



# Material Safety Data Sheet

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**Section 1: Identification of the substance and manufacturer**

Trade name **DAI-EL G-603, G-621, G-671**  
: Semi-compound (curing agent and curing accelerator are added)  
Synonym 1-Propene, 1,1,2,3,3,3-hexafluoro-polymer with 1,1-difluoroethene and tetrafluoroethene  
Fluoroelastomer  
Application Seal material, O-ring with chemical and heat resistance

## Company identification

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**Section 2: Composition / information on ingredients**

| Component       | CAS RN     | mass %       | EINECS        | Symbol | R-phrases |
|-----------------|------------|--------------|---------------|--------|-----------|
| Fluoroelastomer | 25190-89-0 | confidential | not available | n.ap   | n.ap      |
| DBU-B           | 49663-94-7 | confidential | 2564196       | n.ap   | n.ap      |
| Bis phenol AF   | 1478-61-1  | confidential | 2160367       | Xi     | R41       |

**Section 3: Hazard identification**

Skin Burns from contact with molten material. Signs/symptoms may include burning pain, red and swollen skin, and blisters.

**Danger!** Vapors and fumes liberated during hot processing with this material may cause flu-like symptoms (chills, fever and , sometimes, cough) that may not occur until several hours after exposure and typically pass within about 36 to 48 hours.

HAZARDOUS DECOMPOSITION PRODUCTS:

Carbon Monoxide and Carbon Dioxide, Hydrogen Fluoride (HF), Perfluoroisobutylene (PFIB), Carbonyl Fluoride (COF<sub>2</sub>), Toxic Vapors, Gases or Particulates.

**Section 4: First aid measures**

Inhalation When thermal decomposition occur, fresh air. Rest. Get medical aid.  
Skin Contact Rinse and then wash skin with water and soap. If skin contact with hot material occurs: DO NOT ATTEMPT TO REMOVE MOLTEN MATERIAL. Immediately flush affected area with plenty of cold water and cover with a clean dressing. Have burn treated by a physician.  
Eyes Contact First rinse with plenty of water for at least 5 minutes (remove contact lenses if easily possible), then take to a doctor.  
Ingestion Rinse mouth. Get medical attention.

**SECTION 5: Fire-fighting measures**

|                     |   |
|---------------------|---|
| General Information | Non-flammable.<br>Wear self-contained breathing apparatus (SCBA) and full protective gear. Use water spray to cool fire exposed containers. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. |
| Extinguishing Media | Powder, alcohol-resistant foam, carbon dioxide.   |
| Flash Point         | none  |
| Autoignition Temp   | no data   |
| Explosion Limits    | Lower: none Upper: none   |
| Combustion products | These products are harmful CO, CO <sub>2</sub> , halogenated compounds.<br>WARNING: TOXIC FLUORINE COMPOUNDS EVOLVED IN FIRE.   |

**SECTION 6: Accidental release measures**

Collect spilled material and separate from other waste. Use proper personal protective equipment as indicated in Section 8.

**SECTION 7: Handling and storage****HANDLING**

Close containers after each use.

Exposure to toxic gases through inhalation can occur if smoking tobacco becomes contaminated by this material. Therefore, do not smoke in the work areas and wash hands and face after handling in order to avoid transfer of the material onto smoking tobacco.

**STORAGE**

Keep away from heat, steam or sunlight.

Keep containers tightly closed when not in use.

**SECTION 8: Exposure controls / personal protection**Engineering Controls:

Use local exhaust ventilation facilities. When molding or curing.

If user operations generate fume, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Exposure Limits

|                  |   |
|------------------|---|
| HF               | TLV (as F): 0.5 ppm as TWA, 2 ppm as STEL; Ceiling (skin) (ACGIH 2005)<br>MAK: 3ppm; 2.5mg/m <sup>3</sup> , BAT 7mg/g creatinine (1999)<br>MAK as STEL: 6ppm, 5mg/m <sup>3</sup> (1999) |
| COF <sub>2</sub> | TLV: 2ppm; 5.4mg/m <sup>3</sup> (as TWA);<br>5ppm; 13mg/m <sup>3</sup> (as STEL) (ACGIH 1997)   |
| PFIB             | TLV: 0.01ppm; 0.082 mg/m <sup>3</sup> (ceiling values) (ACGIH 1993-1994).   |

Personal Protective Equipment

Wear safety glasses with side shields.

Wear appropriate gloves, when handling this material to prevent thermal burns.

Wear protective clothing and boots as required.

If thermal decomposition occurs:

Mask for acidic gases must be used to avoid inhalation of the product.

**SECTION 9: Physical and chemical properties**

|                     |   |
|---------------------|---|
| Appearance          | White to light yellow                                   |
| Dimension           | Sheet (350x400x50)                                      |
| Odor                | No  |
| Boiling point       | Not applicable  |
| Melting point       | Not applicable  |
| Specific gravity    | 1.85 (H <sub>2</sub> O=1 at 25 C)                       |
| Vapor pressure      | Not applicable  |
| Viscosity           | Not applicable  |
| Solubility in water | Insoluble   |
| Solubility          | Soluble in ketones, esters, ethers and perfluoroalkanes |

**SECTION 10: Stability and reactivity**

|                                  |   |
|----------------------------------|---|
| Chemical Stability               | Stable under normal temperatures and pressures.                           |
| Conditions to Avoid              | Ignition sources, excess heat.  |
| Incompatibility                  | Finely divided metallic powder or filler, such as aluminum and magnesium. |
| Hazardous Decomposition Products | Carbon monoxide, carbon dioxide, HF, COF <sub>2</sub> and PFIB            |

**SECTION 11: Toxicological information**

When heated for a long time, a very small quantity of hydrogen fluoride (HF), carbonyl fluoride (COF<sub>2</sub>) Perfluoroisobutylene (PFIB) is generated. Further the higher temperature, the larger it will increase. Follow safe industrial hygiene practices and wear proper protective equipment when handling this compound.

(as HF or COF<sub>2</sub>)

Burning sensation. Cough. Dizziness. Headache. Laboured breathing. Nausea. Shortness of breath. Sore throat. Vomiting. Symptoms may be delayed. Inhalation of this gas or vapour may cause lung oedema.

(as PFIB)

The substance irritates the respiratory tract. Inhalation of this gas may cause lung oedema. Exposure may result in death. The effects may be delayed. Medical observation is indicated.

**SECTION 12: Ecological information**

Exotoxicity is expected to be low based on the near zero water solubility of the polymer. Material is considered inert and not expected to be biodegradable or toxic.

**SECTION 13: Disposal considerations**

Dispose of in compliance with Federal, state and local government regulations. Usually considered an inert packaging material that can be recycled or landfilled. Incineration is not a preferred disposal method because of the possible formation of hydrogen fluoride.

**SECTION 14: Transport information**

|              |                               |
|--------------|-------------------------------|
| Hazard Class | not regulated                 |
| UN Number    | not applicable, none assigned |

**SECTION 15: Regulatory information**

NFPA-HMIS RATINGS (SCALE 0-4): HEALTH=1, FIRE=1, REACTIVITY=0

European Labeling in Accordance with EC Directives

|                |  |
|----------------|--|
| Hazard Symbols | -  |
| Risk Phrases   | -  |
| Safety Phrases | 15: Keep away from heat.<br>20/21: When using, do not eat, drink or smoke. |

**SECTION 16: Other information**

|                              |  |
|------------------------------|--|
| TSCA Chemical Inventory      | Except for DBU-B. DAIKIN America Inc. submitted LVE. |
| Korea Inventory of chemicals | All components are listed                            |
| Japan (ENCS)                 | All components are listed                            |

ICSC: International Chemical Safety Cards

|                      | ICSC; # | RTECS#    | EC No        |
|----------------------|---------|-----------|--------------|
| Hydroquinone         | 0166    | MX3500000 | 604-005-00-4 |
| Hydrogen fluoride    | 0283    | MW7875000 | 009-002-00-6 |
| Carbonyl fluoride    | 0633    | FG6125000 |              |
| Perfluoroisobutylene | 1216    | UD1800000 |              |

**Safety Data Sheet according to EC Directive 93/112**

This product is not designed, manufactured, or intended for medical uses, including implantation to the body or other applications in direct contact with body fluids or tissues.  
Do not use for non-industrial applications.

The information in this Material Safety Data Sheet (MSDS) is believed to be correct as of the date issued. The information does not relate to use in combination with any other material or in any process.

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