

# Safety Data Sheet

DSCL (Classification)
<p>Xi, T Symbol R36/37/38 – Irritating to eyes, respiratory system and skin. R45 – May cause cancer. R52/53 – Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.</p> <p>S36/37/39 – Wear suitable protective clothing, gloves and eye/face protection. S61 – Avoid release to the environment. Refer to special instructions/safety data sheet. S24/25 – Avoid contact with skin and eyes.</p>

Section 1. Identification of the substance/preparation and of the company/undertaking			
Product Identity / Trade Name	<b>Chlorendic Anhydride PE1+</b>	CAS#	115-27-5
Chemical Name	1,4,5,6,7,7-Hexachloro-8,9,10-trinorborn-5-ene-2,3-dicarboxylic anhydride	Chemical Formula	C <sub>9</sub> H <sub>2</sub> Cl <sub>6</sub> O <sub>3</sub>
Synonym	4,5,6,7,8,8-Hexachloro-3a,4,7,7a-tetrahydro-4,7-methanoiso benzofuran-1,3-dione	Chemical Family	Chlorinated bicyclic Anhydride
Supplier	Velsicol Chemical LLC 10400 W. Higgins Road Rosemont, IL 60018 U.S.A. Phone: 847-813-7888 Fax: 847-298-9018 Email: msds@velsicol.com	Manufacturer	Jiangsu Anpon Electrochemical Co., Ltd 30 Huagong Road, Huaian, Jiangsu, China Tel: 0517-83556373 Fax: 0517-83635571 Email: Wangsk@anpon.com
In Case of Emergency	In the continental U.S.A. call CHEMTREC 800-424-9300 (24 hours)  Outside the continental U.S.A. call CHEMTREC 703-527-3887 (24 hours)	Use of Substance / Preparation	Industrial applications: Hardener for epoxy resins, paints, and coatings. Other non-specified industry: Flame Retardant in unsaturated polyester resins.

Section 2. Hazards identification	
Potential Acute Health Effects	Inhalation and skin contact are expected to be the primary routes of occupational exposure to chlorendic anhydride. This material is irritating to the eyes, skin and respiratory tract. Allergic skin reaction may occur in susceptible individuals. Chlorendic anhydride is considered, on the basis of single exposure (acute) animal tests, to be slightly toxic after ingestion (swallowing), practically non-toxic after inhalation and skin contact, severely irritating to eyes and practically non-irritating to skin.
Potential Chronic Health Effects	Chlorendic anhydride will slowly degrade to chlorendic acid in the presence of water and/or sunlight. The National Toxicology Program (NTP) has concluded that there is clear evidence of carcinogenicity (cancer) in a feeding study of rats and mice using chlorendic acid. International Agency for Research on Cancer (IARC) has given chlorendic acid an overall evaluation of 2B (possibly carcinogenic).

Section 3. Composition/information on ingredients						
Name	Symbols	R Phrases	CAS#	EC Number	% by Weight	
1) Chlorendic Anhydride	Xi	R36/37/38	115-27-5	204-077-3	> 95.0	
2) Chlorendic Acid	T	R45	115-28-6	204-078-9	< 3.0	
3) Maleic anhydride	C	R22, R34, R42/43	108-31-6	203-571-6	< 1.0	
4) Chlorobenzene		R10, R20, R52/53	108-90-7	203-628-5	< 5.0	

Section 4. First-aid measures	
Eye Contact	Immediately flush with plenty of water for at least 15 minutes. Get medical attention immediately.
Skin Contact	Immediately wash skin with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Destroy contaminated shoes.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion	If swallowed, induce vomiting as directed by medical personnel. Get medical attention. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

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## Section 5. Fire-fighting measures

Fire Fighting Media and Instructions	Non-Flammable. Not considered to present risks of explosion. However, contains up to 3% occluded volatiles, which can present a fire hazard if sufficient oxygen and a source of ignition is present. Ground containers and equipment to avoid static charge accumulation and/or use an inert atmosphere to prevent combustion.
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## Section 6. Accidental release measures

Small Spill	Use appropriate tools to put the spilled solid in a convenient waste disposal container.
Large Spill	Stop the leak if possible. Ventilate the area involved. Sweep up the material and place in container for later disposal.

## Section 7. Handling and storage

Handling	S22 – Do not breathe dust. S24/25 – Avoid contact with skin and eyes. S26 – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S36/37/39 – Wear suitable protective clothing, gloves and eye/face protection. S45 – In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S61 – Avoid release to the environment. Refer to special instructions/Safety data sheets.
Storage	Store in well ventilated area away from sources of ignition.

## Section 8. Exposure controls/personal protection

Engineering Controls	Investigate engineering techniques to reduce exposures. Provide ventilation if necessary to minimize exposure. If practical use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.
Personal Protection	Chemical resistant coveralls, gloves and boot covers. Shoes/boots. A full-face piece respirator with dual organic vapor and particulate matter cartridge is recommended.
Personal Protection in Case of a Large Spill	Chemical resistant coveralls, gloves and boot covers. Shoes/boots. A full-face piece respirator with dual organic vapor and particulate matter cartridge is recommended. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Exposure Limits	<i>108-31-6, Maleic anhydride:</i> United Kingdom, WEL - TWA: 1 mg/m <sup>3</sup> TWA, WEL - STEL: 3 mg/m <sup>3</sup> STEL United States: TWA: 0.25 ppm from OSHA/NIOSH; TWA: 0.25 ppm from ACGIH.  Consult local authorities for acceptable exposure limits.

## Section 9. Physical and chemical properties

Appearance	Fine, crystalline solid.	Odor	No distinctive odor.
Molecular Weight	371	Color	White to yellowish.
pH (1% soln/water)	Not Available.		
Boiling Point	Not available.		
Melting Point	235°C (455°F)		
Critical Temperature	Not available.		
Relative Density	1.73 (Water = 1)		
Vapor Pressure	2 mm of Hg (@ 20°C)		
Vapor Density	13 (Air = 1)		
Volatility	Not available		
Evaporation Rate	Not available.		
Viscosity	Not available.		
Partition Coefficient Log n-Octanol/Water	Octanol/water = 2.21; 1,2-dichlorobenzene/water = 0.49		
Ionicity (In Water)	Not available.		
Dispersion Properties	Not available.		
Solubility	Easily soluble in acetone. Soluble in methanol, diethyl ether, n-octanol. Insoluble in cold water, hot water		
Flash Point	Not available.		
Auto Ignition Temp.	Not available.		
Flammability	Non-flammable. However, contains up to 5% occluded chlorobenzene, which can present a fire hazard if sufficient oxygen and a source of ignition is present. Ground containers and equipment to avoid static charge accumulation and/or use an inert atmosphere to prevent combustion.		

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## Section 9. Physical and chemical properties

Explosive Properties	Not considered to present risks of explosion.
Oxidising Properties	Not available.

## Section 10. Stability and reactivity

Stability	The product is stable.
Instability Temperature	Not available.
Conditions to Avoid	No additional remark.
Incompatibility with Various Substances	Highly reactive with oxidizing agents, organic materials. Slightly reactive to reactive with reducing agents, acids, alkalis. Very slightly to slightly reactive with metals.
Corrosivity	Non-corrosive in presence of glass.
Hazardous Polymerization	Not available.
Hazardous Decomposition Products	Not available.

## Section 11. Toxicological information

Routes of Entry	Inhalation. Skin contact.
Toxicity to Animals	<p><i>115-27-5, Chlorendic Anhydride in RTECS (# RB9080000):</i>  Draize test, rabbit, eye: 100 mg Severe;  Inhalation, rabbit: LC50 = &gt;1 gm/m<sup>3</sup>;  Inhalation, rat: LC50 = &gt;1 gm/m<sup>3</sup>;  Oral, mouse: LD50 = 2400 mg/kg;  Oral, rat: LD50 = 2300 mg/kg;  Skin, rabbit: LD50 = &gt;3 gm/kg.</p> <p>Allergic skin reaction was reported in guinea pigs after repeated skin application. Repeated skin contact produced skin irritation, stomach lesions, diarrhea, nasal and eye discharge, decreased activity, anorexia and dehydration in rats. Decreased body weights, decreased food consumption and changes in heart, liver, kidney and spleen weights were reported after repeated dietary administration to rats. Repeated inhalation of dust produced nasal and eye irritation, salivation, hair loss, decreased body weight gain, liver and thyroid changes, lesions in the lung and stomach and cellular changes in the respiratory tract and stomach. No birth defects were reported in the offspring of rats given Chlorendic anhydride orally during fetal development. No genetic changes were reported in standard tests using animals and animal and bacterial cells. Genetic changes were reported in a standard test using human cells.</p> <p><i>108-31-6, Maleic anhydride in RTECS (#ON3675000):</i>  Dermal, guinea pig: LD50 = &gt;20 gm/kg;  Draize test, rabbit, eye: 1% Severe;  Oral, mouse: LD50 = 465 mg/kg;  Oral, rabbit: LD50 = 875 mg/kg;  Oral, rat: LD50 = 400 mg/kg;  Skin, rabbit: LD50 = 2620 mg/kg.</p> <p><i>115-28-6, Chlorendic Acid in RTECS (#RB9000000):</i>  Draize test, rabbit, eye: 250 ug/24H Severe;  Draize test, rabbit, skin: 500 mg/24H Mild.</p> <p>The National Toxicology Program (NTP) has concluded that there is clear evidence of carcinogenicity (cancer) in a feeding study of rats and mice using Chlorendic acid. International Agency for Research on Cancer (IARC) has given Chlorendic acid an overall evaluation of 2B (possibly carcinogenic).</p> <p><i>108-90-7, Chlorobenzene:</i>  Oral, LD50, Rat: 1110 mg/kg;  Oral, LD50, Mouse: 2300 mg/kg.</p>

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<b>Section 12. Ecological information</b>	
Ecotoxicology	48-hour LC50: 110.7 ppm Daphnia magna, practically non-toxic 96-hour LC50: 422.7 ppm Bluegill sunfish, practically non-toxic 96-hour LC50: 422.7 ppm Rainbow trout, practically non-toxic
Chemical Fate	No additional remark.

<b>Section 13. Disposal considerations</b>	
Waste Disposal	Recycle to process, if possible. Consult your local or regional authorities for disposal options.

<b>Section 14. Transport information</b>	
ADR Classification	Environmentally hazardous substance.
IMDG Classification	IMDG Class: 9 UN Number: 3077 Packaging group: III Proper shipping name: Environmentally hazardous substance, solid, n.o.s.
Special Provisions for Transport	Not applicable.
Customs Classification	International HTS# 2917.20.0000

<b>Section 15. Regulatory information</b>																			
European Labeling	Xi, T Symbol; R36/37/38 – Irritating to eyes, respiratory system and skin. R45 – May cause cancer. R52/53 – Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. S24/25 – Avoid contact with skin and eyes. S36/37/39 – Wear suitable protective clothing, gloves and eye/face protection. S61 – Avoid release to the environment. Refer to special instructions/Safety data sheets.																		
Global Inventories	<table border="0"> <tr> <td>Europe (EINECS, ELINCS, NLP)</td> <td>In Compliance with the EINECS</td> </tr> <tr> <td>Australia (AICS)</td> <td>In Compliance with the AICS</td> </tr> <tr> <td>Canada (DSL, NDSL)</td> <td>In Compliance with the DSL</td> </tr> <tr> <td>China (IECSC)</td> <td>In Compliance with the IECSC</td> </tr> <tr> <td>Japan (ENCS)</td> <td>In Compliance with the ENCS</td> </tr> <tr> <td>Korea (KECI)</td> <td>In Compliance with the KECI</td> </tr> <tr> <td>New Zealand (NZIoC)</td> <td>In Compliance with the NZIoC</td> </tr> <tr> <td>Philippines (PICCS)</td> <td>In Compliance with the PICCS</td> </tr> <tr> <td>United States (TSCA)</td> <td>In Compliance with the TSCA</td> </tr> </table>	Europe (EINECS, ELINCS, NLP)	In Compliance with the EINECS	Australia (AICS)	In Compliance with the AICS	Canada (DSL, NDSL)	In Compliance with the DSL	China (IECSC)	In Compliance with the IECSC	Japan (ENCS)	In Compliance with the ENCS	Korea (KECI)	In Compliance with the KECI	New Zealand (NZIoC)	In Compliance with the NZIoC	Philippines (PICCS)	In Compliance with the PICCS	United States (TSCA)	In Compliance with the TSCA
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United States (TSCA)	In Compliance with the TSCA																		
Other Regulations	Germany: Ordinance on the Classification of Water-Endangering Substances. This substance has been assigned WGK Class: 2 (water endangering); WGK Identification Number: None; assigned by Velsicol Chemical LLC, pending further evaluation.																		

<b>Section 16. Other information</b>	
Full Text of Risk Phrases	R10 – Flammable. R20 – Harmful by inhalation. R22 – Harmful if swallowed. R34 – Causes burns. R36/37/38 – Irritating to eyes, respiratory system and skin. R42/43 – May cause sensitization by inhalation and skin contact. R45 – May cause cancer R52/53 – Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Amendments	Update to Section 1,16
Prepared By & Date	Dawei Li, 06/04/2010
References	-REGISTRY Database, Chemical Abstract Service -CHEMLIST Database, Chemical Abstract Service -Registry of Toxic Effects of Chemical Substances (RTECS) -Hazardous Substance Data Bank (HSDB), National library of Medicine, #2920 -LOLI Database -ICRMS North American Database, Ariel Research Corporation -ICRMS European Database, Ariel Research Corporation

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<b>Section 16. Other information</b>			
	<ul style="list-style-type: none"> <li>-ICRMS Inventories Database, Ariel Research Corporation</li> <li>-Product Information Bulletin, Velsicol Chemical LLC</li> <li>-Material Safety Data Sheet, Velsicol Chemical LLC</li> <li>-Velsicol Chemical LLC, unpublished studies</li> </ul>		
Information Contact	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;">           For SDS or Regulatory information, contact:            Dawei Li            Velsicol Chemical LLC            1199 Warford Street            Memphis, TN 38108            Phone: 901-323-6226, ext. 124            Fax: 901-324-5897            dli@velsicol.com         </td> <td style="width: 50%; vertical-align: top;">           For Technical or Product Support Information, contact:            Sherman Friedman            Velsicol Chemical LLC            10400 W. Higgins Road            Rosemont, IL 60018 U.S.A.            Phone: 847-635-3486            Fax: 847-298-9018            Email: sfriedman@velsicol.com         </td> </tr> </table>	For SDS or Regulatory information, contact: Dawei Li Velsicol Chemical LLC 1199 Warford Street Memphis, TN 38108 Phone: 901-323-6226, ext. 124 Fax: 901-324-5897 dli@velsicol.com	For Technical or Product Support Information, contact: Sherman Friedman Velsicol Chemical LLC 10400 W. Higgins Road Rosemont, IL 60018 U.S.A. Phone: 847-635-3486 Fax: 847-298-9018 Email: sfriedman@velsicol.com
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