Smart Heavy Duty

2K Polyureathane Exterior Clear 88

SP2KPE-CLEAR88

1L SET (0.5L & 0.5L HARDENER) & 5L SET (2.5L & 2.5L HARDENER)

Description

SMART HEAVY DUTY 2K POLYUREATHANE EXTERIOR CLEAR 88 is a colourless, transparent , high solid polyurethan top coat developed to provide a highly durable and luxurious gloss for clear finishes. Product features

- Colourless and transparent
- Exterior & Interior Use
- UV Resistant
- Water Resistant

Application Area

- Roof
- Terraces
- Floors
- Tunnels
- Tanks
- Swimming pools
- Toilet

Composition

Pigment	:	None
Binder	:	High Solid Polyurethan
Volume Solid	:	80%

Properties

Finishing	:	High Sheen
Colour	:	Clear Transparent
Density	:	1.03
Pot Life	:	40 minutes after mixing
Mixing Ratio	:	1:1 (by volume)
Theoritical Coverage	:	8.61 m2 per litre per coat based on 100 µm dry film thickness 4.3 m2 per litre per coat based on 200 µm dry film thickness Recommended No. of Coats: 2 coats
Drying Time	:	Touch Dry: About 3 hours (Dependent on temperature and humidity and thickness applied)
	:	Hard Dry: About 8 hours (Dependent on temperature and humidity and thickness applied)
Recoating Interval	:	8 hours minimum based on normal condition

Application Method

Brush	:	For normal use thinning is not necessary.
Roller	:	For normal use thinning is not necessary.
Conventional Air Spray	:	Thin with 10 – 20% by volume with PU solvent and adjust to requirement.
Airless Spray	:	Thinning is not usually necessary. Can be thin 5 – 10% volume with PU Solvent to assist application.

Surface Preparation

Remove all loose, defective paint or powdery residues, loose chalk, dust and foreign matter. Repair cracks, uneven surfaces with suitable fillers. Smoothen the putty / filler areas with sand paper. Surfaces to be painted must be cleaned thoroughly and dry, it must be free from dirt, grease and other foreign matters. Allow all surfaces to dry completely prior to painting. Avoid painting when the moisture content and alkalinity of the walls are still high. (Recommended painting specification requires the moisture content of the walls to be below 16% measured by protimeter and alkalinity of the walls to be below pH9.)

Painting Guide

Surface Condition	Sealer (1 coat)	Finish (1 - 2 coats)
For Recoat Floor Surface with previous coating cleaned	• Epoxy Tile Primer	SMART HEAVY DUTY 2K POLYUREATHANE EXTERIOR CLEAR 88
New Cement Floor Surface	• Epoxy Tile Primer	SMART HEAVY DUTY 2K POLYUREATHANE EXTERIOR CLEAR 88

Company Identification

Manufacturer : Smart Paint Manufacturing Sdn. Bhd.
No 9 & 11, Jalan Indah Gemilang 5, Taman Perindustrian Gemilang,
81800 Ulu Tiram, Johor, Malaysia
Telephone No. : +607-863 9855 (Hunting Line) Fax No. : +607-861 5055
Email : info@smart-paints.com

Smart Heavy Duty

2K Polyureathane Exterior Clear 88

2 Component Solvent Based Polyureathane for Exterior

0.5 Litre & 2.5 Litres

Version No. :

Issue Date: **05/06/2024**

Safety Data Sheet according to CLASS requirement

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING	
Product Identifier	
Product Name	***Smart Heavy Duty 2K Polyureathane Exterior Clear 88***
Product Code	SP2KPE-CLEAR88
Chemical Name	Not Applicable
Chemical Formula	Not Applicable
Other means of Identification	2 Component Solvent Based Polyurethane for Exterior
CAS Number	Not Applicable
Relevant use of the chemical and restriction	
Relevant identified uses	Use according to manufacturer's directions
Details of manufacturer / importer	
Registered Company Name	**SMART PAINT MANUFACTURING SDN BHD** (1031014-A)
Address	No. 9 & 11, Jalan Indah Gemilang 5, Taman Perindustrian Gemilang, 81800 Ulu Tiram, Johor, Malaysia.
Telephone	+607-863 9855
Fax	+607-861 5055
Email	info@smart-paints.com
Web	http://www.smart-paints.com
Emergency telephone number	
Association / Organisation	Not Applicable
Emergency telephone number	Not Applicable
Other emergency telephone number	Not Applicable

SECTION 2 HAZARDS IDENTIFICATION	
Classification of the substances or mixture	
GHS Classification	**Health Hazard** Flammable liquids - Category 3 Skin Sensitization - Category 1
Label elements	
GHS label elements	
Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour.
H317	May cause an allergic skin reaction.

Precautionary statement(s)	
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233	Wear protective gloves/protective clothing/eye protection/face protection.
P241	Use explosion-proof electrical/ ventilating/lighting equipment.
P242	Obtain special instructions before use.
P243	Do not handle until all safety precautionary have been read and understood.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P280	Use personal protective equipment as required.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing shall not be allowed out of the workplace.

SECTION 2 HAZARDS IDENTIFICATION

Precautionary statement(s) Response	
P302+P352	IF ON SKIN : Wash with plenty of water and soap.
P332+P313	If skin irritation occurs : Get medical advice / attention
P303+P361+P353	IF ON SKIN (or hair) : Remove /take off immediately all contaminated clothing. Rinse skin with water/ shower.
P370+P378	Take off contaminated clothing and was before reuse.
P391	Collect spillage.
Precautionary statement(s) Storage	
P405	Store in locked up.
Precautionary statement(s) Disposal	
P501	Dispose of content/ container to appropriate waste site or reclaimer in accordance with local or national regulations.

SECTION 3 COMPOSITION / INFORMATION OF INGREDIENTS

CAS number	% [weight]	Name
-	< 90	Resin
123-86-4	< 9	Butyl acetate
-	< 1	Additive

SECTION 4 FIRST AID MEASURES

Description of first aid measure

Eye contact	▪ Check or and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelid open. Do not use an eye ointment. Seek for medical attention.
Skin contact	▪ Frequent or prolonged contact may irritate and cause dermatitis. Skin contact may aggravate an exiting dermatitis condition. Remove contaminated clothing – launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abbrasive soap. Get medical attention if redness or irritation occurs.
Inhalation	▪ High vapour (>1000 ppm) are irritating to the eyes and respiratory tract, may cause headaches, dizziness, anaesthesia. Drowsine unconsciousness and other central nervous system effects. Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform mouth to mouth resuscitation. Administer oxygen if available. Allow the victim to rest in a well ventilated area. Seek medical attention.

SECTION 5 FIREFIGHTING MEASURES

Suitable Fire Extinguishing Media :
Small fire : Use dry powder, Foam.
Large fire : Use water spray. Fog or foam. Water or foam may cause frothing.

Special Protective Actions For Fire Fighters:
Cool container in water spray in order to prevent pressure build-up, auto ignition or explosion. Avoid flushing spilled material into sewers, stream or other bodies of water. For small outdoor fires, portable fire extinguishers may be used, and self contained breathing apparatus (SCBA) may not be required. Respiratory and eye protection are required for fire fighting personnel.

Specific Hazards Arising From The Chemical :
Static discharge, material can accumulate static charges which can cause an incendiary electrical discharge. “Empty” containers retain product residue (liquid and/or vapour) and can be dangerous. DO NOT pressurize, cut. Weld braze, solder, drill grind, or expose such containers to heat, flame sparks, static electricity, or other sources of ignition ; they may explode and cause injury or death.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment And Emergency Procedure
Eye /skin protection :
Where there is potential for eye contact, wear chemical goggles and have eye flushing equipment immediately available. Wear appropriate protective clothing and chemical resistant gloves to prevent skin contact. Wear a face shield and chemical resistant clothing such as rubber apron when splashing is likely.
Respiratory Protection :
Use JKKP/NIOSH approved respiratory protection (full face piece recommended) when exposure limits are exceeded.
Ventilation :
Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits. If practical, use local mechanical exhause ventilation at source of air contamination such as open process equipment.

Environment Precaution
Flammable liquid. Ventilate. Eliminate all sources of ignition. Prevent additional discharge of material. For small spills implement cleanup procedure; for large spills implement cleanup procedure and if in public area, keep public away and advice authorities , provide suitable personal protective. dike and contain spill with inert material (sand, earth, etc) and transfer liquid and solid separately to container for recovery or disposal. Report as per regulatory or disposal. Do not use combustible material such as sawdust. Report as per regulatory equipment.

Methods And Materials For Containments And Clean Up
For small liquid spills (<1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residue to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose to all salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Remove contaminated soil and dispose of safely.

SECTION 7 HANDLING AND STORAGE

Precautions For Safe Handling
Avoid smoking and use of open ire. Avoid inhalation of vapours and contact with skin and eyes. Observe good industrial practices.

Condition For Safe Storage ,including Any Incompatibilities
Store in tightly closed original container in well-ventilated area. Avoid expose to direct sunlight.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters/ Occupational Limits

	ACGIH TLV-TWA		OSHA PEL-TWA	
Ingredient/Bahan	**ppm**	**mg/m3**	**ppm**	**mg/m3**
Butyl acetate	150	-	150	713

APPROPRIATE ENGINEERING CONTROL MEASURES
If user operations generate dust, fumes, gas, vapours 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.
Emission 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.

PERSONAL PROTECTION
Respiratory protection
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.
Recommended : Full mask with type Cartridge filter.
Hand protection
Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products I a risk assessment indicates this is necessary. After contamination with product change the gloves immediately and dispose of them according to relevant national and local regulations.
Eye 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.
Recommended : Safety glasses with side-shields.

Skin/ 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.
Recommended : Wear protective clothing.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance / colour	Liquid/Clear
Odour	Aromatic Hydrocarbon
Solid	86-88%
Specific Gravity (@ 25°C)	1.04
Viscosity (Ku)	53 KU
***Boiling Point**	123- 126 oC
***Flash Point**	27 oC
***Melting Point**	Not applicable
***Vapour Pressure (@ 20°C)**	Not applicable
Vapour Density (101.3 kPA / air=1)	Not applicable
Evaporation Rate (n - Butyl Ether=1)	Not applicable
Lower Flammable Limit LEL / Explosion limit (%)	Not applicable
Upper Flammable Limit UEL / Explosion limit (%)	Not applicable
Solubility	Insoluble in water

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY
No dangerous reaction known under condition of normal use.

CHEMICAL STABILITY
Stable under normal temperature conditions and recommended use.

POSSIBILTY OF HAZARDOUS REACTION
Under normal conditions of storage and use, hazardous reaction will not occur.

CONDITIONS TO AVOID
Heat, flame , sparks.
Nitric acid, sulfuric acid, strong oxidizing agents.
Electrostatic accumulation hazard? If Yes, use proper grounding procedure.

HAZARDOUS DECOMPOSITION PRODUCTS
When expose to high temperature, may produce hazardous decomposition products such as Carbon monoxide ,carbon dioxide, smoke and oxides of nitrogen

SECTION 11 TOXICOLOGY INFORMATION

There is no data available on the product itself.
Toxicological information of hazardous ingredients :

Acute toxicity /Ketoksikan Akut
Components/ Komponen:
Butyl Acetate:
Acute oral toxicity : LD50 (Rat, male): 12,789 mg/kg
LD50 (Rat, female): 10,760 mg/kg
Acute inhalation toxicity : LC50 (Rat, male and female): 0.74 mg/l
Acute dermal toxicity : LD50 (Rabbit): 14,000 mg/kg

Skin corrosion/irritation
Components:
Butyl Acetate:
Species : Rabbit
Exposure time: 4 h Result : No skin irritation

Serious eye damage/eye irritation
Components :
Butyl Acetate:
Species : Rabbit Result : No eye irritation

Respiratory or skin sensitization
Components:
Butyl Acetate:
Exposure routes: Inhalation Remarks: No data available
Exposure routes: Skin contact Result : Not sensitizing

Germ cell mutagenicity
Components:
Butyl Acetate:
Germ cell mutagenicity Assessment: Not mutagenic in vivo and in vitro

Carcinogenicity
Components:
Butyl Acetate:
Carcinogenicity Assessment : Not classified

Reproductive toxicity
Components:
Butyl Acetate:
Reproductive toxicity Assessment : Not classified

STOT - single exposure
Components:
Butyl Acetate:
Target Organs : Central Nervous System Assessment : May cause drowsiness or dizziness

STOT - repeated exposure
Components:
Butyl Acetate:
Remarks: Not classified

Aspiration toxicity
Components:
Butyl Acetate:
Statement on Aspiration Tox. : No data available

SECTION 12 ECOLOGICAL INFORMATION

Toxicity
No data available

Persistence and degradability
No information available.

Bioaccumulative Potential
Has the potential to bioaccumulate.

Mobility In Soil
Floats on water. Adsorbs to soil and has low mobility.

Other Adverse Effects
Do not allow product to reach ground water, water course or sewage system.

Ingredient	Fish 96 hour, LC50 mg/L	Crustacea 48 hour, EC50 mg/L	Algae 72 or 96 hour, ErC50 mg/L
Butyl Acetate	18	44	397

SECTION 13 DISPOSAL INFORMATION

Waste Disposal :
Recover or recycle if possible. Otherwise dispose in accordance with all applicable with all applicable national environment laws and regulations.

Product Disposal:
This product when dispose of in its unused and uncontaminated state should be treated as a hazardous waste.

Container Disposal :
Drain container thoroughly. Rinse three times with suitable solvent. Treat rinsing as for product disposal. After draining, vent in a safe place away from sparks and fire. Send drum recoverer or metal reclaimer. Residue may cause an explosion hazard. Do not pincture, cut or weld uncleaned drums. Keep container labelled until cleaned and then remove or deface labels.

SECTION 14 TRANSPORT INFORMATION

Transport to be in accordance with ADR/RID for road/rail, IMDG for sea and IATA for air.

LAND TRANSPORT
Classified as Dangerous Goods by the criteria of the European Agreement concerning the international carriage of Dangerous Goods (ADR) by Road & Regulations concerning the international carriage of Dangerous Goods (RID) by Rail.

UN Number: 1263
Proper shipping name : Paint (including paint, lacquer,enamel, stain, shellac, varnish, liquid filler and liquid lacquer base) or paint related material (including paint thinning or reducing compound.
Class: 3
Packaging Group: III

SEA TRANSPORT
Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG) for the transport of Sea.

UN Number: 1263
Proper shipping name : Paint (including paint, lacquer,enamel, stain, shellac, varnish, liquid filler and liquid lacquer base) or paint related material (including paint thinning or reducing compound.
Class : 3
Packaging Group: III
Marine Pollutant: No
SEA (Annex II of MARPOL 73/78 and the IBC Code)/ LAUT (Annex II of MARPOL 73/78 dan the IBC Code) : Not Applicable

AIR TRANSPORT
Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for the transport by Air.

UN Number: 1263
Proper shipping name : Paint (including paint, lacquer,enamel, stain, shellac, varnish, liquid filler and liquid lacquer base) or paint related material (including paint thinning or reducing compound.
Class: 3
Packaging Group: III

SECTION 15 REGULATORY INFORMATION

Applicable national regulations :

a) OHSA 1994 and relevant regulation
b) Factories and Machinery Act 1967 and relevant regulations
c) Environment Quality Act 1967 and regulations.
d) Pesticide Act 1974 and regulations
e) Occupational Safety and Health (Classification, Labelling And Safety Data Sheet of Hazardous Chemicals) Reg 2013
f) Industry Code Of Practice (On Chemicals Classification And Hazard Communication

SECTION 16 OTHER INFORMATION

Date of preparation: 05-06-2024
Date of revision: -
Version: 01

ABBREVIATION/SINGKATAN
ACGIH American Conference of Governmental Industrial Hygienists
TLV Threshold limit value
TWA Time-Weighted Average
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
LD50 Lethal Dose
LC50 Median Lethal concentration
IACR International Agency for Research in Cancer
CAS Registry Numbers Chemical Abstracts Service Registry Numbers
ICOP Industry Code Of Practice on Chemical Classification and Health approved by Minister under section 37 of the Act
C Ceiling Limit
CEIL Ceiling Limit airborne concentration
STEL Short Term Exposure Limit
DNA Data Not Available
N/R Not Regulated

Disclaimer
All information appearing here in is based on our present state of our knowledge. However the information in this SDS may not be valid for such material used in combination with any other materials or in any process. No representation, warranty or guarantee is made as to its accuracy, reliability or completeness. We do not accept liability for any loss or damage that may occur from the use of this information.

Smart Heavy Duty
2K Polyureathane Exterior Clear 88 Hardener (Part B)
Hardener for 2 Component Solvent based Polyurethane
0.5L & 2.5L

Version No. : **2.1.24**
Issue Date: **05/06/2024**
Safety Data Sheet according to CLASS requirement

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

Product Identifier

Product Name	***Smart Heavy Duty 2K Polyureathane Exterior Clear 88 Hardener (Part B)***
Product Code	SP2KPE-CLEARHD88
Chemical Name	Not Applicable
Chemical Formula	Not Applicable
Other means of Identification	Hardener for 2 Component Solvent based Polyurethane
CAS Number	Not Applicable

Relevant use of the chemical and restriction

Relevant identified uses	Use according to manufacturer's directions

Details of manufacturer / importer

Registered Company Name	**SMART PAINT MANUFACTURING SDN BHD** (1031014-A)
Address	No. 9 & 11, Jalan Indah Gemilang 5, Taman Perindustrian Gemilang, 81800 Ulu Tiram, Johor, Malaysia.
Telephone	+607-863 9855
Fax	+607-861 5055
Email	info@smart-paints.com
Web	http://www.smart-paints.com

Emergency telephone number

Association / Organisation	Not Applicable
Emergency telephone number	Not Applicable
Other emergency telephone number	Not Applicable

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substances or mixture

GHS Classification	**Physical Hazard** Flammable liquids - Category 3 **Health Hazard** Acute toxicity (Oral) - Category 4 Skin Sensitization - Category 1 Specific target organ toxicity -Single exposure (irritating to respiratory system) - Category 3 Respiratory sensitization - Category 1 **Environment Hazard** Hazardous to the aquatic environment -acute - Category 3 Hazardous to the aquatic environment -chronic - Category 3

Label elements

GHS label elements	
Signal word	Warning

Hazard statement(s)

H226	Flammable liquid and vapour.
H332	Harmful if swallowed.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.
H335	May cause respiratory irritation.
H402	Harmful to aquatic life.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statement(s)	
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233	Wear protective gloves/protective clothing/eye protection/face protection.
P241	Use explosion-proof electrical/ ventilating/lighting equipment.
P242	Obtain special instructions before use.
P243	Do not handle until all safety precautionary have been read and understood.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P280	Use personal protective equipment as required.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing shall not be allowed out of the workplace.

SECTION 2 HAZARDS IDENTIFICATION

Precautionary statement(s) Response	
P302+P352	IF ON SKIN : Wash with plenty of water and soap.
P332+P313	If skin irritation occurs : Get medical advice / attention
P303+P361+P353	IF ON SKIN (or hair) : Remove /take off immediately all contaminated clothing. Rinse skin with water/ shower.
P370+P378	Take off contaminated clothing and was before reuse.
P391	Collect spillage.
Precautionary statement(s) Storage	
P405	Store in locked up.
Precautionary statement(s) Disposal	
P501	Dispose of content/ container to appropriate waste site or reclaimer in accordance with local or national regulations.

SECTION 3 COMPOSITION / INFORMATION OF INGREDIENTS

CAS number	% [weight]	Name
28182-81-2	75 -90	Hexamethylene diisocyanate isocyanurate-type oligomers
64742-95-6	5 - 7	Solvent naphtha (petroleum), light arom.
123-86-4	3 - 5	n-Butyl acetate
822-06-0	0.2 - 0.3	1,6-hexamethylene diisocyanate

SECTION 4 FIRST AID MEASURES

Description of first aid measure

Eye contact	▪ Check or and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelid open. Do not use an eye ointment. Seek for medical attention.
Skin contact	▪ Frequent or prolonged contact may irritate and cause dermatitis. Skin contact may aggravate an exiting dermatitis condition. Remove contaminated clothing – launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abbrasive soap. Get medical attention if redness or irritation occurs.
Inhalation	▪ High vapour (>1000 ppm) are irritating to the eyes and respiratory tract, may cause headaches, dizziness, anaesthesia. Drowsine unconsciousness and other central nervous system effects. Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform mouth to mouth resuscitation. Administer oxygen if available. Allow the victim to rest in a well ventilated area. Seek medical attention.

SECTION 5 FIREFIGHTING MEASURES

Suitable Fire Extinguishing Media :
Small fire : Use dry powder, Foam.
Large fire : Use water spray. Fog or foam. Water or foam may cause frothing.

Special Protective Actions For Fire Fighters:
Protective equipment for fire-fighting:
Wear a self-contained breathing apparatus.

Specific Hazards Arising From The Chemical :
Hazards during fire-fighting: harmful vapours
Evolution of fumes/fog. The substances/groups of substances mentioned can be released in case of fire.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment And Emergency Procedure
Use personal protective clothing. Breathing protection required.
Can release flammable vapours. Wind direction should be noted.
Avoid all sources of ignition: heat, sparks, open flame. Use antistatic tools.

Environment Precaution
Contain contaminated water/firefighting water. Do not discharge into drains/surface waters/groundwater.

Methods And Materials For Containments And Clean Up
For large amounts: Pump off product.
For residues: Pick up with suitable absorbent material.
Dispose of absorbed material in accordance with regulations

SECTION 7 HANDLING AND STORAGE

Precautions For Safe Handling
Avoid smoking and use of open ire. Avoid inhalation of vapours and contact with skin and eyes. Observe good industrial practices.

Condition For Safe Storage ,including Any Incompatibilities
Store in tightly closed original container in well-ventilated area. Avoid expose to direct sunlight.
Storage stability:
If moisture enters isocyanate containers, CO2 forms and pressure builds up.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters/ Occupational Limits

	ACGIH TLV-TWA		OSHA PEL-TWA	
Ingredient/Bahan	**ppm**	**mg/m3**	**ppm**	**mg/m3**
n-Butyl acetate	150	50	150	710
1,6-hexamethylene	0.005	-	-	-

APPROPRIATE ENGINEERING CONTROL MEASURES
If user operations generate dust, fumes, gas, vapours 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.
Emission 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.

PERSONAL PROTECTION
Respiratory protection
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.
Recommended : Full mask with type Cartridge filter.
Hand protection
Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products I a risk assessment indicates this is necessary. After contamination with product change the gloves immediately and dispose of them according to relevant national and local regulations.
Eye 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.
Recommended : Safety glasses with side-shields.

Skin/ 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.
Recommended : Wear protective clothing.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance / colour	Liquid/Colourless
Odour	Faint odour
Solid	Not applicable
Specific Gravity (@ 25°C)	1.13
Viscosity (Ku)	Not applicable
***Boiling Point**	160 °C
***Flash Point**	51.5 °C
***Melting Point**	-25 °C
***Vapour Pressure (@ 20°C)**	< 50 mbar
Vapour Density (101.3 kPA / air=1)	Not determined
Evaporation Rate (n - Butyl Ether=1)	Not determined
Lower Flammable Limit LEL / Explosion limit (%)	1.0% (V)
Upper Flammable Limit UEL / Explosion limit (%)	7.5% (V)
Solubility	React with water

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY
No dangerous reaction known under condition of normal use.

CHEMICAL STABILITY
Stable under normal temperature conditions and recommended use.

POSSIBILTY OF HAZARDOUS REACTION
Reacts with alcohols. Reacts with amines. Reacts with substances which contain active hydrogen.
Reacts with water, with formation of carbon dioxide. The formation of gaseous decomposition
products builds up pressure in tightly closed containers. Vapours may form ignitable mixture with air.

CONDITIONS TO AVOID
Avoid moisture. See SDS section 7 - Handling and storage.

HAZARDOUS DECOMPOSITION PRODUCTS
Decomposition products:
No applicable information available.
Thermal decomposition:
No decomposition if used correctly

SECTION 11 TOXICOLOGY INFORMATION

Primary routes of exposure
Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects
Oral
Type of value: LD50
Species: rat
Value: > 5,000 mg/kg
The product has not been tested. The statement has been derived from the properties of the individual components.
Inhalation
Type of value: LC50
Species: rat
Value: > 1 - 5 mg/l
Exposure time: 4 h

Determined for mist The substance from the isocyanate substance class has been tested in a form (respirable aerosol) that is different from the forms in which the product is placed on the market and used. Therefore, the test result is not adequate for the purpose of classification and labelling of the product. Based on expert judgement and available data, a modified classification and labeling for acute inhalation toxicity is justified. The generation of a respirable aerosol must be prevented! The product has not been tested. The statement has been derived from the properties of the individual components.
Information on: (OLIGOMER) Hexamethylene diisocyanate isocyanurate-type oligomers
Type of value: LC50
Species: rat (male/female)
Value: 0.467 mg/l (OECD Guideline 403)
Exposure time: 4 h
An aerosol was tested.
The test result applies only to the substance transferred into respirable aerosol (particles < 20 µm).

Dermal
Type of value: ATE
Value: > 5,000 mg/kg
The product has not been tested. The statement has been derived from the properties of the individual components.

Assessment other acute effects
Assessment of STOT single:
Causes temporary irritation of the respiratory tract.
The product has not been tested. The statement has been derived from the properties of the individual components.

Skin
Species: rabbit
Result: non-irritant
Method: OECD Guideline 404
The product has not been tested. The statement has been derived from the properties of the individual components.

Eye
Species: rabbit
Result: non-irritant
Method: OECD Guideline 405
The product has not been tested. The statement has been derived from the properties of the individual components.

Sensitization
Assessment of sensitization: May cause allergic respiratory reaction. May cause allergic skin
reaction. The product has not been tested. The statement has been derived from the properties of the individual components.
Guinea pig maximization test
Species: guinea pig
Result: sensitizing
sensitizing effect in animal tests

Aspiration Hazard
No aspiration hazard expected.

Chronic Toxicity/Effects
Repeated dose toxicity
Assessment of repeated dose toxicity: The information available on the product provides no
indication of toxicity on target organs after repeated exposure.

SECTION 11 TOXICOLOGY INFORMATION

Genetic toxicity
Assessment of mutagenicity: Based on the ingredients, there is no suspicion of a mutagenic effect.

Carcinogenicity
Assessment of carcinogenicity: No data available concerning carcinogenic effects.

Reproductive toxicity
Assessment of reproduction toxicity: Based on the ingredients, there is no suspicion of a toxic effect on reproduction.

Teratogenicity
Assessment of teratogenicity: Based on the ingredients, there is no suspicion of a teratogenic effect

SECTION 12 ECOLOGICAL INFORMATION

Toxicity
Aquatic toxicity
Assessment of aquatic toxicity:
Acutely harmful for aquatic organisms. May cause long-term adverse effects in the aquatic environment.
The product has not been tested. The statement has been derived from the properties of the individual components.

Toxicity to fish
LC50 (96 h) 10 - 100 mg/l, Brachydanio rerio
The product has not been tested. The statement has been derived from the properties of the individual components.

Aquatic invertebrates
EC50 10 - 100 mg/l, Daphnia magna
The product has not been tested. The statement has been derived from the properties of the individual components.

Aquatic plants
EC50 (72 h) 10 - 100 mg/l, algae
The product has not been tested. The statement has been derived from the properties of the individual components.

Chronic toxicity to fish
No data available.
Chronic toxicity to aquatic invertebrates
No data available

Microorganisms/Effect on activated sludge
Toxicity to microorganisms
bacteria/EC50 (3 h): > 1,000 mg/l
The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations. The product has not been tested. The statement has been derived from the properties of the individual components.

Persistence and degradability
Assessment biodegradation and elimination (H2O)
The substance can be virtually eliminated from water in suitable effluent treatment plants by biodegradation, stripping and mechanical separation.
Elimination information
Not readily biodegradable (by OECD criteria).

Additional information
Other ecotoxicological advice:
Do not release untreated into natural waters. The local regulations on waste-water treatment must be followed.

SECTION 13 DISPOSAL INFORMATION

Waste Disposal :
Recover or recycle if possible. Otherwise dispose in accordance with all applicable with all applicable national environment laws and regulations.

Product Disposal:
This product when dispose of in its unused and uncontaminated state should be treated as a hazardous waste.

Container Disposal :
Drain container thoroughly. Rinse three times with suitable solvent. Treat rinsing as for product disposal. After draining, vent in a safe place away from sparks and fire. Send drum recoverer or metal reclaimer. Residue may cause an explosion hazard. Do not pincture, cut or weld uncleaned drums. Keep container labelled until cleaned and then remove or deface labels.

SECTION 14 TRANSPORT INFORMATION

Transport to be in accordance with ADR/RID for road/rail, IMDG for sea and IATA for air.

LAND TRANSPORT
Classified as Dangerous Goods by the criteria of the European Agreement concerning the international carriage of Dangerous Goods (ADR) by Road & Regulations concerning the international carriage of Dangerous Goods (RID) by Rail.

UN Number: 1263
Proper shipping name : Paint (including paint, lacquer,enamel, stain, shellac, varnish, liquid filler and liquid lacquer base) or paint related material (including paint thinning or reducing compound.
Class: 3
Packaging Group: III

SEA TRANSPORT
Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG) for the transport of Sea.

UN Number: 1263
Proper shipping name : Paint (including paint, lacquer,enamel, stain, shellac, varnish, liquid filler and liquid lacquer base) or paint related material (including paint thinning or reducing compound.
Class : 3
Packaging Group: III
Marine Pollutant: No
SEA (Annex II of MARPOL 73/78 and the IBC Code)/ LAUT (Annex II of MARPOL 73/78 dan the IBC Code) : Not Applicable

AIR TRANSPORT
Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for the transport by Air.

UN Number: 1263
Proper shipping name : Paint (including paint, lacquer,enamel, stain, shellac, varnish, liquid filler and liquid lacquer base) or paint related material (including paint thinning or reducing compound.
Class: 3
Packaging Group: III

SECTION 15 REGULATORY INFORMATION

Applicable national regulations :

a) OHSA 1994 and relevant regulation
b) Factories and Machinery Act 1967 and relevant regulations
c) Environment Quality Act 1967 and regulations.
d) Pesticide Act 1974 and regulations
e) Occupational Safety and Health (Classification, Labelling And Safety Data Sheet of Hazardous Chemicals) Reg 2013
f) Industry Code Of Practice (On Chemicals Classification And Hazard Communication

SECTION 16 OTHER INFORMATION

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ABBREVIATION/SINGKATAN
ACGIH American Conference of Governmental Industrial Hygienists
TLV Threshold limit value
TWA Time-Weighted Average
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
LD50 Lethal Dose
LC50 Median Lethal concentration
IACR International Agency for Research in Cancer
CAS Registry Numbers Chemical Abstracts Service Registry Numbers
ICOP Industry Code Of Practice on Chemical Classification and Health approved by Minister under section 37 of the Act
C Ceiling Limit
CEIL Ceiling Limit airborne concentration
STEL Short Term Exposure Limit
DNA Data Not Available
N/R Not Regulated

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