

## Certificate of Analysis

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**Product Name:** Disulfiram

**Catalog No.:** 3807

**Batch No.:** 1

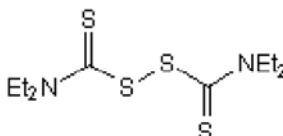
CAS Number: 97-77-8

EC Number: 202-607-8

IUPAC Name: *Bis*(diethylthiocarbamoyl)disulfide

### 1. PHYSICAL AND CHEMICAL PROPERTIES

**Batch Molecular Formula:** C<sub>10</sub>H<sub>20</sub>N<sub>2</sub>S<sub>4</sub>  
**Batch Molecular Weight:** 296.54  
**Physical Appearance:** Pale yellow solid  
**Solubility:** DMSO to 20 mM  
ethanol to 100 mM  
**Storage:** Store at +4°C  
**Batch Molecular Structure:**



### 2. ANALYTICAL DATA

**Melting Point:** At 70°C  
**<sup>1</sup>H NMR:** Consistent with structure

Caution - Not Fully Tested • Research Use Only • Not For Human or Veterinary Use

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**Batch No.:** 1

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EC Number: 202-607-8

IUPAC Name: Bis(diethylthiocarbonyl)disulfide

**Description:**

Inhibitor of aldehyde dehydrogenase that displays antialcoholism activity. Shown to reversibly stimulate Ca<sup>2+</sup>-ATPase activity and inhibit V-ATPase (EC<sub>50</sub> = 26 μM). Also inhibits expression of MMP-2 and MMP-9 and displays anti-invasive activity. Pyroptosis inhibitor; binds gasdermin D (GSDMD) and inhibits pore formation. Also inhibits SARS-CoV-2 main protease (M<sup>pro</sup>; IC<sub>50</sub> = 9.35 μM) and inhibits viral replication in Vero cells in vitro.

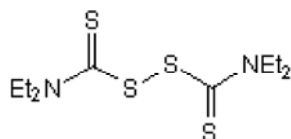
**Physical and Chemical Properties:**

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Batch Molecular Weight: 296.54

Physical Appearance: Pale yellow solid

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**Storage:** Store at +4°C

**Solubility & Usage Info:**

DMSO to 20 mM  
ethanol to 100 mM

**Stability and Solubility Advice:**

Some solutions can be difficult to obtain and can be encouraged by rapid stirring, sonication or gentle warming (in a 45-60°C water bath).

Information concerning product stability, particularly in solution, has rarely been reported and in most cases we can only offer a general guide. Our standard recommendations are:

**SOLIDS:** Provided storage is as stated on the product label and the vial is kept tightly sealed, the product can be stored for up to 6 months from date of receipt.

**SOLUTIONS:** We recommend that stock solutions, once prepared, are stored aliquoted in tightly sealed vials at -20°C or below and used within 1 month. Wherever possible solutions should be made up and used on the same day.

**References:**

**Jin et al** (2020) Structure of M<sup>pro</sup> from COVID-19 virus and discovery of its inhibitors. *Nature*. PMID: 3227248.

**Pandeya et al** (2019) Gasdermin D (GSDMD) as a new target for the treatment of infection. *Medchemcomm* **10** 660. PMID: 31191857.

**Fisher et al** (2010) The ethanol metabolite acetaldehyde increases paracellular drug permeability *in vitro* and oral bioavailability *in vivo*. *J.Pharmacol.Exp.Ther.* **332** 326. PMID: 19820208.

**Johnson et al** (2009) Identification of inhibitors of vacuolar proton-translocating ATPase pumps in yeast by high-throughput screening flow cytometry. *Anal.Biochem.* **398** 203. PMID: 20018164.

**Cho et al** (2007) Disulfiram suppresses invasive ability of osteosarcoma cells via the inhibition of MMP-2 and MMP-9 expression. *J.Biochem.Mol.Biol.* **40** 1069. PMID: 18047805.

**Starling et al** (1996) Stimulation of the Ca<sup>2+</sup>-ATPase of sarcoplasmic reticulum by disul. *Biochem.J.* **320** 101. PMID: 8947473.

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