

1. Product and company identification

Product name	: FASTPATCH CT RESIN
Supplier	: Antoun Unit 1A, 2 Costello Place, Seven Hills, NSW 2147 Tel: 1300 320 799
Material uses	: Not available.
Manufacturer	: Willamette Valley Company 1075 Arrowsmith Eugene, OR 97402 541-484-9621
Code	: 1026250
Validation date	: 9/23/2012.
Print date	: 9/23/2012.
Responsible name	: Regulatory Compliance
<u>In case of emergency</u>	: CALL INFOTRAC 800-535-5053 001-352-323-3500

2. Hazards identification

Physical state	: Liquid.
Emergency overview	: WARNING! CAUSES EYE AND SKIN IRRITATION. MAY BE HARMFUL IF SWALLOWED. May be harmful if swallowed. Irritating to eyes and skin. Do not ingest. Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.
Routes of entry	: Dermal contact. Eye contact. Inhalation.
<u>Potential acute health effects</u>	
Inhalation	: No known significant effects or critical hazards.
Ingestion	: Harmful if swallowed.
Skin	: Irritating to skin.
Eyes	: Irritating to eyes.
<u>Potential chronic health effects</u>	
Chronic effects	: No known significant effects or critical hazards.
Carcinogenicity	: No known significant effects or critical hazards.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.
Target organs	: Contains material which may cause damage to the following organs: lungs, upper respiratory tract, skin.
<u>Over-exposure signs/symptoms</u>	
Inhalation	: No specific data.
Ingestion	: No specific data.
Skin	: Adverse symptoms may include the following: irritation redness

2 . Hazards identification

Eyes : Adverse symptoms may include the following:
pain or irritation
watering
redness

Medical conditions aggravated by over-exposure : None known.

See toxicological information (section 11)

3 . Composition/information on ingredients

<u>Name</u>	<u>CAS number</u>	<u>%</u>
Polyol Resin	Proprietary	1-5
Titanium Dioxide	13463-67-7	1-5
Carbon Black	1333-86-4	<1

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

4 . First aid measures

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Notes to physician : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5 . Fire-fighting measures

Flammability of the product : In a fire or if heated, a pressure increase will occur and the container may burst.

Extinguishing media

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

Not suitable : None known.

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

Hazardous combustion products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
metal oxide/oxides

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

6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.
- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

7 . Handling and storage

- Handling** : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Product name

Titanium Dioxide

Exposure limits

OSHA PEL (United States, 6/2010).

TWA: 15 mg/m³ 8 hour(s). Form: Total dust

OSHA PEL 1989 (United States, 3/1989).

TWA: 10 mg/m³ 8 hour(s). Form: Total dust

ACGIH TLV (United States, 2/2010). Notes: Substance identified by other sources as a suspected or confirmed human carcinogen.

1996 Adoption Substances for which the TLV is higher than the

OSHA Permissible Exposure Limit (PEL) and/or the NIOSH

Recommended Exposure Limit (REL). See CFR 58(124) :36338-

33351, June 30, 1993, for revised OSHA PEL. Refers to Appendix A -

- Carcinogens.

TWA: 10 mg/m³ 8 hour(s).

Carbon Black

ACGIH TLV (United States, 2/2010). Notes: Substance identified by other sources as a suspected or confirmed human carcinogen.

1996 Adoption Refers to Appendix A -- Carcinogens.

TWA: 3 mg/m³ 8 hour(s). Form: Inhalable fraction

NIOSH REL (United States, 6/2009). Notes: See Appendix A - NIOSH Potential Occupational Carcinogen See Appendix C - Supplemental Exposure Limits

TWA: 3.5 mg/m³ 10 hour(s).

NIOSH REL (United States, 6/2009). Notes: Carbon black in

8 . Exposure controls/personal protection

presence of polycyclic aromatic hydrocarbons (PAHs) See Appendix A - NIOSH Potential Occupational Carcinogen See Appendix C - Supplemental Exposure Limits
TWA: 0.1 mg of PAHs/cm³ 10 hour(s).

OSHA PEL (United States, 6/2010).

TWA: 3.5 mg/m³ 8 hour(s).

OSHA PEL 1989 (United States, 3/1989).

TWA: 3.5 mg/m³ 8 hour(s).

- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
- Engineering measures** : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Personal protection**
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
- Precautions to be taken in use:** : This product may contain materials classified as nuisance particulates, which may be present at hazardous levels only during sanding or abrading of the dried film. Wear a dust/mist respirator approved for dust when dusts are generated from sanding or abrading the dried film.

9 . Physical and chemical properties

- Physical state** : Liquid.
- Flash point** : Open cup: >204.44°C (>400°F)
- Color** : Gray.
- Odor** : Odorless.
- Boiling/condensation point** : >100°C (>212°F)
- Specific gravity** : 1.18
- Estimated Vapor Density** : >1 [Air = 1]
- VOC %** : 0.840125%
- Evaporation rate** : <1 (Water = 1)
- Solubility** : Soluble in the following materials: water.

10 . Stability and reactivity

- Stability** : The product is stable.
- Conditions to avoid** : No specific data.
- Materials to avoid** : No specific data.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.

11 . Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Titanium Dioxide	LD Intratracheal	Rat	>100 ug/kg	-
	TDLo	Rat	5 mg/kg	-
	Intratracheal			
	TDLo	Rat	1.6 mg/kg	-
	Intratracheal			
	TDLo	Rat	1.25 mg/kg	-
Carbon Black	Intratracheal			
	TDLo Oral	Rat	60 g/kg	-
	LD50 Oral	Rat	>15400 mg/kg	-
	TDLo	Rat	16 mg/kg	-
	Intratracheal			
	TDLo	Rat	15 mg/kg	-
	Intratracheal			
	TDLo	Rat	10 mg/kg	-
	Intratracheal			

Carcinogenicity

Conclusion/Summary

The International Agency for Research on Cancer (IARC) Monograph No. 93 reports there is sufficient evidence in experimental animals exposed to titanium dioxide but inadequate evidence for carcinogenicity in humans. Human studies do not suggest an association between occupational exposure to titanium dioxide dust and an increased risk of cancer. The IARC summary concludes, "that no significant exposure to titanium dioxide is thought to occur during the use of products in which titanium dioxide is bound to other materials, such as paint".

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Titanium Dioxide	-	2B	-	+	-	-
Carbon Black	-	2B	-	+	-	-

IDLH : Not available.

Synergistic products : Not available.

12 . Ecological information

Environmental effects : No known significant effects or critical hazards.

Aquatic ecotoxicity

Product/ingredient name	Test	Result	Species	Exposure
Polyol Resin	-	Acute EC50 >500 mg/L	Daphnia	48 hours
	-	Acute LC50 >1240 mg/L	Fish	96 hours
Titanium Dioxide	-	Acute EC50 35.9 mg/L Fresh water	Algae - Green algae - Pseudokirchneriella subcapitata - Exponential growth phase	72 hours

12 . Ecological information

-	Acute EC50 5.83 mg/L Fresh water	Algae - Green algae - Pseudokirchneriella subcapitata - Exponential growth phase	72 hours
-	Acute EC50 >1000000 ug/L Fresh water	Daphnia - Water flea - Daphnia magna - <24 hours	48 hours
-	Acute LC50 >10 mg/L Fresh water	Daphnia - Water flea - Daphnia pulex - Adult	48 hours
-	Acute LC50 >10 mg/L Fresh water	Crustaceans - Water flea - Ceriodaphnia dubia - Neonate - <24 hours	48 hours
-	Acute LC50 5.5 ppm Fresh water	Daphnia - Water flea - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling) - <24 hours	48 hours
-	Acute LC50 >1000000 ug/L Marine water	Fish - Mummichog - Fundulus heteroclitus	96 hours
-	Chronic NOEC 95 mg/L Fresh water	Algae - Green algae - Pseudokirchneriella subcapitata - Exponential growth phase	72 hours
-	Chronic NOEC 10.1 mg/L Fresh water	Algae - Green algae - Pseudokirchneriella subcapitata - Exponential growth phase	72 hours
-	Chronic NOEC 0.984 mg/L Fresh water	Algae - Green algae - Pseudokirchneriella subcapitata - Exponential growth phase	72 hours

Conclusion/Summary : Not available.

Biodegradability

Conclusion/Summary : Not available.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

13 . Disposal considerations

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	Not regulated.	-	-	-		-
TDG Classification	Not regulated.	-	-	-		-
IMDG Class	Not regulated.	-	-	-		-
IATA-DGR Class	Not regulated.	-	-	-		-

PG* : Packing group

15 . Regulatory information

U.S. Federal regulations : TSCA 8(b) inventory: All components are listed or exempted.
SARA 311/312 - Acute, Chronic

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

WARNING: This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

Ingredient name	Cancer	Reproductive
Titanium Dioxide	Yes.	No.
N-Methylpyrrolidone	No.	Yes.
Carbon Black	Yes.	No.

Canada

WHMIS (Canada) : Class D-2A: Material causing other toxic effects (Very toxic).

Canada inventory : Not determined.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

Mexico

Classification :



EU regulations

Risk phrases : This product is not classified according to EU legislation.

International regulations

15 . Regulatory information

- International lists** :
- Australia inventory (AICS):** Not determined.
 - China inventory (IECSC):** Not determined.
 - Japan inventory:** Not determined.
 - Korea inventory:** Not determined.
 - New Zealand Inventory of Chemicals (NZIoC):** Not determined.
 - Philippines inventory (PICCS):** Not determined.
- EU Inventory** : Not determined.

16 . Other information

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

Health	1
Flammability	1
Physical hazards	0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

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



- Date of printing** : 9/23/2012.
Date of issue : 9/23/2012.
Date of previous issue : 8/27/2012.
Version : 1.04

▣ Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

1 . Product and company identification

Product name	: FASTPATCH CT ISO
Supplier	: Willamette Valley Company 1075 Arrowsmith Eugene, OR 97402 541-484-9621
Material uses	: Not available.
Manufacturer	: Willamette Valley Company 1075 Arrowsmith Eugene, OR 97402 541-484-9621
Code	: 1026245
Validation date	: 1/6/2014.
Print date	: 1/6/2014.
Responsible name	: Regulatory Compliance
In case of emergency	: CALL INFOTRAC 800-535-5053 001-352-323-3500

2 . Hazards identification

Physical state	: Liquid.
Emergency overview	: WARNING! CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC RESPIRATORY AND SKIN REACTION. Irritating to eyes, respiratory system and skin. May cause sensitization by inhalation and skin contact. Do not breathe vapor or mist. Do not get on skin or clothing. Avoid contact with eyes. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
Routes of entry	: Dermal contact. Eye contact. Inhalation.
<u>Potential acute health effects</u>	
Inhalation	: Irritating to respiratory system. May cause sensitization by inhalation. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Ingestion	: No known significant effects or critical hazards.
Skin	: Irritating to skin. May cause sensitization by skin contact.
Eyes	: Irritating to eyes.
<u>Potential chronic health effects</u>	
Chronic effects	: Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
Carcinogenicity	: No known significant effects or critical hazards.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.
Target organs	: Contains material which may cause damage to the following organs: lungs, upper respiratory tract, eyes, nose/sinuses, testes, throat.

2 . Hazards identification

Over-exposure signs/symptoms

- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
wheezing and breathing difficulties
asthma
- Ingestion** : No specific data.
- Skin** : Adverse symptoms may include the following:
irritation
redness
- Eyes** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Medical conditions aggravated by over-exposure** : Pre-existing respiratory and skin disorders may be aggravated by over-exposure to this product.
- Additional information** : Sensitization may develop as a result of a single large overexposure or from repeated overexposure at lower levels. Respiratory sensitization can result in a strong asthmatic response to future airborne exposures, even at levels well below the PEL/TLV. Symptoms may include coughing, wheezing, tightness in the chest and shortness of breath. The skin sensitization reaction may include rash, itching, hives, and swelling of the arms and legs. Sensitization can be either temporary or permanent.

See toxicological information (Section 11)

3 . Composition/information on ingredients

<u>Name</u>	<u>CAS number</u>	<u>%</u>
Modified MDI	Not Disclosed	30-60
4,4' -Diphenylmethane Diisocyanate	101-68-8	30-60
Modified MDI	25686-28-6	5-10
Polymethylenepolyphenyl Isocyanate	9016-87-9	5-10

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

4 . First aid measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4 . First aid measures

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

5 . Fire-fighting measures

Flammability of the product : In a fire or if heated, a pressure increase will occur and the container may burst.

Extinguishing media

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

Not suitable : None known.

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

Hazardous combustion products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides

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

6 . Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

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

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

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

7 . Handling and storage

Handling : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

7 . Handling and storage

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

8 . Exposure controls/personal protection

Product name

4,4' -Diphenylmethane Diisocyanate

Exposure limits

OSHA PEL (United States, 6/2010).

CEIL: 0.02 ppm

CEIL: 0.2 mg/m³

ACGIH TLV (United States, 3/2012).

TWA: 0.005 ppm 8 hours.

OSHA PEL 1989 (United States, 3/1989).

CEIL: 0.02 ppm

CEIL: 0.2 mg/m³

NIOSH REL (United States, 1/2013).

TWA: 0.05 mg/m³ 10 hours.

TWA: 0.005 ppm 10 hours.

CEIL: 0.2 mg/m³ 10 minutes.

CEIL: 0.02 ppm 10 minutes.

Polymethylenepolyphenyl Isocyanate

OSHA PEL 1989 (United States, 3/1989). Absorbed through skin.

TWA: 5 mg/m³, (as CN) 8 hours.

OSHA PEL (United States, 6/2010). Absorbed through skin.

TWA: 5 mg/m³, (as CN) 8 hours.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

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

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

Personal protection

Respiratory

: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands

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

8 . Exposure controls/personal protection

- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

- Physical state** : Liquid.
- Flash point** : Open cup: >204.44°C (>400°F)
- Color** : Brown.
- Odor** : Odorless.
- Boiling/condensation point** : >100°C (>212°F)
- Specific gravity** : 1.15
- Estimated Vapor Density** : >1 [Air = 1]
- VOC %** : 0%
- Evaporation rate** : <1 (Water = 1)
- Solubility** : Insoluble in the following materials: water.

10 . Stability and reactivity

- Stability** : The product is stable.
- Conditions to avoid** : No specific data.
- Materials to avoid** : No specific data.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Hazardous polymerization** : Hazardous polymerization may occur under certain conditions of storage or use. Water reactive.

11 . Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
4,4' -Diphenylmethane Diisocyanate	LD50 Oral	Rat	9200 mg/kg	-
Polymethylenepolyphenyl Isocyanate	LD50 Dermal	Rabbit	>9400 mg/kg	-
	LD50 Oral	Rat	49 g/kg	-
	LC50 Inhalation	Rat	490 mg/m ³	4 hours
	Vapor			

Carcinogenicity

Conclusion/Summary

- IDLH** : Not available.
- Synergistic products** : Not available.

12 . Ecological information

Environmental effects : No known significant effects or critical hazards.

Aquatic ecotoxicity

Conclusion/Summary : Not available.

Biodegradability

Conclusion/Summary : Not available.

13 . Disposal considerations

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

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	Not regulated.	-	-	-		
TDG Classification	Not regulated.	-	-	-		-
IMDG Class	Not regulated.	-	-	-		-
IATA-DGR Class	Not regulated.	-	-	-		-

PG* : Packing group

15 . Regulatory information

U.S. Federal regulations : **TSCA 8(b) inventory**: All components are listed or exempted.
SARA 311/312 - Acute, Chronic

SARA 313

	Product name	CAS number	Concentration
Form R - Reporting requirements	4,4' -Diphenylmethane Diisocyanate	101-68-8	30-60
	Polymethylenepolyphenyl Isocyanate	9016-87-9	5-10

This product contains toxic chemical(s) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986, and subpart C-Supplier Notification Requirement of 40 CFR Part 372.

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

Canada

15 . Regulatory information

WHMIS (Canada) : Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
 Class D-2A: Material causing other toxic effects (Very toxic).
 Class D-2B: Material causing other toxic effects (Toxic).

Canada inventory : All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Mexico

Classification :



EU regulations

Hazard symbol or symbols :



Risk phrases : R23- Toxic by inhalation.
 R48/20- Harmful: danger of serious damage to health by prolonged exposure through inhalation.
 R36/37/38- Irritating to eyes, respiratory system and skin.
 R42/43- May cause sensitization by inhalation and skin contact.

Safety phrases : S1/2- Keep locked up and out of the reach of children.
 S23- Do not breathe vapor or spray.
 S36/37- Wear suitable protective clothing and gloves.
 S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
 S63- In case of accident by inhalation: remove casualty to fresh air and keep at rest.

International regulations

International lists : **Australia inventory (AICS)**: Not determined.
China inventory (IECSC): Not determined.
Japan inventory: Not determined.
Korea inventory: Not determined.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): Not determined.
Philippines inventory (PICCS): Not determined.
Taiwan inventory (CSNN): Not determined.

EU Inventory : Not determined.

16 . Other information

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

Health	*	2
Flammability		1
Physical hazards		1

16 . Other information

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

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



Date of printing : 1/6/2014.

Date of issue : 1/6/2014.

Date of previous issue : No previous validation.

Version : 1

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.