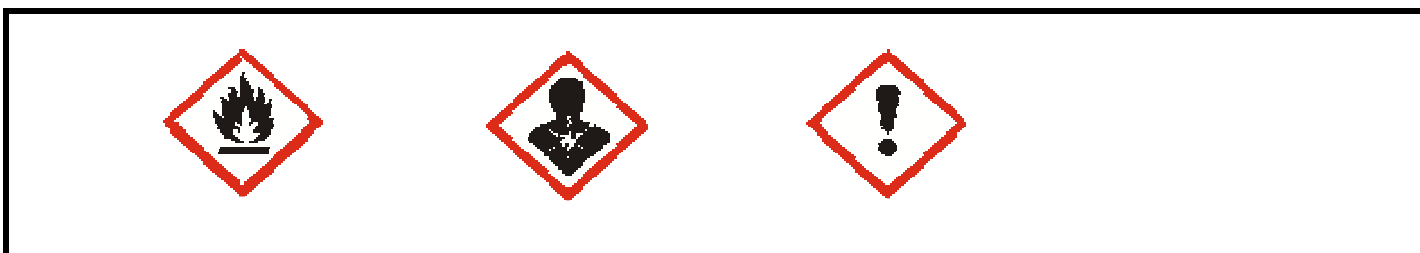


MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	: UNY MARINE HS , BASE	Product No. : 5512
Manufacutrer / Supplier	: TOA-Chugoku Paints Co.,Ltd	
	110 Moo 5 Wellgrow I.E. Bangna-Trad Rd. Km.36,	
	Bangsamak, Bangpokong Chachoengsao, 24180	
	Telephone no. 66 02 2602701-8 , 66 038 570498-9	Fax : 66 02 2602700 , 66 038 570500
In case of emergency	: Telephone no. 66 02 2602701-8 , 66 038 570501	
Material intended use	: Coating: Solvent (Refer to technical data sheet)	

2. HARZARDS IDENTIFICATION



3. COMPOSITION / INFORMATION ON INGREDIENTS

This product contains the following hazardous ingredients				
Ingredient name	CAS No.	EINECS No.	% by weight	Classification
Xylene	1330-20-7	215-535-7	15 - 20	R10 Xn; R20/21 Xi; R38
n-butyl acetate	123-86-4	204-658-1	1 - 5	R10 R66, R67
solvent naphtha (petroleum), light aromatic	64742-95-6	265-199-0	2	R10 Xn; R20, R65 Xi; R37 R66 N; R51/53

4. FIRST-AID MEASURES

<u>First-aid measures</u>	
General	: In all cases of doubt, or when syptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.
Eye contact	: Check for and remove any contact lenses. Immediately flush eyes with running clean fresh water for at least 15 minutes, keeping the eyelids open and seek medical attention.
Skin contact	: Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognised skin cleanser. Do not use solvents or thinners.
Inhalation	: Remove to fresh air. Keep patient warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occures, provide artificial respiration or oxygen by trained personnel. Give nothing by mouth. If unconscious, place in recovery position and seek medical advice.
Ingestion	: If accidentally swallow obtain immediate medical attention and show the container or label. Keep patient warm and at rest. Do not induce vomitting.

5. FIRE FIGHTING MEASURES

Extinguishing media	: Recommended : alcohol-resistant foam, CO2, powders, water spray. Do not use - water jet.
Recommendation	: Fire will produce dense black smoke. Exposure to decomposition products may cause a health hazard. Appropriate breathing apparatus may be required. Cool closed containers exposed to fire with water. Do not release runoff from fire to sewers or waterways.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	: Remove sources of ignition and ventilation the area, avoid breathing vapour or mist. Do not turn lights or unprotected electrical equipment on or off.
Spill	: Contain and absorb spillage with non-combustible material e.g. sand, earth, vermiculite. Place in closed container outside building and disposal according to local regulation. Preferably clean with a detergent. Do not use solvents. Do not allow spills to enter drains or watercourses. If drain, lakes, river, or sewers are contaminated, inform the appropriate authorities in accordance with local regulations.

Note : see section 8 for personal protective equipment and section 13 for waste disposal.

7. HANDLING AND STORAGE

Handling	: This coating contains solvents. Solvent vapours are heavier than air and may spread along floors. vapours may form explosive mixtures with air. Areas of storage, preparation and application should be ventilated to prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentrations higher than the occupational exposure limits.
In storage	: Handle containers carefully to prevent damage and spillage. Naked flames and smoking should not be permitted in storage areas. It is recommended that fork lift trucks and electrical equipment are protected to the appropriate standard.
In use	: Avoid skin and eye contact. Avoid inhalation of vapours and spray mists. Observe label precaution. Put on appropriate personal protective equipment. Smoking, eating and drinking should be prohibited in areas where this material is handled. Never use pressure to empty. Container is not a pressure vessel. Always keep in containers made from the same material as the original one. The product may charge electrostatically. Always use earthing leads when pouring solvents and transferring product. Operators should wear clothing which does not generate static and antistatic footwear; floor should be conductive type. When operators, whether spraying or not, have to work inside the spray booth, ventilation is unlikely to be sufficient to control particulates and solvent vapour in all case. In such circumstances they should wear a compressed air-fed respirator during the spraying process and until such time as the particulates and solvent vapour concentration has fallen below the exposure limits.
Storage	: Store in accordance with local regulation. Observe label precautions. Store in a cool, well ventilated area away from incompatible materials and source of heat and direct sunlight. Keep away from ; oxidising agent, strong alkalis, strong acids.

Storage	<p>Store on concrete or other impervious floor, preferably with bunding to contain any spillage.</p> <p>Do not stack more than 3 pallets high.</p> <p>Keep container tightly closed. Container that have been opened must be carefully resealed and kept upright to prevent leakage.</p> <p>Prevent unauthorised access.</p> <p>This is highly flammable liquid. Refer to the requirements of local regulations for the storage and handling regulations pertaining to this material.</p>
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8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures	: Provide adequate ventilation. Where reasonably practicable, this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and solvent vapours below the occupational exposure limits (OEL) suitable respirator must be worn.
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Exposure Limits

Exposure standards are those provided by the ACGIH (American Conference of Government Industrial Hygienists).

<u>Material</u>	<u>STEL-15 min.ave</u>	<u>Long term-TWA-8hr</u>
xylene	150 ppm	100 ppm
solvent naphtha (petroleum), light aromatic	-	100 mg/kg
naphtha (petroleum), hydrotreated heavy	-	100 mg/kg
n-butyl acetate	200 ppm	150 ppm

Personal protection equipment

Respiratory Protection	: Use a properly fitted, air-purifying or air-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.
	When concentrations exceed the exposure limits shown above, worker must wear appropriate respirators. Provision of other control such as exhaust ventilation should be considered if practical.
Eye Protection	: Wear safety eyewear, e.g. safety spectacles, goggle or visors to protect against the splash of liquids. Eyewear should comply with an approved standard.
	Wear a full face shield if mixing or pouring operations pose a risk of splashes.
	An eyewash station is suggested as a good work place practice.
Hands Protection	: Gloves of an appropriate material should worn during mixing and application.
	For prolonged or repeated handling, use the following type of gloves: gloves; nitrile.
	Barrier creams may help to protect the exposed areas of the skin but should not be applied once exposure has occurred.
	For right choice of glove materials, with focus on chemical resistance and time of penetration, seek advice by the supplier of chemical resistant gloves.
Skin Protection	: Overalls which cover the body, arms and legs should worn. Skin should not be exposed.
	Barrier creams may help to protect areas which are difficult to cover such as face and neck.
	They should however not be applied once exposure has occurred. Petroleum jelly based types
	Such as vaseline should not be used. All part of the body should be washed after contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state : () Solid (x) Liquid () Paste () Powder	Odour : Smell of solvent	Density : 1.23 g/cm ³
	Colour : Various	Flash point : 23 °C
Solubility : Insoluble in water	Explosion limits : LEL% 0.6 UEL% 12.3	
Vapour pressure : 9700 Pa, 20 °C	Autoignition temperature : 370 °C	

10. STABILITY AND REACTIVITY

Stable under recommended storage and handling conditions (see section 8). When exposed to high temperatures may produce hazardous decomposition products such as carbon monoxide, carbon dioxide, oxide of nitrogen and smoke.

Keep away from oxidising agents, strongly alkaline and strong acid materials in order to avoid possible exothermic reactions.

11. TOXICOLOGICAL INFORMATION

There are no data available on the product itself.

Exposure to solvent vapour concentration from the component solvents in excess of the state occupational exposure limits may result in adverse health effects such as mucous and membrane and respiratory system irritation and adverse effects on the kidneys, liver and central nervous system. Symptoms include headache, nausea, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.

Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin resulting in dryness, irritation and possible non-allergic contact dermatitis. Solvents may also be absorbed through the skin. Splashes of liquid in the eye may cause irritation and soreness with possible reversible damage.

12. ECOLOGICAL INFORMATION

There is no data available on the preparation itself.

Do not allow to enter drains or water courses.

The preparation has been assessed following the conventional method of the Dangerous Preparations Directive 1999/45/EC and is not classified as dangerous for the environment.

Aquatic ecotoxicity

Material name	Test	Result	Species	Exposure
xylene	Mortality	Acute LC50 3300 to 4093 u/L	Fish-Rainbow	96 hours.
		Fresh water	trout, donaldson-trout-	
			Oncorhynchus mykiss	
			trout, donaldson-trout-	
solvent naphtha (petroleum), light aromatic	-	Acute EC50 < 10 mg/L	Daphnia	48 hours
	-	Acute IC50 < 10 mg/L	Algae	72 hours
	-	Acute LC50 < 10 mg/L	Fish	96 hours.
n-butyl acetate	Mortality	Acute LC50 18000 to 19000 u/L	Fish-Fathead minnow	96 hours
		Fresh water	Pimephales promelas	

13. DISPOSAL CONSIDERATION

Method of disposal : Do not allow into drain or water courses. Wastes and empty containers should be disposed of in accordance with regulations made under the Control of Pollution Act and the Environmental Protection Act.

Using information provided in this data sheet advice should be obtained from the Waste Regulation Authority, whether the special waste regulations apply.

14. TRANSPORT INFORMATION

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.

International transport regulations

Proper shipping name : Paint
UN number : 1263
Class : 3
Packing group : III
Label :



Additional information

ADR / RID : Hazardous identification no. : 30
: Special provision : 640E
IMDG : Class : 3
: Proper shipping name : Paint
: Emergency schedules (EmS) : F-E, S-E
: Marine pollutant : No

15. REGULATORY INFORMATION

The product complies with these local regulations.

EU regulations : The product is classified and labelled for supply in accordance with the Directive 1999/45/EC as follows:

hazard symbol :



Harmful

Risk phrases : R10 Flammable
R20/21 Harmful by inhalation and in contact with skin
R43 May cause sensitisation by skin contact.
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases : S23 Don not breathe vapour / spray.
S36/37 Wear suitable protective clothing and gloves.
S51 Use only in well-ventilated areas.

Contains : Xylene

16. OTHER INFORMATION

CEPE Classification	:	1	
Full text of R-phrases	:	R10	Flammable
		R20/21	Harmful by inhalation and in contact with skin.
		R22	Harmful if swallowed.
		R37	irritating to respiratory system and skin.
		R38	Irritating to skin.
		R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
		R65	Harmful: may cause lung damage if swallowed.
		R66	Repeated exposure may cause skin dryness or cracking.
		R67	Vapours may cause drowsiness and dizziness.

The information on this safety data sheet is based upon the present state of our knowledge and on current law.

The product should not be used for purposes other than shown in the product data sheet without first obtaining written advice.

It is always the responsibility of the user to take all necessary steps to meet the demands of applicable legislation.

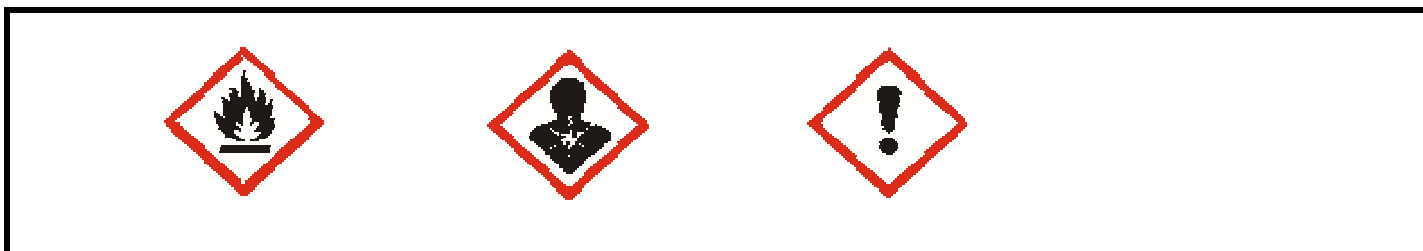
The information in this Material Safety Data Sheet is required according to legislation.

MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	: UNY MARINE HS , HARDENER	Product No. : 5512
Manufacutrer / Supplier	: TOA-Chugoku Paints Co.,Ltd	
	110 Moo 5 Wellgrow I.E. Bangna-Trad Rd. Km.36,	
	Bangsamak, Bangpokong Chachoengsao, 24180	
	Telephone no. 66 02 2602701-8 , 66 038 570498-9 Fax : 66 02 2602700 , 66 038 570500	
In case of emergency	: Telephone no. 66 02 2602701-8 , 66 038 570501	
Material intended use	: Coating: Solvent (Refer to technical data sheet)	

2. HARZARDS IDENTIFICATION



3. COMPOSITION / INFORMATION ON INGREDIENTS

This product contains the following hazardous ingredients				
Ingredient name	CAS No.	EINECS No.	% by weight	Classification
Xylene	1330-20-7	215-535-7	42- 45	R10 Xn; R20/21 Xi; R38
n-butyl acetate	123-86-4	204-658-1	3 - 7	R10 R66, R67
1,6-Diisocyanatohexane	822-06-0	212-484-8	50	T;R23 Xi; R36/37/38 R42/43
Hexamethylene Diisocyanate	28182-81-2	500-060-2	2	R42/43

4. FIRST-AID MEASURES

<u>First-aid measures</u>	
General	: In all cases of doubt, or when sytoms persist, seek medical attention. Never give anything by mouth to an unconscious person.
Eye contact	: Check for and remove any contact lenses. Immediately flush eyes with running clean fresh water for at least 15 minutes, keeping the eyelids open and seek medical attention.
Skin contact	: Remove contaminated clothing and shoes. Wash skin throughly with soap and water or use recognised skin cleanser. Do not use solvents or thinners.
Inhalation	: Remove to fresh air. Keep patient warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occures, provide artificial respiration or oxygen by trained personnel. Give nothing by mouth. If unconscious, place in recovery position and seek medical advice.
Ingestion	: If accidentally swallow obtain immediate medical attention and show the container or label. Keep patient warm and at rest. Do not induce vomitting.

5. FIRE FIGHTING MEASURES

Extinguishing media	: Recommended : alcohol-resistant foam, CO2, powders, water spray. Do not use - water jet.
Recommendation	: Fire will produce dense black smoke. Exposure to decomposition products may cause a health hazard. Appropriate breathing apparatus may be required. Cool closed containers exposed to fire with water. Do not release runoff from fire to sewers or waterways.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	: Remove sources of ignition and ventilation the area, avoid breathing vapour or mist. Do not turn lights or unprotected electrical equipment on or off.
Spill	: Contain and absorb spillage with non-combustible material e.g. sand, earth, vermiculite. Place in closed container outside building and disposal according to local regulation. Preferably clean with a detergent. Do not use solvents. Do not allow spills to enter drains or watercourses. If drain, lakes, river, or sewers are contaminated, inform the appropriate authorities in accordance with local regulations.

Note : see section 8 for personal protective equipment and section 13 for waste disposal.

7. HANDLING AND STORAGE

Handling	: This coating contains solvents. Solvent vapours are heavier than air and may spread along floors. vapours may form explosive mixtures with air. Areas of storage, preparation and application should be ventilated to prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentrations higher than the occupational exposure limits.
In storage	: Handle containers carefully to prevent damage and spillage. Naked flames and smoking should not be permitted in storage areas. It is recommended that fork lift trucks and electrical equipment are protected to the appropriate standard.
In use	: Avoid skin and eye contact. Avoid inhalation of vapours and spray mists. Observe label precaution. Put on appropriate personal protective equipment. Smoking, eating and drinking should be prohibited in areas where this material is handled. Never use pressure to empty. Container is not a pressure vessel. Always keep in containers made from the same material as the original one. The product may charge electrostatically. Always use earthing leads when pouring solvents and transferring product. Operators should wear clothing which does not generate static and antistatic footwear; floor should be conductive type. When operators, whether spraying or not, have to work inside the spray booth, ventilation is unlikely to be sufficient to control particulates and solvent vapour in all case. In such circumstances they should wear a compressed air-fed respirator during the spraying process and until such time as the particulates and solvent vapour concentration has fallen below the exposure limits.
Storage	: Store in accordance with local regulation. Observe label precautions. Store in a cool, well ventilated area away from incompatible materials and source of heat and direct sunlight. Keep away from ; oxidising agent, strong alkalis, strong acids.

Storage	<p>Store on concrete or other impervious floor, preferably with bunding to contain any spillage.</p> <p>Do not stack more than 3 pallets high.</p> <p>Keep container tightly closed. Container that have been opened must be carefully resealed and kept upright to prevent leakage.</p> <p>Prevent unauthorised access.</p> <p>This is highly flammable liquid. Refer to the requirements of local regulations for the storage and handling regulations pertaining to this material.</p>
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8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures	: Provide adequate ventilation. Where reasonably practicable, this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and solvent vapours below the occupational exposure limits (OEL) suitable respirator must be worn.
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Exposure Limits

Exposure standards are those provided by the ACGIH (American Conference of Government Industrial Hygienists).

<u>Material</u>	<u>STEL-15 min.ave</u>	<u>Long term-TWA-8hr</u>
xylene	150 ppm	100 ppm
n-butyl acetate	200 ppm	150 ppm
1,6-Diisocyanatohexane	-	0.005 ppm
Hexamethylene Diisocyanate	1.0 mg/m ³	0.5 mg/m ³

Personal protection equipment

Respiratory Protection	: Use a properly fitted, air-purifying or air-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.
	When concentrations exceed the exposure limits shown above, worker must wear appropriate respirators. Provision of other control such as exhaust ventilation should be considered if practical.
Eye Protection	: Wear safety eyewear, e.g. safety spectacles, goggle or visors to protect against the splash of liquids. Eyewear should comply with an approved standard.
	Wear a full face shield if mixing or pouring operations pose a risk of splashes.
	An eyewash station is suggested as a good work place practice.
Hands Protection	: Gloves of an appropriate material should worn during mixing and application.
	For prolonged or repeated handling, use the following type of gloves: gloves; nitrile.
	Barrier creams may help to protect the exposed areas of the skin but should not be applied once exposure has occurred.
	For right choice of glove materials, with focus on chemical resistance and time of penetration, seek advice by the supplier of chemical resistant gloves.
Skin Protection	: Overalls which cover the body, arms and legs should worn. Skin should not be exposed.
	Barrier creams may help to protect areas which are difficult to cover such as face and neck.
	They should however not be applied once exposure has occurred. Petroleum jelly based types
	Such as vaseline should not be used. All part of the body should be washed after contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state : () Solid (x) Liquid	Odour : Smell of solvent	Density : 1.00 g/cm ³
() Paste () Powder	Colour : Clear	Flash point : 29 °C
Solubility : Insoluble in water	Explosion limits : LEL% 1 UEL% 24	
Vapour pressure : 9700 Pa, 20 °C	Autoignition temperature : 370 °C	

10. STABILITY AND REACTIVITY

Stable under recommended storage and handling conditions (see section 8). When exposed to high temperatures may produce hazardous decomposition products such as carbon monoxide, carbon dioxide, oxide of nitrogen and smoke.

Keep away from oxidising agents, strongly alkaline and strong acid materials in order to avoid possible exothermic reactions.

11. TOXICOLOGICAL INFORMATION

There are no data available on the product itself.

Exposure to solvent vapour concentration from the component solvents in excess of the state occupational exposure limits may result in adverse health effects such as mucous and membrane and respiratory system irritation and adverse effects on the kidneys, liver and central nervous system. Symptoms include headache, nausea, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.

Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin resulting in dryness, irritation and possible non-allergic contact dermatitis. Solvents may also be absorbed through the skin. Splashes of liquid in the eye may cause irritation and soreness with possible reversible damage.

12. ECOLOGICAL INFORMATION

There is no data available on the preparation itself.

Do not allow to enter drains or water courses.

The preparation has been assessed following the conventional method of the Dangerous Preparations Directive 1999/45/EC and is not classified as dangerous for the environment.

Aquatic ecotoxicity

Material name	Test	Result	Species	Exposure
xylene	Mortality	Acute LC50 3300 to 4093 u/L Fresh water	Fish-Rainbow trout, donaldson-trout-Oncorhynchus mykiss trout, donaldson-trout-Oncorhynchus mykiss	96 hours.
n-butyl acetate	Mortality	Acute LC50 18000 to 19000 u/L Fresh water	Fish-Fathead minnow Pimephales promelas	96 hours

Biodegradability

Ingredient name	Aquatic half-life	Photolysis	Biodegradability
xylene	-	-	Readily

13. DISPOSAL CONSIDERATION

Method of disposal : Do not allow into drain or water courses. Wastes and empty containers should be disposed of in accordance with regulations made under the Control of Pollution Act and the Environmental Protection Act.

Using information provided in this data sheet advice should be obtained from the Waste Regulation Authority, whether the special waste regulations apply.

14. TRANSPORT INFORMATION

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.

International transport regulations

Proper shipping name	:	Paint
UN number	:	1263
Class	:	3
Packing group	:	III
Label	:	



Additional information

ADR / RID	:	Hazardous identification no.	:	30
	:	Special provision	:	640E
IMDG	:	Class	:	3
		Proper shipping name	:	Paint
		Emergency schedules (EmS)	:	F-E, <u>S-E</u>
		Marine pollutant	:	No

15. REGULATORY INFORMATION

The product complies with these local regulations.

EU regulations	: The product is classified and labelled for supply in accordance with the Directive 1999/45/EC as follows:
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hazard symbol



Harmful

Risk phrases	: R10	Flammable
	R20/21	Harmful by inhalation and in contact with skin
	R43	May cause sensitisation by skin contact.
	R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases	S23	Do not breathe vapour / spray
	S24	Avoid contact with skin
	S37	Wear suitable gloves.
	S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)
	S51	Use only in well-ventilated areas.

Contains : Xylene

16. OTHER INFORMATION

CEPE Classification	:	1	
Full text of R-phrases	:	R10	Flammable
		R11	Highly flammable.
		R14	Reacts violently with water.
		R20	Harmful by inhalation.
		R20/21	Harmful by inhalation and in contact with skin.
		R23	Toxicity inhalation.
		R36	Irritating to eyes.
		R36/37/38	Irritating to eyes, respiratory system and skin.
		R38	Irritating to skin.
		R42	May cause sensitisation by inhalation.
		R42/43	May cause sensitisation by inhalation and skin contact.
		R66	Repeated exposure may cause skin dryness or cracking.
		R67	Vapours may cause drowsiness and dizziness.

The information on this safety data sheet is based upon the present state of our knowledge and on current law.

The product should not be used for purposes other than shown in the product data sheet without first obtaining written advice.

It is always the responsibility of the user to take all necessary steps to meet the demands of applicable legislation.

The information in this Material Safety Data Sheet is required according to legislation.