

Safety Data Sheet

according to Regulation (EC) No 1907/2006

TIP TOP HARDENER No. 4

Revision date: 31.03.2022

Product code: 00359-1066

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SECTION 1: Identification of the substance/mixture and of the company/undertaking
1.1. Product identifier

TIP TOP HARDENER No. 4

Art.-No.

590 0631, 590 0875, 590 1950

1.2. Relevant identified uses of the substance or mixture and uses advised against
Use of the substance/mixture

Hardener

1.3. Details of the supplier of the safety data sheet

Company name:	TIP TOP Oberflächenschutz Elbe GmbH	
Street:	Heuweg 4	
Place:	D-06886 Wittenberg	
Telephone:	+49(0)3491/635-50	Telefax: +49(0)3491/635-552
Responsible Department:	Responsible for the safety data sheet: sds@gbk-ingelheim.de	

1.4. Emergency telephone number:

 INTERNATIONAL: +49 - (0) 6132 - 84463, GBK GmbH (24h - 7d/w - 365d/a)
 Public Poisons Information Line: +353 (0) 1 809 2166 (8am-10pm 7 days a week)

SECTION 2: Hazards identification
2.1. Classification of the substance or mixture
Regulation (EC) No 1272/2008

 Acute Tox. 4; H302
 Skin Corr. 1A; H314
 Eye Dam. 1; H318
 Skin Sens. 1; H317
 Repr. 1B; H360D
 Aquatic Chronic 3; H412

Full text of hazard statements: see SECTION 16.

2.2. Label elements
Regulation (EC) No 1272/2008
Hazard components for labelling

 3-Aminomethyl-3,5,5-trimethylcyclohexylamine
 2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine
 bis-[4-(2,3-epoxypropoxy)phenyl]propane
 1,3-Diaza-2,4-cyclopentadiene
 3-aminopropyltriethoxysilane

Signal word: Danger

Pictograms:

Hazard statements

H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H360D	May damage the unborn child.
H412	Harmful to aquatic life with long lasting effects.

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Precautionary statements

P202	Do not handle until all safety precautions have been read and understood.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P273	Avoid release to the environment.

Special labelling of certain mixtures

Restricted to professional users.

2.3. Other hazards

According to Regulation (EC) No 1907/2006 (REACH) none of the substances, contained in this product are a PBT / vPvB substance.

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

SECTION 3: Composition/information on ingredients**3.2. Mixtures****Chemical characterization**

Hardener based on aliphatic polyamines

Hazardous components

CAS No	Chemical name	Quantity		
	EC No	Index No	REACH No	
	GHS Classification			
2855-13-2	3-Aminomethyl-3,5,5-trimethylcyclohexylamine			< 35 %
	220-666-8	612-067-00-9	01-2119514687-32	
	Acute Tox. 4, Skin Corr. 1B, Eye Dam. 1, Skin Sens. 1A; H302 H314 H318 H317			
25513-64-8	2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine			< 30 %
	247-063-2		01-2119569598-25	
	Acute Tox. 4, Skin Corr. 1A, Eye Dam. 1, Skin Sens. 1; H302 H314 H318 H317			
1675-54-3	bis-[4-(2,3-epoxypropoxy)phenyl]propane			< 25 %
	216-823-5	603-073-00-2	01-2119456619-26	
	Skin Irrit. 2, Eye Irrit. 2, Skin Sens. 1, Aquatic Chronic 2; H315 H319 H317 H411			
100-51-6	Benzyl alcohol			< 20 %
	202-859-9	603-057-00-5	01-2119492630-38	
	Acute Tox. 4, Acute Tox. 4, Eye Irrit. 2; H332 H302 H319			
288-32-4	1,3-Diaza-2,4-cyclopentadiene			< 5 %
	206-019-2		01-2119485825-24	
	Repr. 1B, Acute Tox. 4, Skin Corr. 1C, Eye Dam. 1; H360D H302 H314 H318			
919-30-2	3-aminopropyltriethoxysilane			< 1 %
	213-048-4	612-108-00-0	01-2119480479-24	
	Acute Tox. 4, Skin Corr. 1B, Eye Dam. 1, Skin Sens. 1; H302 H314 H318 H317			

Full text of H and EUH statements: see section 16.

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Specific Conc. Limits, M-factors and ATE

CAS No	EC No	Chemical name	Quantity
		Specific Conc. Limits, M-factors and ATE	
2855-13-2	220-666-8	3-Aminomethyl-3,5,5-trimethylcyclohexylamine	< 35 %
		oral: ATE 1030 mg/kg Skin Sens. 1A; H317: >= 0,001 - 100	
25513-64-8	247-063-2	2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine	< 30 %
		oral: LD50 = 910 mg/kg	
1675-54-3	216-823-5	bis-[4-(2,3-epoxipropoxy)phenyl]propane	< 25 %
		Skin Irrit. 2; H315: >= 5 - 100 Eye Irrit. 2; H319: >= 5 - 100	
100-51-6	202-859-9	Benzyl alcohol	< 20 %
		inhalation: ATE = 11 mg/l (vapours); inhalation: ATE = 1,5 mg/l (dusts or mists); oral: LD50 = 1230 mg/kg	
288-32-4	206-019-2	1,3-Diaza-2,4-cyclopentadiene	< 5 %
		oral: LD50 = 970 mg/kg	
919-30-2	213-048-4	3-aminopropyltriethoxysilane	< 1 %
		dermal: LD50 = 3800 mg/kg; oral: LD50 = 1780 mg/kg	

SECTION 4: First aid measures**4.1. Description of first aid measures****General information**

Remove contaminated soaked clothing immediately.
Call a physician immediately.

After inhalation

Move to fresh air in case of accidental inhalation of vapours.
In the event of symptoms refer for medical treatment.

After contact with skin

In case of contact with skin wash off immediately with plenty of water.
Seek medical treatment immediately.

After contact with eyes

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Summon a doctor immediately.

After ingestion

Do not induce vomiting.
Summon a doctor immediately.
Induce vomiting only upon the advice of a physician.
Attention. Beware, danger of aspiration.

4.2. Most important symptoms and effects, both acute and delayed

Harmful if swallowed.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
May cause harm to the unborn child.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptoms.

SECTION 5: Firefighting measures**5.1. Extinguishing media****Suitable extinguishing media**

Alcohol-resistant foam, dry chemical, carbon dioxide (CO₂), water-spray.



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Unsuitable extinguishing media

Full water jet.

5.2. Special hazards arising from the substance or mixture

Fire may produce:

Carbon monoxide (CO), carbon dioxide (CO₂) and nitrogen oxides (NO_x).

5.3. Advice for firefighters

Wear self-contained breathing apparatus and protective suit.

Additional information

Cool containers at risk with water spray jet.

Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General advice

Ensure adequate ventilation.

Keep away noninvolved persons.

For non-emergency personnel

Do not breathe vapours.

Avoid contact with skin, eyes and clothing.

For emergency responders

In case of vapour formation use respirator.

Use personal protective clothing.

6.2. Environmental precautions

Do not discharge into the drains/surface waters/groundwater.

6.3. Methods and material for containment and cleaning up

For containment

Prevent spread over a wide area (e.g. by containment or oil barriers).

For cleaning up

Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder).

Shovel into suitable container for disposal.

Clean contaminated surface thoroughly.

6.4. Reference to other sections

Observe protective instructions (see Sections 7 and 8).

Informations for disposal look up chapter 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

Keep container tightly closed.

Handle and open container with care.

Use only in thoroughly ventilated areas.

Avoid contact with skin, eyes and clothing.

Advice on protection against fire and explosion

No special protective measures against fire required.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep container tightly closed in a dry, cool and well-ventilated place.

Protect against direct sun radiation.

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Hints on joint storage

Incompatible with:

Oxidizing agents, Amines, Acids and bases.

Further information on storage conditions

Keep away from food, drink and animal feeding stuffs.

7.3. Specific end use(s)

Hardener

SECTION 8: Exposure controls/personal protection**8.1. Control parameters****DNEL/DMEL values**

CAS No	Substance	Exposure route	Effect	Value
100-51-6	Benzyl alcohol			
Worker DNEL, long-term		inhalation	systemic	22 mg/m ³
Worker DNEL, acute		inhalation	systemic	110 mg/m ³
Worker DNEL, long-term		dermal	systemic	8 mg/kg bw/day
Worker DNEL, acute		dermal	systemic	40 mg/kg bw/day

PNEC values

CAS No	Substance	Value
100-51-6	Benzyl alcohol	
Environmental compartment		
Freshwater		1 mg/l
Marine water		0,1 mg/l
Freshwater sediment		5,27 mg/kg
Marine sediment		0,527 mg/kg
Soil		0,456 mg/kg

Additional advice on limit values

To date, no national critical limit values exist.

8.2. Exposure controls**Appropriate engineering controls**

Ensure adequate ventilation, especially in confined areas.

Protective and hygiene measures

Wash hands before breaks and immediately after handling the product.

When using do not eat, drink or smoke.

Avoid contact with skin, eyes and clothing.

Remove and wash contaminated clothes before re-use.

Eye/face protection

Tightly fitting goggles (EN 166).

Eye wash bottle with pure water (EN 15154).

Hand protection

Chemical protective gloves made of nitrile, nitrile/cotton, butyl or neoprene, with a minimum thickness of 0.7 mm, permeation time of approx. 480 minutes.

This recommendation refers exclusively to the chemical compatibility and the lab test conforming to EN 374 carried out under lab conditions.

Requirements can vary as a function of the use. Therefore it is necessary to adhere additionally to the

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recommendations given by the manufacturer of protective gloves.

Pls. find examples in the protective gloves database under: <http://bestglove.com/site/chemrest/>

Skin protection

Long sleeved clothing (DIN EN ISO 6530)

Respiratory protection

In case of insufficient ventilation wear suitable respiratory equipment (gas filter type A) (EN 14387).

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties**

Physical state:	Liquid
Colour:	Yellowish
Odour:	Amine like

Test method**Changes in the physical state**

Melting point/freezing point:	n. d.
Boiling point or initial boiling point and boiling range:	n. d.
Sublimation point:	n.a.
Softening point:	n. d.
Flash point:	> 100 °C

Flammability

Solid/liquid:	n.a.
Gas:	n.a.

Explosive properties

The product is not explosive.

Lower explosion limits:	n. d.
Upper explosion limits:	n. d.
Auto-ignition temperature:	n. d.

Self-ignition temperature

Solid:	n.a.
Gas:	n.a.

Vapour pressure: n. d.

Density (at 20 °C): 0,99 - 1,04 g/cm³

Bulk density: n.a.

Water solubility: Immiscible
(at 20 °C)

Solubility in other solvents

n. d.

Partition coefficient n-octanol/water: n. d.

Viscosity / dynamic: 650 - 800 mPa·s
(at 25 °C)

Viscosity / kinematic: n. d.

Flow time: > 40 s 6 DIN/ISO 2431
(at 25 °C)

Relative vapour density: n. d.

Evaporation rate: n. d.

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Solvent separation test:

n. d.

Solvent content:

n. d.

9.2. Other information

No data available

SECTION 10: Stability and reactivity**10.1. Reactivity**

No decomposition if stored and applied as directed.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Reactions with acids, alkalies and oxidising agents.

Reactions with amines.

10.4. Conditions to avoid

To avoid thermal decomposition, do not overheat.

Protect against direct sun radiation.

Polymerisation occurs when exposed to heat.

10.5. Incompatible materials

Oxidizing agents, Amines, Acids and bases.

10.6. Hazardous decomposition products

No hazardous decomposition products known.

Fire may produce:

Carbon monoxide (CO), carbon dioxide (CO₂) and nitrogen oxides (NO_x)

Ammonia

SECTION 11: Toxicological information**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008****Acute toxicity**

Harmful if swallowed.

No toxicological data available.

ATEmix/oral: approx. 1300 mg/kg

ATEmix/dermal: > 2000 mg/kg

ATEmix/inhalation: > 20 mg/l

ATEmix calculated

ATE (oral) 1291,9 mg/kg

Irritation and corrosivity

Causes severe skin burns and eye damage.

Causes serious eye damage.

Sensitising effects

May cause an allergic skin reaction. (3-Aminomethyl-3,5,5-trimethylcyclohexylamine; 2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine; bis-[4-(2,3-epoxypropoxy)phenyl]propane; 3-aminopropyltriethoxysilane)

Carcinogenic/mutagenic/toxic effects for reproduction

May damage the unborn child. (1,3-Diaza-2,4-cyclopentadiene)

Germ cell mutagenicity: Based on available data, the classification criteria are not met.

Carcinogenicity: Based on available data, the classification criteria are not met.

STOT-single exposure

Based on available data, the classification criteria are not met.

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STOT-repeated exposure

Based on available data, the classification criteria are not met.

Aspiration hazard

Based on available data, the classification criteria are not met.

Additional information on tests

Classification in compliance with the assessment procedure specified in the Regulation (EC) no 1272/2008.

11.2. Information on other hazards**Endocrine disrupting properties**

No data available

SECTION 12: Ecological information**12.1. Toxicity**

Ecological data are not available.

Harmful to aquatic life with long lasting effects.

Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight <= 700)

LC50/Oncorhynchus mykiss/96 h = 2 mg/l

EC50/Daphnia magna/48 h = 1,8 mg/l

ErC50/Scenedesmus capricornutum/72 h = 11 mg/l

12.2. Persistence and degradability

Not readily biodegradable.

Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight <= 700)

Biodegradable (OECD): 12% / 28 d [OECD 302 B]

12.3. Bioaccumulative potential

No data available

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

12.6. Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

12.7. Other adverse effects

Hazard to waters.

Further information

Do not flush into surface water or sanitary sewer system.

SECTION 13: Disposal considerations**13.1. Waste treatment methods****Disposal recommendations**

Where possible recycling is preferred to disposal.

Can be incinerated, when in compliance with local regulations.

List of Wastes Code - residues/unused products

080409 WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS; wastes from MFSU of adhesives and sealants (including waterproofing products); waste adhesives and sealants containing organic solvents or other hazardous substances; hazardous waste

Contaminated packaging

Contaminated packaging are to be treated like the product itself.

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Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.


Packaging that cannot be cleaned should be disposed of like the product.

SECTION 14: Transport information


Land transport (ADR/RID)

14.1. UN number:	UN 3267
14.2. UN proper shipping name:	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Trimethylhexane-1,6-diamine, 3-Aminomethyl-3,5,5-trimethylcyclohexylamine)
14.3. Transport hazard class(es):	8
14.4. Packing group:	III
Hazard label:	8 
Classification code:	C7
Limited quantity:	5 L / 30 kg
Excepted quantity:	E1
Transport category:	3
Hazard No:	80
Tunnel restriction code:	E

Inland waterways transport (ADN)

14.1. UN number:	UN 3267
14.2. UN proper shipping name:	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Trimethylhexane-1,6-diamine, 3-Aminomethyl-3,5,5-trimethylcyclohexylamine)
14.3. Transport hazard class(es):	8
14.4. Packing group:	III
Hazard label:	8 
Classification code:	C7
Limited quantity:	5 L / 30 kg
Excepted quantity:	E1

Marine transport (IMDG)

14.1. UN number:	UN 3267
14.2. UN proper shipping name:	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Isophoronediamine and trimethylhexamethylene diamine)
14.3. Transport hazard class(es):	8
14.4. Packing group:	III
Hazard label:	8 
Marine pollutant:	No
Limited quantity:	5 L / 30 kg

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Excepted quantity: E1
EmS: F-A, S-B

Air transport (ICAO-TI/IATA-DGR)

14.1. UN number: UN 3267
14.2. UN proper shipping name: CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Isophoronediamine and trimethylhexamethylene diamine, solution)
14.3. Transport hazard class(es): 8
14.4. Packing group: III
Hazard label: 8



Limited quantity Passenger: 1 L
Passenger LQ: Y841
Excepted quantity: E1
IATA-packing instructions - Passenger: 852
IATA-max. quantity - Passenger: 5 L
IATA-packing instructions - Cargo: 856
IATA-max. quantity - Cargo: 60 L

14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: No

14.6. Special precautions for user

Handle in accordance with good industrial hygiene and safety practice.

14.7. Maritime transport in bulk according to IMO instruments

The transport takes place only in approved and appropriate packaging.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulatory information

Restrictions on use (REACH, annex XVII):
Entry 3, Entry 30, Entry 75

2004/42/EC (VOC): 0 %
Information according to 2012/18/EU (SEVESO III): Not subject to 2012/18/EU (SEVESO III)

National regulatory information

Employment restrictions: Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

Water hazard class (D): 2 - obviously hazardous to water

Additional information

Consider Chemical prohibition regulation.

15.2. Chemical safety assessment

For this substance a chemical safety assessment has not been carried out.

SECTION 16: Other information

Changes

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This data sheet contains changes from the previous version in section(s): 2,6,7,9,10,11,12,13,14,15.

Abbreviations and acronyms

ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route
RID = Règlement concernant le transport international ferroviaire de marchandises dangereuses
ADN = Accord européen relatif au transport international des marchandises dangereuses par voie de navigation intérieure
IMDG = International Maritime Code for Dangerous Goods
IATA/ICAO = International Air Transport Association / International Civil Aviation Organization
MARPOL = International Convention for the Prevention of Pollution from Ships
IBC-Code = International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk

GHS = Globally Harmonized System of Classification and Labelling of Chemicals
REACH = Registration, Evaluation, Authorization and Restriction of Chemicals
CAS = Chemical Abstract Service
EN = European norm
ISO = International Organization for Standardization
DIN = Deutsche Industrie Norm
PBT = Persistent Bioaccumulative and Toxic
vPvB = Very Persistent and very Bio-accumulative
LD = Lethal dose
LC = Lethal concentration
EC = Effect concentration
IC = Median immobilisation concentration or median inhibitory concentration

Classification for mixtures and used evaluation method according to Regulation (EC) No 1272/2008 [CLP]

Classification	Classification procedure
Acute Tox. 4; H302	Calculation method
Skin Corr. 1A; H314	Calculation method
Eye Dam. 1; H318	Calculation method
Skin Sens. 1; H317	Calculation method
Repr. 1B; H360D	Calculation method
Aquatic Chronic 3; H412	Calculation method

Relevant H and EUH statements (number and full text)

H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H360D May damage the unborn child.
H411 Toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.

Further Information

Data of items 4 to 8, as well as 10 to 12, do partly not refer to the use and the regular employing of the product (in this sense consult information on use and on product), but to liberation of major amounts in case of accidents and irregularities.

The information describes exclusively the safety requirements for the product (s) and is based on the present level of our knowledge.

The delivery specifications are contained in the corresponding product sheet.

This data does not constitute a guarantee for the characteristics of the product(s) as defined by the legal



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warranty regulations.

"(n.a. = not applicable; n.d. = not determined)"

(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)