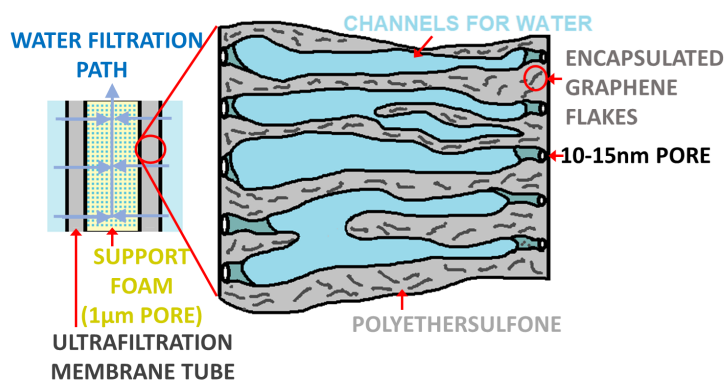


## Safety Data Sheet

### Graphene Imbedded Polyether Sulfone (PES) Ultrafiltration (UF) Nano-porous Hollow Fibre Membrane Filter Module

#### 1. Identification of the substance/mixture and of company/undertaking Product information



Material trade name: 1) Polyether sulfone (PES) hollow fibre membrane  
2) Polyvinylchloride-unplasticized(UPVC) - casing  
3) Graphene platelet  
4) Polyethylene terephthalate (PET) fibre support

#### 2. Hazard identification

##### Classification of the PES substance or mixture according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 4), H302

Skin irritation (Category 2), H315

Eye irritation (Category 2), H319

Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335

##### Labelling for PES according Regulation (EC) No 1272/2008



Pictogram Warning

Hazard statement(s)

H302 Harmful if swallowed.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

Precautionary statement(s)

P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.

P264 Wash skin thoroughly after handling.

P280 Wear protective gloves/ eye protection/ face protection.

P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

### **Classification of the graphene platelet according to Regulation (EC) No 231-955-3**



Pictogram Warning

Hazard statement(s)

R36/37/38 Irritating to eyes, respiratory system and skin

May form combustible dust concentrations in air

Precautionary statement(s)

S7 Keep container tightly closed.

S22 Do not breathe dust.

S29 Do not empty into drains.

S36/37/39 Wear suitable protective clothing such as a Tyvek suit with a hood, nitrile gloves and eye/face protection such as goggles. Wearing a positive atmosphere personal respirator (PAPR) equipped with P100 air filters is recommended.

### **Labelling for graphene platelet according Regulation (EC) No 231-955-3**

Not a hazardous substance or mixture according to Regulation (EC) No 231-955-3

### **Classification of the UPVC substance or mixture according to Regulation (EC) No 1272/2008.**

Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.

### **Labelling for UPVC according Regulation (EC) No 1272/2008**

Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.

### **Classification of the PET substance or mixture according to Regulation (EC) No 1272/2008.**

Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.

### **Labelling for PET according Regulation (EC) No 1272/2008**

Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.

## **3. Toxicological information**

### **Toxicological information of PES**

LD50 Oral for PES- Mouse - 1.300 mg/kg

Behavioral: Convulsions or effect on seizure threshold.

Behavioral: Change in motor activity (specific assay).

Cardiac: Arrhythmias (including changes its conduction).

#### **Toxicological information of graphene platelet**

Irritant effect on skin: Skin contact with graphene powder may cause irritation.

Irritant effect on the eye: Eye contact has shown irritation.

Respiratory or skin sensitization: Graphene powder may cause skin sensitization.

Inhalation: Inhalation can cause irritation.

Ingestion: May be harmful if swallowed.

#### **Toxicological information-UPVC**

No data available

#### **Toxicological information-PET**

No data available

### **4. Ecological information**

This product has no known eco-toxicological effects.

### **5. Stability and reactivity**

Reactivity - No data available

Chemical stability - Stable under recommended storage conditions.

Possibility of hazardous reactions- No data available

Conditions to avoid - No data available

Incompatible materials - Strong oxidizing agents

Hazardous decomposition products-PES

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Sulphur oxides

Hazardous decomposition products-UPVC

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Hydrogen chloride gas

Hazardous decomposition products-graphene platelet

Hazardous decomposition products formed under fire conditions. - Carbon monoxide and carbon dioxide

Hazardous decomposition products-PET

Hazardous decomposition products formed under fire conditions. - Carbon monoxide and carbon dioxide

### **6. First aid measures**

#### **Description of 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**

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

**7. Firefighting measures**

Suitable extinguishing media-Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.

Special hazards arising from the substance or mixture-Carbon oxides, Sulphur oxides

Advice for firefighters-Wear self-contained breathing apparatus for firefighting if necessary.

**8. Handling and storage**

Precautions for safe handling-Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.

Conditions for safe storage, including any incompatibilities

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

Recommended storage temperature 15 - 25 °C

**9. Exposure controls****Appropriate engineering controls**

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

**Personal protective equipment****Eye/face protection**

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin protection**

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

**Body Protection**

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection**

For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher-level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards, such as NIOSH (US) or CEN (EU).

**Control of environmental exposure**

Do not let product enter drains.

**10. Waste disposal**

Waste material must be disposed of in accordance with the Directive on waste 2008/98/EC as well as other national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

Offer surplus and non-recyclable solutions to a licensed disposal company.

Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.