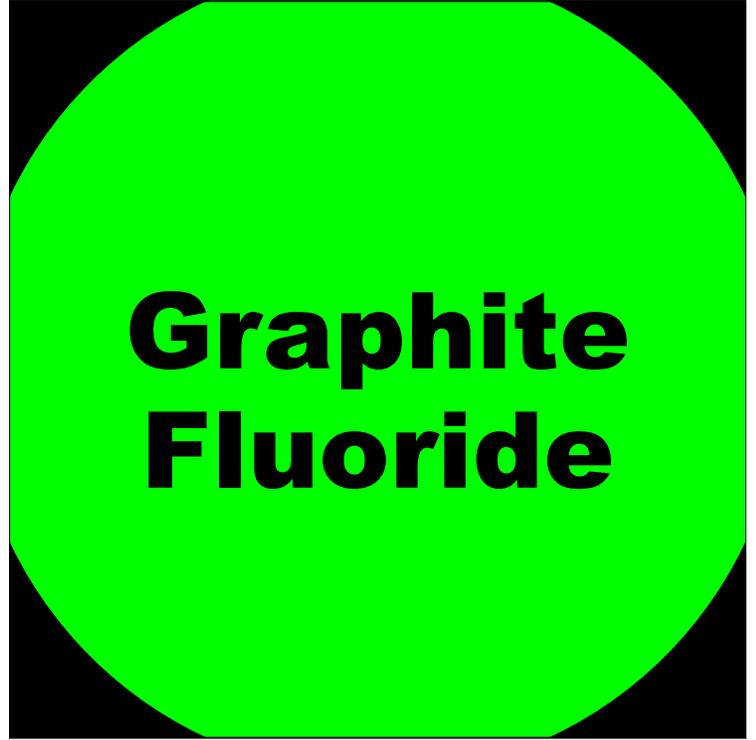


Product Information

Daikin Fluorochemicals



Introduction

Graphite fluoride is a gray-white powder which is obtained from the fluoridization of carbon. It is a compound with excellent properties that combine the lubrication properties of carbon (graphite) and the low frictional coefficient of fluorine compounds.

Graphite fluoride has the highest lubrication and water repellency of any currently-known compound, and also has excellent chemical resistance. It holds a great deal of promise for use in a wide range of industrial applications.

1. Properties

Graphite carbon has the following properties.

Grade	CF-GM
Chemical formula	(CF) _n
True specific gravity	Approx. 2
Apparent density	0.6
Average particle diameter	Approx. 20 μ
Appearance	Fine gray-white powder

2. Features

2-1 Lubrication

Graphite fluoride provides a greater lubrication stability than carbon and molybdenum disulfide, even under harsh conditions involving high temperatures, high loads and corrosive environments.

2-2 Acid and alkali resistance

Graphite fluoride is stable at normal temperature, and only absorbs small amounts of concentrated sulfuric acid and concentrated alkalis even when heated. However, it reacts comparatively easily with amines.

2-3 Solvent resistance

Graphite fluoride resists absorption of a wide range of solvents.

2-4 Water repellency

Graphite fluoride has excellent water repellency, and has a contact angle of 120°.

2-5 Dielectric resistance

Carbon is electrically conductive because of the π electrons in its layers. However, when it is combined with fluorine, covalent bonds are formed which make the carbon lose its conductivity.

2-6 Heat resistance

Graphite fluoride has good heat resistance and does not decompose at temperatures of up to 400°C.

3. Applications

Examples of applications for graphite fluoride are given below. They center mainly on lubrication applications, but the product is also currently being developed for other applications such as oxidizing agents.

- Lubricating oil additive

By adding graphite fluoride to lubricating oils in proportions ranging from 0.1 to several percent, the seizure load of the lubricating oil can be greatly increased.

- Grease additive

Adding graphite fluoride to grease makes it possible to use the grease under higher temperatures and higher loads.

- Paint additive

If graphite fluoride is added to paint, the lubrication of the paint film can greatly improved, allowing the paint to form a high-performance lubrication coating. Research is currently being undertaken to develop applications which are showing great promise in the automobile industry.

4. Cautions on Handling

Graphite fluoride is non-volatile and stable at normal handling temperatures, but at temperatures of approximately 400 °C or higher it starts releasing minute quantities of gas. Therefore, adequate ventilation must be provided during use.

In addition, smoking tobacco when your hands have been exposed to the powder may cause the inhalation of toxic gases, so be sure to wash the hands to prevent the transfer of graphite fluoride to the tobacco.

5. Packaging

CF-GM	25kg
CF-GL	1kg, 10kg

- Molding material additive
As an example, if graphite fluoride is added to the carbon which is used in sliding machine parts, the seizure limit PV values of these parts can be increased. It can also be added directly to plastic molded products to change the surface characteristics of such products.
- As a lubricant
Graphite fluoride can be use as a lubricant for abrasive tools such as diamond grinders, silicon carbide grinders and optical lens grinders.
- As an active material in batteries
Batteries with graphite fluoride anodes and lithium cathodes have been developed and put to practical use.

Furthermore, residual graphite fluoride powder must never be incinerated, as doing so will result in the generation of toxic gases. Waste powder should be disposed of by a licensed waste treatment specialist by a method such as burial. (Be sure to read the Material Safety Data Sheet (MSDS) carefully before using this product.)

●DAIKIN INDUSTRIES LTD. and DAIKIN AMERICA, INC. have obtained the ISO 14001* certification which is an International Standard concerning environmental management systems in the factories where we manufacture our fluorochemicals.

* ISO 14001 is a standard established by the ISO (International Organization for Standardization) which applies to environmental preservation activities. Activities, products and services carried out and provided by our fluorochemicals plants have been certified as being environmentally sound by an internationally recognized certification body.

●The information contained herein represents examples of actual measurement data, and examples of use given are not guarantees of results to be obtained by using this product in the way mentioned.

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