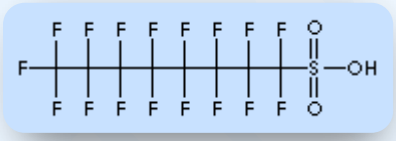
PERFLUOROOCTANE SULFONIC ACID

SYNONYMS

1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-Heptadecafluoro-1-octanesulfonic acid; 1-Perfluorooctanesulfonic acid; Heptadecafluoro-1-octanesulfonic acid; PFOS; Perfluorooctane sulfonate; Perfluorooctane sulfonic acid; Perfluorooctylsulfonic acid;

PRODUCT IDENTIFICATION

CAS RN	1763-23-1; 132324-11-9
EINECS RN	217-179-8
FORMULA	$C_8HF_{17}O_3S$
MOL WEIGHT	500.13



PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	White to yellowish crystalline powder
MELTING POINT	
BOILING POINT	
DENSITY	1.25
SOLUBILITY IN WATER	520 mg/l
pH	
VAPOR DENSITY	
REFRACTIVE INDEX	
FLASH POINT	

APPLICATION

Perfluoroalkyl sulphonates (PFAS) are a group of perfluorinated substances in which one sulphonate group is bonded to the perfluorinated carbon chain. Perfluorooctane sulphonate (PFOS) belongs to this group of compounds. PFAS may also be included in other chemical compounds, e.g. sulphonamides, and polymers, e.g. acrylate polymers, and may be formed when these compounds degrade. PFOS, for example, is a degradation product from different types of PFOS derivatives (PFOS related compounds), of which approximately 100-200 have been identified. (source: http://www.kemi.se/)

The strong electronegativity of the fluoroalkyl chain drives fluorosurfactants to the liquid air interface, resulting in dramatic reductions in surface tension compared with hydrocarbon surfactants that concentrate at condensed phases. Given the nature of the fluoroalkyl tail, fluorosurfactants function well as wetting/leveling agents in organic, high solids, non-aqueous or other oily phase systems, as well as in aqueous systems. Fluorosurfactants differ by the fluoroalkyl chain distribution, and more importantly by the solubilizing head. http://www.masonsurfactants.com/Products/Fluorosurfactant.htm

Zonyl® Fluorosurfactants for wetting
Fluorosurfactants are effective wetting agents in situations where conventional surfactants fail. These include strongly alkaline or acid media. In applications such as soldering flux, fluorinated surfactants function well as low-foaming wetting agents.
Zonyl® Fluorosurfactants for coatings
Fluorosurfactants impart self-leveling properties for even coating thickness. Fluorosurfactants also improve wetting and leveling in photoresist and conformal coatings.
Zonyl® Fluorosurfactants for foam
Amphoteric fluorinated surfactants, such as Zonyl® FS-500 are foaming agents in aqueous media. On the other hand, nonionics, such as Zonyl® FSH and Zonyl® FSO are low foaming surfactants.
Zonyl® Fluorosurfactants for water break
Fluorinated surfactants facilitate wetting of hard surfaces and aid cleaning of low-energy surfaces such as polyethylene. They also promote rapid runoff of rinse solutions. (source: http://www.fm200.org/)

PERFLUOROOCTANE SULFONIC ACID

Modern high performance fire fighting foams used against fires of flammable (Class B) liquids have traditionally been based on low concentrations of fluorosurfactant additives. Fluorosurfactants gave these foams the ability to form thin, spreading films on surfaces of burning liquids, with the films providing significant resistance to diffusion of flammable vapours (i.e., sealability). These two properties, spreading and sealability, afforded fluorosurfactant-based foams fast extinguishment and long burn back characteristics. The fluorosurfactants has typically included perfluorooctyl sulphonate (PFOS) derivatives, perfluorooctanoic acid (PFOA) derivatives and telomer compounds. The perfluorinated entity of the molecule equipped fluorosurfactants with the stability to survive in a harsh fire environment. These same characteristics gave these molecules unexpected long-term stability in the receiving environment. As a consequence, there is growing interest in synthetic foams that do not contain fluorosurfactants and are readily biodegradable. (source: http://www.nfpa.org/)

Abbreviations of perfluorinated compounds

STABILITY AND REACTIVITY

STABILITY	Stable under normal conditions.
CONDITIONS OF INSTABILITY	Incompatible materials, active metals, strong oxidizing agents, strong alkali. Excess heat.
INCOMPATIBLE MATERIALS	Strong oxidising agents. Strong acids.
DECOMPOSITION PRODUCTS	Carbon monoxide, carbon dioxide, hydrogen fluoride, bromine, oxides of sulfur, and carbonyl fluoride
POLYMERIZATION	Will not occur

SAFETY

HAZARD NOTES	Causes burns. Moisture sensitive. Corrosive. Harmful if swallowed. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
EYE	Causes eye burns.
SKIN	Causes skin burns.
INGESTION	May cause severe and permanent damage to the digestive tract. Causes gastrointestinal tract burns.
INHALATION	Causes chemical burns to the respiratory tract.
CHRONIC	Contains fluorine which may generate fluoride ion under certain conditions of decomposition or metabolism, may cause nausea, vomiting, labored breathing, hypocalcaemia, deterioration of bone and tooth structure, kidney and liver damage.
NFPA RATING	Health: , Flammability:0 , Reactivity:0

SALES SPECIFICATION

APPEARANCE	White to yellowish crystalline powder
ASSAY	98.0% min

TRANSPORT & REGULATORY INFORMATION

UN NO.	3261
HAZARD CLASS	8
PACKING GROUP	II
HAZARD SYMBOL	C, N
RISK PHRASES	22-34-51/53-57
SAFETY PHRASES	26-36/37/39-45-61

PERFLUOROOCTANE SULFONIC ACID

PACKING

PRICE

OTHER INFORMATION

NOTE