Rule 282(2)(a)(i): they are electrically heated and used for forging metals that does not involve the use of oil-coated parts. Upon review of the SDS for the T-50 mold release, the mold release is primarily solvent with a 5% carbon content; there is no indication that the 5% is oil.

Compliance Statement

Barnes Aerospace appears to be in compliance with PTI No. 495-85B at this time. Future inspections will be necessary to ensure the upgrades to the scrubber systems is sufficient. Followup will be conducted on HAP PTE, MAP/PMP development, and the dry ice blasting machine exemption.



Image 1(Pressure Drop) : Monitors used for pressure drop and alkaline and acid scrubber systems.



Image 2(Stacks) : Alkaline and acid scrubber stacks. No opacity noted.



Image 3(Coating Booth) : One of 2 coating booths. Note gaps in filters along edges of each square.



Image 4(Coating Booth 2) : Coating booth filters with gaps and buckles around edges.

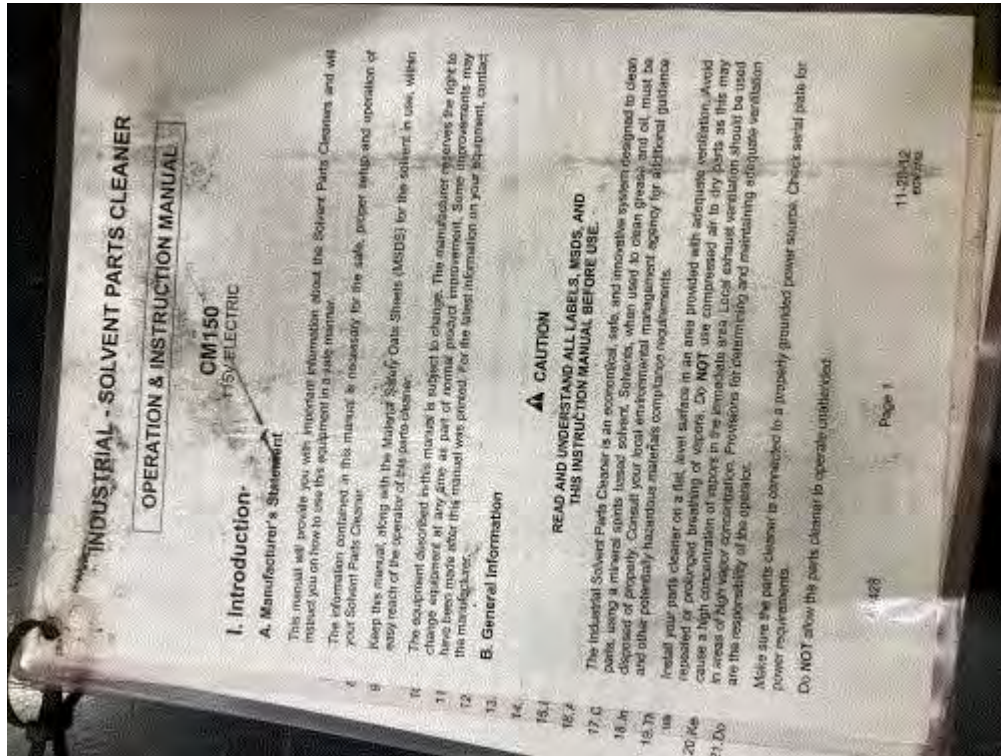


Image 5(Op Instructions) : Parts Washer Operating Instructions

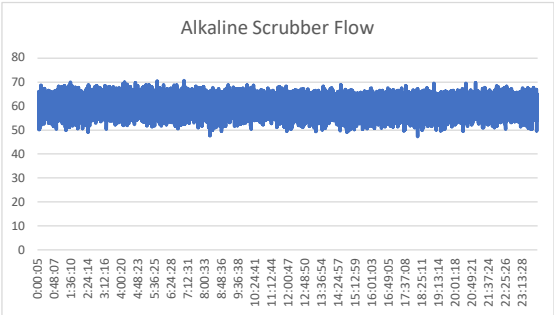
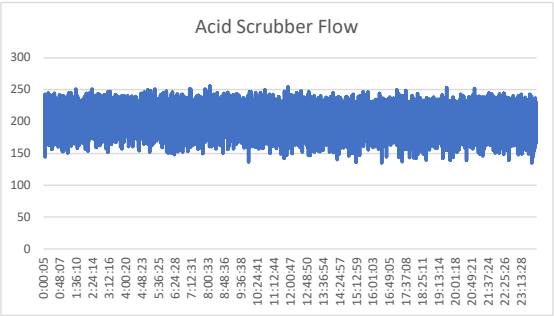
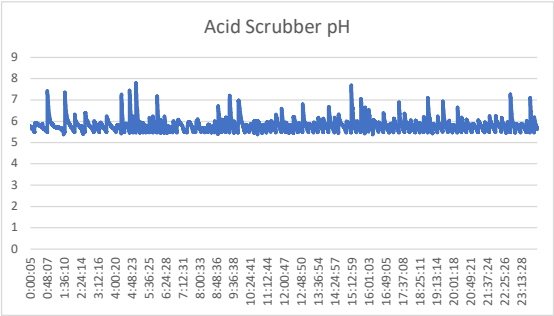


Image 6(Shot Blasting) : Aluminum Oxide shot blasting stations, vented to in-plant environment

NAME Michelle LuplowDATE 7/21/22SUPERVISOR RB

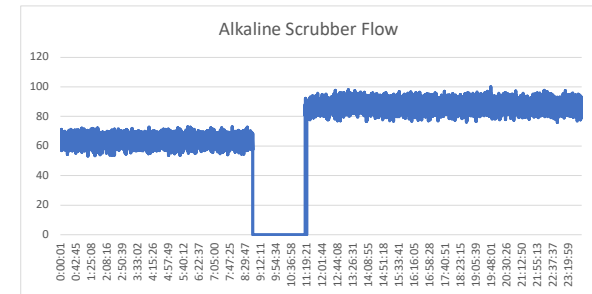
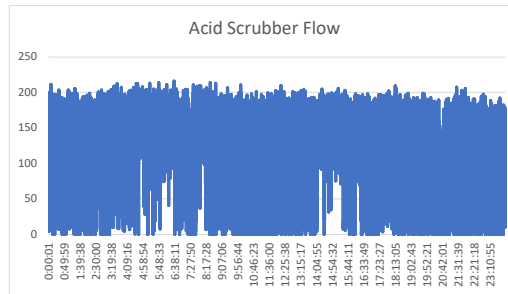
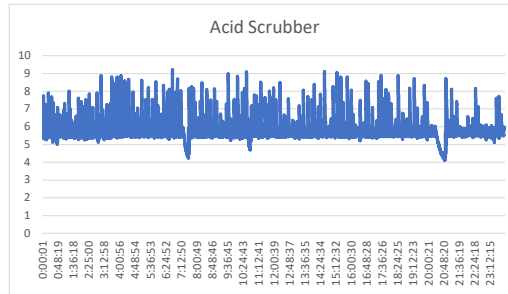
Acid Scrubber (pH & Flow) + Alkaline Scrubber Flow (February 1, 2022)

Date	Time	[EtchLine]	[EtchLine]	[EtchLine]	PvnAlkScrubTkFlow
2/1/2022	0:00:05	5.731818	222.5182	63.49	
2/1/2022	0:00:10	5.745	191.7091	59.195	
2/1/2022	0:00:15	5.754091	213.8091	64.68	
2/1/2022	0:00:20	5.735909	197.8182	63.69	
2/1/2022	0:00:25	5.758636	187.3909	57.96	
2/1/2022	0:00:30	5.745	204.4636	58.255	
2/1/2022	0:00:35	5.735909	219.2818	60.085	
2/1/2022	0:00:40	5.758636	226.6545	64.33	
2/1/2022	0:00:45	5.740455	200.5091	60.085	
2/1/2022	0:00:50	5.740455	199.0727	58.55	
2/1/2022	0:00:55	5.754091	214.2545	54.7	
2/1/2022	0:01:00	5.740455	189.5546	62.06	
2/1/2022	0:01:05	5.754091	204.5546	61.37	
2/1/2022	0:01:10	5.754091	202.8455	60.825	
2/1/2022	0:01:15	5.735909	201.4091	59.935	
2/1/2022	0:01:20	5.754091	178.1455	61.765	
2/1/2022	0:01:25	5.735909	183.8909	63.64	
2/1/2022	0:01:30	5.740455	204.6455	59.44	
2/1/2022	0:01:35	5.749546	221.0818	56.575	
2/1/2022	0:01:40	5.727273	216.9454	63	
2/1/2022	0:01:45	5.745	217.4909	60.725	
2/1/2022	0:01:50	5.727273	192.4273	58.455	
2/1/2022	0:01:55	5.722727	167.8091	58.9	
2/1/2022	0:02:00	5.740455	205.6273	56.92	
2/1/2022	0:02:05	5.713636	210.3909	58.6	
2/1/2022	0:02:10	5.718182	219.1091	63.89	
2/1/2022	0:02:15	5.722727	226.6545	57.66	
2/1/2022	0:02:20	5.704545	197.0091	64.73	
2/1/2022	0:02:25	5.718182	211.2909	62.11	
2/1/2022	0:02:30	5.695909	176.7091	62.305	



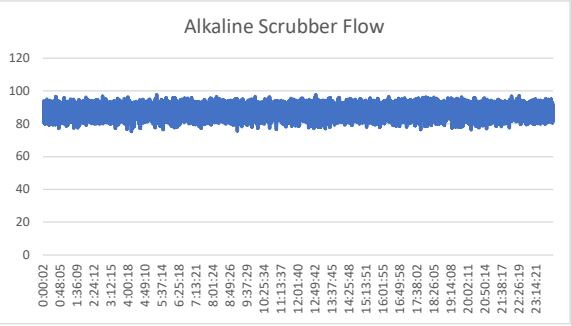
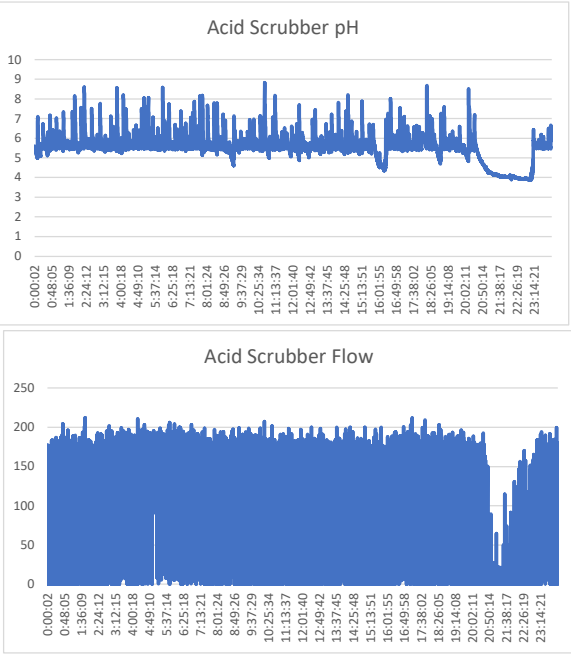
February 24, 2022 pH, Acid flow, Alkaline Flow (Sensor Errors on flows)

Date	Time	[EtchLine]	[EtchLine]	[EtchLine]	[EtchLine]	PvndiCond
2/24/2022	0:00:01	5.686818	140.1455	62.605	0.177994	
2/24/2022	0:00:06	5.628182	108.8818	64.48	0.194175	
2/24/2022	0:00:11	5.601364	123.2545	59.985	0.194175	
2/24/2022	0:00:16	5.579091	4.136364	66.16	0.194175	
2/24/2022	0:00:21	5.574545	161.2545	66.555	0.194175	
2/24/2022	0:00:26	5.560909	181.6455	67.645	0.177994	
2/24/2022	0:00:31	5.547273	176.4364	61.12	0.177994	
2/24/2022	0:00:36	5.551818	134.6636	66.9	0.194175	
2/24/2022	0:00:41	5.534091	173.5636	66.21	0.177994	
2/24/2022	0:00:46	5.525	185.3273	61.91	0.194175	
2/24/2022	0:00:51	5.525	180.0273	66.16	0.177994	
2/24/2022	0:00:56	5.529545	135.3818	68.235	0.194175	
2/24/2022	0:01:01	5.529545	193.9545	65.47	0.194175	
2/24/2022	0:01:06	5.520454	159.7273	60.38	0.194175	
2/24/2022	0:01:11	5.525	133.8545	66.705	0.194175	
2/24/2022	0:01:16	5.534091	161.2545	64.135	0.177994	
2/24/2022	0:01:21	5.543182	165.3	62.405	0.177994	
2/24/2022	0:01:26	5.529545	5.581818	66.555	0.177994	
2/24/2022	0:01:31	5.534091	134.0364	60.575	0.194175	
2/24/2022	0:01:36	5.538636	160.8091	70.21	0.194175	
2/24/2022	0:01:41	5.543182	157.8364	65.765	0.177994	
2/24/2022	0:01:46	5.547273	112.1182	68.285	0.177994	
2/24/2022	0:01:51	5.547273	180.9273	62.455	0.177994	
2/24/2022	0:01:56	5.515909	152.6273	68.385	0.194175	
2/24/2022	0:02:01	5.498182	138.8909	60.135	0.177994	
2/24/2022	0:02:06	5.470909	140.7727	65.32	0.177994	
2/24/2022	0:02:11	5.462273	95.59091	62.605	0.194175	
2/24/2022	0:02:16	5.448637	159.7273	60.43	0.177994	
2/24/2022	0:02:21	5.453182	158.9182	60.035	0.177994	
2/24/2022	0:02:26	5.435	150.0273	65.47	0.194175	
2/24/2022	0:02:31	5.426363	116.2455	67.445	0.194175	
2/24/2022	0:02:36	5.412727	64.86364	62.505	0.194175	
2/24/2022	0:02:41	5.390455	190.5364	66.805	0.177994	
2/24/2022	0:02:46	5.376818	152.1818	62.255	0.177994	
2/24/2022	0:02:51	5.354546	52.10909	71.2	0.194175	
2/24/2022	0:02:56	5.502728	115.9818	58.405	0.177994	

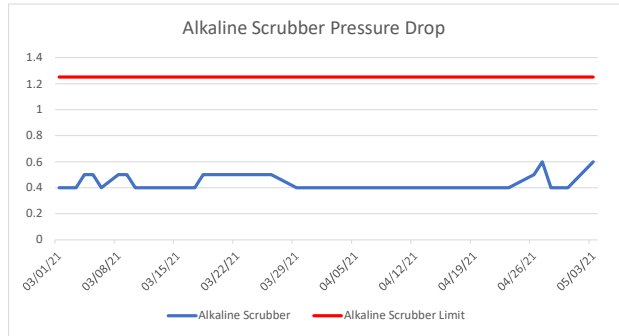
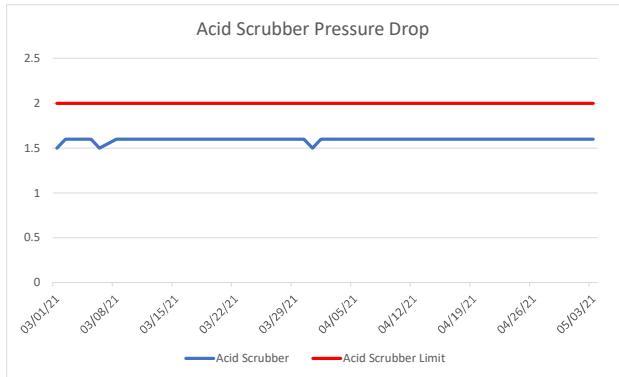


March 3, 2022 pH, Acid Flow, Alkaline Flow (Note pH drop & acid scrubber f

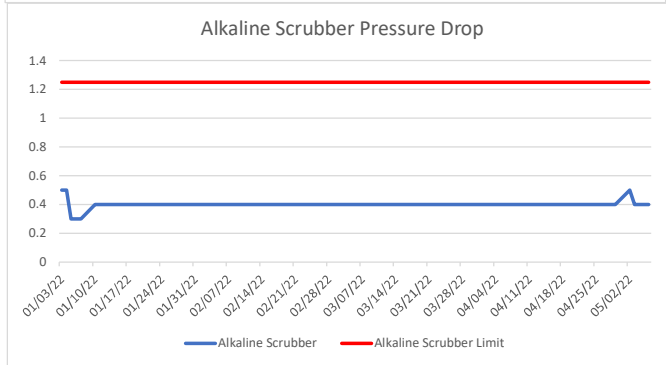
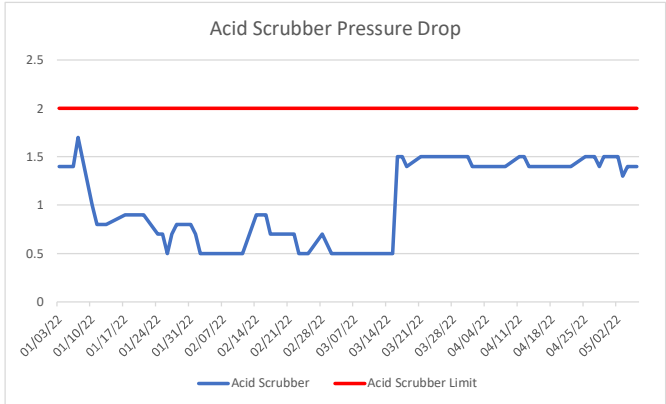
Date	Time	[EtchLine]	[EtchLine]	[EtchLine]	PvnAlkScrubTkFlow
3/3/2022	0:00:02	5.587727	121.3727	89.53	
3/3/2022	0:00:07	5.583182	138.5273	84.045	
3/3/2022	0:00:12	5.574545	152	90.22	
3/3/2022	0:00:17	5.57	101.4273	86.12	
3/3/2022	0:00:22	5.57	177.4273	89.925	
3/3/2022	0:00:27	5.565454	143.4636	91.405	
3/3/2022	0:00:32	5.579091	159.5455	91.755	
3/3/2022	0:00:37	5.574545	138.0818	83.255	
3/3/2022	0:00:42	5.565454	101.4273	90.42	
3/3/2022	0:00:47	5.556364	156.3091	85.925	
3/3/2022	0:00:52	5.547273	166.5546	91.31	
3/3/2022	0:00:57	5.534091	10.24545	84.44	
3/3/2022	0:01:02	5.520454	6.563636	82.415	
3/3/2022	0:01:07	5.493636	0.190909	87.555	
3/3/2022	0:01:12	5.475454	8.454545	84.59	
3/3/2022	0:01:17	5.48	0.190909	87.7	
3/3/2022	0:01:22	5.466818	0.190909	85.675	
3/3/2022	0:01:27	5.462273	157.7545	86.415	
3/3/2022	0:01:32	5.457727	141.4	90.27	
3/3/2022	0:01:37	5.462273	7.281818	90.37	
3/3/2022	0:01:42	5.457727	125.6818	85.33	
3/3/2022	0:01:47	5.453182	141.3091	82.465	
3/3/2022	0:01:52	5.453182	43.4	81.18	
3/3/2022	0:01:57	5.444091	163.1364	88.395	
3/3/2022	0:02:02	5.435	149.4	87.505	
3/3/2022	0:02:07	5.417273	135.5636	82.465	
3/3/2022	0:02:12	5.417273	116.2455	90.47	
3/3/2022	0:02:17	5.408182	7.190909	88.885	
3/3/2022	0:02:22	5.399091	5.309091	89.135	



2021 Pressure Drop Snapshot				
Pressure drop	Acid Scrubber	Acid Scrubber Limit	Alkaline Scrubber	Alkaline Scrubber Limit
03/01/21	1.5	2	0.4	1.25
03/02/21	1.6	2	0.4	1.25
03/03/21	1.6	2	0.4	1.25
03/04/21	1.6	2	0.5	1.25
03/05/21	1.6	2	0.5	1.25
03/06/21	1.5	2	0.4	1.25
03/08/21	1.6	2	0.5	1.25
03/09/21	1.6	2	0.5	1.25
03/10/21	1.6	2	0.4	1.25
03/11/21	1.6	2	0.4	1.25
03/12/21	1.6	2	0.4	1.25
03/15/21	1.6	2	0.4	1.25
03/16/21	1.6	2	0.4	1.25
03/17/21	1.6	2	0.4	1.25
03/18/21	1.6	2	0.5	1.25
03/19/21	1.6	2	0.5	1.25
03/22/21	1.6	2	0.5	1.25
03/23/21	1.6	2	0.5	1.25
03/24/21	1.6	2	0.5	1.25
03/25/21	1.6	2	0.5	1.25
03/26/21	1.6	2	0.5	1.25
03/29/21	1.6	2	0.4	1.25
03/30/21	1.6	2	0.4	1.25
03/31/21	1.5	2	0.4	1.25
04/01/21	1.6	2	0.4	1.25
04/05/21	1.6	2	0.4	1.25
04/06/21	1.6	2	0.4	1.25
04/07/21	1.6	2	0.4	1.25
04/08/21	1.6	2	0.4	1.25
04/09/21	1.6	2	0.4	1.25
04/12/21	1.6	2	0.4	1.25
04/13/21	1.6	2	0.4	1.25
04/14/21	1.6	2	0.4	1.25
04/15/21	1.6	2	0.4	1.25
04/16/21	1.6	2	0.4	1.25
04/19/21	1.6	2	0.4	1.25



Pressure Drop Recordkeeping Snapshot				
Pressure drop	Acid Scrubber	Acid Scrubber Limit	Alkaline Scrubber	Alkaline Scrubber Limit
01/03/22	1.4	2	0.5	1.25
01/04/22	1.4	2	0.5	1.25
01/05/22	1.4	2	0.3	1.25
01/06/22	1.4	2	0.3	1.25
01/07/22	1.7	2	0.3	1.25
01/10/22	1	2	0.4	1.25
01/11/22	0.8	2	0.4	1.25
01/12/22	0.8	2	0.4	1.25
01/13/22	0.8	2	0.4	1.25
01/17/22	0.9	2	0.4	1.25
01/18/22	0.9	2	0.4	1.25
01/19/22	0.9	2	0.4	1.25
01/20/22	0.9	2	0.4	1.25
01/21/22	0.9	2	0.4	1.25
01/24/22	0.7	2	0.4	1.25
01/25/22	0.7	2	0.4	1.25
01/26/22	0.5	2	0.4	1.25
01/27/22	0.7	2	0.4	1.25
01/28/22	0.8	2	0.4	1.25
01/31/22	0.8	2	0.4	1.25
02/01/22	0.7	2	0.4	1.25
02/02/22	0.5	2	0.4	1.25
02/03/22	0.5	2	0.4	1.25
02/04/22	0.5	2	0.4	1.25
02/07/22	0.5	2	0.4	1.25
02/08/22	0.5	2	0.4	1.25
02/09/22	0.5	2	0.4	1.25
02/10/22	0.5	2	0.4	1.25
02/11/22	0.5	2	0.4	1.25
02/14/22	0.9	2	0.4	1.25
02/15/22	0.9	2	0.4	1.25
02/16/22	0.9	2	0.4	1.25
02/17/22	0.7	2	0.4	1.25
02/18/22	0.7	2	0.4	1.25
02/21/22	0.7	2	0.4	1.25



1. IDENTIFICATION:

PRODUCT NAME: FORMKOTE T-50
PRODUCT CODE: PFKT50
PRODUCT USE.: Low Friction Coating
Manufacturer:

HMIS CODES H F R P
2*3 0 G

EVERLUBE PRODUCTS
100 COOPER CIRCLE
PEACHTREE CITY, GA 30269

EMERGENCY PHONE (24 hours): CHEMTREC - 800-424-9300
INFORMATION PHONE (8:00 a.m - 5:00 p.m EST): (770) 261-4800
NAME OF PREPARER: CHEMICAL COMMUNICATIONS COORDINATOR
DATE PREPARED: 4/28/2021

2. HAZARDS IDENTIFICATION



CLASSIFICATION:

Extremely Flammable Liquid and Vapors - Category 1
Acute Toxicity, Dermal - Category 4
Acute Toxicity, Inhalation - Category 4
Acute Toxicity, Oral - Category 4
Aspiration Hazard - Category 1
Carcinogenicity - Category 2
Serious Eye Irritation - Category 2
Reproductive Toxicity - Category 2
Skin Corrosion/Irritation - Category 2
Specific target organ toxicity, repeated exposure - Category 2
Specific target organ toxicity, single exposure - Category 3

SIGNAL WORD:

DANGER

HAZARDS STATEMENT:

H225-Highly flammable liquid and vapors
H304-May be fatal if swallowed and enters airways
H312-Harmful in contact with skin.
H315-Causes skin irritation
H319-Causes serious eye irritation
H332-Harmful if inhaled
H336-May cause drowsiness or dizziness
H351-Suspected of causing cancer
H361-Suspected of damaging fertility or the unborn child.
H373-May cause damage to organs through prolonged or repeated exposure.

PRECAUTIONARY STATEMENTS:

P202-Do not handle until all safety precautions have been read and understood.
P210-Keep away from heat/sparks/open flames/hot surfaces - No smoking
P242-Use only non-sparking tools.
P280-Wear protective gloves/eye protection/face protection.

SAFETY DATA SHEET

P403-P233-Store in well-ventilated place. Keep container tightly closed.
P501-Dispose of contents/container in accordance with local/regional/national/regulation.

3. COMPOSITION/INFORMATION ON INGREDIENTS

	CAS#	% BY WT.
TOLUENE	108-88-3	70 - 75%
OSHA PEL 200.00 PPM-TWA		
OSHA PEL 300.000 PPM-CEILING		
OSHA VPPEL 100.000 PPM-TWA		
OSHA VPPEL 150.000 PPM-STEL (SKIN)		
ACGIH TLV 50.000 PPM-TWA (SKIN)		
ACGIH TLV 150.000 PPM-STEL (SKIN)		
LD 50 ORAL RAT: 2.6 g/kg		
LC 50 INHALATION RAT: 8000 PPM; 4 h		
LD 50 DERMAL RABBIT: 12,124 mg/kg		
LC50 FISH 7.63 mg/l 96 h		
EC50 INVERTEBRATES 8 mg/l 24 h		
EC50 ALGAE 10 mg/l 24h		
XYLENE	1330-20-7	5% - 10%
ACGIH TWA: 100 PPM		
ACGIH STEL: 150 PPM		
OSHA Z-1 TWA: 100 PPM		
OSHA Z-1 435 mg/m3		
LD50: ORAL 3,523 mg/kg (rat)		
LC50 INHALATION 6700 ppm (rat) 4hr		
EC50 ALGAE 4.36 mg/l 73 hr		
IC50 DAPHNIA 1 mg/l 24hr		
LC50 FISH 2.6 mg/l 96hr		
ETHYL BENZENE	100-41-4	0% - 5%
ACGIH: 20 ppm TWA		
OSHA 100 ppm TWA; 435 mg/m3 TWA		
OSHA 125 ppm STEL; 545 mg/m3 STEL		
NIOSH 100 ppm TWA; 435 mg/m3 TWA		
NIOSH 125 ppm STEL; 545 mg/m3 STEL		
LD50 ORAL: 3500 mg/kg (rat)		
LC50 Inhalation 17.2 mg/l 4h (rat)		
LD50 Dermal 15354 mg/kg (rabbit)		
LC50 FISH: 11.0-18.0 mg/l 96 hr		
EC50 ALGAE 4.6 mg/l 72 hr		
EC50 DAPHNIA 18.-2.5 mg/l 48 hr		

4. First Aid Measures

Eyes:

With eyelids open, immediately flush eyes with lots of lukewarm water for at least 30 minutes. Get immediate medical assistance.

Skin:

Wash the skin thoroughly with plenty of water for at least 15 minutes, using a mild and non-abrasive soap. Cold water may be used.

Ingestion:

Never give anything by mouth if the victim is semi-conscious, unconscious, or convulsing.

Inhalation:

Evacuate to fresh air and administer artificial respiration if breathing stopped. Obtain medical aid.

SAFETY DATA SHEET

5. Fire Fighting Measures

Flammable Properties:

Flash Point (Degree F): 40 F

Flash Point Method: TCC

Explosive Limits:

Upper explosive limit: 7.1% (V)

Lower explosive limit: 1.0% (V)

Hazardous Combustion Products:

Carbon, Silicon, or their compounds

Extinguishing Media:

CO₂, foam, dry chemical or halon

Firefighting Procedures:

Fire-Fighters should wear self-contained breathing apparatus and full protective equipment.

Extinguish all nearby sources of ignition.

6. Accidental Release Measures

Small Spill:

Eliminate all sources of ignition, provide ventilation, contain spill, and absorb with inert absorbent.

Wear appropriate breathing apparatus (if applicable) and protective clothing.

Use only non-sparking tools and equipment.

Large Spill:

Remove by mechanical means and place in containers.

Use only non-sparking tools and equipment.

Environmental Precautions:

Prevent product or wash waters from entering the water system or sewers.

US regulations require reporting spills of this material that could reach any surface waters. In Canada, report to the applicable provincial environment ministry.

7. Handling and Storage

Handling:

Avoid breathing dust/fume/gas/mist/vapors/spray.

Do not get in eyes, on skin, or on clothing.

Wash contaminated clothing thoroughly after handling.

Wash skin thoroughly (with soap and water) after handling.

Storage:

Store in a cool, dry well ventilated place, away from incompatible materials.

Store in a closed/sealed container.

SAFETY DATA SHEET

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

Mixture, see section 3

Engineering Controls:

General mechanical ventilation or local exhaust should be suitable to keep vapor concentrations below the threshold limit values.

Use explosion-proof electrical/ventilating/lighting equipment.

Prevent the product or the wash waters from entering the water system or sewers.

Personal Protective Equipment:



Respiratory Protection:

In case of inadequate ventilation, wear respirator protection.

Use NIOSH/MSHA approved Cartridge Respirator or Mask to keep airborne mists and concentrations below the time weighted threshold limit values.

Skin Protection:

Wear protective gloves (eg Neoprene or Nitrile) for skin protection.

Eye Protection:

Wear eye protection/face protection. Contact lenses should not be worn without goggles.

9. Physical and Chemical Properties

Flammability (solid, gas).....: Data not available

Boiling Point: 228 F

Melting Point: Data not available

VOC.....: 765 grams/liter

Freezing Point: Data not available

Flash Point: 40 F

Vapor Pressure: Data not available

Vapor Density: Heavier than air.

Solubility in Water: Insoluble

Density.....: 8. lb/gl

Evaporation Rate: Faster than n-Butyl Acetate.

Explosive Limits:

Upper Explosive Limit: 7.1% (V)

Lower Explosive Limit: 1.0% (V)

Specific Gravity: .96076

PH: None known

Volatile (% by Weight).....: 80%

Appearance and Odor: Gray/Black liquid, organic solvent odor

Odor Threshold: Not applicable

Viscosity: Not applicable

Partition Coefficient:.....: Data not available

Decomposition Temperature ...: Data not available

Autoignition temperature.....: Data not available

SAFETY DATA SHEET

10. Stability and Reactivity

Chemical Stability (Conditions to Avoid):

Stable under normal conditions.

Incompatibility:

Oxidizers, Strong Acids or Alkalies.

Hazardous Decomposition Products:

Irritating and/or toxic fumes including the following may be released:

Carbon, Silicon, or their compounds

Hazardous Polymerization:

Will not occur.

11. Toxicological Information

Acute Toxicity Values:

Mixture, see section 3 - Hazardous Ingredients

Germ Cell Mutagenicity:

None known

Chronic/Carcinogenicity:

IARC (International Agency for Research of Cancer):

Group 2B-Possibly carcinogenic to humans

NTP (National Toxicology Program):

None known

Reproductive Toxicity:

Product contains chemical(s) suspected of damaging fertility/unborn child

STOT-single exposure:

May cause drowsiness or dizziness

STOT-repeated exposure:

May cause damage to organs through prolonged or repeated exposure.

Aspiration Hazard:

May be fatal if swallowed and enters airways

Routes of Exposure:

Skin contact, skin absorption, eye contact, inhalation

12. Ecological Information

Environmental Fate:

Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Canadian and U.S. regulations require that environmental and/or other agencies be notified of a spill incident. The spill area must be cleaned and restored to the original condition or to the satisfaction of authorities.

Environmental Toxicity:

Data not available

Persistence and Degradability:

SAFETY DATA SHEET

Data not available

Bioaccumulative Potential:

Data not available

Mobility in Soil

Data not available

Other Adverse Effects:

None known

13. Disposal Considerations

Disposal Methods:

Dispose of contents/container to: A licensed waste disposal facility.
Do not attempt to combust waste on-site. Incinerate at a licensed waste disposal site with approval of environment authority.

14. Transport Information

Domestic (Land, DOT), International (Water, IMO/IMDG), International (Air, ICAO) Road and Rail (ADR/RID), Air (ICAO/IATA), Vessel (IMO/IMDG):

UN Number:

UN 1263

UN Shipping Name:

PAINT RELATED MATERIAL

Transport Hazard Class:

Class 3



Packing Group:

Group II

ENVIRONMENTAL HAZARDS:

Marine Pollutant:

None known

Special Precautions for User:

None known

15. Regulatory Information

U.S. Federal Regulations:

TSCA:

ALL COMPONENTS OF THIS PRODUCT ARE ON THE TSCA INVENTORY OR ARE EXEMPT FROM REQUIREMENTS

CERCLA: SARA Hazard Category:

Section 313:

SAFETY DATA SHEET

IF THIS MATERIAL HAS ANY COMPONENTS THAT ARE REPORTABLE UNDER SARA 313 THEY ARE SHOWN IN THE FOLLOWING LISTING. IF THE LISTING IS BLANK, THERE ARE NO REPORTABLE COMPONENTS.

COMPONENT	CAS #	% BY WT.
TOLUENE	108-88-3	70 - 75%
XYLENE	1330-20-7	5% - 10%
ETHYL BENZENE	100-41-4	0% - 5%

FRANK DODD SECTION 1502:

ALL COMPONENTS OF THIS PRODUCT COMPLY WITH TITLE 15 OF THE US CONSUMER FINANCIAL PROTECTION ACT, DODD-FRANK ACT SECTION 1502 (CONFLICT MINERALS ACT).

State Regulations:

California Prop 65:

This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

International Regulations:

WHMIS:

B2, D2A, D2B,

CEPA (Canadian Environmental Protection Act)

ALL INGREDIENTS ARE CEPA APPROVED FOR IMPORT TO CANADA. THIS PRODUCT HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CONTROLLED PRODUCTS REGULATION (CPR) AND THE MSDS CONTAINS ALL THE INFORMATION REQUIRED BY THE CPR.

EINECS (European Inventory of Existing Chemical List)

ALL COMPONENTS OF THIS PRODUCT ARE INCLUDED ON THE EUROPEAN INVENTORY OF EXISTING CHEMICALS LIST

16. Other Information

Date of Preparation: 4/28/2021

KEY/LEGEND

ACGIH: American Conference of Governmental Industrial Hygienists
 ADR: International Carriage of Dangerous Goods by Road
 RID: International Carriage of Dangerous Goods by Rail
 CAS: Chemical Abstracts Service
 CERCLA: Comprehensive Environmental Response, Compensation, & Liability Act
 DOT: Department of Transportation
 HMIS: Hazardous Materials Identification System
 IATA: International Air Transport Association
 ICAO: International Civil Aviation Organization
 IDL: Immediately Dangerous to Life
 IMDG: International Maritime Dangerous Goods
 IMO: International Maritime Organization
 LC: Lethal Concentration
 LD: Lethal Dose
 NIOSH: National Institute for Occupational Safety & Health
 OSHA: Occupational Safety & Health Administration
 PPM: Parts Per Million
 REL: Recommended Exposure Limit

SAFETY DATA SHEET

SARA: Superfund Amendments and Reauthorization Act
STEL: Short-term Exposure Limits
STOT: Specific Target Organ Toxicity
TLV: Threshold Limit Value
TSCA: Toxic Substances Control Act
TWA: Time Weighted Average
VOC: Volatile Organic Compounds
WHMIS: Workplace Hazardous Materials Information System

Manufacturer Disclaimer:

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