

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product name : VERTEX CASTAPRESS LIQUID

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/preparation : Preparation

Information on hazardous ingredients *

Chemical name	CAS No.	%	EC Number	Symbol	R-Phrases
Methyl methacrylate	80-62-6	> 93	201-297-1	F, Xi	R11-36/37/38-43
Crosslinker	97-90-5	< 6	202-617-2	Xi	R36/37

* *Occupational Exposure Limit(s), if available, are listed in section 8*

3. HAZARDS IDENTIFICATION

Physical/chemical hazards : Highly incensive.
Human health hazards : Irritating. May cause sensitization by skin contact.
Environmental hazards : The data available do not support any environmental hazard.

4. FIRST-AID MEASURES

Effects and symptoms

Inhalation : Irritating to respiratory system. Exposure may result in depressed respiration, coughing, nausea and sore throat. Prolonged or repeated exposure to large amounts may cause damage to lungs (lung oedema).
Ingestion : Irritating to mouth, throat and oesophagus. Exposure may result in sore throat, nausea, retching and blisters. Prolonged or repeated exposure to large amounts may result in unconsciousness or coma.
Skin contact : Irritating to skin. Exposure may result in redness, swelling and pain. Prolonged or repeated skin contact may result in burns and blisters. May cause sensitization by skin contact (sweating, fever, pain). In oversensitive people even exposure to very small amounts causes allergic reactions.
Eye contact : Irritating to eyes. Exposure may result in impaired vision, tears, redness and pain.

First-aid measures

Inhalation : Immediately remove victim to fresh air. Keep victim at rest in half upright position. If breathing is difficult: mouth-to-mouth resuscitation. If not breathing: artificial respiration. Immediately get medical attention.
Ingestion : Never give anything by mouth to an unconscious person. Do not induce vomiting. Wash out mouth with water. Make victim drink water. Keep victim at rest. Immediately get medical attention.

- Skin contact** : Wash off with plenty of water for at least 15 minutes. Remove contaminated clothing. (Do not pull loose). Wash off with plenty of water. Immediately get medical attention.
- Eye contact** : Immediately wash out with plenty of water with the eyelid held wide open for at least 15 minutes. After initial flushing, remove any contact lenses and continue flushing. Immediately get medical attention.
- Protection of first-aiders** : Avoid exposure. Use appropriate protection (see section 8).

5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable

: Dry chemical, AFFF, foam, carbon dioxide. In extreme cases, if aforementioned extinguishing agents are ineffective in fighting a large fire, use a halon extinguisher.

Not suitable

: Do not extinguish with water.

Special fire-fighting procedures

: Fight fires from a protected location. Dike fire control water for later disposal. Cool exposed containers with water spray.

Unusual fire/explosion hazards

: Vapour is heavier than air and travels along the ground with the risk of distant ignition.

Hazardous thermal (de)composition products

: Burning may produce: carbon dioxide, carbon monoxide.

Protection of fire-fighters

: Burning may produce: toxic and/or corrosive vapours/gases. Use breathing apparatus (self-contained breathing apparatus with full face shield). Wear suitable protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

: In the event of major spillage: Evacuate room. Contact safety officer immediately. Wear suitable protective clothing, gloves and eye/face protection.

Environmental precautions

: Prevent dispersion. Do not allow to enter sewage system. In the event of major spillage: Contact safety officer immediately.

Methods for cleaning up

: Incendive / Danger of explosion. Keep away from sources of ignition. Seal leak if possible without risk. Prevent dispersion. Clean up only under supervision of an expert. Collect spilled material in sealable containers. Absorb remainder in sand or other inert material. Collect in sealable containers.

7. HANDLING AND STORAGE

Handling

: When handling the product, allow for materials and conditions which should be avoided (see Chapter 10). Avoid exposure. Use appropriate protection (see section 8). Take precautionary measures against static discharges. Keep away from open flame, sparks or sources of ignition. Explosion protected electrical equipment.

Storage

: Store in fireproof location. When storing the product, allow for materials and conditions which should be avoided (see Chapter 10). Ventilation required along the floor. Keep container tightly closed.

Packaging materials

Suitable

: Keep in sealable containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering measures	: In the event of use above flash point: Use in closed systems. Do not use compressed air by filling, discharging or handling the product. Ventilation required along the floor. Ventilation required. Explosion protected electrical equipment. Explosion proof lighting. Earth connection against static electricity. Spark-free tool. Do not heat.
Hygiene measures	: When using do not eat, drink or smoke. Follow good housekeeping practices.
Occupational Exposure Limits	
Chemical name	OEL (United Kingdom)
Methyl methacrylate	TWA: 100 mg/m ³ (25 ppm)
<u>Personal protective equipment</u>	
Respiratory system	: With sufficient ventilation, extraction or closed system, breathing apparatus not necessary. In the event of possible exposure: gas/vapour filter.
Skin and body	: Wear suitable protective clothing.
Hands	: Wear suitable gloves (butyl rubber gloves or neoprene gloves).
Eyes	: With sufficient extraction or closed system: safety goggles. In the event of possible exposure: combined eye and respiratory protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: Liquid.
Colour	: Colourless.
Odour	: Ester-like.
Boiling point	: 100,3 °C
Melting point	: -48 °C
Vapour pressure	: 47 mbar (20°C)
Specific gravity (H ₂ O=1)	: 0,94
Solubility in water	: 15,9 g/l (20°C)
pH	: Not applicable.
Flash point	: 10 °C
Autoignition temperature	: 430 °C
Lower explosion limit	: 2,1 volume %
Upper explosion limit	: 12,5 volume %
Viscosity	: 0,6 mPa.s

10. STABILITY AND REACTIVITY

Stability	: Stable under normal conditions. When incorrectly used: Fire hazard, polymerization. (Stable with: hydrochloric acid).
Conditions to avoid	: Keep away from: open flame and sources of ignition. Do not heat. Protect from (sun)light and heat.
Materials to avoid	: Keep away from: oxidizing substances.
Hazardous reactions	: Not available.
Hazardous decomposition products	: None.

11. TOXICOLOGICAL INFORMATION

Mutagenicity : Ames test: Not mutagenic.

Chemical name : **Methyl methacrylate**

Acute toxicity - Oral : LD₅₀ (rat): 7872 mg/kg

Acute toxicity - Dermal : LD₅₀ (rabbit): > 5000 mg/kg

Acute toxicity - Inhalation : LC₅₀ (rat, 4 hour): 78000 mg/m³

Chemical name : **Crosslinker**

Acute toxicity - Oral : LD₅₀ (rat): 3300 mg/kg

12. ECOLOGICAL INFORMATION

No ecological information is known on the product but some is available on the ingredients defined in section 2.

Chemical name : **Methyl methacrylate**

Ecotoxicity : LC₅₀ (fish, 96 hour): 130 mg/l
 EC₅₀ (Daphnia magna, 24 hour): 720 mg/l

13. DISPOSAL CONSIDERATIONS

Methods of disposal : Disposal according to the local legislation.

Waste of residues : Keep waste separate. Because of possible pollution, remove as industrial waste or hazardous waste.

Contaminated packaging : Keep waste packaging separate. Because of possible pollution, remove as industrial waste or hazardous waste.

14. TRANSPORT INFORMATION

International transport regulations

UN number : 1247

TREMCARD : 30G30

Land - Road/Railway

Proper shipping name : Methyl methacrylate, stabilized

ADR/RID Class : 3

ADR/RID Item number : 3b)

Packing group : II

Hazard Identification Number : 339

Inland waterways

Proper shipping name : Methyl methacrylate, stabilized

ADNR Class : 3

Sea

Proper shipping name : Methyl methacrylate, stabilized

IMDG Class : 3.2

IMDG Page number : 3259

Packing group : II

Medical First Aid Guide (MFAG) : 330

Emergency Schedules (EmS) : 3-07

Air

Proper shipping name : Methyl methacrylate, stabilized
UN/ID Number : 1247
IATA-DGR Class : 3

National transport regulations

United Kingdom : No additional national transport regulations are known to the supplier

15. REGULATORY INFORMATION

EU Regulations

EU Classification

(67/548/EEC-88/379/EEC)

Hazard symbol(s) : F, Xi



HIGHLY FLAMMABLE



IRRITANT

Risk phrases

: R11: Highly flammable.
 R36/37/38: Irritating to eyes, respiratory system and skin.
 R43: May cause sensitization by skin contact.

Safety phrases

: S09: Keep container in a well-ventilated place.
 S16: Keep away from sources of ignition - No smoking.
 S24: Avoid contact with skin.
 S29: Do not empty into drains.
 S33: Take precautionary measures against static discharges.
 S37: Wear suitable gloves.
 S46: If swallowed, seek medical advice immediately and show this container or label.

National regulations

United Kingdom : No additional national regulations are known to the supplier

16. OTHER INFORMATION

The information contained in the Safety data sheet is correct to the best of our knowledge at the date of issue. It is intended as a guide for the safe use, handling, disposal, storage and transportation and is not intended as warranty or as a specification. The Information relates only to the product specified and may not be suitable for combinations with other materials or in processes other than those specifically described herein.

HISTORY

Date of printing : 28-01-1999
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Date of issue : 27-01-1999
Version : 001.00.00

The version-number is made up of three parts; part 1 is a general information code, part 2 a country-specific code and part 3 a language-specific code (Country: Great Britain; Language: English)

Rapid Simplified

MATERIAL SAFETY DATA SHEET CHEMICAL SUBSTANCES AND PRODUCTS ACCORDING DIRECTIVE 91/155/EEC

date: January 1997, version: 5, author: NCK

IDENTIFICATION OF THE PRODUCT AND COMPANY

1.1 product name: VERTEX™ Rapid Simplified
liquid
chemical characterisation: Monomer based on methyl
methacrylate.
 $\text{CH}_2=\text{C}(\text{CH}_3)\text{COOCH}_3$

COMPOSITION AND INFORMATION ON INGREDIENTS

components	label	CAS reg.nr.	[%]	MAC [ppm]
Methyl methacrylate	X_F	80-62-6	> 95	50
Crosslinker	X_i	97-90-5	< 5	-
Accelerator	X_n	99-97-8	< 1	-

HAZARDS IDENTIFICATION

3.1 routes of entry:

Methyl methacrylate is absorbed into the body by inhalation, swallowing and through the skin. A for the health harmful concentration in the air, is quickly reached at a temperature of 20°C.

3.2 carcinogenic aspects:

None of the components of this product are listed by IARC, NTP, OSHA or ACIGH as carcinogens.

3.3 maximum concentration at workplace (MAC):

For methyl methacrylate: 50 ppm = 200 mg/m³

3.4 effects short-term:

Liquid or high vapour concentration can irritate eyes and respiratory system and cause skin rashes.

3.5 effects long-term, repeated exposure:

Prolonged exposure can lead to headaches, nausea, drowsiness and unconsciousness. Repeated and prolonged overexposure may cause permanent allergic skin rashes.

FIRST AID MEASURES

4.1 inhalation: Remove to fresh air, rest, sit half way up. Get medical help if discomfort persists.



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- skin: Remove contaminated clothing. Wash thoroughly with soap and water.
- eyes: Flush thoroughly with water for 15 minutes and contact a doctor.
- ingestion: Wash out the mouth and transport immediately to a hospital.

MEASURES IN CASE OF FIRE

- 5.1 flash point: 10°C
- 5.2 explosion limits: air vol. %
lower: 2.1 %
upper: 12.5 %
- 5.3 auto ignition temperature: 430°C
- 5.4 extinguisher method:
useful: Powder, A.F.F.F., foam and carbon dioxide.
not useful: Direct jet of water.
- 5.5 hazardous decomposition products: none
- 5.6 hazardous reactions:
When heated above the flash point, flammable vapours are emitted which can mix with air and can burn or be explosive. Vapours are heavier than air and may travel to the source of ignition and flash back. Heat can cause polymerisation with rapid release of energy which may rupture container explosively.

ACCIDENTAL RELEASE MEASURES

- 6.1 leakage / spillage:
Warn bystanders. Eliminate sources of ignition. Prevent monomer from entering drains or water sources. Collect liquid in a open barrel. Absorb spilled liquid with inert material as dry earth or other absorbent material and transfer to a safe place for disposal.
See point 13 for disposal of the liquid.
- 6.2 personal precautions:
See point 8 for personal protection.
- 6.3 environmental precautions:
See point 12 for information concerning the environment.

HANDLING AND STORAGE

- 7.1 handling:
Work in a well ventilated place. Material is inflammable, it must be kept away from naked flames or other sources of ignition. Keep away from food, drinks, and animal feed.
- 7.2 storage:
Store in a cool dark place, separated from oxidising agents. Container may be filled only for 80 %. Keep container tightly closed to avoid evaporation of the product.
- 7.3 protection against fire and explosion:
Keep out of direct sunlight or any source of heat, sparks or flame. Take measures against the build-up of electrostatic charges. In case of fire, keep any closed container of monomer cool by using a fine water spray if they cannot be moved away.

PERSONAL PROTECTION

8.1 respiratory protection:

Local exhaust ventilation or an adequate mask with a filter useful for organic vapour (type A₂B₂). Possible a half-mask with active carbon may be used (FHMPE).

- hand protection: Polyvinylalcohol gloves.
Warning: PVA is soluble in water!
- eye protection: Protecting glasses.
- other protection: None.

8.2 industrial hygiene:

Keep working clothes separately. Take off contaminated clothing immediately. Keep away from food, drinks and animal feed.

PHYSICAL AND CHEMICAL PROPERTIES

9.1 appearance:	colourless, clear liquid
9.2 odour:	ester like
9.3 pH:	not applicable
9.4 boiling point:	101°C
9.5 melting point:	-48°C
9.6 flash point:	10°C
9.7 auto ignition temperature:	430°C
9.8 explosive properties:	yes, see point 5.2
9.9 oxidising properties:	not applicable
9.10 vapour pressure:	47 mbar (at 20°C)
9.11 relative density:	0.94 (water = 1)
9.12 water solubility:	1.5 g / 100 ml (at 20°C)
9.13 viscosity:	0.6 mPa×s

STABILITY AND REACTIVITY

10.1 stability:

The liquid is stabilised with hydrochinon (CAS-regnr. 123-31-9). However polymerisation may occur when the expiry date and/or storage temperature is considerable exceeded.

10.2 hazardous reactions:

When heated above the flash point, flammable vapours are emitted which can mix with air and can burn or be explosive. Vapours are heavier than air and may travel to the source of ignition and flash back. Heat can cause polymerisation with rapid release of energy which may rupture container explosively.

10.3 hazardous decomposition products:

By use according the instructions; none.

INFORMATION ON TOXICITY

According to literature. Methyl methacrylate is essentially non toxic when absorbed into the body by any route, but for some few individuals is a powerful skin sensitiser. Apart from this skin allergy, human cases of ill health caused by material are of a low probability. Long-term inhalation test on rats and hamsters with exposure concentrations ranging from 100 to 400 ppm did not show any chronic toxic effects. However concentrations on excess of 100 ppm volume may be irritating for some people. Handling of the product requires adequate ventilation to prevent accumulation of



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vapours in work areas.

11.1 Methyl methacrylate:

Acute oral rat: LD₅₀ = 7872 mg/kg
Acute skin rabbit: LD₅₀ = 9400 mg/kg
Acute inhalation rat: LC₅₀ = 7093 ppm/4 hours

Human patch test:

Approximate one-third of subjects developed mild redness at site of application. Twenty percent showed sensitivity when tested 10 days later.

11.2 Crosslinker:

Acute oral rat: LD₅₀ = 3300 mg/kg
Skin irritation rabbit: Not irritating
Eye irritation rabbit: Not irritating

11.3 Accelerator:

Acute oral rat: LD₅₀ = 1.88 ml/kg
Acute inhalation mouse: LD₅₀ = 212 mg/kg
Skin irritation rabbit: Severe irritant
Eye irritation rabbit: Irritating

ECOLOGICAL INFORMATION

The product should not be allowed to drain into sewers.
There is a severe danger of explosion.

DISPOSAL CONSIDERATIONS

The product can be disposed as methyl methacrylate. The preferred method for disposal of waste quantity's of methyl methacrylate is by incineration in accordance with local regulations.

TRANSPORT

14.1 UN No.: 1247

14.2 transport by land:

UN No.: 1247
GGVS: class 3, item 3b
ADR: class 3, item 3b
GGVS/ADR note: Methyl methacrylate, inhibited.
GGVE: class 3, item 3b
RID: class 3, item 3b
GGVE/RID note: Methyl methacrylate, inhibited.
Tank lorry RN 10500: 339/1247
Packing group land: II

14.3 transport through the air:

UN no./ID no.: 1247
ICAO/IATA: class 3
Technical name: Methyl methacrylate, inhibited.
Packing group air: II

14.4 transport by sea:

UN no. sea: 1247
IMDG/GGVSee code: class 3.2
EmS: 3-07
MFAG: 330
Technical name: Methyl methacrylate, inhibited.
Packing group sea: II

14.5 transport by

inland waterways:

ADNR: class 3 (IIa), item 1a