

Material Safety Data Sheet

Spray2Fix High Solids Urethane 666-58-7038SC

Code: 666-58-7038SC

Akzo Nobel Coatings Inc. encourages and expects you to read and understand this entire MSDS, as there is important information throughout the document. Further, Akzo Nobel Coatings Inc. expects you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

To promote safe handling, each customer or recipient should: 1) Notify its employees, agents, contractors, and others whom it knows or believes will use this material of the information contained in this MSDS and any other information regarding hazards and safety; 2) Furnish this same information to each of its customers for the product; 3) Request its customers to notify their employees, customers, and other users of the product of this information; and 4) Notify its employees, agents, contractors, and others that the precautions identified for this product and any other products with which mixtures may be created are transferable and cumulative to the mixture.

Section 1. Chemical product and company identification

Manufacturer

Akzo Nobel Coatings, Inc.
1 East Water Street
Waukegan, IL 60085
USA
+1(847) 625-4200

Product code : 666-58-7038SC

Product name : Spray2Fix High Solids Urethane 666-58-7038SC

Product use : Coatings or Coatings Component

Date of issue : 29 April 2015

Version : 11

Date of printing : 20 May 2015.

IN CASE OF EMERGENCY (HEALTH OR SPILLS):

CHEMTREC +1 (800) 424-9300 (Inside the US)

CHEMTREC International +1 (703) 527-3887 (Outside the US, collect calls accepted)

For the most recent update to this Material Safety Data Sheet, visit our website at <http://www.akzonobel.com/aerospace>
For additional information call (847) 625-4200.

Section 2. Hazards identification

Emergency overview : DANGER!

EXTREMELY FLAMMABLE AEROSOL. MAY CAUSE SEVERE ALLERGIC RESPIRATORY REACTION. HARMFUL IF INHALED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR IF SWALLOWED. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. POSSIBLE CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER, BASED ON ANIMAL DATA.

Potential acute health effects

Inhalation : Toxic by 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.

Section 2. Hazards identification

- Ingestion** : Harmful if swallowed.
Skin : Harmful in contact with skin. Severely irritating to the skin.
Eyes : Irritating to eyes.

Potential chronic health effects

- Chronic effects** : Contains material that may cause target organ damage, based on animal data. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
Carcinogenicity : Contains material which may cause cancer, based on animal data. Risk of cancer depends on duration and level of exposure.
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: blood, kidneys, lungs, the nervous system, peripheral nervous system, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

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 disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (Section 11)

Section 3. Composition/information on ingredients

United States

<u>Name</u>	<u>CAS number</u>	<u>% by weight</u>
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Section 3. Composition/information on ingredients

dimethyl ether	115-10-6	25 - 40
acetone	67-64-1	10 - 25
Hexamethylene diisocyanate, oligomers	28182-81-2	5 - 10
butanone	78-93-3	5 - 10
silicon dioxide	7631-86-9	1 - 5
n-butyl acetate	123-86-4	1 - 5
aluminium hydroxide	21645-51-2	1 - 5
2-methoxy-1-methylethyl acetate	108-65-6	1 - 5
heptan-2-one	110-43-0	1 - 5
carbon black respirable	1333-86-4	0.1 - 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.

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.
- 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.

Section 5. Fire-fighting measures

- Flammability of the product** : Extremely flammable aerosol. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Gas may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back, causing fire or explosion. Bursting aerosol containers may be propelled from a fire at high speed. Runoff to sewer may create fire or explosion hazard.

Extinguishing media

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

Section 5. Fire-fighting measures

- 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. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
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.
- Special remarks on fire hazards** : Not available.
- Special remarks on explosion hazards** : Not available.

Section 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. In the case of aerosols being ruptured, care should be taken due to the rapid escape of the pressurized contents and propellant. If a large number of containers are ruptured, treat as a bulk material spillage according to the instructions in the clean-up section. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe 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).
- Methods for cleaning up**
- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. 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.

Section 6. Accidental release measures

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. 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.

Section 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 asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C. Do not pierce or burn, even after use. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Empty containers retain product residue and can be hazardous.

Storage : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Product name

Exposure limits

United States

dimethyl ether

AIHA WEEL (United States, 10/2011).

TWA: 1000 ppm 8 hours.

acetone

ACGIH TLV (United States, 6/2013).

STEL: 1782 mg/m³ 15 minutes.

STEL: 750 ppm 15 minutes.

TWA: 1188 mg/m³ 8 hours.

TWA: 500 ppm 8 hours.

NIOSH REL (United States, 10/2013).

TWA: 590 mg/m³ 10 hours.

TWA: 250 ppm 10 hours.

OSHA PEL (United States, 2/2013).

TWA: 2400 mg/m³ 8 hours.

TWA: 1000 ppm 8 hours.

butanone

ACGIH TLV (United States, 6/2013).

STEL: 885 mg/m³ 15 minutes.

STEL: 300 ppm 15 minutes.

Section 8. Exposure controls/personal protection

	TWA: 590 mg/m ³ 8 hours. TWA: 200 ppm 8 hours. NIOSH REL (United States, 10/2013). STEL: 885 mg/m ³ 15 minutes. STEL: 300 ppm 15 minutes. TWA: 590 mg/m ³ 10 hours. TWA: 200 ppm 10 hours. OSHA PEL (United States, 2/2013). TWA: 590 mg/m ³ 8 hours. TWA: 200 ppm 8 hours.
silicon dioxide	NIOSH REL (United States, 10/2013). TWA: 6 mg/m ³ 10 hours.
n-butyl acetate	ACGIH TLV (United States, 6/2013). STEL: 200 ppm 15 minutes. TWA: 150 ppm 8 hours. NIOSH REL (United States, 10/2013). STEL: 950 mg/m ³ 15 minutes. STEL: 200 ppm 15 minutes. TWA: 710 mg/m ³ 10 hours. TWA: 150 ppm 10 hours. OSHA PEL (United States, 2/2013). TWA: 710 mg/m ³ 8 hours. TWA: 150 ppm 8 hours.
aluminium hydroxide	ACGIH TLV (United States, 6/2013). TWA: 1 mg/m ³ 8 hours. Form: Respirable fraction
2-methoxy-1-methylethyl acetate	AIHA WEEL (United States, 10/2011). TWA: 50 ppm 8 hours.
heptan-2-one	ACGIH TLV (United States, 6/2013). TWA: 233 mg/m ³ 8 hours. TWA: 50 ppm 8 hours. NIOSH REL (United States, 10/2013). TWA: 465 mg/m ³ 10 hours. TWA: 100 ppm 10 hours. OSHA PEL (United States, 2/2013). TWA: 465 mg/m ³ 8 hours. TWA: 100 ppm 8 hours.
carbon black respirable	ACGIH TLV (United States, 6/2013). TWA: 3 mg/m ³ 8 hours. Form: Inhalable fraction NIOSH REL (United States, 10/2013). TWA: 3.5 mg/m ³ 10 hours. TWA: 0.1 mg of PAHs/cm ³ 10 hours. OSHA PEL (United States, 2/2013). TWA: 3.5 mg/m ³ 8 hours.

Consult local authorities for acceptable exposure limits.

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.

Section 8. Exposure controls/personal protection

- Engineering measures** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
- 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.
- Dry sanding, flame cutting and/or welding of the dry paint film will give rise to dust and/or hazardous fumes. Wet sanding/flattening should be used wherever possible. If exposure cannot be avoided by the provision of local exhaust ventilation, suitable respiratory protective equipment should be used.
- 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.
- 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. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- 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.

Section 9. Physical and chemical properties

Physical state	: Liquid.
Flash point	: Closed cup: -17.2°C (1°F)
Auto-ignition temperature	: Not available.
Upper/lower flammability or explosive limits	
Upper:	: Not determined.
Lower:	: Not determined.
Appearance	: Not available.
Odor	: Not available.
Odor threshold	: Not available.
Specific gravity	: 0.831
pH	: Not available.
Boiling/condensation point	: 56°C (132.8°F)
Melting/freezing point	: Not available.
Vapor pressure	: Not available.
Vapor density	: Heavier than air
Density	: 6.94 lbs per gal 0.831 g/cm ³
Weight Volatiles	: 74.71% (w/w)
Volume Volatiles	: 84.52 % (v/v)
Weight Solids	: 25.29 % (w/w)
Volume Solids	: 15.48 % (v/v)
Regulatory VOC	: 4.91 lbs/gal (588 g/l) minus water and exempt solvents
Dispersibility properties	: Not dispersible in the following materials: cold water.
Evaporation rate	: Not determined.
Coefficient of water/oil distribution	: Not determined.

Section 10. Stability and reactivity

Stability	: The product is stable.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame).
Materials to avoid	: No specific data.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Conditions of reactivity	: Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge. Flammable in the presence of the following materials or conditions: oxidizing materials.

Section 11. Toxicological information

United States

Acute toxicity

Product/ingredient name	Result	Species	Dose
dimethyl ether	LC50 Inhalation Gas.	Rat	308000 mg/m ³
	LD50 Intravenous	Rat	5500 mg/kg
acetone	LD50 Oral	Rat	5800 mg/kg
	LDLo Dermal	Rabbit	20 mL/kg
2-methoxy-1-methylethyl acetate	LDLo Intraperitoneal	Rat	500 mg/kg
	TDL0 Intraperitoneal	Rat	1452 mg/kg
	TDL0 Oral	Rat	5 mL/kg
	LD50 Dermal	Rabbit	>5 g/kg
n-butyl acetate	LD50 Oral	Rat	9000 mg/kg
	LD50 Oral	Rat	8532 mg/kg
	LD50 Dermal	Rabbit	>17600 mg/kg
aluminium hydroxide	LD50 Oral	Rat	10768 mg/kg
	LC50 Inhalation Vapor	Rat	390 ppm
	LDLo Intraperitoneal	Rat	150 mg/kg
heptan-2-one	TDL0 Oral	Rat	15 mg/kg
	LD50 Dermal	Rabbit	12600 uL/kg
	LD50 Intraperitoneal	Rat	800 mg/kg
	LD50 Oral	Rat	1670 mg/kg
butanone	LD50 Oral	Rat	1600 mg/kg
	LD50 Dermal	Rabbit	6480 mg/kg
	LD50 Intraperitoneal	Rat	607 mg/kg
	LD50 Oral	Rat	2737 mg/kg
carbon black respirable	TDL0 Intraperitoneal	Rat	361 mg/kg
	LD50 Oral	Rat	>15400 mg/kg
	TDL0 Intratracheal	Rat	16 mg/kg
	TDL0 Intratracheal	Rat	15 mg/kg
TDL0 Intratracheal	Rat	10 mg/kg	

Conclusion/Summary : Not available.

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
acetone	Eyes - Mild irritant	Human	-	186300 parts per million	-
	Eyes - Mild irritant	Rabbit	-	10 microliters	-
	Eyes - Moderate irritant	Rabbit	-	24 hours	-
	Eyes - Severe irritant	Rabbit	-	20 milligrams	-
	Skin - Mild irritant	Rabbit	-	20 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours	-
				500 milligrams	
				395 milligrams	

Section 11. Toxicological information

n-butyl acetate	Eyes - Moderate irritant	Rabbit	-	100	-
	Skin - Moderate irritant	Rabbit	-	24 hours	-
				500	
				milligrams	
Hexamethylene diisocyanate, oligomers	Eyes - Moderate irritant	Rabbit	-	100	-
	Skin - Moderate irritant	Rabbit	-	500	-
				milligrams	
heptan-2-one	Skin - Mild irritant	Rabbit	-	24 hours	-
				14	
				milligrams	
silicon dioxide	Eyes - Mild irritant	Rabbit	-	24 hours	-
				25	
				milligrams	
butanone	Skin - Mild irritant	Rabbit	-	24 hours	-
				14	
				milligrams	
	Skin - Moderate irritant	Rabbit	-	24 hours	-
				500	
				milligrams	

Conclusion/Summary : Not available.

Sensitizer

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
acetone	A4	-	-	None.	-	-
butanone	-	-	-	None.	-	-
n-butyl acetate	-	-	-	None.	-	-
aluminium hydroxide	A4	-	-	-	-	-
heptan-2-one	-	-	-	None.	-	-
carbon black respirable	A3	2B	-	+	-	-

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Section 12. Ecological information

Environmental effects : No known significant effects or critical hazards.

Aquatic ecotoxicity : Not available.

Biodegradability : Not available.

Ecotoxicological data for one or more components are known and will be made available on request.


Section 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. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

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.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label
DOT Classification	UN1950	Aerosols	2.1	-	

Additional information

Reportable quantity

31718.2 lbs / 14400.1 kg [4577.7 gal / 17328.6 L]

Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.

Packaging instruction

Passenger aircraft

Quantity limitation: 75 kg

Cargo aircraft

Quantity limitation: 150 kg

Special provisions

N82

Section 14. Transport information

The above classification is based on a one gallon container (s) packaged and marked to comply with the requirements of 49 CFR Parts 171 through 173, as applicable. It is each shipper's responsibility to ensure each package is compatible with a selected mode of transportation and packaged in compliance with the domestic and, if applicable, international requirements for the selected mode of transport.

Section 15. Regulatory information

United States

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

United States inventory (TSCA 8b) : All components are listed or exempted.

SARA 313

	<u>Product name</u>	<u>CAS number</u>	<u>Concentration</u>
Form R - Reporting requirements	:		
<u>California Prop. 65</u>	:	WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.	

Canada

WHMIS (Canada) : Class B-2: Flammable liquid
Class B-5: Flammable aerosol.
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).



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.

Canada inventory : At least one component is not listed in DSL but all such components are listed in NDSL.

EU regulations

Hazard symbol or symbols :



Risk phrases

R11- Highly flammable.
R36- Irritating to eyes.
R43- May cause sensitization by skin contact.
R66- Repeated exposure may cause skin dryness or cracking.
R67- Vapors may cause drowsiness and dizziness.

Section 15. Regulatory information

Safety phrases : S23- Do not breathe vapor or spray.
S24- Avoid contact with skin.
S37- Wear suitable gloves.
S38- In case of insufficient ventilation, wear suitable respiratory equipment.

International regulations

International lists : **Australia inventory (AICS)**: At least one component is not listed.
China inventory (IECSC): At least one component is not listed.
Japan inventory: All components are listed or exempted.
Korea inventory: At least one component is not listed.
Malaysia Inventory (EHS Register): At least one component is not listed.
New Zealand Inventory of Chemicals (NZIoC): At least one component is not listed.
Philippines inventory (PICCS): All components are listed or exempted.
Taiwan inventory (CSNN): At least one component is not listed.

Section 16. Other information

HMIS® III

MSDS # 0028CB1D80

Health	*	2
Flammability		4
Physical hazards		0

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.

SAFETY DATA SHEET

High Solids Polyurethane Enamel X-503

Section 1. Identification

GHS product identifier : High Solids Polyurethane Enamel X-503
Other means of identification : High Solids Polyurethane Enamel X-503

Relevant identified uses of the substance or mixture and uses advised against
: FOR INDUSTRIAL USE ONLY

Supplier/Manufacturer : Akzo Nobel Coatings, Inc.
1 East Water Street
Waukegan, IL 60085
USA
Tel. 1 847 623 4200
Email: customer.
service@akzonobel.com

Canadian Supplier : Akzo Nobel Coatings Ltd.
110 Woodbine Downs Blvd.
Unit #4 Etobicoke, Ontario
Canada M9W 5S6
+1 (800) 618-1010

Emergency telephone number : CHEMTREC +1 (800) 424-9300 (Inside the US)
CHEMTREC International +1 (703) 527-3887 (Outside the US, collect calls accepted)

Date of issue / Date of revision : 11 September 2018

Safety Data Sheet Version : 6

Date of printing : 11 September 2018

Akzo Nobel Coatings Inc. encourages and expects you to read and understand this entire MSDS, as there is important information throughout the document. Further, Akzo Nobel Coatings Inc. expects you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

To promote safe handling, each customer or recipient should: 1) Notify its employees, agents, contractors, and others whom it knows or believes will use this material of the information contained in this MSDS and any other information regarding hazards and safety; 2) Furnish this same information to each of its customers for the product; 3) Request its customers to notify their employees, customers, and other users of the product of this information; and 4) Notify its employees, agents, contractors, and others that the precautions identified for this product and any other products with which mixtures may be created are transferable and cumulative to the mixture.

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
ACUTE TOXICITY (oral) - Category 4
SKIN IRRITATION - Category 2
EYE IRRITATION - Category 2A

Section 2. Hazards identification

GHS label elements

Hazard pictograms :



Signal word :

Warning

Hazard statements :

Flammable liquid and vapor.
Harmful if swallowed.
Causes serious eye irritation.
Causes skin irritation.

Precautionary statements

Prevention :

Wear protective gloves. Wear eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Ground/bond container and receiving equipment. Keep container tightly closed. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

Response :

IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage :

Store in a well-ventilated place. Keep cool.

Disposal :

Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified :

None known.

Section 3. Composition/information on ingredients

Substance/mixture :

Mixture

Ingredient name	%	CAS number
Hexamethylene diisocyanate, oligomers	80 - 85	28182-81-2
heptan-2-one	15 - 20	110-43-0

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

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.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. 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.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : Causes skin irritation.
- Ingestion** : Harmful if swallowed.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Ingestion** : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- 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.
- Specific treatments** : No specific treatment.

Section 4. First aid measures

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.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO₂, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

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

Special protective actions for fire-fighters : 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. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

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.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : 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. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

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).

Methods and materials for containment and cleaning up

Section 6. Accidental release measures

- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. 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.
- Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. 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.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : 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. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in a segregated and approved area. 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. Eliminate all ignition sources. Separate from oxidizing materials. 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.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Section 8. Exposure controls/personal protection

Ingredient name	Exposure limits
Hexamethylene diisocyanate, oligomers heptan-2-one	None. ACGIH TLV (United States, 3/2016). TWA: 233 mg/m ³ 8 hours. TWA: 50 ppm 8 hours. NIOSH REL (United States, 10/2016). TWA: 465 mg/m ³ 10 hours. TWA: 100 ppm 10 hours. OSHA PEL (United States, 6/2016). TWA: 465 mg/m ³ 8 hours. TWA: 100 ppm 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

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.

Individual protection measures

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.

Eye/face protection : 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, gases 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 protection

Hand protection : 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.

Body protection : 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. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

	Physical state	: Liquid.
	Color	: Yellowish.
Odor		: Solvent.
Odor threshold		: Not available.
pH		: Not available.
Melting/freezing point		: Not available.
Boiling point		: 151°C (303.8°F)
boiling range		: Not available.
Flash point		: Closed cup: 39°C (102.2°F)
Evaporation rate		: Not available.
Flammability (solid, gas)		: Not available.
Upper/lower flammability or explosive limits		
	Upper:	: Not determined.
	Lower:	: Not determined.
Vapor pressure		: Not available.
Vapor density		: Not available.
Relative density		: 1.073
Density		: 8.95 lbs/gal 1.073 g/cm ³
Solubility		: Not available.
Solubility in water		: Not available.
Partition coefficient: n-octanol/water		: Not available.
Auto-ignition temperature		: Not available.
Decomposition temperature		: Not available.
Viscosity		: Kinematic (room temperature): 2.33 cm ² /s (233 cSt)
Weight Volatiles		: 18.98% (w/w)
Volume Volatiles		: 25.03 % (v/v)
Weight Solids		: 81.02 % (w/w)
Volume Solids		: 74.97 % (v/v)
Regulatory VOC		: 1.7 lbs/gal 204 g/l minus water and exempt solvents
VOC Actual		: 1.7 lbs/gal 204 g/l

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
heptan-2-one	LD50 Oral	Rat	1600 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Hexamethylene diisocyanate, oligomers	Eyes - Moderate irritant	Rabbit	-	100 milligrams	-
	Skin - Moderate irritant	Rabbit	-	500 milligrams	-
heptan-2-one	Skin - Mild irritant	Rabbit	-	24 hours 14 milligrams	-

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Section 11. Toxicological information

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.
Inhalation : No known significant effects or critical hazards.
Skin contact : Causes skin irritation.
Ingestion : Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness
Inhalation : No specific data.
Skin contact : Adverse symptoms may include the following:
irritation
redness
Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : 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.

Section 11. Toxicological information

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	1620.1 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
heptan-2-one	Acute LC50 131000 to 137000 µg/l Fresh water	Fish - Pimephales promelas	96 hours

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Hexamethylene diisocyanate, oligomers	5.54	367.7	low
heptan-2-one	2.26	-	low

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.






Section 13. Disposal considerations

Disposal methods : 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. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Special precautions for user : Please Note: The information provided in section 14 is based on a bulk package shipment via ground transport in North America. All shippers are responsible for ensuring the proper transportation classification and package/container requirements are followed for the relevant mode of transport.

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

	DOT Classification	TDG Classification	Mexico Classification	IMDG	IATA
UN number	UN1263	UN1263	UN1263	UN1263	UN1263
UN proper shipping name	PAINT RELATED MATERIAL	PAINT RELATED MATERIAL	PAINT RELATED MATERIAL	PAINT RELATED MATERIAL	PAINT RELATED MATERIAL
Transport hazard class(es)	3 	3 	3 	3 	3 
Packing group	III	III	III	III	III
Environmental hazards	No.	No.	No.	No.	No.

Section 15. Regulatory information

U.S. Federal regulations

United States inventory (TSCA 8b): All components are listed or exempted.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard

International lists

National inventory

- Australia** : All components are listed or exempted.
- Canada** : All components are listed or exempted.
- China** : All components are listed or exempted.
- Europe** : All components are listed or exempted.
- Japan** : **Japan inventory (ENCS):** All components are listed or exempted.
Japan inventory (ISHL): At least one component is not listed.

Section 15. Regulatory information

Malaysia	: At least one component is not listed.
New Zealand	: All components are listed or exempted.
Philippines	: All components are listed or exempted.
Republic of Korea	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.
Turkey	: At least one component is not listed.

Section 16. Other information

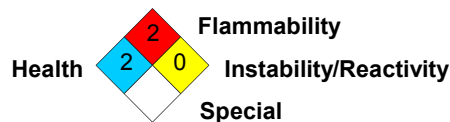
Hazardous Material Information System (U.S.A.)

Health	*	2
Flammability		3
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 SDSs 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.)



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History

Date of issue/Date of revision	: 11 September 2018
Version	: 6
MSDS #	: 007976 0007 001A76E700

Section 16. Other information

Key to abbreviations

: ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

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.