



>>Entry Name: Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), 11Cl

ENTRY UNDER REVIEW

Synonym(s): Persulfuric acid. Hypersulfuric acid. Marshall's acid

CAS Registry Number: 13445-49-3

Related CAS Registry Numbers(s): 14149-70-3 15092-81-6

$\text{HO}(\text{O})_2\text{SOOS}(\text{O})_2\text{OH}$

Molecular Formula: $\text{H}_2\text{O}_8\text{S}_2$

Molecular Weight: 194.143

Accurate Mass: 193.91911

Percentage Composition: H 1.04%; O 65.93%; S 33.03%

Source/Synthesis: Synth. from $\text{HSO}_3\text{Cl} + \text{H}_2\text{O}_2$

Physical Description: Colourless monoclinic cryst., stable for weeks at 20°, smelling of ozone. Dec. into $\text{SO}_4^{(-)}$

Melting Point: Mp 65 dec.°

Solubility: Sol. H_2O (dec.); sol. EtOH; sl. sol. Et_2O

Hazard & Toxicity: Strong oxidant

>>Derivative: Di-Li salt

CAS Registry Number: 18697-38-6

Molecular Formula: $\text{Li}_2\text{O}_8\text{S}_2$

Molecular Weight: 206.009

Accurate Mass: 205.935466

Percentage Composition: Li 6.74%; O 62.13%; S 31.13%

Source/Synthesis: Synth. from $\text{Li}_2\text{CO}_3 + \text{BaS}_2\text{O}_8$ in H_2O at 0° for 1 h

Use/Importance: Used as an initiator for alkene polym. in aq. systems, esp. for manuf. of polyacrylonitrile and its copolymers; for etching printed circuit boards; bleaching. Oxidant in org. synth.

Physical Description: Sl. hygroscopic colourless solid + $1\text{H}_2\text{O}$

Solubility: Sol. H_2O (56 g per 100 cm^3)

Other Data: Dec. >120°. Dec. at 80-90°→ $\text{LiHSO}_4 + \text{O}_2$

Hazard & Toxicity: Strong oxidant. Irritating to eyes, skin, and mucous membranes. LD_{50} (rat, orl) 690 mg/kg

>>Derivative: Ba salt

CAS Registry Number: 14392-58-6

Molecular Formula: BaO_8S_2

Molecular Weight: 329.454

Accurate Mass: 329.808692

Percentage Composition: Ba 41.68%; O 38.85%; S 19.47%

Source/Synthesis: Synth. from $\text{Ba}(\text{OH})_2 \cdot 8\text{H}_2\text{O} + (\text{NH}_4)_2\text{S}_2\text{O}_8$ at r.t.

Physical Description: Colourless solid + $4\text{H}_2\text{O}$

Other Data: Dec. at 80° with loss of O_2

>>Derivative: Di- NH_4 salt

Synonym(s): Ammonium peroxydisulfate. Diammonium peroxodisulfate. Ammonium persulfate

CAS Registry Number: 7727-54-0

Molecular Formula: $\text{H}_8\text{N}_2\text{O}_8\text{S}_2$

Molecular Weight: 228.204

Accurate Mass: 227.972208

Percentage Composition: H 3.53%; N 12.28%; O 56.09%; S 28.10%

Source/Synthesis: Formed by anodic oxidation of $(\text{NH}_4)_2\text{SO}_4$

Use/Importance: Commercially available

Physical Description: Colourless monoclinic cryst. Stable as dry solid. Dec. in H_2O forming O_2

Aldrich: 21558-9

Fluka: 9920

Sigma: A7460

References: