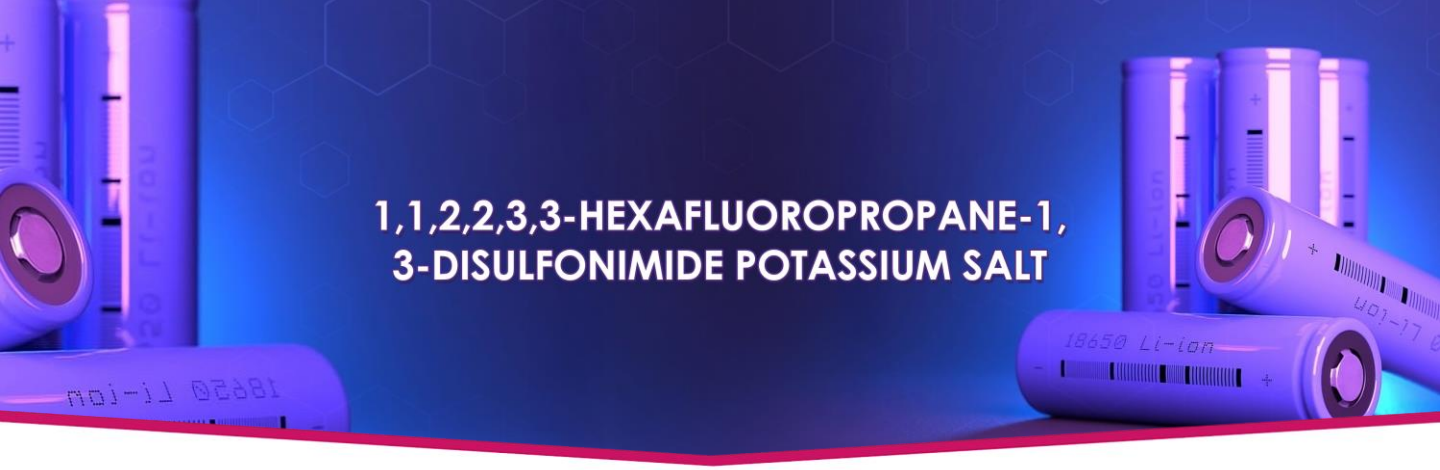


PRODUCT IN FOCUS

EXSYN®
ESSENTIAL CHEMISTRY

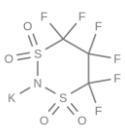
1,1,2,2,3,3-Hexafluoropropane-1,3-disulfonimide Potassium Salt

INTRODUCTION

Commonly known as potassium bis(fluorosulfonyl)imide (KFSI), the compound has a three-carbon backbone bearing six fluorine atoms and two sulfonimide (-SO_2F) groups. The molecule's architecture lends it both high chemical stability and useful reactivity.
Because of its excellent ionic conductivity and thermal / electrochemical stability, it finds use in advanced electrolyte formulations—for example in lithium-ion and next-generation batteries, in ionic liquids, and in other electrochemical systems.

Manufacture

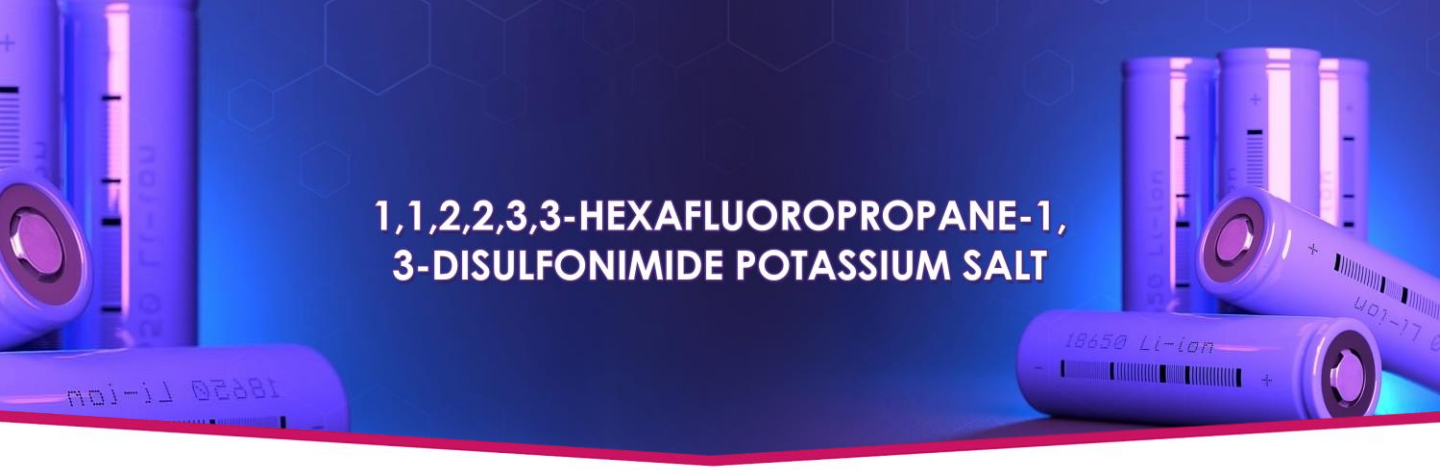
The synthesis consists of six steps, beginning with a nickel-catalyzed ring opening and di-iodination of 2,2,3-trifluoro-3-(trifluoromethyl)oxirane, followed sequentially by di-sulfonation, di-chlorination, di-fluorination, cyclic amide formation, and finally conversion to the potassium salt through treatment of 1,3-dihydroperfluoropropane bisulfonimide ammonium salt with potassium *tert*-butoxide.

Synonyms	Potassium;4,4,5,5,6,6-hexafluoro-1λ6,3λ6-dithia-2-azanidacyclohexane 1,1,3,3-tetraoxide
CAS no.	588668-97-7
EINECS no.	224-335-9
Molecular formula	$C_3F_6KNO_4S_2$
Molecular weight	331.24 g/mol
Structure	

Applications

KFSI is a highly specialized compound known for its unique properties and versatility in various applications

- **Electrolyte in Batteries**: It serves as an effective electrolyte salt in lithium-ion & potassium ion systems, enhancing their performance and longevity. Its excellent thermal stability and electrochemical properties make it an ideal choice for energy storage systems, particularly in high-performance applications such as electric vehicles and renewable energy storage.
- **In Photoresists / Microelectronics:** Component in photoacid generators, supporting microfabrication and lithography processes.
- **Solid Polymer Electrolyte :** When blended with polymers, it boosts thermal stability and enables the creation of advanced fluorinated materials and specialty chemicals, essential to next-generation electronics and aerospace solutions.
- **Fluorinated Surfactants:** Used in the formulation of fluorinated surfactants, which are valuable in various cleaning products and coatings due to their excellent wetting properties and resistance to dirt and stains.
- In preparation of graphite intercalation compounds (GICs) containing the cyclo hexafluoropropane-1,3-bis(sulfonyl)amide anion.



PRODUCT IN FOCUS

EXSYN®
ESSENTIAL CHEMISTRY

SPECIFICATIONS

Test	Unit	Specification
Appearance	-	White to almost white powder
Water Content	%	Max 1.0
Purity	% Area	Min 95.0

STORAGE & PRECAUTION
Store at ambient conditions

PACKING
Compliant with international regulations

REACH Status
Not registered

ExSyn offers 1,1,2,2,3,3-Hexafluoropropane-1,3-disulfonimide Potassium Salt on commercial scales and welcomes enquiries. No matter the quantity you need, our exceptional quality and service will make ExSyn your supplier of choice! If you need any additional information or SDS, please contact us.