SAFETY DATA SHEET



Hardtop AX Comp B

Section 1. Identi	fication
GHS product identifier	: Hardtop AX Comp B
Product code	: 18120
Other means of identification	: Not available.
Product type	: Liquid.
Product description	: Hardener.
Relevant identified uses o	f the substance or mixture and uses advised against
Use in coatings - Industria	al use
Use in coatings - Professi	onal use
Supplier's details	: 佐敦涂料(张家港)有限公司 江苏省张家港保税区扬子江化学工业园长江路15号 215634 电话: +86 512 58937988 传真: +86 512 58937986
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Emergency telephone number (with hours of operation)	: Jotun Coatings (Taiwan) Ltd. Co. Tel: +886 2 87705061

Section 2. Hazards identification

Classification of the substance or mixture	 FLAMMABLE LIQUIDS - Category 3 ACUTE TOXICITY (inhalation) - Category 4 SKIN SENSITISATION - Category 1 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Narcotic effects) - Category 3
<u>GHS label elements</u> Hazard pictograms	

Section 2. Hazards identification

Signal word	/arning.	
Hazard statements	226 - Flammable liquid and vapour. 317 - May cause an allergic skin reaction. 332 - Harmful if inhaled. 335 - May cause respiratory irritation. 336 - May cause drowsiness or dizziness.	
Precautionary statements		
Prevention	280 - Wear protective gloves. 210 - Keep away from heat, hot surfaces, sparks, open flames and other ig ources. No smoking. 261 - Avoid breathing vapour.	nition
Response	 304 + P312 - IF INHALED: Call a POISON CENTER or doctor if you feel ur 362 + P364 - Take off contaminated clothing and wash it before reuse. 302 + P352 - IF ON SKIN: Wash with plenty of water. 333 + P313 - If skin irritation or rash occurs: Get medical advice or attentior 	
Storage	403 + P233 - Store in a well-ventilated place. Keep container tightly closed. 403 + P235 - Keep cool.	
Disposal	501 - Dispose of contents and container in accordance with all local, region ational and international regulations.	al,
Other hazards which do not result in classification	one known.	

Section 3. Composition/information on ingredients

Substance/mixture	: Mixture
Other means of	: Not available.
identification	

Product name	% (w/w)	CAS number	Туре
hexane, 1,6-diisocyanato-, homopolymer	≥50 - ≤75	28182-81-2	[1]
n-butyl acetate	≥25 - ≤50	123-86-4	[1] [2]
产品名称	% (w/w)	CAS号码	类型
聚六亚甲基二异氰酸酯	≥50 - ≤75	28182-81-2	[1]
醋酸丁酯	≥25 - ≤50	123-86-4	[1] [2]

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.

<u>Type</u>

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

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 if irritation occurs.

Section 4. First aid measures

Inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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 necessary, call a poison center or physician. 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	: Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	: Wash out mouth with water. Remove dentures if any. 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

wost important symptoms/e	160	ste, acute and delayed
Potential acute health effec	<u>ts</u>	
Eye contact	1	No known significant effects or critical hazards.
Inhalation	:	Harmful if inhaled. May cause drowsiness or dizziness. May cause respiratory irritation.
Skin contact	1	May cause an allergic skin reaction.
Ingestion	:	No known significant effects or critical hazards.
Over-exposure signs/symp	on	<u>15</u>
Eye contact	:	No specific data.
Inhalation	:	Adverse symptoms may include the following: respiratory tract irritation coughing nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
Skin contact	:	Adverse symptoms may include the following: irritation redness
Ingestion	:	No specific data.
		l 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	1	No specific treatment.
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.

Section 4. First aid measures

See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media	
Suitable extinguishing media	: Use dry chemical, CO ₂ , water spray (fog) or foam.
Unsuitable extinguishing media	: Do not use water jet.
Specific hazards arising from the chemical	: Flammable liquid and vapour. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.
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	: 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 spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.		
Environmental precautions	: Avoid dispersal of spilt 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 material for co	ntainment and 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.		
Large spill	: Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach the 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 spilt 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). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapour 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. Store locked up. Eliminate all ignition sources. Separate from oxidising 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 unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits	
n-butyl acetate	TW Minstry of Labor, labor permissible workplace exposure standards, allowable concentration (Taiwan, 3/2018). STEL: 890 mg/m ³ 15 minutes. STEL: 187.5 ppm 15 minutes. TWA: 712 mg/m ³ 8 hours. TWA: 150 ppm 8 hours.	

Biological exposure indices

No exposure indices known.

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, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
Individual protection measures	
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.
Hand protection :	

Section 8. Exposure controls/personal protection

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	 There is no one glove material or combination of materials that will give unlimited resistance to any individual or combination of chemicals. The breakthrough time must be greater than the end use time of the product. The instructions and information provided by the glove manufacturer on use, storage, maintenance and replacement must be followed. Gloves should be replaced regularly and if there is any sign of damage to the glove material. Always ensure that gloves are free from defects and that they are stored and used correctly. The performance or effectiveness of the glove may be reduced by physical/chemical damage and poor maintenance. Barrier creams may help to protect the exposed areas of the skin but should not be applied once exposure has occurred. Wear suitable gloves tested to ISO 374-1:2016.
	Recommended, gloves(breakthrough time) > 8 hours: Teflon (> 0.35 mm), polyvinyl alcohol (PVA) (> 0.3 mm) May be used, gloves(breakthrough time) 4 - 8 hours: 4H/Silver Shield® (> 0.07 mm), butyl rubber (> 0.4 mm)
	Not recommended, gloves(breakthrough time) < 1 hour: nitrile rubber (> 0.4 mm), neoprene (> 0.35 mm), PVC (> 0.5 mm), Viton® (> 0.7 mm)
	For right choice of glove materials, with focus on chemical resistance and time of penetration, seek advice by the supplier of chemical resistant gloves.
	The user must check that the final choice of type of glove selected for handling this product is the most appropriate and takes into account the particular conditions of use, as included in the user's risk assessment.
Eye protection	: Safety eyewear complying to ISO 16321-1:2022 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: safety glasses with side-shields.
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.
Hygiene measures	: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Date of issue/Date of revision	: 14.08.2023 Date of previous issue	: 18.07.2023	Version : 1.02 6/12
Melting point/freezing point	: Not applicable.		
рН	: Not applicable.		
Odour threshold	: Not available.		
Odour	: Characteristic.		
Colour	: Clear.		
Physical state	: Liquid.		
<u>Appearance</u>			

Section 9. Physical and chemical properties and safety characteristics

: Not available.
: Closed cup: 38°C (100.4°F)
: Not available.
: 1.4 - 7.6%

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Vapour pressure

	Vapour Pressure at 20°C				С	Vapour pressure at 50°C			
Ingredient name	mm Hg	ı k	kPa Method		I	mm Hg	kPa	Method	
n-butyl acetate	11.25	1	.5	DIN EN 1	3016-2				
hexamethylene-di-isocyanate	0.01	0	.0013						
Hexamethylene diisocyanate, oligomers	0.000018	0	0.0000024						
Relative vapour density	: Not	availat	ole.						
Density	: 1.06	g/cm³							
Solubility(ies)	1.00								
Media		Resu	lt						
cold water hot water			oluble oluble						
Partition coefficient: n- octanol/water	: Not	applica	able.						
Auto-ignition temperature	:								
Ingredient name			°C		°F	N	lethod		
n-butyl acetate			415		779	E	J A.15		
hexamethylene-di-isocyanate			454		849.2				
Decomposition temperature	: Not a	availat	ole.						
Viscosity	: Kine	matic	(40°C (10	4°F)): >20).5 mm²/s	s (>20.5 cSt)			
Particle characteristics	. NI.4	r.							
Median particle size	: Not	applica	able.						
Section 10. Stabil	ity an	nd re	eactivi	ity					
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 pressurise, cut, weld braze, solder, drill, grind or expose containers to heat or sources of ignition.								
Incompatible materials			or incompa materials	atible with	the follo	wing materia	ıls:		

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

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
n-butyl acetate	LC50 Inhalation Vapour LD50 Dermal LD50 Oral	Rabbit	>21.1 mg/l >17600 mg/kg 13100 mg/kg	4 hours - -

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
hexane, 1,6-diisocyanato-, homopolymer	Eyes - Moderate irritant	Rabbit	-	100 mg	-
	Skin - Moderate irritant	Rabbit	-	500 mg	-

Sensitisation

•••••••••••••••••••••••••••••••••••••••	Route of exposure	Species	Result
hexane, 1,6-diisocyanato-, homopolymer	skin	Mammal - species unspecified	Sensitising

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
hexane, 1,6-diisocyanato-, homopolymer	Category 3		Respiratory tract irritation
n-butyl acetate	Category 3		Narcotic effects

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on likely routes : Not available. of exposure

Potential acute health effects

No known significant effects or critical hazards.	
Harmful if inhaled. May cause drowsiness or dizziness. May cause respirator irritation.	У
May cause an allergic skin reaction.	
No known significant effects or critical hazards.	
:	 No known significant effects or critical hazards. Harmful if inhaled. May cause drowsiness or dizziness. May cause respiratory

Symptoms related to the physical, chemical and toxicological characteristics : No specific data.

Eye contact

Section 11. Toxicological information

Inhalation	: Adverse symptoms may include the following: respiratory tract irritation coughing nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
Skin contact	: Adverse symptoms may include the following: irritation redness
Ingestion	: No specific data.

Delayed and immediate effect	<u>ts</u>	as well as chronic effects from short and long-term exposure
<u>Short term exposure</u>		
Potential immediate effects	:	Not available.
Potential delayed effects	1	Not available.
<u>Long term exposure</u>		
Potential immediate effects	1	Not available.
Potential delayed effects	:	Not available.
Potential chronic health eff	<u>əct</u>	<u>s</u>
Not available.		
General	:	Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
Carcinogenicity	1	No known significant effects or critical hazards.
Mutagenicity	:	No known significant effects or critical hazards.
Reproductive toxicity	1	No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/ kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapours) (mg/l)	Inhalation (dusts and mists) (mg/l)
Hardtop AX Comp B	N/A	N/A	N/A	N/A	2.0
hexane, 1,6-diisocyanato-, homopolymer	N/A	N/A	N/A	N/A	1.5
n-butyl acetate	13100	N/A	N/A	N/A	N/A

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Section 12. Ecological information

Product/ingredient name	LogPow	BCF	Potential
hexane, 1,6-diisocyanato-, homopolymer	5.54	367.7	low
n-butyl acetate	2.3	-	low

Mobility in soil

Soil/water partition	: Not available.
coefficient (Koc)	

Other adverse effects

: No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods

: The generation of waste should be avoided or minimised 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. Vapour 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 spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

			UN	IMD	G	IATA	κ
UN number	UN1263			UN1263		UN1263	
UN proper shipping name	Paint			Paint		Paint	
Transport hazard class(es)	3			3		3	
Packing group							
Environmental hazards	No.			No.		No.	
Additional informat	ion	:	Tunnel restriction c	:ode: (D/E)			
IMDG		:	Hazard identification				
Special precautions	for user	:	Transport within a upright and secure the event of an acc	. Ensure that perso			
Transport in bulk ac to IMO instruments	cording	:	Not available.				
Date of issue/Date of rev	ision		: 14.08.2023 Date o	f previous issue	: 18.07.2023	Version	: 1.02 10

Section 15. Regulatory information

TCCSCA List of toxic chemicals Not applicable. **TCCSCA List of concerned chemicals** Not applicable. **OSHA Enforcement Rules** : This product contains substances "Specially hazardous to health": n-butyl acetate. Article 28 **Organic solvent poisoning** : Type 2 prevention rule Priority management chemicals, Article 2 CMR chemical substances, category 1 (Article 2.2 (I)) : Applicable Chemical substances possessing physical hazards or health hazards (Article 2.2 (II)) Ingredient name Name on list Concentration n-butyl acetate ≥25 - ≤50 butyl acetate International regulations Chemical Weapon Convention List Schedules I, II & III Chemicals Not listed. **Montreal Protocol** Not listed. Stockholm Convention on Persistent Organic Pollutants Not listed. **UNECE Aarhus Protocol on POPs and Heavy Metals**

Not listed.

Section 16. Other information

Procedure used to derive the classification

	Justification				
irritation) - Category 3) - Category 4	On basis of test data Calculation method Calculation method Calculation method Calculation method			
References	: Not available.				
Organisation that prepared the SDS	: Jotun AS, Norway +47 33 45 70 00				
<u>History</u>					
Date of printing	: 14.08.2023				
Date of previous issue	: 18.07.2023				
Version	: 1.02				
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 = Internediate 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, 				
Date of issue/Date of revision	: 14.08.2023 Date of previous issue : 18.07.2023	Version : 1.02 11/12			

Section 16. Other information

1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) N/A = Not available SGG = Segregation Group UN = United Nations

✓ Indicates information that has changed from previously issued version.

Notice to reader

The information in this document is given to the best of Jotun's knowledge, based on laboratory testing and practical experience. Jotun's products are considered as semi-finished goods and as such, products are often used under conditions beyond Jotun's control. Jotun cannot guarantee anything but the quality of the product itself. Minor product variations may be implemented in order to comply with local requirements. Jotun reserves the right to change the given data without further notice.

Users should always consult Jotun for specific guidance on the general suitability of this product for their needs and specific application practices.

If there is any inconsistency between different language issues of this document, the English (United Kingdom) version will prevail.