

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

Product name : Tetrakis(ethylmethylenamido)hafnium(IV)

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

According to Regulation (EC) No1272/2008

Flammable liquids (Category 2)

Substances, which in contact with water, emit flammable gases (Category 2)

Skin irritation (Category 2)

Eye irritation (Category 2)

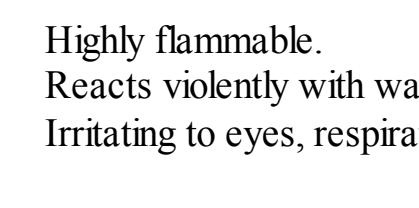
Specific target organ toxicity - single exposure (Category 3)

According to European Directive 67/548/EEC as amended.

Highly flammable. Reacts violently with water. Irritating to eyes, respiratory system and skin.

Label elements

Pictogram



Signal word

Danger

Hazard statement(s)

Highly flammable liquid and vapour.

H225

In contact with water releases flammable gases.

H261

Causes skin irritation.

H315

Causes serious eye irritation.

H319

May cause respiratory irritation.

H335

Reacts violently with water.

EUH014

Precautionary statement(s)

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P210

Handle under inert gas. Protect from moisture.

P261

Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.

P305 + P351 + P338

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P422

Store contents under inert gas.

Hazard symbol(s)

Highly flammable

F

Irritant

Xi

R-phrase(s)

Highly flammable.

R11

Reacts violently with water.

R14

Irritating to eyes, respiratory system and skin.

R36/37/38

Keep away from sources of ignition - No smoking.

S-phrase(s)

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S16

Wear suitable protective clothing.

S26

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

S36

Other hazards - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Tetrakis(ethylmethylenamido)hafnium(IV)
TEMAH

Formula : C12H32HfN4

Molecular Weight : 410.9 g/mol

CAS-No.	EC-No.	Classification	Concentration
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Tetrakis(ethylmethylenamido)hafnium(IV)

352535-01-4

Flam. Liq. 2; Water-react 2;

Skin Irrit. 2; Eye Irrit. 2; STOT

SE 3; H225, H261, H315,

H319, H335, EUH014

F, Xi, R11 - R14 - R36/37/38

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water.

Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Carbon dioxide (CO2) Dry powder

Extinguishing media which shall not be used for safety reasons

Water

Special protective equipment for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation.

Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions

Prevent further leakage or spillage. Do not let product enter drains.

Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Do not flush with water.

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in cool place.

Never allow product to get in contact with water during storage.

Handle and store under inert gas.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Eye protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Impervious clothing. Flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form liquid

Colour colourless

Safety data

pH no data available

Melting point < -50 °C

Boiling point 78 °C at 0,01 hPa - lit.

Flash point 11 °C - closed cup

Ignition temperature no data available

Lower explosion limit no data available

Upper explosion limit no data available

Density 1,324 g/cm3 at 25 °C

Water solubility no data available

10. STABILITY AND REACTIVITY

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

Reacts violently with water.

Conditions to avoid

Heat, flames and sparks.

Extremes of temperature and direct sunlight. Exposure to moisture.

Materials to avoid

Strong oxidizing agents, Water, Oxygen

Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx),

Hafnium oxide

11. TOXICOLOGICAL INFORMATION

Acute toxicity

no data available

Skin corrosion/irritation

no data available

Serious eye damage/eye irritation

no data available

Respiratory or skin sensitization

no data available

GERM cell mutagenicity

no data available

Carcinogenicity

no data available

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as

probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity

no data available

Inhalation - May cause respiratory irritation.

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