1. Identification

Product identifier

TIP TOP HARDENER ER-42

Art.-No.

525 1116, 525 1118, 525 1151, 525 1156, 525 3254

Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture

Hardener

Details of the supplier of the safety data sheet

Company name:	REMA TIP TOP / North America Inc.
Street:	1500 Industrial Blvd
Place:	Madison, GA 30650, USA
Telephone:	+1 800 225 7362,
Internet:	www.rematiptop.com
Responsible Department:	Responsible for the safety data sheet: sds@gbk-ingelheim.de
Emergency telephone number:	(USA domestic) 1 800 535 5053 or international (001) 352 323 3500 Infotrac/GBK GmbH-ID: 93591

2. Hazard identification

Classification of the substance or mixture

WHMIS 2015

Flammable liquids: Flam. Liq. 2
Carcinogenicity: Carc. 2
Skin corrosion/irritation: Skin Irrit. 2
Serious eye damage/eye irritation: Eye Irrit. 2A
Respiratory or skin sensitization: Resp. Sens. 1
Respiratory or skin sensitization: Skin Sens. 1
Specific target organ toxicity - single exposure: STOT SE 3 (narcotic effects) (respiratory tract irritation)
Specific target organ toxicity - repeated exposure: STOT RE 2

Label elements

WHMIS 2015

Signal word: Danger

Pictograms:

Hazard statements

Highly flammable liquid and vapour.
Causes skin irritation.
Causes serious eye irritation.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
Suspected of causing cancer.
May cause respiratory irritation.
May cause drowsiness or dizziness.
May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

Obtain special instructions before use.

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Keep container tightly closed.
Do not breathe vapour.
Wear protective gloves/protective clothing/eye protection/face protection.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.

Other hazards

According to Regulation (EC) No 1907/2006 (REACH) none of the substances, contained in this product are a PBT / vPvB substance.
Vapours may form explosive mixture with air.

3. Composition/information on ingredients

Mixtures

Chemical characterization

Aromatic polyisocyanate

Hazardous components

CAS No	Chemical name	Quantity
141-78-6	Ethyl acetate	< 85 %
9016-87-9	Diphenylmethanediisocyanate, isomeres and homologues	< 30 %
53317-61-6	Aromatic polyisocyanate	< 10 %
4083-64-1	Tosyl isocyanate	< 0,5 %

4. First-aid measures

Description of first aid measures

General information

Remove contaminated soaked clothing immediately.
If you feel unwell, seek medical advice.
Take away from danger area and lay down affected person.
In case of the person being unconscious put him/her in a stable side position.

After inhalation

Move to fresh air in case of accidental inhalation of vapours or decomposition products.
Refer for medical treatment.
If patient is not breathing, apply artificial respiration.

After contact with skin

Wash off with soap and plenty of water.
Consult a doctor if skin irritation persists.
Do not use solvents or thinners.

After contact with eyes

Remove contact lens.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Seek medical treatment by eye specialist.

After ingestion

Do not induce vomiting.
Rinse out mouth and give plenty of water to drink.
Never give anything by mouth to an unconscious person.
Summon a doctor immediately.

Induce vomiting only upon the advice of a physician.

Most important symptoms and effects, whether acute or delayed

Suspected of causing cancer.
May cause damage to organs through prolonged or repeated exposure.
Causes serious eye irritation.
Causes skin irritation.
May cause respiratory irritation.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
May cause drowsiness or dizziness.

WHMIS: This material is considered hazardous by WHMIS 2015 (Workplace Hazardous Materials Information System).

Indication of immediate medical attention and special treatment needed

Treat symptoms.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

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

Unsuitable extinguishing media

Full water jet.

Specific hazards arising from the hazardous product

Fire may produce:
Carbon monoxide (CO), carbon dioxide (CO2) and nitrogen oxides (NOx).
Hydrogen cyanide (HCN)
Isocyanates (NCO).

Special protective equipment and precautions for fire-fighters

Wear self-contained breathing apparatus and protective suit.

Additional information

Cool containers at risk with water spray jet.
The vapour/air mixture is explosive, even in empty, uncleaned receptacles.
Vapours are heavier than air and spread along ground.
Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

General advice

Use only explosion-proof equipment.
Ensure adequate ventilation.
Keep away sources of ignition.

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.

Environmental precautions

Do not discharge into the drains/surface waters/groundwater.
Inform competent authority about release into the sewerage, ground or into waters.

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.
Container can be pressurized by carbon dioxide due to reaction with humid air and/or water.
Container should not be gas-tight closed.

Reference to other sections

Observe protective instructions (see Sections 7 and 8).
Information for disposal look up chapter 13.

7. Handling and storage

Precautions for safe handling

Advice on safe handling

Keep container tightly closed.
Keep a good ventilation and air-exhaust at the place of work.
Vapours are heavier than air and spread along ground.
Avoid contact with the skin and the eyes.
When using do not eat, drink or smoke.
Do not empty container under pressure. No pressure tank!
Containers that have been opened must be carefully resealed and kept upright to prevent leakage.

Advice on protection against fire and explosion

Keep away from heat and sources of ignition.
Do not smoke.
Take precautionary measures against static discharges.
Use only explosion-proof equipment.

Advice on general occupational hygiene

Do not inhale vapours.
Wash hands before breaks and immediately after handling the product.
When using do not eat, drink or smoke.
Treat subsequently with skin cream.
Avoid contact with skin, eyes and clothing.
Remove and wash contaminated clothing before re-use.

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.
Pay attention to anti-explosion protection rules.
Protect from heat and direct solar radiation.

Hints on joint storage

Incompatible with:
Oxidizing agents
Acids and bases.
Water, amines, alcohols

Further information on storage conditions

Keep away from food, drink and animal feeding stuffs.

8. Exposure controls/Personal protection

Control parameters

Exposure limits (ACGIH)

CAS No	Chemical name	ppm	mg/m³	F/ml	Category	Origin
141-78-6	Ethyl acetate	400	1440		TWA (8 h)	ACGIH-2025

Exposure controls

Appropriate engineering controls

Ensure adequate ventilation, especially in confined areas.

Individual protection measures, such as personal protective equipment

Eye/face protection

Safety goggles with side protection (splash protection) or tightly fitting goggles (EN 166)
Eye wash bottle with pure water.

Hand protection

Splash protection:
Protective gloves resistant to chemicals made of nitrile, Minimum coat thickness 0.4 mm, Permeation resistance (wear duration) > 10 minutes.
Protective gloves resistant to chemicals made off butyl, Minimum coat thickness 0,7 mm, Permeation resistance (wear duration) > 60 minutes, i.e. protective glove <Butoject 898> made by www.kcl.de.
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 recommendations given by the manufacturer of protective gloves.

Skin protection

Long sleeved clothing.

Respiratory protection

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

9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state:	Liquid
Colour:	Yellowish
Odour:	Characteristic

Changes in the physical state

Melting point/freezing point:	n. d.
Boiling point or initial boiling point and boiling range:	77 °C
Sublimation point:	n.a.
Softening point:	n. d.
Pour point:	n. d.
Flash point:	- 4 °C

Flammability

Solid/liquid:	n.a.

Explosive properties

The product is considered non-explosive; nevertheless explosive vapour/air mixture can be generated.

Lower explosive limits:	2,1 vol. %
Upper explosive limits:	11,5 vol. %
Auto-ignition temperature:	n. d.

Self-ignition temperature

Solid:	n.a.
Gas:	n.a.
Decomposition temperature:	n. d.
pH-Value:	n. d.
Viscosity / dynamic: (at 20 °C)	10 mPa·s
Viscosity / kinematic:	n. d.
Flow time:	n. d.
Water solubility: (at 20 °C)	Immiscible

Solubility in other solvents

n. d.

Partition coefficient n-octanol/water:	n. d.
Vapour pressure: (at 20 °C)	97 hPa
Density (at 20 °C):	0,97 g/cm³
Bulk density:	n.a.
Relative vapour density:	n. d.

Other information

Information with regard to physical hazard classes

Sustained combustibility:	Sustained combustibility

Oxidizing properties

Not oxidising.

Other safety characteristics

Solvent separation test:	n. d.
Solvent content:	n. d.
Solid content:	26 %
Evaporation rate:	n. d.

10. Stability and reactivity

Reactivity

No decomposition if stored and applied as directed.

Chemical stability

Stable under normal conditions.

Possibility of hazardous reactions

Reactions with acids, alkalies and oxidising agents.
Reacts with: Water, amines, alcohols

Conditions to avoid

To avoid thermal decomposition, do not overheat.
Heating can release vapours which can be ignited.
Vapour/air-mixtures are explosive at intense warming.

Incompatible materials

Strong oxidizing agents
Strong acids and strong bases
Water, amines, alcohols

Hazardous decomposition products

No hazardous decomposition products known.
Fire may produce:
Carbon monoxide (CO), carbon dioxide (CO2) and nitrogen oxides (NOx)
Hydrogen cyanide gas.
Isocyanates

11. Toxicological information

Information on toxicological effects

Acute toxicity

Based on available data, the classification criteria are not met.
No toxicological data available.

ATEmix calculated

ATE (oral) > 2000 mg/kg; ATE (dermal) > 2000 mg/kg; ATE (inhalation vapour) > 20 mg/l; ATE (inhalation dust/mist) > 5 mg/l

Irritation and corrosivity

Skin corrosion/irritation: Causes skin irritation.
Serious eye damage/eye irritation: Causes serious eye irritation.

Sensitizing effects

May cause allergy or asthma symptoms or breathing difficulties if inhaled. (Diphenylmethanediisocyanate, isomeres and homologues; Tosyl isocyanate)
May cause an allergic skin reaction. (Diphenylmethanediisocyanate, isomeres and homologues; Aromatic polyisocyanate)

Carcinogenic/mutagenic/toxic effects for reproduction

Suspected of causing cancer. (Diphenylmethanediisocyanate, isomeres and homologues)
Germ cell mutagenicity: Based on available data, the classification criteria are not met.
Reproductive toxicity: Based on available data, the classification criteria are not met.

STOT-single exposure

May cause respiratory irritation. (Diphenylmethanediisocyanate, isomeres and homologues)
May cause drowsiness or dizziness. (Ethyl acetate)

STOT-repeated exposure

May cause damage to organs through prolonged or repeated exposure. (Diphenylmethanediisocyanate, isomeres and homologues)

Aspiration hazard

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

Information on likely routes of exposure

Skin and eye contact, inhalation and ingestion.

Additional information on tests

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

Information on other hazards

Endocrine disrupting properties

No data available

Other information

Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.
Inhalation of high concentrations may cause injuries to liver, kidneys and central nervous system.
A longer or repeated contact my lead to irritation of eyes and mucous membranes.
Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.
With hypersensitive people, reactions as cough or difficulty of breathing may appear even with tiny concentrations of isocyanates; therefore keep room aerated and ventilated.

12. Ecological information

Ecotoxicity

Ecological dates are not available.

Persistence and degradability

No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

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.

Other adverse effects

Slightly water hazardous.

Further information

Do not flush into surface water or sanitary sewer system.In aqueous systems, formation of unsoluble and chemically inert (inactive) polyureas.

13. Disposal considerations

Waste treatment methods

Disposal recommendations

Can be incinerated, when in compliance with local regulations.
Where possible recycling is preferred to disposal.

Contaminated packaging

Empty containers should be taken for local recycling, recovery or waste disposal.
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.

14. Transport information

Canadian TDG

UN number:	UN 1133
Proper shipping name:	Adhesives
Hazard classes:	3
Packing group:	II
Hazard label:	3
Limited quantity:	5L

Marine transport (IMDG)

UN number or ID number:	UN 1133
United Nations proper shipping name:	Adhesives
Transport hazard class(es):	3
Packing group:	II
Hazard label:	3

Marine pollutant:	No
Limited quantity:	5 L / 30 kg
Excepted quantity:	E2
EmS:	F-E, S-D

Air transport (ICAO-TI/IATA-DGR)

UN number or ID number:	UN 1133
United Nations proper shipping name:	ADHESIVES
Transport hazard class(es):	3
Packing group:	II
Hazard label:	3

Special Provisions:	A3
Limited quantity Passenger:	1 L
Passenger LQ:	Y341
Excepted quantity:	E2
IATA-packing instructions - Passenger:	353
IATA-max. quantity - Passenger:	5 L
IATA-packing instructions - Cargo:	364
IATA-max. quantity - Cargo:	60 L

Environmental hazards

ENVIRONMENTALLY HAZARDOUS: No

15. Regulatory information

Canadian regulations

DSL/NDSL inventory status

All components are listed on the DSL Inventory.

WHMIS classification

WHMIS: B2, D2B

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all information required by the CPR.

16. Other information

Changes

This data sheet contains changes from the previous version in section(s): 9,12.

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

Further Information

Data of sections 4 to 8, as well as 10 to 12, do not necessarily refer to the use and the regular handling of the product (in this sense consult package leaflet and expert information), but to release 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 warranty regulations.
(n.a. = not applicable; n.d. = not determined)

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