



1. Identification of the substance/preparation and of the company/undertaking

Product name STANDOX AIR TECH
2K HARDENER 680

Product code 000004024669787085

Intended use of the substance/preparation
Hardener for professional use

Company/Undertaking Identification

Producer/Supplier STANDOX GmbH
Street/Box Christbusch 45
Nat.-Code/Postal code/City DE 42285 Wuppertal
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Information on SDS

Responsible Department Regulatory Affairs
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Emergency Information

Emergency telephone +44 (0)845 600-6640

For further information, please also consult our Internet site:
<http://www.standex.com>

2. Composition/information on ingredients

Chemical characterization

Mixture of synthetic resins and solvents

Hazardous components

Substances presenting a health or environmental hazard within the meaning of the DSD 67/548/EEC incl. 29. ATP

EC-No.	CAS-No.	Chemical Name	Concentration	Classification
500-060-2	28182-81-2	Hexamethylene diisocyanate, oligomers	25.00 - < 35.00 %	Xi; R43
203-933-3	112-07-2	2-butoxyethyl acetate	20.00 - < 25.00 %	Xn; R20/21
204-658-1	123-86-4	n-butyl acetate	10.00 - < 12.50 %	R10 R66 R67
265-199-0	64742-95-6	solvent naphtha (petroleum), light arom. (<0,1% benzene)	7.00 - < 10.00 %	R10 Xi; R37 N; R51/53 Xn; R65 R66 R67 NotaH NotaP
215-535-7	1330-20-7	xylene	7.00 - < 10.00 %	R10 Xn; R20/21 Xi; R38
212-112-9	763-69-9	ethyl 3-ethoxypropionate	5.00 - < 7.00 %	R52/53
202-436-9	95-63-6	1,2,4-trimethylbenzene	3.00 - < 5.00 %	R10 Xn; R20 Xi; R36/37/38 N; R51/53
202-849-4	100-41-4	ethylbenzene	2.00 - < 2.50 %	F; R11 Xn; R20
203-604-4	108-67-8	mesitylene	1.00 - < 2.00 %	R10 Xi; R37 N; R51/53

EC-No.	CAS-No.	Chemical Name	Concentration	Classification
203-132-9	103-65-1	n-propylbenzene	0.50 - < 1.00 %	R10 Xn; R65 Xi; R37 N; R51/53
202-704-5	98-82-8	cumene	0.25 - < 0.50 %	R10 Xn; R65 Xi; R37 N; R51/53
212-485-8	822-06-0	hexamethylene-di-isocyanate	0.20 - < 0.25 %	R42/43 Xi; R36/37/38 T; R23

Additional advice

To avoid misinterpretation in any case of risk assessment it is not allowed to accumulate the above mentioned percentages. See full text of R-phrases in chapter 16.

3. Hazards identification

The preparation is classified as dangerous in accordance with Directive 1999/45/EC.

Human health hazards

Classification : harmful; sensitizing; dangerous for the environment; flammable;
Flammable. Harmful by inhalation and in contact with skin. May cause sensitization by inhalation and skin contact. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Special hazard instructions for humans and environment

Contains isocyanates. See information supplied by the manufacturer. Contains: hexamethylene-di-isocyanate. May produce an allergic reaction.

4. First aid measures

General advice

When symptoms persist or in all cases of doubt seek medical advice. Never give anything by mouth to an unconscious person.

Inhalation

Avoid inhalation of vapour or mist. Move to fresh air in case of accidental inhalation of vapours. If breathing is irregular or stopped, administer artificial respiration. If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.

Skin contact

Do NOT use solvents or thinners. Take off all contaminated clothing immediately. Wash skin thoroughly with soap and water or use recognized skin cleanser. If skin irritation persists, call a physician.

Eye contact

Remove contact lenses. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart. Seek medical advice.

Ingestion

If swallowed, seek medical advice immediately and show this container or label. Do not induce vomiting. Keep at rest.

5. Fire-fighting measures

Hazardous combustion products

Fire will produce dense black smoke containing hazardous combustion products (see heading 10). Exposure to decomposition products may be a hazard to health.

Fire and Explosion Hazards

Flammable liquid. Vapours may form explosive mixtures with air. Remove all sources of ignition.

Suitable extinguishing media

Universal aqueous film-forming foam, carbon dioxide (CO₂), dry chemical, water spray.

**Extinguishing media which must not be used for safety reasons**

high volume water jet

Special Protective Equipment and Fire Fighting Procedures

Wear as appropriate: full protective flameproof clothing. Wear self contained breathing apparatus for fire fighting if necessary. In the event of fire, cool tanks with water spray. Do not allow run-off from fire fighting to enter drains or water courses.

Additional advice

Cool closed containers exposed to fire with water spray.

6. Accidental release measures

Personal precautions

Keep in a well-ventilated place. Keep away from sources of ignition. Comply with safety directives (see chapters 7 and 8). Do not inhale vapours.

Environmental precautions

Do not let product enter drains. Notify the respective authorities in accordance with local law in the case of contamination of rivers, lakes or waste water systems.

Methods for cleaning up

Contain and collect spillage with non-combustible absorbent materials, e.g. sand, earth, vermiculite, diatomaceous earth and place in container for disposal according to local regulations. The contaminated area should be cleaned up immediately with a suitable decontaminant. One possible (flammable) decontaminant comprises (by volume): water (45 parts), ethanol or isopropyl alcohol (50 parts), concentrated (d : 0,880) ammonia solution (5 parts). A non-flammable alternative is sodium carbonate (5 parts), water (95 parts). Add the same decontaminant to the remnants and let stand for several days until no further reaction in non-sealed container. Once this stage is reached, close container and dispose according to local regulations (see section 13).

7. Handling and storage

Handling

Persons with a history of skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this preparation is being used.

Safe handling advice

Prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentration higher than the occupational exposure limits. The product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Preparation may charge electrostatically: always use grounded leads when transferring from one container to another. Operators should wear antistatic footwear and clothing. No sparking tools should be used. Avoid skin and eye contact. Do not breathe vapours or spray mist. Smoking, eating and drinking should be prohibited in the application area. For personal protection see section 8. Comply with the health and safety at work laws. If material is a coating, do not sand, flame cut, braze or weld dry coating without an appropriate respirator or appropriate ventilation, and gloves.

Advice on protection against fire and explosion

Solvent vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Never use pressure to empty container: container is not a pressure vessel. Always keep in containers of same material as the original one. The accumulation of contaminated rags may result in spontaneous combustion. Good housekeeping standards and regular safe removal of waste materials will minimize the risks of spontaneous combustion and other fire hazards.

Storage**Requirements for storage areas and containers**

Observe label precautions. Store between 5 and 25°C in a dry, well ventilated place away from sources of heat, ignition and direct sunlight. No smoking. Prevent unauthorized access. Containers which are opened must be carefully resealed and kept upright to prevent leakage. The storage and use of this product is subject to the requirements of the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR). Up to 250 litres of such flammable liquids may be stored in a work area provided they are kept in a fire-proof cupboard or bin. Larger quantities must be kept in a separate storeroom conforming to the structural requirements of the regulations. Further guidance is contained in the HSE ACOP L135, "Storage of Dangerous Substances."

Advice on common storage

Store separately from oxidizing agents, strongly alkaline and strongly acidic materials, amines, alcohols and water. Precautions should be taken to avoid exposure to atmospheric humidity or water. Evolution of CO₂ in closed containers causes overpressure and produces a risk of bursting.

Additional information on storage conditions

Precautions should be taken to avoid exposure to atmospheric humidity or water. Humid air and/or water will produce carbon dioxide which will pressurize the container. Open drum carefully as content may be under pressure.



8. Exposure controls / personal protection

Persons with a history of skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this preparation is being used.

Additional technical information on the plant

Provide adequate ventilation. Air-fed protective respiratory equipment must be worn by spray operator even when good ventilation is provided.

National occupational exposure limits

CAS-No.	Chemical Name	Source	Time	Type	Value	Note
123-86-4	n-butyl acetate			STEL	966 mg/m ³	
				STEL	200 ppm	
				TWA	724 mg/m ³	
				TWA	150 ppm	
1330-20-7	xylene			STEL	441 mg/m ³	
				STEL	100 ppm	
				TWA	220 mg/m ³	
				TWA	50 ppm	
100-41-4	ethylbenzene			STEL	552 mg/m ³	
				STEL	125 ppm	
				TWA	441 mg/m ³	
				TWA	100 ppm	
98-82-8	cumene			STEL	250 mg/m ³	
				STEL	50 ppm	
				TWA	125 mg/m ³	
				TWA	25 ppm	

Protective equipment

Personal protective equipment should be worn to prevent contact with eyes, skin or clothing.

Respiratory protection

For spraying: air-fed respirator. For operations other than spraying: in well ventilated areas, air-fed respirators could be replaced by a combination of charcoal filter and particulate filter mask.

Hand protection

Chemical Name	Glove material	Glove thickness	Break through time
2-butoxyethyl acetate	Viton [®]	0.7 mm	480 min
	nitrile rubber	0.33 mm	480 min
n-butyl acetate	Viton [®]	0.7 mm	10 min
	nitrile rubber	0.33 mm	30 min
solvent naphtha (petroleum), light arom. (<0,1% benzene)	Viton [®]	0.7 mm	30 min
xylene	nitrile rubber	0.33 mm	30 min



Chemical Name	Glove material	Glove thickness	Break through time
	Viton [®]	0.7 mm	480 min

The protective glove should be checked in each case for their work specific suitability (e.g. mechanical stability, product compatibility, and anti-static properties). When the intended use is for spray application a nitrile glove of the chemical resistance group 3 (e.g. Dermatril[®] glove) is to be used. After contamination, the glove has to be changed. If immersing the hands into the product is not avoidable (e.g. maintenance work) a butyl or fluorocarbon rubber glove should be used. When skin exposure may occur to materials specified in chapter 2 of this SDS, advice should be sought from the glove supplier as to appropriate type to use with this product and the permeation breakthrough times. Care should be taken when working with sharp edged articles as these can easily damage the gloves and make them ineffective. The instructions and information provided by the glove supplier on use, storage, maintenance and replacement must be followed. Damaged gloves or those showing signs of wear should be replaced immediately.

Eye protection

Wear protective eyewear for protection against solvent spatter.

Skin protection

Wear suitable protective clothing. Personnel should wear antistatic clothings made of natural fiber or of high temperature resistant synthetic fiber.

Hygiene measures

Wash skin thoroughly with soap and water or use recognized skin cleanser. Do not use organic solvents!

Environmental exposure controls

Do not let product enter drains. For ecological information refer to chapter 12.

9. Physical and chemical properties

General information (appearance)

Physical state: liquid Colour: clear

Important health, safety and environmental information

	Value	Method
Flash point	38 °C	DIN 53213/ISO1523
Autoignition temperature	375 – 479 °C	DIN 51794
Boiling point/range	125 – 195 °C	
Lower explosion limit	0.9 %	
Upper explosion limit	12.3 %	
Vapour pressure	3.2 hPa	
Relative density	0.97 g/cm ³	DIN 53217/ISO 2811
Water solubility	moderate	
Viscosity (23 °C)	<20 s	ISO 2431-1993 6 mm
Solvent separation test	< 3%	ADR/RID
Content of volatile components (including water)	67.8%	Basis Vapour pressure >= 0.01 kPa
pH	Not applicable.	
Conductivity	Not applicable.	

10. Stability and reactivity

Stability

Stable

Conditions to avoid

Stable under recommended storage and handling conditions (see section 7).

Materials to avoid

Keep away from oxidising agents and strongly acid or alkaline materials. Amines and alcohols cause exothermic reactions. Preparation reacts slowly with water resulting in evolution of CO₂. Evolution of CO₂ in closed containers causes overpressure and produces a risk of bursting.

Hazardous decomposition products

When exposed to high temperatures may produce hazardous decomposition products such as carbon monoxide and dioxide, smoke, oxides of nitrogen as well as hydrogen cyanide, amines, alcohols and water.

11. Toxicological information

General observations

There are no data available on the product itself. The product is classified and labelled in accordance with EC directives or respective national laws. See sections 2 and 15 for details.

Practical experience

Based on the properties of the isocyanate components and considering toxicological data on similar products, the following applies: This formulation may cause acute irritation and/or sensitization of the respiratory system leading to an asthmatic condition, wheeziness and a tightness of the chest. Sensitized persons may subsequently show asthmatic symptoms when exposed to atmospheric concentrations well below the OEL. Repeated exposure may lead to permanent respiratory disability. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness. Through skin resorption, solvents can cause some of the effects described here. Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin resulting in non-allergic contact dermatitis and absorption through the skin. The liquid splashed in the eyes may cause irritation and reversible damage. Exposure to component solvents vapours concentration in excess of the stated occupational exposure limit may result in adverse health effect such as mucous membrane and respiratory system irritation and adverse effect on kidney, liver and central nervous system. Components of the product may be absorbed into the body through the skin. Contains Hexamethylene diisocyanate, oligomers, hexamethylene-di-isocyanate. May produce an allergic reaction.

Toxicity Test Type	Value	Time	Species
Hexamethylene diisocyanate, oligomers			
Oral LD50	1,000 mg/kg		rat
Dermal LD50	5,000 mg/kg		rabbit
Inhalation LC50	137 mg/m ³	4 h	rat
n-butyl acetate			
Oral LD50	9.3 ml/kg		rat
Dermal LD50	10 ml/kg		Guinea Pig
Inhalation LC50	> 6,335 ppm	4 h	rat
solvent naphtha (petroleum), light arom. (<0,1% benzene)			
Oral LD50	< 5 g/kg		rat
Dermal LD50	> 4 ml/kg		rat
Inhalation LD50	> 3,670 mg/kg	8 h	rat
xylene			
Oral LD50	4,300 mg/kg		rat
Dermal LD50	12,180 mg/kg		rabbit
Inhalation LC50	5,000 ppm	4 h	rat
ethyl 3-ethoxypropionate			
Oral LD50	4.3 g/kg		Female Rat
Dermal LD50	4.92 ml/kg		rat
Inhalation LC50	> 1,000 ppm	6 h	rat
1,2,4-trimethylbenzene			
Oral LD50	5,000 mg/kg		rat
Inhalation LC50	18,000 mg/m ³	4 h	rat
ethylbenzene			
Oral LD50	3,500 mg/kg		rat
Dermal LD50	17,800 mg/kg		rabbit
Inhalation LC50	4,000 ppm	4 h	rat
mesitylene			
Inhalation LC50	24,000 mg/m ³	4 h	rat
hexamethylene-di-isocyanate			
Oral LD50	5,000 mg/kg		rat
Oral LD50	350 mg/kg		Mouse
Dermal LD50	2,000 mg/kg		rabbit
Dermal LD50	600 mg/kg		rabbit
Inhalation LC50	2.18 mg/l		rat
Inhalation LC50	310 mg/kg	4 h	rat

12. Ecological information

There are no data available on the product itself. The product should not be allowed to enter drains or watercourses.

Acute toxicity aquatic invertebrates

EINECS-No.	Chemical Name	Species	Type	Exposure time	Value	Method
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265-199-0	solvent naphtha (petroleum), light arom. (<0,1% benzene)	light	Daphnia	EC50	24 h	170 mg/l
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Acute and extended toxicity of fishes

EINECS-No.	Chemical Name	Species	Type	Exposure time	Value	Method
265-199-0	solvent naphtha (petroleum), light arom. (<0,1% benzene)	zebra fish	LC50	96 h	10 mg/l	

Toxicity with aquatic plants

EINECS-No.	Chemical Name	Species	Type	Exposure time	Value	Method
265-199-0	solvent naphtha (petroleum), light arom. (<0,1% benzene)	Algae	EC50	72 h	10 mg/l	
212-112-9	ethyl 3-ethoxypropionate	Daphnia		4 days	100 µl	

Mobility

No information available.

Persistence and degradability

No information available.

Bioaccumulative potential

No information available.

Other adverse effects

The preparation has been assessed following the conventional method of the Dangerous Preparations Directive 1999/45/EC and is classified for eco-toxicological properties accordingly. See Sections 2 and 15 for details.

13. Disposal considerations

Dispose of in accordance with local regulations.

Product:

Recommendation:

A disposal process that converts the waste into energy is recommended. If this is not possible the hazardous waste must be disposed of by incineration.

Waste Key Number	Description
08 05 01	waste isocyanates

Uncleaned packaging:

Recommendation:

Properly emptied containers are to be scrap processed or reconditioned. Improperly emptied containers are considered hazardous waste (waste key number 150110). Waste, including emptied containers, is controlled waste. Do not allow into drains or watercourses or dispose of where ground or surface waters may be affected. If fully drained containers are compacted they can be regarded as Controlled Waste and disposed of in accordance with the requirements of the Control of Pollution Act 1974 and the Environmental Protection Act 1990 (GB), the Pollution Control and Local Government (NI) Order 1978 (NI) or of the EC (Waste) Regulations 1979 and the EC (Toxic & Dangerous Waste) Regulations 1982 (IRL).

14. Transport information

Transport only in accordance with the requirements of the Carriage of Dangerous Goods by Road and Rail (Classification, Packaging and Labeling), ADR for road, RID for rail, IMDG for sea and ICAO/IATA for air transport.

ADR/RID (Land transport)

Proper shipping name: PAINT RELATED MATERIAL

UN-No: 1263
Hazard Class: 3
Subsidiary Hazard Class: Not applicable.
Packing group: III

Special Provision: 640E
Hazchem: 3[Y]

IMDG (Sea transport)

Proper shipping name: PAINT RELATED MATERIAL

UN-No: 1263
Hazard Class: 3
Subsidiary Hazard Class: Not applicable.
Packing group: III
Marine Pollutant: P
EmS: F-E,S-E

ICAO/IATA (Air transport)

Proper shipping name: PAINT RELATED MATERIAL

UN-No: 1263
Hazard Class: 3
Subsidiary Hazard Class: Not applicable.
Packing group: III

15. Regulatory information

In accordance with the CHIP Regulations 2002 the product is labelled as follows:

Symbol and indicating of hazard

Xn	Harmful
Contains	Hexamethylene diisocyanate, oligomers.

R-phrases(s)

R10	Flammable.
R20/21	Harmful by inhalation and in contact with skin.
R42/43	May cause sensitization by inhalation and skin contact.
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrases(s)

S23	Do not breathe gas/fumes/vapour/spray.
S36/37	Wear suitable protective clothing and gloves.
S38	In case of insufficient ventilation, wear suitable respiratory equipment.
S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Contains isocyanates. See information supplied by the manufacturer.

Based on an agreement by the European Paintmaker Association CEPE, isocyanate containing formulations for spray application are labelled with R42.

National legislation

This safety datasheet has been prepared according to British legislation.

The product is labeled according to the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 as amended (CHIP Regulations). The risk associated with the use of this product must be assessed in accordance with the Control of Substances Hazardous to Health (COSHH) Regulations and the Dangerous Substances and Explosive Atmospheres Regulations.



16. Other information

Full text of R phrases with no. appearing in section 2

R10	Flammable.
R11	Highly flammable.
R20	Harmful by inhalation.
R20/21	Harmful by inhalation and in contact with skin.
R23	Toxic by inhalation.
R36/37/38	Irritating to eyes, respiratory system and skin.
R37	Irritating to respiratory system.
R38	Irritating to skin.
R42/43	May cause sensitization by inhalation and skin contact.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R52/53	Harmful 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.

Information taken from reference works and the literature.

Substance No.	CAS no: www.cas.org/EO/regsys.html EC no: http://ecb.jrc.it/esis/index.php?PGM=ein
Substances presenting a health or environmental hazard within the meaning of Directive 67/548/EEC.	http://ecb.jrc.it/existing-chemicals/ http://ecb.jrc.it/classification-labelling/ http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB http://www.cdc.gov/niosh/ipcs/icstart.html
Other directives, limitations and prohibitory regulations	Directive 76/769/EC Directive 98/24/EC Directive 90/394/EC Directive 793/93/EC Directive 1999/45/EC Directive 2006/8/EC EUR-LEX: http://europa.eu.int/eur-lex/
Exposure limit for the pure substance	http://osha.europa.eu/OSHA

Training advice

Directive 76/769/EC
Directive 98/24/EC

Further information

The information of this SDS is based on the present state of our knowledge and meets the requirements of EU and national laws. The user's working conditions however, are beyond our knowledge and control. The product is not to be used for purposes other than those specified under section 1 without a written permission. It remains the responsibility of the user to ensure that the necessary steps are taken to meet the laws and regulations. Handling of the product may only be done by people above 18 years of age, who are satisfactorily informed of how to do the work, the hazardous properties and necessary safety precautions. The information given in this SDS is to describe the product only in terms of health and safety requirements and should not, therefore, be construed as guaranteeing specific properties.

Report version

Version	Changes
1.0	
Revision Date:	29-Jan-2007