

## Perfluoro(3-oxapent-4-ene)sulfonyl fluoride

### FSO<sub>2</sub>CF<sub>2</sub>CF<sub>2</sub>OCF=CF<sub>2</sub> (abb.; FSVE)

<b>Purity</b>	99%
<b>CAS Number</b>	29514-94-1
<b>Molecular Formula</b>	C <sub>4</sub> F <sub>8</sub> O <sub>3</sub> S
<b>Molecular Weight</b>	280.09

**Application**

1. Constituent of electrolyte resin for Pt catalyst ink for fuel cells. Copolymer of PDD and FSVE is excellent in poisoning to Pt catalyst and O<sub>2</sub> solubility compared to commercially available Nafion resin, and gives high current density. MD simulations (with Pt, S, and O distribution images) suggested that the low adhesion of the sulfonic acid monomer with a few ether bonds to the Pt catalyst and the O<sub>2</sub> solubility of the free volume of PDD were factors.

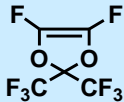
	Specific gravity	Mn	EW g/mol	O <sub>2</sub> conc. mmol/cm <sup>3</sup> atm <sup>1</sup>	Current density mA/cm <sup>2</sup>
Nafion D2020	2.04	2.8*10 <sup>4</sup>	952	3.6	3.8
PDD-FSVE copolym	1.93	3.9*10 <sup>4</sup>	735	6.8	7.7

Note-1 ; EW Polymer weight per -SO<sub>3</sub>H 1eq  
 Note-2 ; O<sub>2</sub>concentration and current density are at 90%RH\*80°C

**Nafion:**  $\left( \text{CF}_2\text{CF}_2 \right)_x \left( \text{CF}_2\text{CF} \left( \text{OCF}_2\text{CFOCF}_2\text{CF}_2\text{SO}_3\text{H} \right) \right)_y$

**PDD-FSVE:**  $\left( \text{FC} \left( \text{CF}_3 \right) \text{CF} \right)_m \left( \text{CF}_2\text{CF} \left( \text{OCF}_2\text{CF}_2\text{SO}_3\text{H} \right) \right)_n$

*Nature Communications, 12, 2021, article No.4956, Pat.Pub.2014-602776*

 ; PDD is also available from P&M-Invest

**Properties:**

<b>Appearance</b>	Liquid
<b>Boiling point, °C</b>	75-78
<b>Melting point, °C</b>	
<b>Flash point, °C</b>	

<b>Capacity:</b>	50kg/month
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<b>Packing:</b>	-
<b>UN, PG:</b>	-