

Safety Data Sheet

In accordance with Hazard Communication Standard (HCS) (29 CFR 1910.1200(g))

SECTION 1 IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

1.1. Substance identifier

Product name:	DPX-C
Other names (if available):	Dichlorotricyclo[8.2.2.24,7]hexadeca-1(12),4,6,10,13,15-hexaene, mixed isomers
Synonymous:	Chloro-p-xylylene cyclic dimer; Dichlorodi-1,4-xylylene; Dichlorotricyclo(8.2.2.2(sup 4,7))hexadeca-4,6,10,12,13,15-hexaene
Name in Annex VI-CLP:	Not present in Annex VI-CLP
Name reported in the inventory of harmonized classification and labelling:	Substance not listed
CAS number	28804-46-8
IUPAC name (if CAS is not available)	Tricyclo[8.2.2.24,7]hexadeca-4,6,10,12,13,15-hexaene, dichloro

1.2. Relevant identified uses of the substance and uses advised against

Relevant use(s)	Parylene intermediate
Uses advised against	Unknown

1.3. Details of the supplier of the safety data sheet

Supplier:	Specialty Coating Systems, Inc. 7645 Woodland Dr., Indianapolis, IN 46278 USA Phone number : 317-244-1200 Fax number: 317-240-2073
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1.4. Emergency telephone number

Location	Company name: Chemtel Phone number: 800-255-3924 (24 hours per day, 7 days per week)
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SECTION 2 HAZARDS IDENTIFICATION

2.1 Classification of the substance

Classification of the substance in accordance with Hazard Communication Standard (HCS) (29 CFR 1910.1200(g))

Hazard class	Class code and hazard category	Hazard statement	Hazard warning
Skin sensitization	1B	May cause an allergic skin reaction	Warning
Specific organ toxicity-	2	Causes damage to organs	Warning



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repeated exposure		through prolonged or repeated exposure	
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Classification and labelling in accordance with the Hazard Communication Standard (HCS)(29 CFR 1910.1200(g)).

Hazard symbol	Hazard Statements	Precautionary Statements
	<p>H317: May cause an allergic skin reaction</p> <p>H372: Causes damage to organs through prolonged or repeated exposure</p>	<p>P260: Do not breathe dust</p> <p>P264: Wash thoroughly after handling</p> <p>P272: Contaminated work clothing must not be allowed out of the workplace</p> <p>P280: Wear protective gloves</p> <p>P314: Get medical attention/advice if you feel unwell</p> <p>P302+P352: If on skin, wash with plenty of water</p> <p>P333+P313: If skin irritation or rash occurs, get medical attention</p> <p>P363: Wash contaminated clothing before reuse</p> <p>P501: Dispose of contents/containers in accordance with local regulations</p>

2.2 Main adverse effects

Health effects	Ingestion: may be harmful if swallowed
	Inhalation: may be harmful if inhaled
	Skin Contact: may be irritating
	Eye contact: may be irritating
	There are no known environmental hazards

See also sections from 9 to 12

2.3 Other hazards

Toxic fumes may be released during a fire. Direct eye contact may cause temporary redness. Inhalation of dusts may cause respiratory irritation. May cause gastrointestinal irritation. Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhea.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Description

Name of the component	DPX-C
Concentration	≥92%
Structural formula	
Chemical formula	C ₁₆ H ₁₄ Cl ₂
Molecular weight	277.12 [g/mol]
Substance with Community OEL	NO
CAS name	Tricyclo[8.2.2.2(sup 4,7)]hexadeca-4,6,10,12,13,15-hexaene, dichloro
CAS number	28804-46-8
IUPAC name	Tricyclo[8.2.2.2(sup 4,7)]hexadeca-4,6,10,12,13,15-hexaene, dichloro

<i>EC number</i>	249-236-8
<i>Index number</i>	Not available in the literature search carried out
<i>Impurity/ies (if classified)</i>	There are no harmful impurities

SECTION 4 FIRST AID MEASURES

4.1 Description of the first aid measures

<i>Eye contact</i>	Wash thoroughly with water or saline. Keep the eyelids open during flushing.
<i>Skin contact</i>	Remove the contaminated clothing. Wash the body with soap or mild detergent and rinse with water until the substance is completely removed (15-20 minutes).
<i>Ingestion</i>	If swallowed: rinse mouth thoroughly with water
<i>Inhalation</i>	Avoid breathing dust that might otherwise arise from handling the product. Move to fresh air in a well ventilated area.

4.2 Most important symptoms and effects/Indication of immediate special treatment

Repeated and prolonged exposure to the substance may cause damage to organs (affected organs: liver; kidney; heart; blood; brain; thyroid gland; parathyroid gland; seminal vesicle; prostate). The repeated contact to skin may cause an allergic reaction. Dusts inhalation may cause coughing and irritation to oral cavity. The direct contact with eyes may cause irritation. Symptoms may include redness, swelling, and tearing.

SECTION 5 FIREFIGHTING MEASURES

5.1 Extinguishing media

<i>Suitable extinguishing media</i>	Water spray, dry chemical, foam, carbon dioxide
<i>Unsuitable extinguishing media</i>	There are no known unsuitable means of extinguishing

5.2 Special hazards arising from the mixture

<i>Hazardous combustion products</i>	Thermal decomposition or burning may result in the liberation of toxic fumes that include but are not limited to hazardous CO, CO ₂ , and HCl
<i>Other special hazards</i>	There are no known special hazards on this substance

5.3 Advice for fire fighters

<i>Technical actions for protection</i>	Do not attempt to extinguish the fire without the use of a self-contained breathing apparatus and suitable protective clothing
<i>Special protective equipment for firefighters</i>	Wear boots, gloves, eye and face protection. Respirators: Use the devices shown in the best conditions of care based on information reported in the previous subsections.

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel



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<i>Eyes</i>	Wear appropriate protective equipment (see Section 8)
<i>Skin</i>	Wear full protective clothing with the body.
<i>Airway</i>	In case of fire and explosion, avoid breathing fumes and vapors. Use a self-contained breathing apparatus and suitable protective clothing. Fumes can be eliminated by spraying with water.

For emergency responders	
<i>Eyes</i>	see Section 8
<i>Skin</i>	see Section 8
<i>Airway</i>	see Section 8

6.2 Environmental precautions

In case of accidental release or leakage, prevent the substance from reaching a discharge that may reach surface water or groundwater. Inform respective authorities in case of environmental pollution.

6.3 Methods and material for containment and clearing up

<i>Containment procedures:</i>	Collect all the material spilled on the ground with appropriate protective equipment and put it in a clean container
<i>Cleaning up procedures:</i>	In the event of a smaller spill, recover the substance by suction or other mechanical means and wash the area with plenty of water and detergents. Avoid generation of dust. Proper protective equipment should be used. Place all spill residues in an appropriate container and seal. Dispose of in accordance with local waste disposal regulations.

SECTION 7 HANDLING AND STORAGE

7.1. Precautions for safe handling

<i>Recommendation for handling</i>	Keep away from sources of ignition Handle in well-ventilated place Avoid contact with materials / substances that are incompatible Wear appropriate Personal Protective Equipment (see section 8) Keep the substance away from the water discharge
<i>Recommendation for personal hygiene</i>	Do not eat, drink or smoke in work areas Wash hands after use Remove contaminated clothing and PPE before entering areas where you eat

7.2. Conditions for safe storage including any incompatibilities

<i>Potential ignition sources:</i>	Do not expose to heat
Procedure to control other effects	
<i>Weather conditions:</i>	Store the original container in a cool, dry place
<i>Ambient pressure:</i>	Does not provide for any mode of containment
<i>Temperature:</i>	Recommended storage at <30 °C
<i>Sunlight:</i>	Do not expose to direct sunlight
<i>Humidity:</i>	Store in ambient conditions

Vibration:	Does not provide for any mode of containment
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Material to keep the integrity of the mixture	
Stabilizers:	Not used
Antioxidants:	Not used

7.3. Specific end use(s)

Recommendation for specific final use(s)
Parylene intermediate

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Occupational Exposure Limits	Not present in searchable databases
Other Occupational Exposure Limits	Not present in searchable databases
Biological Limits (BEI)	Not present in searchable databases
Other Biological Limits (BEI)	Not present in searchable databases
OSHA ACGIH TLV	Not present in searchable databases
Other Relevant Occupational Exposure Limits	TLV-TWA PNOC Inhalable: 10 mg/m ³

8.2. Exposure controls**8.2.1. Appropriate engineering controls**

a) Eye and Face protection	Safety glasses according to OSHA 29 CFR 1910.133
b) Skin protection	
<i>hands protection</i>	-Chemical resistant gloves according to OSHA 29 CFR 1910.138 -The glove material has to be impermeable and resistant to the product / substance. -Material: Nitrile rubber (nitrile), hypoallergenic -Thickness: not less than 0.12 mm
<i>other, body protection</i>	The protection must be chosen depending on activity and exposure. For example: apron, boots and clothing suitable in the event of spillage or in a chemical emergency.
c) Respiratory protection	Where the risk assessment shows the need for air-purifying respirators, use only respiratory protection authorized in U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134) or equivalent U.S. State Standards. Use respirators and components tested and approved under appropriate government standards such as NIOSH (U.S.) or CEN (EU).
d) Thermal hazards	Not specified in the standard practice of using the substance. Identify any personal protective equipment based on specific conditions of usage.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance:	White to off-white granular solid
Odor:	Odorless



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Melting point/freezing point	171°C at 101.3 kPa
Boiling point/boiling range:	>430°C at 101.3 kPa
Flash point	Not available
Flammability (solid, gas)	Not flammable
Upper/lower flammability or explosive limits	Not available
Vapor pressure	0.002 Pa
Vapor density	1.34 g/cm ³ (1)
Relative density	0.671 at 20°C
Solubility	Insoluble
Partition coefficient:n-octanol/water	3.98 at 20°C
Auto-ignition temperature	No self ignition up to the melting point (171°C)
Decomposition temperature	Not available
Viscosity	Not available
Sublimation temperature/start	160°C

SECTION 10 STABILITY AND REACTIVITY

10.1. Reactivity

The substance is not considered reactive under normal conditions of use.

10.2. Chemical stability

The substance is stable at ambient temperature and pressure if stored in closed containers in a well ventilated place.

	NO	YES	Used stabilizer
Stabilizers:	X		
Change in physical appearance	X		

10.3. Possibility of hazardous reactions

	NO	YES
Possibility of an exothermic reaction:	X	-
Possibility of a reaction releasing excessive pressure	X	-
Possible degradation with instable product formation	X	-

10.4. Condition to avoid

Avoid exposure to UV light and excessive heat

10.5. Incompatible materials

Strong oxidizing agents

10.6. Hazardous decomposition products

Thermal decomposition or burning may result in the liberation of toxic fumes, including but not limited to CO, CO₂, and HCl.

SECTION 11 INFORMATION ON TOXICOLOGICAL EFFECTS

Exposure routes :	YES	NO
Inhalation :	X	
Ingestion :	X	
Skin contact :	X	
Eye contact :	X	

Effects (acute, delayed, chronic) following the exposure (short and/or prolonged):	
Inhalation:	Irritation of the mucosa of the upper airway
Ingestion:	Heartburn and abdominal pain
Skin contact:	Redness of the skin
Eye contact:	Burning sensation and redness of the conjunctiva

Acute toxicity effects:	
Oral	DL50 oral rat: >2000 mg/kg ^[1]
Dermal:	LD50 Dermal Rabbit: >2000 mg / kg ^[1]
Inhalation:	Not available in the literature search carried out
Other effects:	Not available in the literature search carried out

Corrosion/Irritation effects:	Not available in the literature search carried out
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Severe ocular lesion:	There are no serious injuries
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Sensitisation:	
Dermal:	Skin sensitizer
Respiratory:	May cause inhalation irritation

CMR effects:	
Germinal cell mutagenicity	Based on experimental data, considered non mutagenic
Carcinogenicity:	No components are listed as carcinogenic by ACGIH, IARC, OSHA, or NTP
Reproductive toxicity:	Not expected to cause reproductive effects

SECTION 12 ECOLOGICAL INFORMATION

12.1. Toxicity

Aquatic Toxicity: No effects to aquatic organisms were observed in three limit tests. The highest Dichloro-p-cyclophane (DPX-C) concentration tested was 0.357 mg/L (acetone as a vehicle).	
Toxicity for fish:	LC50 (96 h) (Oncorhynchus mykiss) > 0.357 mg/L
Toxicity for Daphnia Magna:	EC50 (48 h) > 0.357 mg/l
Toxicity for algae:	EC50 (72h) (Pseudokirchneriella subcapitata) > 0.357 mg/L
	NOEC (72h) (Pseudokirchneriella subcapitata) > 0.357 mg/L
	LOEC (72h) (Pseudokirchneriella subcapitata) > 0.357 mg/L
Toxicity for microorganism:	NOEC (3h): 1000 mg/L (nominal concentration)
	EC50 (3h): >1000 mg/L (nominal concentration)



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12.2. Persistence and degradability

DPX-C is hydrolytically stable in acidic, neutral and alkaline condition. The hydrolytic degradation of DPX-C through hydrolysis after 5 days of incubation at 50 ± 0.5 °C at pH 4, 7 and 9 is less than 10%. Therefore, it is concluded that the theoretical half-life of DPX-C is >1 year at 25 °C.

DPX-C is not readily biodegradable (biodegradability was 2.05, 2.05, 2.28 and 3.19% (based on ThOD, i.e., 2.194 mg O₂/mg) on day 7, 14, 21, and 28, respectively).

12.3. Bioaccumulative potential

No bioaccumulation data on fish are available for DPX-C, but, based on the logKow value and and toxicokinetics considerations, the substance is expected to bioaccumulate in living organisms.

12.4. Mobility in soil

The calculated log Koc of the DPX-C was 4.85, which indicated that the substance is hardly mobile in soil and sewage sludge.

12.5. Results of PBT and vPvB assessment

DPX-C is hydrolytically stable in acidic, neutral and alkaline condition: its theoretical half-life is >1 year at 25 °C; and it is not readily biodegradable. Therefore the criteria for Persistence (P) are met. Available data does not permit the classification as very Persistent (vP).

No bioaccumulation data on fish are available for DPX-C, but, based on the logKow value and and toxicokinetics considerations, the substance is expected to bioaccumulate in living organisms. Therefore, from a precautionary point of view, criteria for classification as Bioaccumulative (B) are met. Available data does not permit the classification as very Bioaccumulative (vB).

On the basis of results of the 28-day repeated dose toxicity study by oral route in rats, the substance is classified as STOT RE 2, H373. Therefore the criteria for the classification as Toxic (T) are met.

The substance may have PBT or vPvB properties. The available information does not allow to conclude if DPX-C fulfils or does not fulfils the PBT/vPvB criteria. Therefore the substance is considered as if it is a PBT or vPvB.

12.6. Other adverse effects

Data not available

**SECTION 13
DISPOSAL CONSIDERATION**

The excess material and debris should be handled in compliance with safety and any personal protective equipment listed under items 7 and 8. Dispose of in accordance with appropriate local disposal/waste regulations.

13.1. Waste treatment methods

	Incineration	Recycling	Landfilling
Polymer film or coating	X		
Contaminated packaging:			X

**SECTION 14
TRANSPORT INFORMATION**

Regulatory Information	UN Number	UN Proper Shipping Name	Transport Hazard Class(es)	Packing Group	Label
TDG	None	Not regulated	Not regulated	None	



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TDG Additional information	None				
ICAO/IATA	None	Not regulated	Not regulated	None	
ICAO/IATA Additional information	None				
49CFR/DOT	None	Not regulated	Not regulated	None	
49CFR/DOT Additional information	None				
IMDG	None	Not regulated	Not regulated	None	
IMDG Additional information	None				

SECTION 15 REGULATORY INFORMATION

In this section, all other information on regulations are reported if not provided in other sections/subsection of the Safety Data Sheet.

15.1. Chemical Safety Assessment

	YES	NO
Exposure scenario attached		X
Chemical Safety Assessment (CSA) attached		X

15.2. State Right to Know Laws

Ingredients	CAS#	CA Proposition 65		State "Right to know" Lists				
		Listed	Toxicity Type	CA	MA	MN	NJ	PA
Tricyclo[8.2.2.24,7]hexadeca-1(12).4.6.10.13.15-hexaene, dichloro	28804-46-8	No	N/Ap	No	No	No	No	No

15.3. US Federal Information- Components listed below are present on the following US Federal chemical lists:

Ingredients	CAS #	TSCA Inventory	CERCLA Reportable Quantity (RQ) (40 CFR 117.302)	SARA Title III: Section 302 (40 CFR 355)	SARA Title III: Section 313 (40 CFR 372) Toxic	SARA Title III: Section 313 (40 CFR 372) de minimus Concentration
Tricyclo[8.2.2.24,7]hexadeca-1(12).4.6.10.13.15-hexaene, dichloro	28804-46-8	Yes	N/Ap	N/Av	No	N/Ap

SECTION 16 OTHER INFORMATION

Revision	Edition Date	Edit Description
n. 03	January 03, 2018	Classified as hazardous according to Dossier CAS 28804-46-8 12 May 2017



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n. 04	May 9, 2018	Nomenclature Revision
n.05	July 2, 2018	Additional State/Federal Information Sec. 15

Acronyms

- ACGIH: American Conference of Governmental Industrial Hygienists
- ADR: Agreement concerning the carriage of dangerous goods by Road
- BCF: Bioaccumulative factor
- BEI : Biological Exposure Indices (Indici di esposizione biologica)
- CAS: Chemical Abstract Service (division of the American Chemical Society)
- CHETAH: Computer programme for chemical thermodynamics and energy release evaluation
- CLP: Classification, Labelling and Packaging
- CMR: Carcinogens, Mutagens, Toxic for reproduction substances
- EINECS: European Inventory of existing Commercial Substances
- EPA: US Environmental Protection Agency
- GHS: Globally Harmonised System
- IARC: International Agency for Research on Cancer
- IATA: International Air Transport Association Code
- IMDG: International Maritime Dangerous Goods Code
- IUPAC: International Union of Pure and Applied Chemistry
- LOEL: Lowest Observed Effect Level
- N.A.: Not Applicable
- N.A.: Not Available
- NOAEL: No Observed Adverse Effect Level
- NTP: National Toxicology Program
- OEL: Occupational Exposure Limit
- OSHA: Occupational Safety and Health Administration
- PPE: Personal protective Equipment
- PBT: Persistent, Bioaccumulative and Toxic substances
- RID: Regulation concerning the International carriage of Dangerous goods by rail
- TLV/TWA: Threshold Limit Value/Threshold Weighted Average
- vPvB: very Persistent, very Bioaccumulative

DISCLAIMER

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