

**BASIC APPLICATION FOR EQUIPMENT / AIR POLLUTION PERMIT  
OR CERTIFICATE OF OPERATION**

FORM E001  
03/2011

1. Name of Company Kordsa, Inc.  
*(If corporation or LLC, name on file with Tennessee Secretary of State Corporate Records Division)*
2. NAICS Code: 325211
3. Company Official to Contact: Brad Thorfinnson
4. Phone No. (714) 863-3730
5. Mailing Address: 4501 N Access Road Chattanooga TN 37415  
*Street or P.O. Box City State Zip Code*

6. Physical Location  
(If different from line 5) (same)  
*Street City State Zip Code*

7. Application for:  
 Installation Permit       Initial Certificate of Operation       Renewal Certificate of Operation

Previous Installation Permit or Certificate of Operation No.: \_\_\_\_\_

8. Type of equipment for which application is made:
- |   |   |  |
|---|---|--|
| <input checked="" type="checkbox"/> Process Equipment (Form E010 or Form E010A)   | <input type="checkbox"/> Previously Submitted | <input checked="" type="checkbox"/> Attached |
| <input checked="" type="checkbox"/> Fuel Burning Equipment (Form E011)  | <input type="checkbox"/> Previously Submitted | <input checked="" type="checkbox"/> Attached |
| <input type="checkbox"/> Incineration Equipment (Form E012)   | <input type="checkbox"/> Previously Submitted | <input type="checkbox"/> Attached            |
| <input type="checkbox"/> Minor Pollution Source (Form E014)<br><i>(Less than 1000 lbs/yr and less than 10 lbs/day total uncontrolled contaminant emissions)</i> | <input type="checkbox"/> Previously Submitted | <input type="checkbox"/> Attached            |

The following forms are filed with this application:  
E010, E106, E109, E110, E011

9. Equipment Name:  
Impregnation Line

10. If application is for a Certificate of Operation (Initial or Renewal), are there any changes since previous application in the equipment or operation which might:

A. Increase, decrease, or alter process materials, fuel, refuse type, etc.?  Yes  No

B. Increase, decrease, or alter emissions or emission points?  Yes  No

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11. Process Weight, lb/hr, (Item 6 on Form E010), Incineration Rate, lb/hr, (Item 3C on Form E012), or Fuel Burning Rate, 1,000 Btu/hr, (Item 7C on Form E011): 132 lb/hr (Solvenated Resin) - and - 10 m/min (Fabric)

This is to certify that I am familiar with operations concerning this equipment and the information provided on this application is true and complete to the best of my knowledge:

Mail completed form to:  
CHATTANOOGA-HAMILTON COUNTY  
AIR POLLUTION CONTROL BUREAU  
2034 Hamilton Place Blvd., Suite 300  
Chattanooga, TN 37421

Brad Thorfinnson  
Name  
Project Manager  
Title  
3/28/24  
Date

This form must be completely filled out before it will be processed



Alan Frazier <afrazier@chattanooga.gov>

## Microtex Permit to Construct Application - 4501 N. Access Rd.

3 messages

Miles Jorgensen <Miles.Jorgensen@kordsa.com>

Thu, Mar 28, 2024 at 2:14 PM

To: Alan Frazier <afrazier@chattanooga.gov>

Cc: "Brad Thorfinnson-[AXIOM]" <bthorfinnson@axiommaterials.com>, Hunter Hill <hunter@stevenshs.com>

Alan,

Good afternoon and I hope that you are doing well today. Please find attached the application for Microtex to construct a composites process line at the Kordsa, Inc. facility. Please note that Kordsa owns Axiom Materials, Inc. and Axiom Materials Inc. is the majority shareholder of Microtex Composites S.r.l. and Microtex Composites S.r.l. will be in control of operations of the equipment. As a result, we have had their Project Manager be the signatory for this application. If you have any questions please let Hunter, Brad and I know, and one of us will respond.

Thanks, and have a wonderful Easter weekend.

Sincerely,

Miles Jorgensen  
Environmental Engineer



A: 4501 North Access Road  
Chattanooga TN 37415-9990  
T: 423-643-2759

[www.kordsa.com](http://www.kordsa.com)  
[www.reinforcer.com](http://www.reinforcer.com)



### UYARI / NOTIFICATION

Uyarı : Bu ileti hukuken korunmuş, gizli veya ifşa edilmemesi gereken bilgiler içerebilir. Eğer iletinin gönderildiği kişi değilseniz, bu iletiyi çoğaltmayınız ve dağıtmayınız. Bu iletiyi yanlışlıkla alan kişi, gönderene derhal telefon veya elektronik ileti ile durumu bildirmeli ve bilgisayarından silmelidir.

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Microtex Air Permit to Construct Application - signed Brad Thorfinnson 03-28-2024.pdf

907K

Hunter Hill <hunter@stevenshs.com>

Mon, May 13, 2024 at 2:17 PM

To: "afrazier@chattanooga.gov" <afrazier@chattanooga.gov>

Alan,

I have it on my calendar to check in with you about this project. I know that when they submitted it, they had the goal to start up production for the new equipment this August (2024). Do you have any updates, or needing any additional information to keep the permitting on schedule?

Thanks,

-Hunter

Hunter Hill, PE\*

Project Manager

\*LICENSED IN: AL, FL, GA, MS, NC, SC, TN, TX



Nashville | Chattanooga | Birmingham  
205.471.0307

[Quoted text hidden]

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 **Microtex Air Permit to Construct Application - signed Brad Thorfinnson 03-28-2024.pdf**  
907K

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**afrazier@chattanooga.gov** <afrazier@chattanooga.gov>  
To: hunter@stevensehs.com, hunter@stevensehs.com

Wed, May 15, 2024 at 11:21 AM

Your message

To: [hunter@stevensehs.com](mailto:hunter@stevensehs.com)  
Subject: FW: Microtex Permit to Construct Application - 4501 N. Access Rd.  
Sent: 5/13/24, 2:17:19 PM AST

was read on 5/15/24, 11:21:25 AM AST

Kordsa, Inc.  
4501 North Access Rd.  
Chattanooga, TN 37415  
Phone (423) 643-2761

March 27, 2024

Mr. Alan Frazier  
Chattanooga-Hamilton County Air Pollution Control Bureau  
6125 Preservation Drive  
Chattanooga, TN 37416-3638

Subject: Kordsa, Inc.  
Installation Permit Application for  
Axiom Materials & Microtex Composites Prepreg production line  
Solvated resin impregnation with drying oven and NG Afterburner

Dear Mr. Frazier:

With this letter, Kordsa Inc. (Kordsa) submits a permit application for an installation permit at its Chattanooga, TN facility. The application includes various equipment for a solvent based composites prepreg production line. The companies Axiom Materials, Inc. and Microtex Composites S.r.l. are designing and installing the production line and will be operating the equipment at the Kordsa Chattanooga facility as a subsidiary of Kordsa (under common control). Equipment listed in the application includes – the recirculation tank; the solution treater (impregnating unit); the radiant dryer; and the Natural Gas Afterburner to control VOC emissions from the solvents released in the dryer and to provide heat to the dryer via heat exchangers to a thermal oil heater. A process flow diagram is included in the application. The appropriate forms and calculations are attached.

Kordsa has reviewed the applicability of 40 CFR 63 Subpart W in §§63.520 below:

*[The provisions of this subpart apply to all existing, new, and reconstructed manufacturers of basic liquid epoxy resins (BLR) and manufacturers of wet strength resins (WSR) that are located at a plant site that is a major source, as defined in section 112(a) of the Clean Air Act.]...*

Kordsa is not a major source of HAP, and will maintain actual HAP emissions logs to demonstrate area source HAP status every 12-calendar months. The proposed equipment and processes that are included in this application, are summarized below:

1. The process equipment that includes a double unwind station, a splicing unit, an accumulator, the solvent based prepreg impregnation unit, radiant dryer, oil heater, air heater, and cooling unit, and a turret rewinder were disassembled in Italy from Microtex Composites operations. The equipment is being shipped and will be re-assembled and operated in Chattanooga, TN.
2. The facility would like start up the new production line in August 2024 or sooner depending on how soon a permit is issued and materials can begin to be ordered and brought on-site.

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3. The process flow diagram included in the application is intended to show only those parts of the process that contribute to emissions of air pollutants. More detailed engineering drawings of the process are available for review upon request.
4. The process can be used interchangeably with various thickness and weights of composite fabrics including carbon fibers, Kevlar, ceramic matrix composites, and various other lightweight – high strength composite matrix materials. The line speed maximum is 10 meters/min (m/min) of fabric and a working width of 1300 mm.
5. Impregnation of various resin types will be possible, though only one resin formula can be added to the recirculation tank for processing and resin formulation at a time. Various resin formulas are possible. This application considers the worst-case potential VOC emissions for the two types of Epoxy resins (MEK-based or Acetone-based) and for Phenolic resin. At least one of Axiom Materials Inc. products is a vinyl polyester resin product, but it was not considered in the emissions estimates because the MEK-based epoxy resins already represent worst-case.
6. The primary products will be Epoxy Resins with raw materials containing as much as 100% MEK for the solvent content. The maximum solvent volume or throughput for all resin types (epoxy or phenolic) will be 60 Kg/Hr or 132.3 LB/Hr. Solvated resin mixtures will be shipped to the Chattanooga facility pre-mixed. This application does not include mixing operations. Should a mixing operation be required at the facility in the future, a separate permit application shall be prepared and provided to the Air Pollution Control Bureau.
7. When pre-mixed solvated resin is added to the recirculation tank, our best engineering estimate is that no more than 4% of the total solvent content would be released as fugitive emissions when loading the tank. This is a conservative estimate based on the process description, and the recirculation tank will remain closed at all times except when loading occurs.
8. The natural gas-fired afterburner unit uses heat exchangers to heat the thermal oil heater, and the thermal oil then heats the radiant drying oven for the process. The afterburner controls solvent-laden gas exhaust from radiant drying oven with 100% capture efficiency (total enclosure) and 99% VOC destruction efficiency.

Current Operating Permits 6132-10200501-06C and 6132-10200501-07C, and the installation permit 6132-30800116-09I for Kordsa's three Boilers, the five Dowtherm Vaporizers, and the Ovens for the polymer fabric coating dip line state that no more than  $2300 \times 10^6$  cubic feet of natural gas and no more than 880,000 gallons of No. 2 Fuel Oil shall be burned in these sources combined during any period of twelve (12) consecutive calendar months. Kordsa requests to maintain this plant-wide fuel burning limit with the installation of one (1) Natural Gas fired Afterburner, rated at 3.37 MMBtu/hr (988 kW) capacity. Kordsa has reviewed its recent operations and believes it will be able to operate within the above fuel burning limits for 12-consecutive month periods for this project.

The facility is currently an area source of HAPs with not more than 10.0 tons per year for each individual HAP and below 24.9 tons per year for total HAPs. With this installation permit, Kordsa requests a limit of no more than 9.9 Tons/Year of annual methanol emissions and a facility-wide limit for total combined HAP emissions of no more than 24.9 Tons/Year to avoid becoming a major source of HAPs (Synthetic Minor Limits requested for individual and combined HAPs). In the potential emissions calculations contained in this application, Kordsa has conservatively assumed that all methanol used in the process from Phenolic Resin types is emitted either in the drying ovens and controlled in the natural gas afterburner at 99% destruction efficiency or emitted as fugitive emissions from the process. Actual

methanol emissions may be reduced by diluting total methanol usage with ethanol in the phenolic resin type epoxy; however, the reduction efficiency of that dilution step is unknown for the proposed design. At the current projected annual production volume and usage rates, Kordsa will need to limit Epoxy Resins containing up to 40% formaldehyde content to less than 557,357 lbs/year (48.1%) or less of total potential throughput and limit Phenolic Resins containing up to 100% methanol content to less than 56,779 lbs/year (4.9%) or less of total potential throughput, as shown in the attached calculations. The balance of total potential throughput (47%) will be Epoxy Resins containing acetone, which is exempt as a VOC, and these formulas are not expected to include any HAP content. As mentioned in the outline above, at least one of Axiom Materials Inc. products is a vinyl polyester resin product, but the facility does not expect this product to contribute significantly to the VOC emissions from the process, and MEK-based epoxy resins are more representative of worst-case.

I hereby certify that, based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete.

Please provide written notification of receipt of a complete application so that Kordsa may continue with engineering and initial planning and civil construction phases of the project. We will check in periodically to inquire about the status of the permit application and to answer any questions about the application in an effort to ensure that the goal for starting up production in August 2024 is able to be achieved. If you have questions or comments, please contact Miles Jorgensen, Environmental Engineer, at (423) 643-2759, or my consultant, Hunter Hill, at (205) 471-0307.

Sincerely,

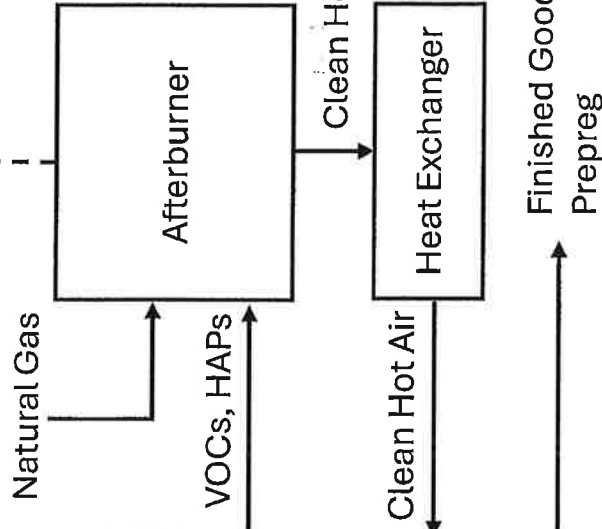
Responsible Official: Brynd Thorsingson (print)  
 (sign)

Representative of: Microtex

Title: Project Manager

SP

PM, NO<sub>x</sub>, CO,  
SO<sub>2</sub>, VOC,  
HAPs to ATM

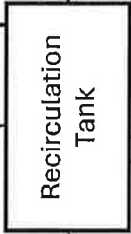


Raw Materials:  
Fabric

Raw Materials:  
Solvated Resin

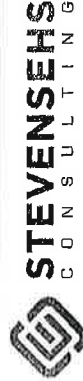
VOC, HAPs  
to ATM

Raw Materials:  
Solvated Resin



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Kordsa, Inc. - Impregnation Line

Emissions Process Flow Diagram

Table 1. Facility-wide Annual Potential-to-Emit

Emission Unit	EUID	Potential Emission Rate (TPY)										
		Total PM (Allowable)	Total PM <sub>10</sub>	Total PM <sub>2.5</sub>	NO <sub>x</sub>	CO	SO <sub>2</sub>	VOC	HMD	NH <sub>3</sub>	CO <sub>2</sub> e	
Boilers #2, #6, and #7		5.282	1.837	1.837	40.630	44.527	3.426	2.859	-	-	70,609	
Riley Dowtherm Vaporizers #1 - #4 and #6		3.459	0.865	0.865	45.518	38.235	0.273	2.503	-	-	54,677	
<b>Facility PTE from Power Combustion Sources (tpy)</b>		<b>8.741</b>	<b>2.702</b>	<b>2.702</b>	<b>86.148</b>	<b>82.762</b>	<b>3.699</b>	<b>5.363</b>	<b>0.000</b>	<b>0.000</b>	<b>125,286</b>	
Dowtherm Transport System		-	-	-	-	-	-	20.152	-	-	-	
Two Hexamethylene Diamine Storage Tanks		0.329	0.33	0.33	-	-	-	0.00	0.00	-	-	
CP Line IV		2.859	2.859	2.859	-	-	-	0.790	2.86	0.323	-	
CP Line V		1.707	1.707	1.707	-	-	-	0.758	1.71	0.311	-	
Spinning Machines 321, 322, 331, 332, 333		6.57	6.57	6.57	-	-	-	-	-	-	-	
Dip and Hot Stretch Unit 1	DU1	19.67	5.89	5.89	8.20	13.77	0.10	0.90	-	-	19,695	
DIP UNIT 1 Process NH <sub>3</sub> , VOCs & HAPs	DU1	-	-	-	-	-	-	13.72	-	-	-	
Storage Tanks	DU1	-	-	-	-	-	-	0.08	-	-	-	
Impregnation Line		-	-	-	-	-	-	28.74	-	-	-	
Impregnation Line Afterburner NG Combustion		0.11	0.03	0.03	1.45	1.22	0.01	0.08	-	-	-	
<b>Facility PTE from Non-Combustion Sources (Includes Ovens)</b>		<b>31.243</b>	<b>17.382</b>	<b>17.382</b>	<b>9.646</b>	<b>14.988</b>	<b>0.107</b>	<b>65.219</b>	<b>4.566</b>	<b>54.116</b>	<b>19,695</b>	
<i>Insignificant Activities by Emission Level?</i>												
Emergency Generator		0.011	0.004	0.004	0.352	0.193	0.014	0.022	-	-	38.9	
Emergency Fire Pump		0.009	0.003	0.003	0.276	0.151	0.011	0.017	-	-	30.5	
Space Heaters		0.10	0.026	0.026	1.374	1.154	0.008	0.076	-	-	1,641.23	
<b>Facility-wide PTE (tpy)</b>		<b>40.108</b>	<b>41.678</b>	<b>20.118</b>	<b>97.795</b>	<b>99.248</b>	<b>3.839</b>	<b>70.695</b>	<b>4.566</b>	<b>54.116</b>	<b>146,691</b>	

1. For process areas with Total PM permit limits, emissions based on permit limits. For other areas, potential emissions are based on maximum annual production.

2. The total emissions from each individual insignificant activity category (including listed categories and insignificant by emission level) must be less than 5 tpy for each criteria pollutant emitted and less than 1,000 lb/yr for each HAP per §4-56(c)(11) and §4-56(c)(12) of the Chattanooga City Code.

The flake handling system is included as an insignificant activity per §4-56(c)(12)(ii) of the Chattanooga City Code.

The storage tanks (greater than 1,000 gal in capacity) are included as insignificant activity per §4-56(c)(12)(xiv) & (c)(12)(xv) of the Chattanooga City Code.

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Table 2. Facility-wide Hourly Potential Emissions

Emission Unit	EUID	Potential Emission Rate (lb/hr)										
		Total PM	Total PM <sup>1-</sup> (Allowable)	Total PM <sub>10</sub>	Total PM <sub>2.5</sub>	NO <sub>x</sub>	CO	SO <sub>2</sub>	VOC	HMD	NH <sub>3</sub>	CO <sub>2</sub> e
Boilers #2, #6, and #7		6.045	11.25	3.664	3.664	28.157	21.124	13.008	1.383	-	-	41,976
Riley Dowtherm Vaporizers #1 - #4 and #6		2.499	5.00	1.514	1.514	15.143	8.729	5.376	0.572	-	-	17,347
<b>Facility PTE from Power Combustion Sources (lb/hr)</b>		<b>8.545</b>	<b>16.250</b>	<b>5.179</b>	<b>5.179</b>	<b>43.300</b>	<b>29.853</b>	<b>18.384</b>	<b>1.955</b>	<b>0.000</b>	<b>0.000</b>	<b>59,323</b>
Dowtherm Transport System		0.476	1.11	0.476	0.476	-	-	-	9.640	-	-	-
Two Hexamethylene Diamine Storage Tanks		1.497	1.50	1.497	1.497	-	-	-	0.000	-	-	-
CP Line IV		1.489	1.50	1.489	1.489	-	-	-	0.180	0.074	-	-
CP Line V		1.50	2.00	1.50	1.50	-	-	-	0.173	0.071	-	-
Spinning Machines 321, 322, 331, 332, 333		5.62	5.62	0.09	0.09	2.34	3.93	0.03	0.258	-	-	5,627.12
Dip and Hot Stretch Unit 1	DU1	-	-	-	-	-	-	-	3.92	-	15.28	-
DIP UNIT 1 Process NH3, VOCs & HAPs Storage Tanks	DU1	-	-	-	-	-	-	-	-	-	-	-
Impregnation Line	DU1	0.03	0.03	0.01	0.01	0.33	0.28	0.00	6.56	-	-	394.76
Impregnation Line Afterburner NG Combustion		10.607	11.754	5.058	5.058	2.673	4.213	0.030	20.752	2.986	15.425	6021.875
<b>Facility PTE from Non-Combustion Sources (Includes Ovens)</b>												
<i>Insignificant Activities by Emission Level<sup>2</sup></i>												
Emergency Generator		0.220	-	0.085	0.082	7.04	3.86	0.27	0.430	-	-	778.26
Emergency Fire Pump		0.173	-	0.066	0.064	5.51	3.02	0.21	0.337	-	-	609.83
Space Heaters		0.024	-	0.006	0.006	0.31	0.26	0.00	0.017	-	-	374.71
<b>Facility-wide PTE (lb/hr)</b>		<b>19.151</b>	<b>28.004</b>	<b>10.236</b>	<b>10.236</b>	<b>45.973</b>	<b>34.066</b>	<b>18.414</b>	<b>22.707</b>	<b>2.986</b>	<b>15.425</b>	<b>65,345</b>

1. For process areas with Total PM permit limits, emissions based on permit limits. For other areas, potential emissions are based on maximum annual production.

2. To be considered an insignificant activity under §4-56(c)(12)(ii) of the Chattanooga City Code, each individual stack related to an insignificant activity must have a potential-to-emit of less than 0.500 lb PM/hr and not emit any gaseous pollutants. The combined emissions from all sources deemed insignificant by emission level must be less than 2 lb PM/hr.

Additionally, the total emissions from each individual insignificant activity category (including listed categories and insignificant by emission level) must be less than 5 tpy for each criteria pollutant emitted and less than 1,000 lb/yr for each HAP per §4-56(c)(11) and §4-56(c)(12) of the Chattanooga City Code.

The flake handling system is included as an insignificant activity per §4-56(c)(12)(i) of the Chattanooga City Code.

The storage tanks (greater than 1,000 gal in capacity) at the site are deemed to be insignificant by emission level per §4-56(c)(12)(iv) & (c)(12)(xvi) of the Chattanooga City Code.

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Table 3. Facility-wide Annual Potential-to-Emit (HAPs)

Emission Unit	EUID	Total HAP	Formaldehyde	Styrene	Methanol	Biphenyl	Triethylamine	Methyl Methacrylate	Phenol
Boiler's #2, #6, and #7		1.00	0.05	-	-	-	-	-	-
Riley Dowtherm Vaporizers #1 - #4 and #6		0.86	0.03	-	-	-	-	-	-
<b>Facility PTE from Power Combustion Sources (tpy)</b>		<b>1.859</b>	<b>0.086</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>
Dowtherm Transport System		5.091	-	-	-	5.091	-	-	-
Two Hexamethylene Diamine Storage Tanks		-	-	-	-	-	-	-	-
CP Line IV		-	-	-	-	-	-	-	-
CP Line V		-	-	-	-	-	-	-	-
Spinning Machines 321, 322, 331, 332, 333		-	-	-	-	-	-	-	-
Dip and Hot Stretch Unit 1	DU1	11.79	0.41	2.49	8.60	-	-	-	-
DIP UNIT 1 Process NH3, VOCs & HAPs Storage Tanks	DU1	-	-	-	-	-	-	-	-
DU1	DU1	-	-	-	-	-	-	-	-
Impregnation Line		8.078	5.571	-	1.408	-	0.042	0.704	0.352
Afterburner for Impregnation Line		0.006	2.48E-04	-	-	-	-	-	-
<b>Facility PTE from Non-Combustion Sources (Includes Ovens)</b>		<b>24.970</b>	<b>5.981</b>	<b>2.489</b>	<b>10.008</b>	<b>5.091</b>	<b>0.042</b>	<b>0.704</b>	<b>0.352</b>
<i>Insignificant Activities by Emission Level<sup>2</sup></i>		-	-	-	-	-	-	-	-
Emergency Generator		-	-	-	-	-	-	-	-
Emergency Fire Pump		-	-	-	-	-	-	-	-
Space Heaters		-	-	-	-	-	-	-	-
<b>Facility-wide PTE (tpy)</b>		<b>26.828</b>	<b>6.068</b>	<b>2.489</b>	<b>10.008</b>	<b>5.091</b>	<b>0.042</b>	<b>0.704</b>	<b>0.352</b>

1. For process areas with Total PM permit limits, emissions based on permit limits. For other areas, potential emissions are based on maximum annual production.

2. The total emissions from each individual insignificant activity category (including listed categories and insignificant by emission level) must be less than 5 tpy for each criteria pollutant emitted and less than 1,000 lb/yr for each HAP per: \$4-56(c)(11) and \$4-56(c)(12) of the Chattanooga City Code.

The flake handling system is included as an insignificant activity per \$4-56(c)(12)(ii) of the Chattanooga City Code.

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Table 3. Facility-wide Potential Emissions (HAPs)

Pollutant	Potential Emissions (ton/yr)
Total HAP	26.83
Methanol (Maximum Individual HAP)	10.01

The Facility requests synthetic minor limits to avoid Major source status for HAPs. Not more than 9.9 tons/year for individual HAP emissions and not more than 24.9 tons/year for total combined HAP emissions.

**PROCESS EQUIPMENT APPLICATION**

FORM E010  
07/2000

1. **Name of Company** (as shown on Line 1, Form E001): Kordsa, Inc.
2. **Equipment Name** (as shown on Line 10, Form E001): Impregnation Line
3. **Installation Date:** June 2024      4. **Type of Process:** Fabric and Solvenated Resin Impregnation
5. **Major Raw Materials Used:** Woven Synthetic Polymer Fabric
6. **Process Weight:** 132 lb/hr (Solvenated Resin) - and - 10 m/min (Fabric) Pounds per hour  
This is the total weight of all materials introduced into the process.

**7. Control Equipment**

- Emissions Uncontrolled                       Baghouse (File Form E102)  
 Wet Collecting Device (File Form E103)       Inertial Separators (File Form E105)  
 Electrostatic Precipitator (File Form E104)     Other – Specify: Afterburner - Thermal Oxidizer

**8. Control Efficiency**

Enter the control efficiency for each pollutant emitted by this equipment (for appropriate Forms E102, E103, E104, E105, E107, or enter zeros if the emissions are uncontrolled as noted in Item 7.

Pollutant	% Efficiency
Particulates	0
SO <sub>x</sub>	0
NO <sub>x</sub>	0
CO	0
Hydrocarbons	99%
Other:	

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Chattanooga-Hamilton County  
Air Pollution Control Bureau

Note: (4%) of all solvent VOC content is assumed to be released and uncontrolled when solvents are added to the recirculation tank.

**9. Emissions Summary**

Enter the amount of each pollutant listed in pounds per hour.

Pollutant	Uncontrolled Emissions (File Form E106)	Actual Emissions (Stack Test Report)	OR	Estimated Emissions (See Formula A)
Total Suspended Particulate	N/A	N/A	OR	N/A
PM10	N/A	N/A		N/A
Sulfur Oxides	N/A	N/A		N/A
Nitrogen Oxides (as NO <sub>2</sub> )	N/A	N/A		N/A
Other (specify)				
VOC	132.3 (lb/hr)	N/A		6.56 (lb/hr)
Total HAPs	N/A - see calculations	N/A	8.08 (tpy)	

Formula A:      Estimated Emissions =  $\frac{(100\% - \text{Control Efficiency (\%)})}{100\%}$  X Uncontrolled Emissions

10. **Environmental Impact**

Those emissions indicated in Item 9 may at times under normal operating conditions cause (check all that apply):

- Odors       Eye Irritations       Property Damage       Health Effects  
 Other nuisances outside of plant property       No environmental damage

11. **Emission Point Data**

Stack Height (emission point) above ground: 35 Ft.      Volume of gas discharged into atmosphere: 2,354 cfm  
Ground Elevation above sea level at stack base: 690 Ft.      Gas exit temperature: 150 - 500 °F  
Stack Diameter: 1.5 Ft.

12. **Ave. Operating Time**

Daily: 24 hours      Weekly: 7 Days      Yearly: 52 Weeks

This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and complete to the best of my knowledge.

Brend Thornton  
Company Official

Project Manager  
Title

3/28/24  
Date

CHATTANOOGA-HAMILTON COUNTY  
AIR POLLUTION CONTROL BUREAU  
6125 Preservation Drive, Suite 140  
Chattanooga, TN 37416-3740

*JLB*

POLLUTION ESTIMATION FORM

FORM E106  
01/2001

- 1. Name of Company: Kordsa, Inc.  
As shown on Line 1 of Form E001
- 2. Equipment Name: Impregnation Line  
As shown on Line 9 of Form E001
- 3. Type of pollutant for which estimate is made: VOC, HAPs

4. Pollution Emission Factor (PEF): See attached calculations  
(Give value & units in lbs/ton, lbs/lb, lbs/gal, gr/ft<sup>3</sup>, etc.)

Source of Emission Factor: Engineering Estimate

5. Uncontrolled Pollution Emission Rate:

$$\frac{\text{PEF from Item 4}}{\text{PEF from Item 4}} \times \frac{\text{Operating Rate}}{\text{Operating Rate}} = \text{Uncontrolled Emission Rate}$$

(Give operating rate for this equipment and the appropriate units in either lbs/hr, tons/hr, gal/hr, or cfm)

6. Uncontrolled Emission Rate: \_\_\_\_\_ Pounds emitted per hour

*This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and correct to the best of my knowledge. **This form must be completely filled out before it is processed.***

Mail to:  
 CHATTANOOGA-HAMILTON COUNTY  
 AIR POLLUTION CONTROL BUREAU  
 6125 Preservation Drive  
 Chattanooga, TN 37416

Company Official: Brad Thompson

Title: Project Manager

Date: 3/28/24

**DO NOT WRITE BELOW THIS LINE**

[Signature] Engineer Approval

This form corresponds to permit number: \_\_\_\_\_

Special Notations: \_\_\_\_\_

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 MAR 28 2024

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Kordusa Inc.  
 Chattanooga, TN  
 Impregnation Line (Avidom Materials and  
 Microcex Composites)

input cells

Capture Efficiency of Afterburner Controlling Impregnation Line &  
 Drying Oven  
 (Total Inclusions) 100%

Hours of Operation 8750

Potential VOC Emissions

Product Type	LESHR (Max)	Lbs/Year (MAX for each resin type)	VOC Content (%)	VOC USAGE UNITS	Emitted at Solvent Recirculation Tank (lbs/yr) (%)	Emitted at VOC Afterburner Stack with 100% capture (%)	Afterburner VOC Destruction Efficiency (%)	Emitted at NG Afterburner Stack (LBS)	TOTAL ANNUAL VOC (FUGITIVE + STACK) (TONS)
Epoxy Resin (48.1% MEK - annual average)	152.3	1,158,747	100.0%	1,158,748.5	45,348.9 (4%)	95%	11,124.0	11,124.0	
Epoxy Resin (42% Acetone - annual average)	152.3	1,158,747	0.0%	0.0	0.0	96%	0.0	0.0	
Phenolic Resin (4.5% Methanol - annual average)	152.3	1,158,747	100.0%	1,158,748.5	45,348.9 (4%)	96%	11,124.0	11,124.0	
This line totals the maximum of either Epoxy or Phenolic Resins. The line can produce one type of Resin Prepreg at a time. The worst-case annual PTE = the maximum VOC-emissions of either resin type.				VOC USAGE TOTAL	Fugitive =	STACK =	TONS	TONS	TONS
Total Resin (all types) LBS				8754	23.17	5.91	1.270	1.270	8.591
Total Resin (all types) LBS				1,158,747	annually				

Potential ANNUAL HAPs Emissions

Product Type	% OF ANNUAL TOTAL SOLVATED RESIN FOR PREPREG	Lbs/Year (Annual AVG for each Solvated Resin type)	Maximum Methanol Content (wt%)	Methanol Annual PTE (LBS)	Maximum Triethylamine Content (wt%)	Triethylamine Annual PTE (LBS)	Maximum Methyl Methacrylate Content (wt%)	Methyl Methacrylate Annual PTE (LBS)	Maximum Phenol Content (wt%)	Phenol Annual PTE (LBS)	Maximum Formaldehyde Content (wt%)	Formaldehyde Annual PTE (LBS)
Epoxy Resin (48.1% MEK - annual average)	48.10%	557,257	0.00%	0.0	0.00%	0.0	0.0	0.0	40.00%	467.00	0.00%	0.0
Epoxy Resin (42% Acetone - annual average)	47.00%	544,511	0.00%	0.0	0.00%	0.0	0.0	0.0	0.00%	0.0	0.00%	0.0
Phenolic Resin (4.5% Methanol - annual average)	4.90%	567,979	100.00%	2,816	3.00%	84.5	50.00%	1,428	28.00%	794.1	3.00%	84.5
SUM (Total LBS/HR) =				1.41	TONS	0.64	TONS	0.79	TONS	0.35	TONS	5.97
				0.321	LBS/HR	0.010	LBS/HR	0.161	LBS/HR	0.050	LBS/HR	1.272

EXAMPLE CALCULATION:  
 Methanol Annual PTE = (4.9% of annual total Solvated Resin) x (Maximum Methanol Content of Resin) x (Resin Production) x (% Emitted as Fug. Emissions from Solvent Recirculation Tank) + (%Afterburner Stack Emissions x Capture Eff. x (1 - Afterburner VOC Dest. Eff.))  
 = ((4.9% x 1,158,747 Lbs/yr) x (100%)) x (4%) + ((567,979 Lbs) x (1.58%) x (1-96%)) = (65,776 Lbs) + (2,816 LBS emitted annual)

Note 1 and HAPs Hourly Emissions Rate (LESHR) = Total Emissions (LBS/HR) / 8,750 (HR/yr);  
 Note 2 There are three types of resin, the highest VOC or HAP content of each resin was used to provide a conservative estimate  
 Note 3 The solvent treater of the impregnation line has a maximum throughput of 60 kg/hr. or 132.3 lb/hr. of solvent  
 Note 4 Based on engineering judgement, the solvent recirculation tank was assumed to have 4% fugitive emissions.

Received

MAR 28 2024

Chattanooga-Hamilton County  
 Air Pollution Control Bureau

**AFTERBURNER APPLICATION**  
(THERMAL AND CATALYTIC)

**FORM E109**  
**07/2001**

1. Name of Company: Kordsa, Inc.  
*(As shown on Line 1, Form E001)*
2. Name of Equipment: Afterburner for Impregnation Line  
*(As shown on Line 10, Form E001)*

3. Equipment Data:

Name of Manufacturer: Calortec Model Number: \_\_\_\_\_

Date of Manufacture: 2005 Date of Installation: June 2024

4. Emissions Data:

A. Air Contaminant Concentration (ppm or percent by volume at standard conditions)

VOC (Total)	132.3 LB/Hr		
Hydrocarbons			

B. Inlet Gas Properties:

	Maximum	Minimum	Average	
Temperature:	350	150	200	°F
Pressure	0.47	0.31	0.39	In. H <sub>2</sub> O
Moisture:				%
Gas Volume:				Ft <sup>3</sup>
Gas Velocity in Duct:				Ft/min.

C. This data was determined by:  Source Test (Submit report)  Estimation (File Form E106)  
 Other (Specify): Design engineers - specs for VOC emission treatment

5. Afterburner Data:

A.  Thermal Afterburner

a. Check All That Apply:  Gas-fired  Oil-Fired  Nozzle-Mixing Premixing  
 Multi-port  Mixing Plate  Other (Specify): \_\_\_\_\_

b. Operating Parameters:

	Maximum	Minimum	Average	
Operating Temperature:	2282			°F
Retention Time:				Sec
Gas Exit Temperature:				°F

c. Heat Recovery Unit:  Yes  No  
If yes, what type? Heat Exchanger with Thermal Oil Heater

---

B.  Catalytic Afterburner

a. Describe Catalyst and Substrate: \_\_\_\_\_

b. Estimated Catalyst Life: \_\_\_\_\_ Hrs

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6. Afterburner Efficiency:

A. Stated by Manufacturer:	99	%
B. Estimated (Attach Calc.):		%
C. Actual (Source Test-attach report):		%

7. Instrumentation Data:

Describe temperature sensory devices and their operating parameters:

\_\_\_\_\_

8. Auxiliary Fuel Data:

A. Type of Auxiliary Fuel:	N/A _____		
B. Auxiliary Fuel Usage:	Maximum	Minimum	Average
			Ft <sup>3</sup> /hr or gal/hr

9. **Submit drawings of all equipment with each application.**

*This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and complete to the best of my knowledge. **This form must be completely filled out before it will be acceptable.***

Mail to:  
 CHATTANOOGA-HAMILTON COUNTY  
 AIR POLLUTION CONTROL BUREAU  
 6125 Preservation Drive  
 Chattanooga, TN 37416

Company Official: Brend Thertman

Title: Project Manager

Date: 3/28/24

**DO NOT WRITE BELOW THIS LINE**

[Signature] Engineer Approval      This form corresponds to Permit Number: \_\_\_\_\_

Special Notations: \_\_\_\_\_

\_\_\_\_\_



**FUEL BURNING EQUIPMENT APPLICATION**

*A separate form must be filed for each stack or emission point.*

FORM E011  
01/2001

1. Name of Company: **Kordsa, Inc.**  
*As shown on Line 1 of Form E001*
2. Equipment Name: **Afterburner for Impregnation Line**  
*As shown on Line 9 of Form E001*
3. Stack Designation: **ABU-1**  
*If there is more than one stack at this location, provide a written or numeric designation to identify each stack.*
4. Control Equipment Data:

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Emissions Uncontrolled      | <input type="checkbox"/> Electrostatic Precipitator (File Form E104)   |
| <input type="checkbox"/> Baghouse (File Form E102)              | <input type="checkbox"/> Inertial Separators (File Form E105)  |
| <input type="checkbox"/> Wet Collecting Device (File Form E103) | <input checked="" type="checkbox"/> Other (Specify):<br><u>Natural Gas combustion emissions from the afterburner are uncontrolled. The afterburner controls VOC/HAP emissions from the impregnation process.</u> |

5. Control Equipment Efficiency:  
*Enter the control equipment efficiency for each pollutant emitted by this equipment as determined on the appropriate Form E102, E103, E104, E105, E107, or enter zeros if "A" is checked in Item 4.*

Pollutant	% Efficiency
Particulates	0
PM <sub>10</sub>	0
SO <sub>x</sub>	0
NO <sub>x</sub>	0
CO	0
VOC	99
Other: HAPs	99

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**MAR 28 2024**  
Chattanooga-Hamilton County  
Air Pollution Control Bureau

6. Emissions Estimation:

		<i>File Form E110 for each fuel used</i>			
		<i>Fuel No.1</i>	<i>Fuel No.2</i>	<i>Fuel No.3</i>	
Particulate Matter (Form E110, Item 6)	Uncontrolled	0.03	Lbs/hr	Lbs/hr	Lbs/hr
	Actual <sup>1</sup>	N/A	Lbs/hr	Lbs/hr	Lbs/hr
	Estimated <sup>2</sup>	0.03	Lbs/hr	Lbs/hr	Lbs/hr
SO <sub>x</sub> (Form E110, Item 7)	Uncontrolled	0.002	Lbs/hr	Lbs/hr	Lbs/hr
	Actual <sup>1</sup>	N/A	Lbs/hr	Lbs/hr	Lbs/hr
	Estimated <sup>2</sup>	0.002	Lbs/hr	Lbs/hr	Lbs/hr
PM <sub>10</sub>	Uncontrolled	0.01	Lbs/hr	Lbs/hr	Lbs/hr
	Actual <sup>1</sup>	N/A	Lbs/hr	Lbs/hr	Lbs/hr
	Estimated <sup>2</sup>	0.01	Lbs/hr	Lbs/hr	Lbs/hr
NO <sub>x</sub> (Form E110, Item 9E)	Uncontrolled	73.27	ppm	ppm	ppm
	Actual <sup>1</sup>	N/A	ppm	ppm	ppm
	Estimated <sup>2</sup>	73.27	ppm	ppm	ppm
Other Air Contaminants (Specify) VOC	Uncontrolled	0.02	Lbs/hr	Lbs/hr	Lbs/hr
	Actual <sup>1</sup>	N/A	Lbs/hr	Lbs/hr	Lbs/hr
	Estimated <sup>2</sup>	0.02	Lbs/hr	Lbs/hr	Lbs/hr

1. *Submit stack test report with full details.*
2. *Estimate the emissions using the formula below*

$$\text{Estimated Emissions (lbs/hr, ppm)} = \frac{100\% - \text{Control Efficiency (\%)}}{100\%} \times \text{Uncontrolled Emissions}$$

Company Name: Kordsa, Inc. Equipment Name: Afterburner for Impregnation Line

Equipment Data:

Manufacturer of Equipment: Calortec Date of Installation: June 2024

Date of Manufacture: 2005

Boiler No.	Fuel Type	Rated Capacity 10 <sup>6</sup> BTU/hr. Input	Type of Firing	Fuel Consumption			Percent Content		Heating Content of Fuel	(% Excess Air)
				Ave.	Max.	Annual	Sulfur	Ash		
1	Natural Gas	3,371	Direct	3,305 SCF/hr	3,305 SCF/hr	28,95 MMcf			1,020 BTU/SCF	15
	Primary: Normal Operating Fuel(s)									
	N/A									
	Standby: Fuel(s) used in emergency only									
	Primary: Normal Operating Fuel(s)									
	Standby: Fuel(s) used in emergency only									

- a. If more than one boiler per stack, list a separate code number to represent each individual boiler.
- b. List all fuels used.
- c. Give rated or maximum input capacity, whichever is greater.
- d. Specify the type of firing for each fuel used.
- e. Indicate consumption of each fuel used in tons/yr, gal/yr, or ft<sup>3</sup>/yr.
- f. Indicate annual consumption of each fuel used in tons/yr, gal/yr, or ft<sup>3</sup>/yr.
- g. The average sulfur and ash content of each fuel must be included - This information may be obtained from the fuel supplier.
- h. Indicate the heating content of each fuel in BTU/ton, BTU/gal, or BTU/ft<sup>3</sup> - This information may be obtained from the fuel supplier.

Space Heating	Process Heating	Other (Describe)
	100%	

Percent (%) of Load Used

8. Emissions Impact:

Those emissions indicated in Item 6 that at times under normal operating conditions cause (check one or more):

- Odors
- Health Effects
- Eye Irritations
- Other nuisances outside of plant property
- Property Damage
- No environmental damage

9. Emission Point Data:

Stack Height (emission point) above ground: 35 Ft  
 Ground Elevation above sea level at stack base: 690 Ft  
 Stack Diameter: 1.5 Ft  
 Volume of gas discharged into atmosphere: 2,354 Cfm  
 Gas exit temperature: 150 - 500 °F

10. Average Equipment Operating Time:

Daily: 24 Hours  
 Weekly: 7 Days  
 Yearly: 52 Weeks

*This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and complete to the best of my knowledge. This form must be completely filled out before it will be processed.*

Mail to:  
 CHATTANOOGA-HAMILTON  
 COUNTY AIR POLLUTION  
 CONTROL BUREAU  
 6125 Preservation Drive  
 Chattanooga, TN 37416

*Company Official*

*Title*

*Date*

**Do not write below this line**



Engineer Approval

Lbs/hr Allowable particulate emissions

Lbs/10<sup>6</sup> BTU allowable SO<sub>x</sub> emissions

ppm allowable NO<sub>x</sub> emissions

UTM Coordinate of Company: EW NS

This form corresponds to permit number:

Special Notations:

POLLUTION ESTIMATION FORM  
(Fuel Burning Equipment)

FORM E110  
01/2002

1. Name of Company: Kordsa, Inc.  
*(As shown on Line 1 of Form E001)*
2. Equipment Name: Afterburner for Impregnation Line  
*(As shown on Line 10 of Form E001)*
3. Percent excess air used in fuel burning (make allowances for leaks around doors and other openings): 15%
4. Type of Fuel (file Form E110 for each fuel used): Natural Gas

5. Source of Emission Factors: AP-42 (See attached emissions calculations)

6. Uncontrolled Particulate Emission Rate:

Particulate Emission Factor: See Attached Calculations  
*(lbs/ton; lbs/10<sup>3</sup> gal; lbs/10<sup>6</sup> ft<sup>3</sup>)*

$$\frac{\text{Maximum Fuel Consumption Rate}}{\text{(tons/hr; gal/hr; ft}^3\text{/hr)}} \times \frac{\text{Particulate Emission Factor}}{\text{Factor}} = \frac{\text{Uncontrolled Particulate Emission Rate}}{\text{Rate}} \text{ Lbs/hr}$$

7. Uncontrolled Sulfur Oxide (SO<sub>x</sub>) Emission Rate:

SO<sub>x</sub> Emission Factor: See Attached Calculations  
*Lbs/ton; lbs/10<sup>3</sup> gal; lbs/10<sup>6</sup> ft<sup>3</sup>*

$$\frac{\text{Maximum Fuel Consumption Rate}}{\text{(tons/hr; gal/hr; ft}^3\text{/hr)}} \times \frac{\text{SO}_x \text{ Emission Factor}}{\text{Factor}} = \frac{\text{Uncontrolled SO}_x \text{ Emission Rate}}{\text{Rate}} \text{ Lbs/hr}$$

8. Uncontrolled Hydrocarbon (HC) Emission Rate:

HC Emission Factor: See Attached Calculations  
*Lbs/ton; lbs/10<sup>3</sup> gal; lbs/10<sup>6</sup> ft<sup>3</sup>*

$$\frac{\text{Maximum Fuel Consumption Rate}}{\text{(tons/hr; gal/hr; ft}^3\text{/hr)}} \times \frac{\text{HC Emission Factor}}{\text{Factor}} = \frac{\text{Uncontrolled HC Emission Rate}}{\text{Rate}} \text{ Lbs/hr}$$

9. Uncontrolled Nitrogen Oxides (NO<sub>x</sub>) Emission Rate:

A. NO<sub>x</sub> Emission Factor: See Attached Calculations  
*Lbs/ton; lbs/10<sup>3</sup> gal; lbs/10<sup>6</sup> ft<sup>3</sup>*

B. 
$$\frac{\text{Maximum Fuel Consumption Rate}}{\text{(tons/hr; gal/hr; ft}^3\text{/hr)}} \times \frac{\text{NO}_x \text{ Emission Factor}}{\text{Factor}} = \frac{\text{Uncontrolled NO}_x \text{ Emission Rate}}{\text{Rate}} \text{ Lbs/hr}$$

Received

MAR 28 2024

10. NO<sub>x</sub> Emission Rate in PPM by Volume at STP:

Cubic feet per hour (CFH) of Exhaust Gases at 15% Excess Air:

A. 
$$\frac{V}{\text{See Table A}} \times \frac{\text{Maximum Fuel Consumption Rate}}{10^6 \text{ BTU/hr}} = \frac{\text{Exhaust Rate}}{\text{CFH}}$$

B. 
$$\frac{\text{See Attached Uncontrolled NO}_x \text{ (Item 9B)}}{\text{Lbs/hr}} \div \frac{\text{CFH of Exhaust Gas (Item 10A)}}{\text{CFH}} = \frac{\text{Lb/ft}^3 \text{ NO}_x}{\text{CFH}}$$

C. 
$$\text{PPM} = (8.37 \times 10^6) \times \frac{\text{Lb/ft}^3 \text{ NO}_x \text{ (Item 10B)}}{\text{CFH}} = \frac{\text{PPM at STP and 15\% Excess Air (NO}_x \text{ calculated as NO}_2\text{)}}{\text{CFH}}$$

Table A	
Fuel	V
Bituminous Coal	11700
Fuel Oil	11400
Natural Gas	11200
Wood	12800

This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and complete to the best of my knowledge. This form must be completely filled out before it will be acceptable.

Mail to:  
**CHATTANOOGA-HAMILTON COUNTY  
 AIR POLLUTION CONTROL BUREAU**  
 6125 Preservation Drive  
 Chattanooga, TN 37416

*Brad Thorfinson*  
 Company Official

*Project Manager*  
 Title

*3/28/24*  
 Date

*Do Not Write Below This Line*

*[Signature]*  
 Engineer Approval

This form corresponds to permit number: \_\_\_\_\_

Special Notations: \_\_\_\_\_  
 \_\_\_\_\_

Kordsa  
 Chattanooga, TN  
 Impregnation Line - Afterburner

Operating Parameters

Fuel Type	Natural Gas		
Afterburner	3,371,196	BTU/hr	(Unit is spec'd at 988 kW)
Combined Max Firing Rate	3.371	MMBTU/hr	
Operating hours	8,760	hr/yr	
Annual Fuel Usage	Natural Gas		
	28.95	MMcf/yr	
	3,306	scf/hr	

Emission Calculations

GWP <sup>6</sup>	
CH4	25
N2O	298

Emission Factors for Natural Gas Combustion<sup>1,2</sup>

	lb/10 <sup>6</sup> scf	lb/MMBtu-HHV	
Particulate Matter (PM <sub>Total</sub> )	7.6	0.0075	AP-42
Particulate Matter (PM <sub>Cond</sub> )	5.7	0.0056	AP-42
Particulate Matter (PM <sub>Fine</sub> ) <sup>3</sup>	1.9	0.0019	AP-42
Nitrogen Oxides (NO <sub>x</sub> )	100	0.0980	AP-42
Carbon Monoxide	84	0.0824	AP-42
Sulfur Dioxide (SO <sub>2</sub> )	0.6	0.0006	AP-42
VOC	5.5	0.0054	AP-42
Carbon Dioxide (CO <sub>2</sub> )	119,316	116.98	40 CFR 98 Table C-1
Methane (CH <sub>4</sub> )	2.249	2.205E-03	40 CFR 98 Table C-2
Nitrous Oxide (N <sub>2</sub> O)	0.22	2.205E-04	40 CFR 98 Table C-2
Lead	5.00E-04		AP-42
Benzene	2.10E-03		AP-42
Formaldehyde	7.50E-02		AP-42
Hexane	1.80		AP-42
Napthalene	6.10E-04		AP-42
Total Selected Metals (TSM)	0.00572		AP-42 Tables 1.4-2 & 1.4-4

Natural Gas Emissions

	lb/hr	Annual <sup>4,8</sup> ton/year
Particulate Matter (PM <sub>Total</sub> )	0.03	0.11
Particulate Matter (PM <sub>10</sub> )	6.28E-03	0.03
Particulate Matter (PM <sub>2.5</sub> )	6.28E-03	0.03
Particulate Matter (PM <sub>Cond</sub> )	1.86E-02	0.08
Nitrogen Oxides (NO <sub>x</sub> )	0.33	1.45
Carbon Monoxide	0.28	1.22
Sulfur Dioxide (SO <sub>2</sub> )	1.98E-03	8.69E-03
Combustion VOC	1.82E-02	0.08
Carbon Dioxide (CO <sub>2</sub> )	394.35	1727.25
Methane (CH <sub>4</sub> )	7.43E-03	0.03
Nitrous Oxide (N <sub>2</sub> O)	7.43E-04	3.26E-03
CO <sub>2</sub> Equivalent (CO <sub>2</sub> eq) <sup>8</sup>	--	1,729.03
Lead	1.65E-06	7.24E-06
Benzene	6.94E-06	3.04E-05
Formaldehyde	2.48E-04	1.09E-03
Hexane	5.95E-03	2.61E-02
Napthalene	2.02E-06	8.83E-06
Total Selected Metals (TSM)	1.89E-05	8.27E-05

Example Calculations/Notes:

- (1) Compilation of Air Pollutant Emission Factors, AP-42, Supplement D, Fifth Edition, Section 1.4, Tables 1.4-1 and 1.4-2, July 1998, Small Boilers < 100 MMBtu/hr
- (2) Per AP-42, Table 1.4-1 and 1.4-2, to convert from lb/10<sup>6</sup> scf to kg/10<sup>6</sup> m<sup>3</sup>, multiply by 16. To convert from lb/10<sup>6</sup> scf to lb/MMBtu, divide by 1,020.
- (3) Assume PM<sub>Fine</sub> = PM<sub>2.5</sub>, PM<sub>10</sub>
- (4) Maximum Emissions (lb/hr) = Emission Factor (lb/MMscf) \* Natural Gas Usage (MMcf/hr)
- (5) Annual Emissions (tpy) = Average Emissions (lb/hr) \* 8,760 (hr/yr) / 2,000 (lb/ton)
- (6) GWP from 40 CFR 98 Subpart A Table A-1; to convert kg/MMBtu to lb/MMBtu, multiply by 2.205
- (7) CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O Annual Emissions (tpy) = Average Emissions (lb/hr) \* 8,760 (hr/yr) / 2,000 (lb/ton)
- (8) CO<sub>2</sub> Equivalent (CO<sub>2</sub>eq) = CO<sub>2</sub>(t) + [GWP<sub>CH4</sub> \* CH<sub>4</sub> (t)] + [GWP<sub>N2O</sub> \* N<sub>2</sub>O (t)]

Received

MAR 28 2024

Chattanooga-Hamilton County  
 Air Pollution Control Bureau



Alan Frazier <afrazier@chattanooga.gov>

## Kordsa -- Microtex Composites Impregnation Line

1 message

Hunter Hill <hunter@stevenses.com>  
To: "afrazier@chattanooga.gov" <afrazier@chattanooga.gov>  
Cc: Brad Thorfinnson <bthorfinnson@axiommaterials.com>

Fri, Jun 21, 2024 at 9:41 AM

Alan:

When we last discussed the project, you requested a breakdown of the processing rates for materials that will be processed through the Microtex impregnation line at Kordsa included in the recent permit application. We have summarized this breakdown in the below, and attached are three SDS files of pre-mixed resin & solvent mixtures from Microtex. Please review and let me know if you have any questions. I will call later today to discuss, and if you are not available then please feel free to call at your earliest convenience.

Givens (these all will vary depending on the product but this a maximum solvent usage case):

- Fabric Weight (442 gsm)
- Resin Content (40%)
- Maximum Line Speed (8m/min)
- Resin Solids (75%)

Results in the following:

- Fabric use - 594 lbs/hr
- Resin Solids - 396 lbs/hr
- Solvent - 132 lbs/hr
- Product 990 lbs/hr

A more typical heavy usage would be 90 lbs/hr of solvent. This business is a make-to-order manufacturing company. There are many variations of the epoxy and phenolic products depending on what the customer orders.

### Solvent Usage (Maximum) and Most Likely Solvent Usage Distribution

				Epoxy		Phenolic	
		Units	50% MEK	25% Acetone	15% Methanol	10% Ethanol	
Maximum Solvent	132.6	lbs/hr	66.3	33.2	19.9	13.3	
Maximum Solvent	1,161,576	lbs/yr (24/7)	580,788	290,394	174,236	116,157.6	
Sol. Usage at 80% Uptime	929,261	lbs/yr (80%)	464,631	232,315	139,389	92,926.1	
Destruction Efficiency	99%	estimate	99%	100%	99%	99%	
Emissions	9292.61	lbs/yr	4,646	-	1,394	929.3	
Emissions	4.65	tons/yr	2.32	-	0.70	0.5	

In general, Epoxies use MEK and/or Acetone as a Solvent and Phenolics use Methanol and/or Ethanol

Thanks,

-Hunter

Hunter Hill, PE\*

Project Manager


\*LICENSED IN: AL, FL, GA, MS, NC, SC, TN, TX





Nashville | Chattanooga | Birmingham  
205.471.0307

---

**3 attachments**

 **SDS\_403R\_v.2\_ENG.PDF**  
288K

 **SDS\_402R\_v.1\_ENG.PDF**  
251K

 **SDS\_438R\_v.2.0\_ENG.PDF**  
263K



## Safety Data Sheet

**E3-150/ E3-150N/ E3-150N2**

Safety Data Sheet dated 21/10/2021 version 2



### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

Mixture identification:

Trade name: E3-150/ E3-150N/ E3-150N2

Product type and use: Resina solvente

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use: N.A.

Uses advised against: N.A.

#### 1.3. Details of the supplier of the safety data sheet

Company: MICROTEX COMPOSITES S.R.L.

Via del Pozzo San Sebastiano, 15/c

51100 - Italy

T +39-0574-627298 - F +39-0574-621308

microtex@microtexcomposites.com - www.microtexcomposites.com

Responsible: Silvio Campigli: qualityassurance@microtexcomposites.com

#### 1.4. Emergency telephone number

112

### SECTION 2: Hazards identification



#### 2.1. Classification of the substance or mixture

##### Regulation (EC) n. 1272/2008 (CLP)

Flam. Liq. 2	Highly flammable liquid and vapour.
Skin Irrit. 2	Causes skin irritation.
Eye Dam. 1	Causes serious eye damage.
Skin Sens. 1	May cause an allergic skin reaction.
Repr. 1B	May damage fertility or the unborn child.
Aquatic Chronic 2	Toxic to aquatic life with long lasting effects.

Adverse physicochemical, human health and environmental effects:

No other hazards

#### 2.2. Label elements

##### Regulation (EC) No 1272/2008 (CLP):

##### Hazard pictograms and Signal Word



Danger

##### Hazard statements

H225	Highly flammable liquid and vapour.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H360	May damage fertility or the unborn child.
H411	Toxic to aquatic life with long lasting effects.

##### Precautionary statements

Received

JUN 21 2024

Chattanooga-Hamilton County  
Air Pollution Control Bureau

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P310	Immediately call a POISON CENTER/doctor/...
P370+P378	In case of fire: Use ... to extinguish.
P391	Collect spillage.
P403+P235	Store in a well-ventilated place. Keep cool.

#### Contains

Phenol, polymer with formaldehyde, glycidyl ether

4,4'-ISOPROPYLIDENEDIPHENOL

Reaction product: bisphenol-A- (epichlorhydrin) May produce an allergic reaction.

2,2'-[(1-metiletilden)bis(4,1-fenilenossimetilen)]bisossirano May produce an allergic reaction.

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol May produce an allergic reaction.

#### Special provisions according to Annex XVII of REACH and subsequent amendments:

None.

Other Hazards: No other hazards

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

N.A.

#### 3.2. Mixtures

Mixture identification: E3-150/ E3-150N/ E3-150N2

#### Hazardous components within the meaning of the CLP regulation and related classification:

Qty	Name	Ident. Numb.	Classification	Registration Number
≥ 30 - < 50 %	Phenol, polymer with formaldehyde, glycidyl ether	CAS:28064-14-4 Index:608-164-0	Skin Irrit. 2, H315; Eye Irrit. 2, H319; Aquatic Chronic 2, H411; Skin Sens. 1, H317	
≥ 20 - < 35 %	Reaction product: bisphenol-A- (epichlorhydrin)	CAS:25068-38-6 EC:500-033-5 Index:603-074-00-8	Skin Irrit. 2, H315; Aquatic Chronic 2, H411; Eye Irrit. 2, H319; Skin Sens. 1, H317	
10-15 %	Butanone	CAS:78-93-3 EC:201-159-0 Index:606-002-00-3	Flam. Liq. 2, H225; Eye Irrit. 2, H319; STOT SE 3, H336	
< 10%	2,2'-[(1-metiletilden)bis(4,1-fenilenossimetilen)]bisossirano	CAS:1675-54-3	Skin Irrit. 2, H315; Eye Irrit. 2, H319; Aquatic Chronic 2, H411; Skin Sens. 1, H317	
≥ 5 - < 10 %	4,4'-ISOPROPYLIDENEDIPHENOL	CAS:80-05-7	Eye Dam. 1, H318; Aquatic Chronic 3, H412; Skin Sens. 1, H317; Repr. 1B, H360F	
< 5%	Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol	CAS:9003-36-5	Skin Irrit. 2, H315; Aquatic Chronic 2, H411; Skin Sens. 1, H317	
< 5%	FENURON	CAS:101-42-8 Index:202-941-4	Eye Irrit. 2, H319; STOT SE 3, H335; Repr. 2, H361d; Aquatic Chronic 2, H411	

## **SECTION 4: First aid measures**

### **4.1. Description of first aid measures**

In case of skin contact:

Immediately take off all contaminated clothing.

Areas of the body that have - or are only even suspected of having - come into contact with the product must be rinsed immediately with plenty of running water and possibly with soap.

OBTAIN IMMEDIATE MEDICAL ATTENTION.

Wash thoroughly the body (shower or bath).

Remove contaminated clothing immediately and dispose off safely.

After contact with skin, wash immediately with soap and plenty of water.

In case of eyes contact:

After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an ophthalmologist immediately.

Protect uninjured eye.

In case of Ingestion:

Do not induce vomiting, get medical attention showing the SDS and label hazardous.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

### **4.2. Most important symptoms and effects, both acute and delayed**

Eye irritation

Eye damages

Skin Irritation

Erythema

### **4.3. Indication of any immediate medical attention and special treatment needed**

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

---

## **SECTION 5: Firefighting measures**

### **5.1. Extinguishing media**

Suitable extinguishing media:

In case of fire: Use ... to extinguish.

Extinguishing media which must not be used for safety reasons:

None in particular.

### **5.2. Special hazards arising from the substance or mixture**

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

### **5.3. Advice for firefighters**

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

---

## **SECTION 6: Accidental release measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

#### **For non emergency personnel:**

Wear personal protection equipment.

Remove all sources of ignition.

Remove persons to safety.

See protective measures under point 7 and 8.

#### **For emergency responders:**

Wear personal protection equipment.

### **6.2. Environmental precautions**

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.

In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

Suitable material for taking up: absorbing material, organic, sand

### **6.3. Methods and material for containment and cleaning up**

Suitable material for taking up: absorbing material, organic, sand

Wash with plenty of water.

### **6.4. Reference to other sections**

See also section 8 and 13

---

## **SECTION 7: Handling and storage**

### 7.1. Precautions for safe handling

Avoid contact with skin and eyes, inhalation of vapours and mists.  
Exercise the greatest care when handling or opening the container.  
Don't use empty container before they have been cleaned.  
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.  
Contaminated clothing should be changed before entering eating areas.  
Do not eat or drink while working.  
See also section 8 for recommended protective equipment.

### 7.2. Conditions for safe storage, including any incompatibilities

Always keep in a well ventilated place.  
Store at below 20 °C. Keep away from unguarded flame and heat sources. Avoid direct exposure to sunlight.  
Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.

Incompatible materials:

None in particular.

Instructions as regards storage premises:

Cool and adequately ventilated.

### 7.3. Specific end use(s)

None in particular

Industrial sector specific solutions:

None in particular

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## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

No data available

### 8.2. Exposure controls

Eye protection:

Use close fitting safety goggles, don't use eye lens.

Protection for skin:

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Protection for hands:

Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

Respiratory protection:

N.A.

Thermal Hazards:

N.A.

Environmental exposure controls:

N.A.

Hygienic and Technical measures

N.A.

---

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical State Liquid

Appearance and colour: Liquid

Odour: N.A.

Odour threshold: N.A.

pH: N.A.

Melting point / freezing point: N.A.

Initial boiling point and boiling range: N.A.

Flash point: < 23°C

Evaporation rate: N.A.

Upper/lower flammability or explosive limits: N.A.

Vapour density: N.A.

Vapour pressure: N.A.

Relative density: N.A.

Solubility in water: N.A.

Solubility in oil: N.A.

Partition coefficient (n-octanol/water): N.A.

Auto-ignition temperature: N.A.

Decomposition temperature: N.A.

Viscosity: N.A.  
 Explosive properties: N.A.  
 Oxidizing properties: N.A.  
 Solid/gas flammability: N.A.  
 Volatile Organic compounds - VOCs = N.A.

**9.2. Other information**

Substance Groups relevant properties N.A.  
 Miscibility: N.A.  
 Conductivity: N.A.

**SECTION 10: Stability and reactivity**

**10.1. Reactivity**

Stable under normal conditions

**10.2. Chemical stability**

Data not available.

**10.3. Possibility of hazardous reactions**

None.

**10.4. Conditions to avoid**

Stable under normal conditions.

**10.5. Incompatible materials**

Avoid contact with combustible materials. The product could catch fire.

**10.6. Hazardous decomposition products**

None.

**SECTION 11: Toxicological information**

**11.1. Information on toxicological effects**

**Toxicological Information of the Preparation**

a) acute toxicity	Not classified
	Based on available data, the classification criteria are not met
b) skin corrosion/irritation	The product is classified: Skin Irrit. 2(H315)
c) serious eye damage/irritation	The product is classified: Eye Dam. 1(H318)
d) respiratory or skin sensitisation	The product is classified: Skin Sens. 1(H317)
e) germ cell mutagenicity	Not classified
	Based on available data, the classification criteria are not met
f) carcinogenicity	Not classified
	Based on available data, the classification criteria are not met
g) reproductive toxicity	The product is classified: Repr. 1B(H360)
h) STOT-single exposure	Not classified
	Based on available data, the classification criteria are not met
i) STOT-repeated exposure	Not classified
	Based on available data, the classification criteria are not met
j) aspiration hazard	Not classified
	Based on available data, the classification criteria are not met

**Toxicological information on main components of the mixture:**

2,2'-[(1-metiletilden)bis(4,1-fenilenossimetilen)] bisossirano	a) acute toxicity	LD50 Oral Rat > 2000 mg/kg	La sostanza non presenta tossicità orale acuta
		LD50 Skin Rat > 2000 mg/kg	La sostanza non presenta tossicità cutanea acuta.
	b) skin corrosion/irritation	Skin Irritant Rabbit Positive	Irritante per la pelle
	d) respiratory or skin sensitisation	Skin Sensitization Rat Positive	Causa sensibilizzazione pe contatto con la pelle
4,4'-ISOPROPYLIDENEDIPHENOL	a) acute toxicity	LD50 Oral Rat > 2000 mg/kg	

d) respiratory or skin sensitisation

LD50 Skin Rabbit = 6400 mg/kg  
LC50 Inhalation Rat > 170 mg/m<sup>3</sup> 6h  
Skin Sensitization

causa sensibilizzazione pe  
esseri umani

Formaldehyde, oligomeric a) acute toxicity  
reaction products with 1-  
chloro-2,3-epoxypropane  
and phenol

LD50 Oral Rat > 5000 mg/kg

LD50 Skin Rat > 2000 mg/kg

---

## SECTION 12: Ecological information

### 12.1. Toxicity

Adopt good working practices, so that the product is not released into the environment.

Eco-Toxicological Information:

Toxic to aquatic life with long lasting effects.

#### List of Eco-Toxicological properties of the product

The product is classified: Aquatic Chronic 2(H411)

### 12.2. Persistence and degradability

N.A.

### 12.3. Bioaccumulative potential

N.A.

### 12.4. Mobility in soil

N.A.

### 12.5. Results of PBT and vPvB assessment

No PBT or vPvB substances present in concentration  
>= 0.1%

### 12.6. Other adverse effects

N.A.

---

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Recover, if possible. Send to authorised disposal plants or for incineration under controlled conditions. In so doing, comply with the local and national regulations currently in force.

---

## SECTION 14: Transport information

### 14.1. UN number

UN1193

### 14.2. UN proper shipping name

ADR-Shipping Name: ETHYL METHYL KETONE SOLUTION

IATA-Shipping Name: ETHYL METHYL KETONE (METHYL ETHYL KETONE)

IMDG-Shipping Name: ETHYL METHYL KETONE (METHYL ETHYL KETONE)

### 14.3. Transport hazard class(es)

ADR-Class: 3

IATA-Class: 3

IMDG-Class: 3

### 14.4. Packing group

ADR-Packing Group: II

IATA-Packing group: II

IMDG-Packing group: II

### 14.5. Environmental hazards

Marine pollutant: Yes

Environmental Pollutant: Yes

### 14.6. Special precautions for user

Road and Rail (ADR-RID):

ADR exempt: No  
ADR-Label: 3  
ADR - Hazard identification number: 33  
ADR-Transport category (Tunnel restriction code): 2 (D/E)

**Air (IATA):**

IATA-Passenger Aircraft: 353  
IATA-Cargo Aircraft: 364  
IATA-Label: 3  
IATA-Subsidiary hazards: -  
IATA-Erg: 3L  
IATA-Special Provisions: -

**Sea (IMDG):**

IMDG-Stowage and handling: Category B  
IMDG-Segregation: -  
IMDG-Subsidiary hazards: -  
IMDG-Special Provisions: -  
IMDG-EMS: F-E, S-D

**14.7. Transport in bulk according to Annex II of Marpol and the IBC Code**

N.A.

---

**SECTION 15: Regulatory information**

**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

Dir. 98/24/EC (Risks related to chemical agents at work)

Dir. 2000/39/EC (Occupational exposure limit values)

Regulation (EC) n. 1907/2006 (REACH)

Regulation (EC) n. 1272/2008 (CLP)

Regulation (EC) n. 790/2009 (ATP 1 CLP) and (EU) n. 758/2013

Regulation (EU) n. 286/2011 (ATP 2 CLP)

Regulation (EU) n. 618/2012 (ATP 3 CLP)

Regulation (EU) n. 487/2013 (ATP 4 CLP)

Regulation (EU) n. 944/2013 (ATP 5 CLP)

Regulation (EU) n. 605/2014 (ATP 6 CLP)

Regulation (EU) n. 2015/1221 (ATP 7 CLP)

Regulation (EU) n. 2016/918 (ATP 8 CLP)

Regulation (EU) n. 2016/1179 (ATP 9 CLP)

Regulation (EU) n. 2017/776 (ATP 10 CLP)

Regulation (EU) n. 2018/669 (ATP 11 CLP)

Regulation (EU) n. 2018/1480 (ATP 13 CLP)

Regulation (EU) n. 2019/521 (ATP 12 CLP)

Regulation (EU) 2015/830

Restrictions related to the product or the substances contained according to Annex XVII Regulation (EC) 1907/2006 (REACH) and subsequent modifications:

Restrictions related to the product: 3, 40

Restrictions related to the substances contained: 75

Provisions related to directive EU 2012/18 (Seveso III):

N.A.

Regulation (EU) No 649/2012 (PIC regulation)

No substances listed

German Water Hazard Class.

Class 3: extremely hazardous.

SVHC Substances:

No data available

**15.2. Chemical safety assessment**

No Chemical Safety Assessment has been carried out for the mixture.

---

**SECTION 16: Other information**

Code	Description
H225	Highly flammable liquid and vapour.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H360	May damage fertility or the unborn child.
H360F	May damage fertility.
H361d	Suspected of damaging the unborn child.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

Code	Hazard class and hazard category	Description
2.6/2	Flam. Liq. 2	Flammable liquid, Category 2
3.2/2	Skin Irrit. 2	Skin irritation, Category 2
3.3/1	Eye Dam. 1	Serious eye damage, Category 1
3.3/2	Eye Irrit. 2	Eye irritation, Category 2
3.4.2/1	Skin Sens. 1	Skin Sensitisation, Category 1
3.7/1B	Repr. 1B	Reproductive toxicity, Category 1B
3.7/2	Repr. 2	Reproductive toxicity, Category 2
3.8/3	STOT SE 3	Specific target organ toxicity — single exposure, Category 3
4.1/C2	Aquatic Chronic 2	Chronic (long term) aquatic hazard, category 2
4.1/C3	Aquatic Chronic 3	Chronic (long term) aquatic hazard, category 3

**Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:**

Classification according to Regulation (EC) Nr. 1272/2008	Classification procedure
2.6/2	On basis of test data
3.2/2	Calculation method
3.3/1	Calculation method
3.4.2/1	Calculation method
3.7/1B	Calculation method
4.1/C2	Calculation method

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.

It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.

This MSDS cancels and replaces any preceding release.

Legend to abbreviations and acronyms used in the safety data sheet:

ACGIH: American Conference of Governmental Industrial Hygienists

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.

AND: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ATE: Acute Toxicity Estimate

ATEmix: Acute toxicity Estimate (Mixtures)

BCF: Biological Concentration Factor

BEI: Biological Exposure Index

BOD: Biochemical Oxygen Demand

CAS: Chemical Abstracts Service (division of the American Chemical Society).

CAV: Poison Center

CE: European Community

CLP: Classification, Labeling, Packaging.

CMR: Carcinogenic, Mutagenic and Reprotoxic



COD: Chemical Oxygen Demand  
COV: Volatile Organic Compound  
CSA: Chemical Safety Assessment  
CSR: Chemical Safety Report  
DMEL: Derived Minimal Effect Level  
DNEL: Derived No Effect Level.  
DPD: Dangerous Preparations Directive  
DSD: Dangerous Substances Directive  
EC50: Half Maximal Effective Concentration  
ECHA: European Chemicals Agency  
EINECS: European Inventory of Existing Commercial Chemical Substances.  
ES: Exposure Scenario  
GefStoffVO: Ordinance on Hazardous Substances, Germany.  
GHS: Globally Harmonized System of Classification and Labeling of Chemicals.  
IARC: International Agency for Research on Cancer  
IATA: International Air Transport Association.  
IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA).  
IC50: half maximal inhibitory concentration  
ICAO: International Civil Aviation Organization.  
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO).  
IMDG: International Maritime Code for Dangerous Goods.  
INCI: International Nomenclature of Cosmetic Ingredients.  
IRCCS: Scientific Institute for Research, Hospitalization and Health Care  
KAFH: KAFH  
KSt: Explosion coefficient.  
LC50: Lethal concentration, for 50 percent of test population.  
LD50: Lethal dose, for 50 percent of test population.  
LDLo: Leathal Dose Low  
N.A.: Not Applicable  
N/A: Not Applicable  
N/D: Not defined/ Not available  
NA: Not available  
NIOSH: National Institute for Occupational Safety and Health  
NOAEL: No Observed Adverse Effect Level  
OSHA: Occupational Safety and Health Administration  
PBT: Persistent, Bioaccumulative and Toxic  
PGK: Packaging Instruction  
PNEC: Predicted No Effect Concentration.  
PSG: Passengers  
RID: Regulation Concerning the International Transport of Dangerous Goods by Rail.  
STEL: Short Term Exposure limit.  
STOT: Specific Target Organ Toxicity.  
TLV: Threshold Limiting Value.  
TWATLV: Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard).  
vPvB: Very Persistent, Very Bioaccumulative.  
WGK: German Water Hazard Class.

**Paragraphs modified from the previous revision:**

- 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING
- 2. HAZARDS IDENTIFICATION

## Safety Data Sheet

**X1-120**

Safety Data Sheet dated 14/10/2021 version 1



### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

Mixture identification:

Trade name: **X1-120**

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use: N.A.

Uses advised against: N.A.

#### 1.3. Details of the supplier of the safety data sheet

Company: **MICROTEX COMPOSITES S.R.L.**

Via del Pozzo San Sebastiano, 15/c

51100 - Italy

T +39-0574-627298 - F +39-0574-621308

microtex@microtexcomposites.com - www.microtexcomposites.com

Responsible: Silvio Campigli: qualityassurance@microtexcomposites.com

#### 1.4. Emergency telephone number

112

### SECTION 2: Hazards identification



#### 2.1. Classification of the substance or mixture

##### Regulation (EC) n. 1272/2008 (CLP)

Flam. Liq. 2 Highly flammable liquid and vapour.  
Skin Irrit. 2 Causes skin irritation.  
Eye Irrit. 2 Causes serious eye irritation.  
Skin Sens. 1 May cause an allergic skin reaction.  
Aquatic Chronic 2 Toxic to aquatic life with long lasting effects.

Adverse physicochemical, human health and environmental effects:

No other hazards

#### 2.2. Label elements

##### Regulation (EC) No 1272/2008 (CLP):

##### Hazard pictograms and Signal Word



Danger

##### Hazard statements

H225 Highly flammable liquid and vapour.  
H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H319 Causes serious eye irritation.  
H411 Toxic to aquatic life with long lasting effects.

##### Precautionary statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

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P370+P378 In case of fire: Use ... to extinguish.  
P391 Collect spillage.  
P403+P235 Store in a well-ventilated place. Keep cool.

#### Contains

Reaction product: bisphenol-A-  
(epichlorhydrin)

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane May produce an allergic reaction.

#### Special provisions according to Annex XVII of REACH and subsequent amendments:

None.

Other Hazards: No other hazards

---

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

N.A.

#### 3.2. Mixtures

Mixture identification: X1-120

#### Hazardous components within the meaning of the CLP regulation and related classification:

Qty	Name	Ident. Numb.	Classification	Registration Number
50-75 %	Reaction product: bisphenol-A- (epichlorhydrin)	CAS:25068-38-6 EC:500-033-5 Index:603-074-00-8	Skin Irrit. 2, H315; Aquatic Chronic 2, H411; Eye Irrit. 2, H319; Skin Sens. 1, H317	
25-35 %	2,2'-[(1-methylethylidene)bis(4,1- phenyleneoxymethylene)] bisoxirane	CAS:1675-54-3 Index:216-823-5	Skin Irrit. 2, H315; Eye Irrit. 2, H319; Aquatic Chronic 2, H411; Skin Sens. 1, H317	
15-25 %	Butanone	CAS:78-93-3 EC:201-159-0 Index:606-002-00-3	Flam. Liq. 2, H225; Eye Irrit. 2, H319; STOT SE 3, H336	

---

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

In case of skin contact:

Immediately take off all contaminated clothing.

Areas of the body that have - or are only even suspected of having - come into contact with the product must be rinsed immediately with plenty of running water and possibly with soap.

Wash thoroughly the body (shower or bath).

Remove contaminated clothing immediately and dispose off safely.

After contact with skin, wash immediately with soap and plenty of water.

In case of eyes contact:

After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an ophthalmologist immediately.

Protect uninjured eye.

In case of Ingestion:

Do not induce vomiting, get medical attention showing the SDS and label hazardous.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

#### 4.2. Most important symptoms and effects, both acute and delayed

Eye irritation

Eye damages

Skin Irritation

Erythema

#### 4.3. Indication of any immediate medical attention and special treatment needed

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

---

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

Suitable extinguishing media:

In case of fire: Use ... to extinguish.

Extinguishing media which must not be used for safety reasons:

None in particular.

### 5.2. Special hazards arising from the substance or mixture

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

### 5.3. Advice for firefighters

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

---

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### For non emergency personnel:

Wear personal protection equipment.

Remove all sources of ignition.

Remove persons to safety.

See protective measures under point 7 and 8.

#### For emergency responders:

Wear personal protection equipment.

### 6.2. Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.

In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

Suitable material for taking up: absorbing material, organic, sand

### 6.3. Methods and material for containment and cleaning up

Suitable material for taking up: absorbing material, organic, sand

Wash with plenty of water.

### 6.4. Reference to other sections

See also section 8 and 13

---

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Avoid contact with skin and eyes, inhalation of vapours and mists.

Don't use empty container before they have been cleaned.

Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.

Contaminated clothing should be changed before entering eating areas.

Do not eat or drink while working.

See also section 8 for recommended protective equipment.

### 7.2. Conditions for safe storage, including any incompatibilities

Always keep in a well ventilated place.

Store at below 20 °C. Keep away from unguarded flame and heat sources. Avoid direct exposure to sunlight.

Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.

Incompatible materials:

None in particular.

Instructions as regards storage premises:

Cool and adequately ventilated.

### 7.3. Specific end use(s)

None in particular

Industrial sector specific solutions:

None in particular

---

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

No data available

### 8.2. Exposure controls

Eye protection:

Use close fitting safety goggles, don't use eye lens.

Protection for skin:

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Protection for hands:

Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

Respiratory protection:

N.A.

Thermal Hazards:

N.A.

Environmental exposure controls:

N.A.

Hygienic and Technical measures

N.A.

---

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical State Liquid

Appearance and colour: Liquid whitish

Odour: like: Ketone

Odour threshold: N.A.

pH: N.A.

Melting point / freezing point: N.A.

Initial boiling point and boiling range: N.A.

Flash point: < 23°C

Evaporation rate: N.A.

Upper/lower flammability or explosive limits: N.A.

Vapour density: N.A.

Vapour pressure: N.A.

Relative density: N.A.

Solubility in water: N.A.

Solubility in oil: N.A.

Partition coefficient (n-octanol/water): N.A.

Auto-ignition temperature: N.A.

Decomposition temperature: N.A.

Viscosity: N.A.

Explosive properties: N.A.

Oxidizing properties: N.A.

Solid/gas flammability: N.A.

Volatile Organic compounds - VOCs = N.A.

### 9.2. Other information

Substance Groups relevant properties N.A.

Miscibility: N.A.

Conductivity: N.A.

---

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Stable under normal conditions

### 10.2. Chemical stability

Data not available.

### 10.3. Possibility of hazardous reactions

None.

### 10.4. Conditions to avoid

Stable under normal conditions.

### 10.5. Incompatible materials

Avoid contact with combustible materials. The product could catch fire.

### 10.6. Hazardous decomposition products

None.

---

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

#### Toxicological Information of the Preparation

a) acute toxicity

Not classified

No data available for the product

b) skin corrosion/irritation	The product is classified: Skin Irrit. 2(H315) No data available for the product
c) serious eye damage/irritation	The product is classified: Eye Irrit. 2(H319) No data available for the product
d) respiratory or skin sensitisation	The product is classified: Skin Sens. 1(H317) No data available for the product
e) germ cell mutagenicity	Not classified No data available for the product
f) carcinogenicity	Not classified No data available for the product
g) reproductive toxicity	Not classified Based on available data, the classification criteria are not met
h) STOT-single exposure	Not classified Based on available data, the classification criteria are not met
i) STOT-repeated exposure	Not classified Based on available data, the classification criteria are not met
j) aspiration hazard	Not classified Based on available data, the classification criteria are not met

**Toxicological information on main components of the mixture:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	a) acute toxicity	LD50 Oral Rat > 2000 mg/kg
		LD50 Skin Rat > 2000 mg/kg
	b) skin corrosion/irritation	Skin Irritant Positive
	c) serious eye damage/irritation	Eye Irritant Yes
	d) respiratory or skin sensitisation	Skin Sensitization Positive

---

**SECTION 12: Ecological information**

**12.1. Toxicity**

Adopt good working practices, so that the product is not released into the environment.

Eco-Toxicological Information:

Toxic to aquatic life with long lasting effects.

**List of Eco-Toxicological properties of the product**

The product is classified: Aquatic Chronic 2(H411)

**12.2. Persistence and degradability**

N.A.

**12.3. Bioaccumulative potential**

N.A.

**12.4. Mobility in soil**

N.A.

**12.5. Results of PBT and vPvB assessment**

No PBT or vPvB substances present in concentration  
>= 0.1%

**12.6. Other adverse effects**

N.A.

---

**SECTION 13: Disposal considerations**

**13.1. Waste treatment methods**

Recover, if possible. Send to authorised disposal plants or for incineration under controlled conditions. In so doing, comply with the local and national regulations currently in force.

---

**SECTION 14: Transport information****14.1. UN number**

UN1193

**14.2. UN proper shipping name**

ADR-Shipping Name: ETHYL METHYL KETONE SOLUTION

IATA-Shipping Name: ETHYL METHYL KETONE (METHYL ETHYL KETONE)

IMDG-Shipping Name: ETHYL METHYL KETONE (METHYL ETHYL KETONE)

**14.3. Transport hazard class(es)**

ADR-Class: 3

IATA-Class: 3

IMDG-Class: 3

**14.4. Packing group**

ADR-Packing Group: II

IATA-Packing group: II

IMDG-Packing group: II

**14.5. Environmental hazards**

Marine pollutant: Yes

Environmental Pollutant: Yes

**14.6. Special precautions for user**

Road and Rail (ADR-RID):

ADR exempt: No

ADR-Label: 3

ADR - Hazard identification number: 33

ADR-Transport category (Tunnel restriction code): 2 (D/E)

Air (IATA):

IATA-Passenger Aircraft: 353

IATA-Cargo Aircraft: 364

IATA-Label: 3

IATA-Subsidiary hazards: -

IATA-Erg: 3L

IATA-Special Provisions: -

Sea (IMDG):

IMDG-Stowage and handling: Category B

IMDG-Segregation: -

IMDG-Subsidiary hazards: -

IMDG-Special Provisions: -

IMDG-EMS: F-E, S-D

**14.7. Transport in bulk according to Annex II of Marpol and the IBC Code**

N.A.

---

**SECTION 15: Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

Dir. 98/24/EC (Risks related to chemical agents at work)

Dir. 2000/39/EC (Occupational exposure limit values)

Regulation (EC) n. 1907/2006 (REACH)

Regulation (EC) n. 1272/2008 (CLP)

Regulation (EC) n. 790/2009 (ATP 1 CLP) and (EU) n. 758/2013

Regulation (EU) n. 286/2011 (ATP 2 CLP)

Regulation (EU) n. 618/2012 (ATP 3 CLP)

Regulation (EU) n. 487/2013 (ATP 4 CLP)

Regulation (EU) n. 944/2013 (ATP 5 CLP)

Regulation (EU) n. 605/2014 (ATP 6 CLP)

Regulation (EU) n. 2015/1221 (ATP 7 CLP)

Regulation (EU) n. 2016/918 (ATP 8 CLP)

Regulation (EU) n. 2016/1179 (ATP 9 CLP)

Regulation (EU) n. 2017/776 (ATP 10 CLP)

Regulation (EU) n. 2018/669 (ATP 11 CLP)  
Regulation (EU) n. 2018/1480 (ATP 13 CLP)  
Regulation (EU) n. 2019/521 (ATP 12 CLP)  
Regulation (EU) 2015/830

Restrictions related to the product or the substances contained according to Annex XVII Regulation (EC) 1907/2006 (REACH) and subsequent modifications:

Restrictions related to the product: 3, 40

Restrictions related to the substances contained: 75

Provisions related to directive EU 2012/18 (Seveso III):

N.A.

Regulation (EU) No 649/2012 (PIC regulation)

No substances listed

German Water Hazard Class.

Class 3: extremely hazardous.

SVHC Substances:

No data available

### 15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for the mixture.

---

## SECTION 16: Other information

Code	Description
H225	Highly flammable liquid and vapour.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.
H411	Toxic to aquatic life with long lasting effects.

Code	Hazard class and hazard category	Description
2.6/2	Flam. Liq. 2	Flammable liquid, Category 2
3.2/2	Skin Irrit. 2	Skin irritation, Category 2
3.3/2	Eye Irrit. 2	Eye irritation, Category 2
3.4.2/1	Skin Sens. 1	Skin Sensitisation, Category 1
3.8/3	STOT SE 3	Specific target organ toxicity — single exposure, Category 3
4.1/C2	Aquatic Chronic 2	Chronic (long term) aquatic hazard, category 2

### Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Classification according to Regulation (EC) Nr. 1272/2008	Classification procedure
2.6/2	On basis of test data
3.2/2	Calculation method
3.3/2	Calculation method
3.4.2/1	Calculation method
4.1/C2	Calculation method

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.

It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.

This MSDS cancels and replaces any preceding release.

Legend to abbreviations and acronyms used in the safety data sheet:

ACGIH: American Conference of Governmental Industrial Hygienists

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.

AND: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ATE: Acute Toxicity Estimate



ATEmix: Acute toxicity Estimate (Mixtures)  
BCF: Biological Concentration Factor  
BEI: Biological Exposure Index  
BOD: Biochemical Oxygen Demand  
CAS: Chemical Abstracts Service (division of the American Chemical Society).  
CAV: Poison Center  
CE: European Community  
CLP: Classification, Labeling, Packaging.  
CMR: Carcinogenic, Mutagenic and Reprotoxic  
COD: Chemical Oxygen Demand  
COV: Volatile Organic Compound  
CSA: Chemical Safety Assessment  
CSR: Chemical Safety Report  
DMEL: Derived Minimal Effect Level  
DNEL: Derived No Effect Level.  
DPD: Dangerous Preparations Directive  
DSD: Dangerous Substances Directive  
EC50: Half Maximal Effective Concentration  
ECHA: European Chemicals Agency  
EINECS: European Inventory of Existing Commercial Chemical Substances.  
ES: Exposure Scenario  
GefStoffVO: Ordinance on Hazardous Substances, Germany.  
GHS: Globally Harmonized System of Classification and Labeling of Chemicals.  
IARC: International Agency for Research on Cancer  
IATA: International Air Transport Association.  
IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA).  
IC50: half maximal inhibitory concentration  
ICAO: International Civil Aviation Organization.  
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO).  
IMDG: International Maritime Code for Dangerous Goods.  
INCI: International Nomenclature of Cosmetic Ingredients.  
IRCCS: Scientific Institute for Research, Hospitalization and Health Care  
KAFH: KAFH  
KSt: Explosion coefficient.  
LC50: Lethal concentration, for 50 percent of test population.  
LD50: Lethal dose, for 50 percent of test population.  
LDLo: Leathal Dose Low  
N.A.: Not Applicable  
N/A: Not Applicable  
N/D: Not defined/ Not available  
NA: Not available  
NIOSH: National Institute for Occupational Safety and Health  
NOAEL: No Observed Adverse Effect Level  
OSHA: Occupational Safety and Health Administration  
PBT: Persistent, Bioaccumulative and Toxic  
PGK: Packaging Instruction  
PNEC: Predicted No Effect Concentration.  
PSG: Passengers  
RID: Regulation Concerning the International Transport of Dangerous Goods by Rail.  
STEL: Short Term Exposure limit.  
STOT: Specific Target Organ Toxicity.  
TLV: Threshold Limiting Value.  
TWATLV: Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard).  
vPvB: Very Persistent, Very Bioaccumulative.  
WGK: German Water Hazard Class.

## Safety Data Sheet

**X4-140**

Safety Data Sheet dated 21/07/2023 version 2.0



A handwritten signature in blue ink, appearing to be "JMS", is located in the upper right corner of the page.

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

Mixture identification:

Trade name: X4-140

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use: N.A.

Uses advised against: N.A.

#### 1.3. Details of the supplier of the safety data sheet

Company: MICROTEX COMPOSITES S.R.L.

Via del Pozzo San Sebastiano, 15/c

51100 - Italy

T +39-0574-627298 - F +39-0574-621308

microtex@microtexcomposites.com - www.microtexcomposites.com

Responsible: Giovanni Laureano: hse@microtexcomposites.com

#### 1.4. Emergency telephone number

112

### SECTION 2: Hazards identification



#### 2.1. Classification of the substance or mixture

##### Regulation (EC) n. 1272/2008 (CLP)

Flam. Liq. 2 Highly flammable liquid and vapour.

Skin Irrit. 2 Causes skin irritation.

Eye Irrit. 2 Causes serious eye irritation.

Skin Sens. 1 May cause an allergic skin reaction.

Aquatic Chronic 2 Toxic to aquatic life with long lasting effects.

Adverse physicochemical, human health and environmental effects:

No other hazards

#### 2.2. Label elements

##### Regulation (EC) No 1272/2008 (CLP):

##### Hazard pictograms and Signal Word



Danger

##### Hazard statements

H225 Highly flammable liquid and vapour.

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

H411 Toxic to aquatic life with long lasting effects.

##### Precautionary statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P233 Keep container tightly closed.

P240 Ground and bond container and receiving equipment.

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P241	Use explosion-proof [electrical/ventilating/lighting/...] equipment.
P242	Use non-sparking tools.
P243	Take action to prevent static discharges.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash ... Thoroughly after handling.
P272	Contaminated work clothing must not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P302+P352	IF ON SKIN: Wash with plenty of water/...
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P321	Specific treatment (see ... On this label).
P332+P313	If skin irritation occurs: Get medical advice/attention.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P370+P378	In case of fire: Use ... to extinguish.
P391	Collect spillage.
P403+P235	Store in a well-ventilated place. Keep cool.
P501	Dispose of contents/container to ...

#### Contains

Reaction product: bisphenol-A-  
(epichlorhydrin)

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane May produce an allergic reaction.

#### Special provisions according to Annex XVII of REACH and subsequent amendments:

None.

Other Hazards: No other hazards

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

N.A.

#### 3.2. Mixtures

Mixture identification: X4-140

#### Hazardous components within the meaning of the CLP regulation and related classification:

Qty	Name	Ident. Numb.	Classification	Registration Number
≥ 50 - ≤ 75 %	Reaction product: bisphenol-A- (epichlorhydrin)	CAS:25068-38-6 EC:500-033-5 Index:603-074-00-8	Skin Irrit. 2, H315; Aquatic Chronic 2, H411; Eye Irrit. 2, H319; Skin Sens. 1, H317	
≥ 15 - ≤ 25 %	2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane	CAS:1675-54-3 Index:216-823-5	Skin Irrit. 2, H315; Eye Irrit. 2, H319; Aquatic Chronic 2, H411; Skin Sens. 1, H317	
≥ 15 - ≤ 25 %	Butanone	CAS:78-93-3 EC:201-159-0 Index:606-002-00-3	Flam. Liq. 2, H225; Eye Irrit. 2, H319; STOT SE 3, H336	

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

In case of skin contact:

- Immediately take off all contaminated clothing.
- Remove contaminated clothing immediately and dispose off safely.
- After contact with skin, wash immediately with soap and plenty of water.

In case of eyes contact:

After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an ophthalmologist immediately.

Protect uninjured eye.

In case of Ingestion:

Do not induce vomiting, get medical attention showing the SDS and label hazardous.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

#### **4.2. Most important symptoms and effects, both acute and delayed**

Eye irritation

Eye damages

Skin Irritation

Erythema

#### **4.3. Indication of any immediate medical attention and special treatment needed**

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

---

### **SECTION 5: Firefighting measures**

#### **5.1. Extinguishing media**

Suitable extinguishing media:

In case of fire: Use ... to extinguish.

Extinguishing media which must not be used for safety reasons:

None in particular.

#### **5.2. Special hazards arising from the substance or mixture**

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

#### **5.3. Advice for firefighters**

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

---

### **SECTION 6: Accidental release measures**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

**For non emergency personnel:**

Wear personal protection equipment.

Remove all sources of ignition.

Remove persons to safety.

See protective measures under point 7 and 8.

**For emergency responders:**

Wear personal protection equipment.

#### **6.2. Environmental precautions**

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.

In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

Suitable material for taking up: absorbing material, organic, sand

#### **6.3. Methods and material for containment and cleaning up**

Suitable material for taking up: absorbing material, organic, sand

Wash with plenty of water.

#### **6.4. Reference to other sections**

See also section 8 and 13

---

### **SECTION 7: Handling and storage**

#### **7.1. Precautions for safe handling**

Avoid contact with skin and eyes, inhalation of vapours and mists.

Don't use empty container before they have been cleaned.

Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.

See also section 8 for recommended protective equipment.

**Advice on general occupational hygiene:**

Contaminated clothing should be changed before entering eating areas.

Do not eat or drink while working.

#### **7.2. Conditions for safe storage, including any incompatibilities**

Always keep in a well ventilated place.

Store at below 20 °C. Keep away from unguarded flame and heat sources. Avoid direct exposure to sunlight.

Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.  
Avoid accumulating electrostatic charge.

**Incompatible materials:**

None in particular.

**Instructions as regards storage premises:**

Cool and adequately ventilated.  
Safety electric system.

**7.3. Specific end use(s)**

None in particular

**Industrial sector specific solutions:**

None in particular

---

**SECTION 8: Exposure controls/personal protection**

**8.1. Control parameters**

**Community Occupational Exposure Limits (OEL)**

	<b>OEL Type</b>	<b>Occupational Exposure Limit</b>
Butanone CAS: 78-93-3	ACGIH	Long Term: 200 ppm; Short Term: 300 ppm Notes: BEI - URT irr, CNS and PNS impair
	EU	Long Term: 600 mg/m <sup>3</sup> - 200 ppm; Short Term: 900 mg/m <sup>3</sup> - 300 ppm

**8.2. Exposure controls**

**Eye protection:**

Use close fitting safety goggles, don't use eye lens.

**Protection for skin:**

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

**Protection for hands:**

Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

**Respiratory protection:**

N.A.

**Thermal Hazards:**

N.A.

**Environmental exposure controls:**

N.A.

**Hygienic and Technical measures**

---

**SECTION 9: Physical and chemical properties**

**9.1. Information on basic physical and chemical properties**

Physical State Liquid

Appearance and colour: Liquid whitish

Odour: like: Ketone

pH: N.A.

Kinematic viscosity: N.A.

Melting point / freezing point: N.A.

Initial boiling point and boiling range: N.A.

Flash point: < 23°C

Upper/lower flammability or explosive limits: N.A.

Vapour density: N.A.

Vapour pressure: N.A.

Relative density: N.A.

Solubility in water: N.A.

Solubility in oil: N.A.

Partition coefficient (n-octanol/water): N.A.

Auto-ignition temperature: N.A.

Decomposition temperature: N.A.

Flammability: The product is classified Flam. Liq. 2 H225

Volatile Organic compounds - VOCs = N.A.

**Particle characteristics:**

Particle size: N.A.

**9.2. Other information**

No other relevant information

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

It may generate dangerous reactions (See subsections below)

### 10.2. Chemical stability

It may generate dangerous reactions (See subsections below)

### 10.3. Possibility of hazardous reactions

None.

### 10.4. Conditions to avoid

Avoid accumulating electrostatic charge.

### 10.5. Incompatible materials

Avoid contact with combustible materials. The product could catch fire.

### 10.6. Hazardous decomposition products

None.

## SECTION 11: Toxicological information

### 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### Toxicological Information of the Preparation

a) acute toxicity	Not classified
	Based on available data, the classification criteria are not met
b) skin corrosion/irritation	The product is classified: Skin Irrit. 2(H315)
c) serious eye damage/irritation	The product is classified: Eye Irrit. 2(H319)
d) respiratory or skin sensitisation	The product is classified: Skin Sens. 1(H317)
e) germ cell mutagenicity	Not classified
	Based on available data, the classification criteria are not met
f) carcinogenicity	Not classified
	Based on available data, the classification criteria are not met
g) reproductive toxicity	Not classified
	Based on available data, the classification criteria are not met
h) STOT-single exposure	Not classified
	Based on available data, the classification criteria are not met
i) STOT-repeated exposure	Not classified
	Based on available data, the classification criteria are not met
j) aspiration hazard	Not classified
	Based on available data, the classification criteria are not met

#### Toxicological information on main components of the mixture:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane	a) acute toxicity	LD50 Oral Rat > 2000 mg/kg
		LD50 Skin Rat > 2000 mg/kg
	b) skin corrosion/irritation	Skin Irritant Positive
	c) serious eye damage/irritation	Eye Irritant Yes
	d) respiratory or skin sensitisation	Skin Sensitization Positive

### 11.2. Information on other hazards

#### Endocrine disrupting properties:

No endocrine disruptor substances present in concentration  $\geq 0.1\%$

## SECTION 12: Ecological information

### 12.1. Toxicity

Adopt good working practices, so that the product is not released into the environment.

Eco-Toxicological Information:

Toxic to aquatic life with long lasting effects.

#### List of Eco-Toxicological properties of the product

The product is classified: Aquatic Chronic 2(H411)

**12.2. Persistence and degradability**

N.A.

**12.3. Bioaccumulative potential**

N.A.

**12.4. Mobility in soil**

N.A.

**12.5. Results of PBT and vPvB assessment**

No PBT or vPvB substances present in concentration  $\geq 0.1\%$

**12.6 Endocrine disrupting properties**

No endocrine disruptor substances present in concentration  $\geq 0.1\%$

**12.7 Other adverse effects**

N.A.

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**SECTION 13: Disposal considerations**

**13.1. Waste treatment methods**

Recover, if possible. Send to authorised disposal plants or for incineration under controlled conditions. In so doing, comply with the local and national regulations currently in force.

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**SECTION 14: Transport information**

**14.1. UN number or ID number**

1133

**14.2. UN proper shipping name**

ADR-Shipping Name: ADHESIVES containing flammable liquid (vapour pressure at 50 °C more than 110 kPa)

IATA-Shipping Name: ADHESIVES containing flammable liquid

IMDG-Shipping Name: ADHESIVES containing flammable liquid

**14.3. Transport hazard class(es)**

ADR-Class: 3

IATA-Class: 3

IMDG-Class: 3

**14.4. Packing group**

ADR-Packing Group: II

IATA-Packing group: II

IMDG-Packing group: II

**14.5. Environmental hazards**

Most important toxic component: Reaction product: bisphenol-A-(epichlorhydrin)

Toxic ingredients quantity: 80.47

Very toxic ingredients quantity: 0.00

Marine pollutant: Yes

Environmental Pollutant: Yes

IMDG-EMS: F-E, S-D

**14.6. Special precautions for user**

Road and Rail (ADR-RID):

ADR-Label: 3

ADR - Hazard identification number: 33

ADR-Special Provisions: 640C

ADR-Transport category (Tunnel restriction code): 2 (D/E)

Air (IATA):

IATA-Passenger Aircraft: 353

IATA-Cargo Aircraft: 364

IATA-Label: 3

IATA-Subsidiary hazards: -

IATA-Erg: 3L

IATA-Special Provisions: A3

Sea (IMDG):

IMDG-Stowage and handling: Category B

IMDG-Segregation: -

IMDG-Subsidiary hazards: -

IMDG-Special Provisions: -

#### 14.7. Maritime transport in bulk according to IMO instruments

N.A.

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### SECTION 15: Regulatory information

#### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Dir. 98/24/EC (Risks related to chemical agents at work)

Dir. 2000/39/EC (Occupational exposure limit values)

Regulation (EC) n. 1907/2006 (REACH)

Regulation (EC) n. 1272/2008 (CLP)

Regulation (EC) n. 790/2009 (ATP 1 CLP) and (EU) n. 758/2013

Regulation (EU) n. 286/2011 (ATP 2 CLP)

Regulation (EU) n. 618/2012 (ATP 3 CLP)

Regulation (EU) n. 487/2013 (ATP 4 CLP)

Regulation (EU) n. 944/2013 (ATP 5 CLP)

Regulation (EU) n. 605/2014 (ATP 6 CLP)

Regulation (EU) n. 2015/1221 (ATP 7 CLP)

Regulation (EU) n. 2016/918 (ATP 8 CLP)

Regulation (EU) n. 2016/1179 (ATP 9 CLP)

Regulation (EU) n. 2017/776 (ATP 10 CLP)

Regulation (EU) n. 2018/669 (ATP 11 CLP)

Regulation (EU) n. 2018/1480 (ATP 13 CLP)

Regulation (EU) n. 2019/521 (ATP 12 CLP)

Regulation (EU) n. 2020/878

Restrictions related to the product or the substances contained according to Annex XVII Regulation (EC) 1907/2006 (REACH) and subsequent modifications:

Restrictions related to the product: 3, 40

Restrictions related to the substances contained: 75

Provisions related to directive EU 2012/18 (Seveso III):

<b>Seveso III category according to Annex 1, part 1</b>	<b>Lower-tier threshold (tonnes)</b>	<b>Upper-tier threshold (tonnes)</b>
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Product belongs to category: P5c	5000	50000
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Product belongs to category: E2	200	500
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Regulation (EU) No 649/2012 (PIC regulation)

No substances listed

German Water Hazard Class.

Class 3: extremely hazardous.

SVHC Substances:

No SVHC substances present in concentration  $\geq$  0.1%

#### 15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for the mixture.

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### SECTION 16: Other information

<b>Code</b>	<b>Description</b>
H225	Highly flammable liquid and vapour.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.
H411	Toxic to aquatic life with long lasting effects.

<b>Code</b>	<b>Hazard class and hazard category</b>	<b>Description</b>
2.6/2	Flam. Liq. 2	Flammable liquid, Category 2
3.2/2	Skin Irrit. 2	Skin irritation, Category 2
3.3/2	Eye Irrit. 2	Eye irritation, Category 2

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3.4.2/1	Skin Sens. 1	Skin Sensitisation, Category 1
3.8/3	STOT SE 3	Specific target organ toxicity — single exposure, Category 3
4.1/C2	Aquatic Chronic 2	Chronic (long term) aquatic hazard, category 2

**Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:**

**Classification according to Regulation (EC) Nr. 1272/2008      Classification procedure**

Flam. Liq. 2, H225	On basis of test data
Skin Irrit. 2, H315	Calculation method
Eye Irrit. 2, H319	Calculation method
Skin Sens. 1, H317	Calculation method
Aquatic Chronic 2, H411	Calculation method

This document was prepared by a competent person who has received appropriate training.

**Main bibliographic sources:**

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.

It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.

This MSDS cancels and replaces any preceding release.

**Legend to abbreviations and acronyms used in the safety data sheet:**

ACGIH: American Conference of Governmental Industrial Hygienists

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.

AND: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ATE: Acute Toxicity Estimate

ATEmix: Acute toxicity Estimate (Mixtures)

BCF: Biological Concentration Factor

BEI: Biological Exposure Index

BOD: Biochemical Oxygen Demand

CAS: Chemical Abstracts Service (division of the American Chemical Society).

CAV: Poison Center

CE: European Community

CLP: Classification, Labeling, Packaging.

CMR: Carcinogenic, Mutagenic and Reprotoxic

COD: Chemical Oxygen Demand

COV: Volatile Organic Compound

CSA: Chemical Safety Assessment

CSR: Chemical Safety Report

DMEL: Derived Minimal Effect Level

DNEL: Derived No Effect Level.

DPD: Dangerous Preparations Directive

DSD: Dangerous Substances Directive

EC50: Half Maximal Effective Concentration

ECHA: European Chemicals Agency

EINECS: European Inventory of Existing Commercial Chemical Substances.

ES: Exposure Scenario

GefStoffVO: Ordinance on Hazardous Substances, Germany.

GHS: Globally Harmonized System of Classification and Labeling of Chemicals.

IARC: International Agency for Research on Cancer

IATA: International Air Transport Association.

IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA).

IC50: half maximal inhibitory concentration

ICAO: International Civil Aviation Organization.

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO).

IMDG: International Maritime Code for Dangerous Goods.

INCI: International Nomenclature of Cosmetic Ingredients.

IRCCS: Scientific Institute for Research, Hospitalization and Health Care

KAFH: KAFH

KSt: Explosion coefficient.

LC50: Lethal concentration, for 50 percent of test population.

LD50: Lethal dose, for 50 percent of test population.  
LDLo: Leathal Dose Low  
N.A.: Not Applicable  
N/A: Not Applicable  
N/D: Not defined/ Not available  
NA: Not available  
NIOSH: National Institute for Occupational Safety and Health  
NOAEL: No Observed Adverse Effect Level  
OSHA: Occupational Safety and Health Administration  
PBT: Persistent, Bioaccumulative and Toxic  
PGK: Packaging Instruction  
PNEC: Predicted No Effect Concentration.  
PSG: Passengers  
RID: Regulation Concerning the International Transport of Dangerous Goods by Rail.  
STEL: Short Term Exposure limit.  
STOT: Specific Target Organ Toxicity.  
TLV: Threshold Limiting Value.  
TWATLV: Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard).  
vPvB: Very Persistent, Very Bioaccumulative.  
WGK: German Water Hazard Class.