## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

- Trade name PVDF SOLEF® 6012/0000

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

**Uses of the Substance/Mixture**

- For industrial use only

### 1.3 Details of the supplier of the safety data sheet

**Company**

Syensqo (Shanghai) International Trading Co., Ltd.
3966, JINDU RD, XINZHUANG INDUSTRIAL ZONE, MINHANG DISTRICT, SHANGHAI, CHINA 201108
Tel: +86 21 2350 1000

**E-mail address**

sds.syensqo@syensqo.com

### 1.4 Emergency telephone number

400 120 6011 (toll-free, access from China only)
NRCC
CHINA (DOMESTIC ONLY): +86 532 8388 9090 (Qingdao)
MULTI LINGUAL EMERGENCY NUMBER (24/7)
Europe/Latin America/Africa:+44 1235 239 670 (UK)
Middle East/Africa speaking Arabic: +44 1235 239 671 (UK)
Asia Pacific : +65 3158 1074 (Singapore)
China : 400 120 6011 (toll-free, access from China only)
North America : +1 800 424 9300

## SECTION 2: Hazards identification

### 2.1 Emergency overview

| | | |
|---|---|---|
| **Appearance** | Form: | pellets |
| | Physical state: | solid |
| | Colour: | translucent white |
| | Odour | odourless |

### 2.2 Classification of the substance or mixture

**GHS Classification and Labeling: Follow GB 15258 and GB 30000 series standard**

- Not classified as hazardous product under the regulation above.

### 2.3 Label elements

**GHS Classification and Labeling: Follow GB 15258 and GB 30000 series standard**

- Not required to be labelled under the local regulation including regulation above.

### 2.4 Physical and chemical hazards

- Not classified based on available information.

### 2.5 Health hazards

- Not classified based on available information.

### 2.6 Environmental hazards

- Not classified based on available information.

### 2.7 Other hazards which do not result in classification

- If small particles are generated during further processing, handling or by other means, may form combustible concentrations in air.
- Thermal decomposition can lead to release of toxic and corrosive gases.

## SECTION 3: Composition/information on ingredients

### 3.1 Substance

- Not applicable, this product is a mixture.

### 3.2 Mixture

- Chemical nature Mixture based on polyvinylidene fluoride

**Information on Components and Impurities**

| Chemical name | CAS-No. | Identification number | GHS Classification | Concentration [%] |
|---|---|---|---|---|
| Polyvinylidene fluoride resin | 24937-79-9 | Not applicable | Not classified | |

**Remarks**

- Contains no hazardous ingredients according to GHS

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

**In case of inhalation**

- negligible

***Exposure to decomposition products***

- Move to fresh air.
- Oxygen or artificial respiration if needed.
- Symptoms of poisoning may develop many hours after exposure.
- Keep under medical supervision for at least 48 hours.

**In case of skin contact**

***Exposure to decomposition products***

- Wash off with soap and water.
- Immediately apply calcium gluconate gel 2.5% and massage into the "affected area using rubber gloves; continue to massage while repeatedly" applying gel until 15 minutes after pain is relieved.
- Consult a physician.

**In case of eye contact**

- Rinse thoroughly with plenty of water, also under the eyelids.

**In case of ingestion**

- negligible

**4.2 Most important symptoms and effects, both acute and delayed**

**In case of inhalation**

**Effects**

- Mechanical irritation from the particulates generated by the product.
- The thermal decomposition vapours of fluorinated polymers may cause polymer fume fever with flu-like symptoms in humans, especially when smoking contaminated tobacco.

**Symptoms**

***Exposure to decomposition products***

- Headache
- Shortness of breath
- Cough

**In case of skin contact**

**Symptoms**

***Exposure to decomposition products***

- Irritation
- Redness
- Burn

**In case of eye contact**

**Effects**

- Mechanical irritation from the particulates generated by the product.

**Symptoms**

***Exposure to decomposition products***

- Irritation
- Redness
- Burn

**In case of ingestion**

**Effects**

- Low ingestion hazard.

**4.3 Indication of any immediate medical attention and special treatment needed**

**Notes to physician**

- None

## SECTION 5: Firefighting measures

**5.1 Extinguishing media**

**Suitable extinguishing media**

- Water
- powder
- Foam
- Dry chemical
- Carbon dioxide (CO2)

**Unsuitable extinguishing media**

- None

### 5.2 Special hazards arising from the substance or mixture

- The product is not flammable.
- Not explosive
- In case of fire hazardous decomposition products may be produced such as: Gaseous hydrogen fluoride (HF), Fluorophosgene

### 5.3 Advice for firefighters

**Special protective equipment for firefighters**

- Wear self-contained breathing apparatus and protective suit.
- When intervention in close proximity wear acid resistant over suit.

**Further information**

- Evacuate personnel to safe areas.
- Approach from upwind.
- Protect intervention team with a water spray as they approach the fire.
- Keep containers and surroundings cool with water spray.
- Keep product and empty container away from heat and sources of ignition.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

**Advice for non-emergency personnel**

- Prevent further leakage or spillage if safe to do so.

**Advice for emergency responders**

- Ensure adequate ventilation.
- Avoid dust formation.
- Material can create slippery conditions.
- Sweep up to prevent slipping hazard.
- Keep away from open flames, hot surfaces and sources of ignition.

### 6.2 Environmental precautions

- Should not be released into the environment.
- Do not flush into surface water or sanitary sewer system.

### 6.3 Methods and materials for containment and cleaning up

- Sweep up or vacuum up spillage and collect in suitable container for disposal.

### 6.4 Reference to other sections

- Refer to protective measures listed in sections 7 and 8.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

- Ensure adequate ventilation.
- Avoid dust formation.
- Use personal protective equipment.

- Keep away from heat and sources of ignition.
- To avoid thermal decomposition, do not overheat.
- Take measures to prevent the build up of electrostatic charge.
- Clean and dry piping circuits and equipment before any operations.
- Ensure all equipment is electrically grounded before beginning transfer operations.

**Hygiene measures**

- Ensure that eyewash stations and safety showers are close to the workstation location.
- When using do not eat, drink or smoke.
- Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.

### 7.2 Conditions for safe storage, including any incompatibilities

**Technical measures/Storage conditions**

- Keep in properly labelled containers.
- Keep away from heat and sources of ignition.
- Keep away from combustible material.
- Keep away from incompatible products
- Provide tight electrical equipment well protected against corrosion.
- Refer to protective measures listed in sections 7 and 8.

- For additional information, consult the current edition of Guide for the Safe Handling of Fluoropolymers published by PlasticsEurope, Association of Plastics Manufacturers.

**Packaging material**

**Suitable material**
- Plastic materials.

### 7.3 Specific end use(s)

- Contact your supplier for additional information

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

- Contains no substances with occupational exposure limit values above their regulatory reporting threshold.

**Components with other occupational exposure limits**

| Components | Value type | Value | Basis |
|---|---|---|---|
| Particles not otherwise specified (PNOS) | TWA | 10 mg/m3 | USA. ACGIH Threshold Limit Values (TLV) |
| | Form of exposure : Inhalable particulate matter | | |
| Particles not otherwise specified (PNOS) | TWA | 3 mg/m3 | USA. ACGIH Threshold Limit Values (TLV) |
| | Form of exposure : Respirable particulate matter | | |

***Threshold limit values of by-products from thermal decomposition:***

**Components with national occupational exposure limits**

| Components | Value type | Value | Basis |
|---|---|---|---|
| Hydrofluoric acid | MAC | 2 mg/m3 | Occupational exposure limits for hazardous agents in the workplace - Chemical hazardous agents. |
| | Expressed as :Fluorine | | |
| Carbonyl fluoride | PC-TWA | 5 mg/m3 | Occupational exposure limits for hazardous agents in the workplace - Chemical hazardous agents. |
| Carbonyl fluoride | PC-STEL | 10 mg/m3 | Occupational exposure limits for hazardous agents in the workplace - Chemical hazardous agents. |

**Components with other occupational exposure limits**

| Components | Value type | Value | Basis |
|---|---|---|---|
| Hydrofluoric acid | TWA | 0.5 ppm | USA. ACGIH Threshold Limit Values (TLV) |
| | Danger of cutaneous absorption<br>Expressed as :Fluorine | | |
| Hydrofluoric acid | C | 2 ppm | USA. ACGIH Threshold Limit Values (TLV) |
| | Danger of cutaneous absorption<br>Expressed as :Fluorine | | |
| Carbonyl fluoride | TWA | 2 ppm | USA. ACGIH Threshold Limit Values (TLV) |
| Carbonyl fluoride | STEL | 5 ppm | USA. ACGIH Threshold Limit Values (TLV) |

**8.2 Exposure controls**

**Control measures**

**Engineering measures**

- Provide local ventilation appropriate to the product decomposition risk (see section 10).
- Refer to protective measures listed in sections 7 and 8.
- Apply technical measures to comply with the occupational exposure limits.

**Individual protection measures**

**Respiratory protection**

- In case of insufficient ventilation, wear suitable respiratory equipment.
- Respirator with a dust filter
- In case of decomposition (see section 10), use an air breathing apparatus with face mask.
- Use only respiratory protection that conforms to international/ national standards.

**Hand protection**

- Wear protective gloves.

***Suitable material***

- Nitrile rubber
- PVC
- Neoprene gloves
- butyl-rubber

- Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

**Eye protection**

- Safety goggles

**Skin and body protection**

- Wear work overall and safety shoes.

**Hygiene measures**

- Ensure that eyewash stations and safety showers are close to the workstation location.
- When using do not eat, drink or smoke.
- Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure controls**

- Dispose of rinse water in accordance with local and national regulations.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

| | |
|---|---|
| **Physical state** | solid |
| **Form** | pellets |
| **Colour** | translucent<br>white |
| **Odour** | odourless |
| **Odour Threshold** | Not applicable |
| **Melting point/freezing point** | Melting point/ range: 170 - 175 °C |
| **Initial boiling point and boiling range** | Boiling point/boiling range:<br>Not applicable |
| **Flammability (solid, gas)** | The product is not flammable. |
| **Flammability (liquids)** | Not applicable |
| **Flammability/Explosive limit** | Lower flammability/explosion limit:<br>Not applicable<br><br>Upper flammability/explosion limit:<br>Not applicable |
| **Flash point** | The product is not flammable. |
| **Auto-ignition temperature** | No data available |
| **Decomposition temperature** | > 290 °C |

| | |
|---|---|
| **pH** | Not applicable |
| **Viscosity** | Viscosity, dynamic : Not applicable |
| **Solubility** | Water solubility:<br>insoluble<br><br>Solubility in other solvents:<br>Dimethylformamide: soluble<br><br>Dimethyl sulphoxide: soluble<br><br>N,N-dimethylacetamide: soluble |
| **Partition coefficient: n-octanol/water** | Not applicable |
| **Vapour pressure** | Not applicable |
| **Density** | 1.7 - 1.8 g/cm3 |
| **Relative density** | No data available |
| **Relative vapor density** | Not applicable |
| **Particle characteristics** | Particle size:<br>> 2,000 µm |
| **Evaporation rate (Butylacetate = 1)** | Not applicable |

**9.2 Other information**

| | |
|---|---|
| **Oxidizing properties** | Not considered as oxidizing |
| **Self-ignition** | Not applicable |
| **Impact sensitivity** | Not explosive |

## SECTION 10: Stability and reactivity

**10.1 Reactivity**

- No dangerous reaction known under conditions of normal use.

**10.2 Chemical stability**

- Stable under recommended storage conditions.

**10.3 Possibility of hazardous reactions**

- Under certain conditions, small dust-particles from the product may form flammable and explosive mixtures with the air.

**10.4 Conditions to avoid**

- To avoid thermal decomposition, do not overheat.
- The decomposition is promoted at high temperature by silica (glass fibers, etc.), boron, and titanium dioxide.
- Keep away from flames and sparks.

**10.5 Incompatible materials**

- Alkali metals (molten form)
- Finely divided aluminium
- silver
- Powdered metals
- Strong bases
- Esters
- Ketones
- Silica, boron, and titanium dioxide at high temperature

### 10.6 Hazardous decomposition products

- Gaseous hydrogen fluoride (HF).
- Fluorophosgene
- Particulates of carbon
- Carbon oxides
- Other hazardous decomposition products may be formed.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

**Acute toxicity**

**Acute oral toxicity**

| | |
|---|---|
| Polyvinylidene fluoride resin | LD50 : > 2,000 mg/kg - Mouse<br>Not classified as hazardous for acute oral toxicity according to GHS.<br>Published data |
| **Acute inhalation toxicity** | No data available |
| **Acute dermal toxicity** | No data available |
| **Acute toxicity (other routes of administration)** | No data available |

**Skin corrosion/irritation**

| | |
|---|---|
| Polyvinylidene fluoride resin | No data available |

**Serious eye damage/eye irritation**

| | |
|---|---|
| Polyvinylidene fluoride resin | Dust contact with the eyes can lead to mechanical irritation. |
| **Respiratory or skin sensitisation** | No data available |

**Mutagenicity**

**Genotoxicity in vitro**

| | |
|---|---|
| Polyvinylidene fluoride resin | Ames test<br>with and without metabolic activation<br><br>negative<br>Method: OECD Test Guideline 471<br>Published data<br>Chromosome aberration test in vitro<br>Strain: Chinese hamster lung cells<br>with and without metabolic activation<br><br>negative<br>Method: according to a standardised method<br>Published data |
| **Genotoxicity in vivo** | No data available |
| **Carcinogenicity** | No data available |

**Toxicity for reproduction and development**

**Toxicity to reproduction/Fertility**

| | |
|---|---|
| Polyvinylidene fluoride resin | Reproduction/developmental toxicity screening test - Rat, male and female, Oral<br>General Toxicity - Parent NOAEL: 1,000 mg/kg bw/day<br>General Toxicity F1 NOAEL: 1,000 mg/kg bw/day<br>Fertility NOAEL Parent: 1,000 mg/kg bw/day<br>OECD Test Guideline 422<br>Gavage, No toxicity to reproduction, Published data |

**Developmental Toxicity/Teratogenicity**

| | |
|---|---|
| Polyvinylidene fluoride resin | Reproduction/developmental toxicity screening test - Rat, male and female, Oral<br>General Toxicity Maternal NOAEL: 1,000 mg/kg bw/day<br>Teratogenicity NOAEL F1:1,000mg/kg bw/day<br>Method: OECD Test Guideline 422<br>Gavage, No effect observed on development, Published data |

**STOT**

**STOT - single exposure**

| | |
|---|---|
| Polyvinylidene fluoride resin | The substance or mixture is not classified as specific target organ toxicant, single exposure. |

**STOT - repeated exposure**

| | |
|---|---|
| Polyvinylidene fluoride resin | The substance or mixture is not considered to cause damage to organs through prolonged or repeated exposure. |
| Polyvinylidene fluoride resin | Oral 28-day - Rat , male and female<br>NOAEL: 1000 mg/kg<br>Method: OECD Test Guideline 422<br>Gavage<br>No adverse effect has been observed in toxicity tests by repeated administration<br>Published data |
| **Experience with human exposure** | No data available |

**CMR effects**

**Mutagenicity**

| | |
|---|---|
| Polyvinylidene fluoride resin | In vitro tests did not show mutagenic effects |

**Reproductive toxicity**

| | |
|---|---|
| Polyvinylidene fluoride resin | Not classified as toxic for the reproduction (fertility and/or development) according to GHS criteria |
| **Aspiration toxicity** | No data available |
| **Further information** | Description of possible hazardous to health effects is based on experience and/or toxicological characteristics of several components.<br>Product dust may be irritating to eyes, skin and respiratory system.<br>The thermal decomposition vapours of fluorinated polymers may cause polymer fume fever with flu-like symptoms in humans, especially when smoking contaminated tobacco.<br>The exposure to decomposition products causes severe irritation of eyes, skin and mucous membranes. |

## SECTION 12: Ecological information

### 12.1 Toxicity

**Aquatic Compartment**

| | |
|---|---|
| **Acute toxicity to fish** | No data available |
| **Acute toxicity to daphnia and other aquatic invertebrates** | No data available |
| **Toxicity to aquatic plants** | No data available |
| **Toxicity to microorganisms** | No data available |

| | |
|---|---|
| **Chronic toxicity to fish** | No data available |
| **Chronic toxicity to daphnia and other aquatic invertebrates** | No data available |

**12.2 Persistence and degradability**

| | |
|---|---|
| **Abiotic degradation** | No data available |
| **Physical- and photo-chemical elimination** | No data available |

**Biodegradation**

**Biodegradability**

| | |
|---|---|
| Polyvinylidene fluoride resin | Not biodegradable<br>Expert judgement<br>According to the high molecular weight of the polymer, diffusion through biological membranes is impossible. |

**Degradability assessment**

| | |
|---|---|
| Polyvinylidene fluoride resin | The product is not considered to be rapidly degradable in the environment |

**12.3 Bioaccumulative potential**

| | |
|---|---|
| **Partition coefficient: n-octanol/water** | No data available |
| **Bioconcentration factor (BCF)** | No data available |

**12.4 Mobility in soil**

| | |
|---|---|
| **Adsorption potential (Koc)** | No data available |
| **Known distribution to environmental compartments** | No data available |

**12.5 Results of PBT and vPvB assessment**

| | |
|---|---|
| Polyvinylidene fluoride resin | Not persistent, bioaccumulative, and toxic (PBT).<br>Not very persistent and very bioaccumulative (vPvB). |

**12.6 Other adverse effects**

**Ecotoxicity assessment**

**Short-term (acute) aquatic hazard**

| | |
|---|---|
| Polyvinylidene fluoride resin | Not classified due to lack of data. |

**Long-term (chronic) aquatic hazard**

| | |
|---|---|
| Polyvinylidene fluoride resin | Not classified due to lack of data. |
| **Remarks** | Ecological injuries are not known or expected under normal use. |

## SECTION 13: Disposal considerations

**13.1 Waste treatment methods**

**Product Disposal**

- Can be incinerated, when in compliance with local regulations.
- The incinerator must be equipped with a system for the neutralisation or recovery of HF.

- Dispose of in accordance with local regulations.

**Advice on cleaning and disposal of packaging**

- Empty containers can be landfilled, when in accordance with the local regulations.

## SECTION 14: Transport information

**CN_DG**
not regulated

**IMDG**
not regulated

**IATA**
not regulated

Note: The above regulatory prescriptions are those valid on the date of publication of this sheet. Given the possible evolution of transport regulations for hazardous materials, it would be advisable to check their validity with your sales office.

## SECTION 15: Regulatory information

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

**Following last version of regulations are applicable for the chemical classification, SDS and label:**

- Specification for classification and labelling of chemicals, GB 30000 series standard
- General rules for preparation of precautionary label for chemicals, GB 15258
- Safety data sheet for chemical products—Content and order of sections, GB/T 16483
- GB/T 17519 Guidance on the compilation of safety data sheet for chemical products
- Decree No. 591 of the State Council of the People's Republic of China:Regulations on the Control over Safety of Hazardous Chemicals
- List of dangerous goods GB 12268
- Classification and code of dangerous goods GB 6944

**Other regulations**

- Law on the Prevention and Control of Occupational Diseases

**Notification status**

| Inventory Information | Status |
|---|---|
| United States TSCA Inventory | - Listed as active on the TSCA inventory |
| Canadian Domestic Substances List (DSL) | - Listed on Inventory |
| Australian Inventory of Industrial Chemicals (AIIC) | - Listed on Inventory |
| New Zealand. Inventory of Chemical Substances | - Listed on Inventory |
| Japan. CSCL - Inventory of Existing and New Chemical Substances | - Listed on Inventory |
| Japan. ISHL - Inventory of Chemical Substances | - Listed on Inventory |
| Korea. Korean Existing Chemicals Inventory (KECI) | - Listed on Inventory |
| China. Inventory of Existing Chemical Substances in China (IECSC) | - Listed on Inventory |

| | |
|---|---|
| Taiwan. Chemical Substance Inventory (TCSI) | - Listed on Inventory |
| Philippines Inventory of Chemicals and Chemical Substances (PICCS) | - Listed on Inventory |
| EU. European Registration, Evaluation, Authorization and Restriction of Chemical (REACH) | - If product is purchased from Syensqo in Europe it is in compliance with REACH, if not please contact the supplier. |

## SECTION 16: Other information

**Key or legend to abbreviations and acronyms used in the safety data sheet**

- C: Ceiling limit
- CN BEI: China. Biological Occupational Exposure Indices
- MAC: Maximum allowable concentration
- PC-STEL: Permissible concentration - short term exposure limit
- PC-TWA: Permissible concentration - time weighted average
- STEL: Short-term exposure limit
- TWA: 8-hour, time-weighted average
- ADR: European Agreement on International Carriage of Dangerous Goods by Road.
- ADN: European Agreement on the International Carriage of Dangerous Goods by Inland Waterways.
- RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
- IATA: International Air Transport Association.
- ICAO-TI: Technical Instructions for Safe Transport of Dangerous Goods by Air.
- IMDG: International Maritime Dangerous Goods.
- TWA: Time weighted average
- ATE: Estimated value of acute toxicity
- EC: European Community number
- CAS: Chemical Abstracts Service.
- LD50: Substance that causes 50% (half) death in the test animals group (Median Fatal Dose).
- LC50: Substance concentration causing 50% (half) death in the test animals group.
- EC50: Effective Concentration of the substance causing the maximum of 50%.
- PBT: Persistent, Bioaccumulative and Toxic substance.
- vPvB: Very Persistent and Very Bioaccumulative.
- GHS/CLP/SEA: Classification, labeling, packaging regulation
- DNEL: Derived No Effect Level
- PNEC: Predicted No Effect Concentration
- STOT: Specific Target Organ Toxicity

**Not all acronyms listed above are referenced in this SDS.**

**Further information**

- Distribute new edition to clients

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. Such information is only given as a guidance to help the user handle, use, process, store, transport, dispose and release the product in satisfactory safety conditions and is not to be considered as a warranty or quality specification. It should be used in conjunction with technical sheets but do not replace them. Thus, the information only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in any other manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.