

Release date: December 1996

COMPOUND NAME: *CalRiX*

COMPANY IDENTIFICATION:

Company: Dr.-Ing Ritter Apparatebau GmbH
Address: Coloniastraße 19-23
City: D-44892 BOCHUM - Germany
Teleph. number: +49-(0)234-28-00-77
Fax number: +49-(0)234-28-00-78
Email: mailbox@ritter-app.com

Emergency calls
Teleph. number: +49-(0)234-28-00-77

1) COMPOUND IDENTIFICATION:

Compound name: *CalRiX*
Chemical name: Perfluorinated polyethers
Molecular weight: 870 g/mol
Structural formula: $\text{CF}_3-(\text{O}-\underset{\text{CF}_3}{\text{CF}-\text{CF}_2})_n-(\text{O}-\text{CF}_2)_m-\text{O}-\text{CF}_3$
n/m = 20-40

CAS name: 1 propene, 1.1.2.3.3.3.-exafluoro-, oxidized, polymd.
CAS number: 69991-67-9
EEC number: not classified
EINECS number: not classified
ELINCS number: not classified

2) DANGEROUS INGREDIENTS

None

3) HAZARDS IDENTIFICATION

Adverse effects and main risks:

No risk is expected on the basis of toxicological evaluation.
No risk for humans and the environment is expected with appropriate use. Endangering is possible only with improper use or in case of thermal decomposition (development of toxic and corrosive gases).

4) FIRST AID MEASURES

Eye contact: Wash with plenty of water.
Skin contact: Wash with water and soap.
Ingestion: Drink water, induce vomiting, see doctor.

5) FIRE FIGHTING MEASURES

Precautions in case of fire:
Keep containers cool by spraying with water when exposed to fire.

Appropriate fire extinguishing media:
Sprayed water, extinguishing powder, extinguishing foam, carbon dioxide.

Improper fire extinguishing media:
None

Risks from exposure to combustion products:
Possible risks are due to irritating and toxic effects of thermal decomposition products (HF and COF₂).

In case of fire: Keep distance or wear appropriate protective clothes. Remove consignment from fire area if possible

Specific protective equipment:
Breathing apparatus, protective clothing for protection of skin against etching HF gases.

6) ACCIDENTAL RELEASE MEASURES

Danger to humans and the environment in case of leakage or spillage is possible only in the case of thermal decomposition.

Personal measures: Wear suitable protective clothes (see section 8). Stop the leakage or spillage.

Environmental measures: Uncontrolled release is to be avoided, especially to surface and underground water and sewage.

Cleaning methods: Absorb the liquid with earth, sand or sawdust.

7) HANDLING AND STORAGE MEASURES

Handling risks: None with appropriate use

Handling precautions: Wear protective clothes when required. Do not drink and eat during handling. No smoking is compulsory in working areas. **No heating above the decomposition temperature (290°C)**. During handling electrostatic charges may be generated and therefore take the appropriate measures to avoid it.

Storage precautions: Keep containers closed. Keep away from heat sources, from flammable, combustible or explosive materials and from incompatible compounds (see sect.10).

Compatible packaging materials:
Store in glass or plastic (polyethylene) containers.

8) EXPOSURE CONTROL/PERSONAL PROTECTION

Exposure Limit Values: For *CaRiX*: none
Only threshold limits of thermal decomposition by-products are applicable:
TLV/TWA (HF) : 2.5 mg/m³
TLV/TWA (COF₂) : 5 mg/M³

Additional precautions: Wear personal protective clothing
Do not inhale gases from thermal decomposition

Personal protective clothing: Eyes protection: safety goggles
Hand protection: rubber gloves
Body protection: worksuit or rubber apron
Breathing apparatus in case of fire

9) PHYSICAL AND CHEMICAL PROPERTIES

Physical state: clear, viscous liquid
Colour: colourless
Odour: odourless
Flammability: not flammable
Explosivity: not explosive
Vapour pressure: < 1 torr at 25 °C
Specific gravity: 1.79 g/cm³
Solubility in water: not soluble
Solubility in org. solvents: soluble in fluorinated solvents

10) STABILITY AND REACTIVITY

Stability: The product is stable in normal conditions of use.

Conditions to avoid: Avoid exposing the product to free flames or to temperatures above 290°C.

Materials to avoid: Strong chemical reaction is possible with contact :
- with alkaline metals and ammonia, strong or non aqueous alkali,
Lewis acids (like AlCl₃, SbF₅, CoF₃) above 100°C,
- with non-passivated (i.e. fresh) magnesium, non-passivated
aluminium and its non-passivated alloys above 100 °C.
With passivated (i.e. aged) work pieces no reaction is possible.

Dangerous decomposition products:
In case of thermal decomposition toxic and corrosive gases can be
exposed:
Hydrogen fluoride = hydrofluoric acid = HF
Carbonyl difluoride = COF₂

11) TOXICOLOGICAL INFORMATION

Penetration routes: Ingestion, inhalation, skin and eye contact.

Adverse effects: Only the thermal decomposition products can be toxic in case of
inhalation.

Local effects/Irritating properties:
Not an irritant.

Delayed effects/Sensitization:
Not a sensitizer.

Chronic effects: No chronic effects are known.

Carcinogenic effects: No carcinogenic effects are known.

Mutagenic effects: No mutagenic effects are known.

Reproduction effects: No reproductive effects are known.

Experimental Toxicological Data:

Very low acute toxicity by oral and inhalation route:

LD50 ingestion: > 25 g/Kg (rat)
note: no effects at that dosage.

LC50 inhalation: > 2000 ppm for 4 hours (rat)
note: no change of behaviour at the tested dosage

No effects by repeated administration (up 1 month at 1 g/Kg/day)

12) ECOLOGICAL INFORMATION

Use the product according to good working practice. Avoid discharge into the environment

13) DISPOSAL CONSIDERATIONS

Send spent product to authorized disposal plants or to incinerators equipped with specific emission treatment plant.

14) TRANSPORT INFORMATION

General information

U.N. number: not classified
Packaging group: not classified

International regulation for road/railway transportation (ADR/RID) Classification:
not classified

LABELLING ACCORDING TO EEC REGULATIONS

Identification letter: none

Brand name: *CalRiX*

Marking: not necessary

Danger signal: not necessary

The above information is based on our current knowledge. It refers to safety relevant aspects. It is not a guarantee of properties. Ritter is not responsible for accidents caused by improper use of the product. Existing laws and regulations must be obeyed