

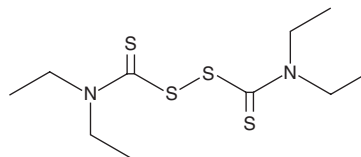
# PRODUCT INFORMATION



## Disulfiram

Item No. 15303

**CAS Registry No.:** 97-77-8  
**Formal Name:** N,N,N',N'-tetraethylthioperoxydicarbonic diamide  
**Synonyms:** NSC 25953, Tetraethylthiuram disulfide  
**MF:** C<sub>10</sub>H<sub>20</sub>N<sub>2</sub>S<sub>4</sub>  
**FW:** 296.5  
**Purity:** ≥95%  
**UV/Vis.:** λ<sub>max</sub>: 216 nm  
**Supplied as:** A crystalline solid  
**Storage:** Room temperature  
**Stability:** ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Laboratory Procedures

Disulfiram is supplied as a crystalline solid. A stock solution may be made by dissolving the disulfiram in the solvent of choice, which should be purged with an inert gas. Disulfiram is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of disulfiram in these solvents is approximately 5 mg/ml.

Disulfiram is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, disulfiram should first be dissolved in DMF and then diluted with the aqueous buffer of choice. Disulfiram has a solubility of approximately 0.2 mg/ml in a 1:4 solution of DMF:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

### Description

Disulfiram is a copper chelator and an irreversible inhibitor of aldehyde dehydrogenase (ALDH; IC<sub>50</sub> = 0.1 mM).<sup>1</sup> It increases the production of reactive oxygen species (ROS) when used at a concentration of 250 nM, as well as increases NF-κB protein levels and reduces neurosphere formation in U87MG glioblastoma multiforme cells at 1 μM.<sup>2</sup> Disulfiram (50 mg/kg per day) decreases tumor growth, inhibits proteasome activity, and induces apoptosis in an MDA-MB-231 breast cancer mouse xenograft model.<sup>3</sup> Formulations containing disulfiram have been used in the treatment of alcohol dependence.

### References

1. Kraemer, R.J. and Deitrich, R.A. Isolation and characterization of human liver aldehyde dehydrogenase. *J. Biol. Chem.* **243**(24), 6402-6408 (1968).
2. Liu, P., Brown, S., Goktug, T., et al. Cytotoxic effect of disulfiram/copper on human glioblastoma cell lines and ALDH-positive cancer-stem-like cells. *Br. J. Cancer* **107**(9), 1488-1497 (2012).
3. Chen, D., Cui, Q.C., Yang, H., et al. Disulfiram, a clinically used anti-alcoholism drug and copper-binding agent, induces apoptotic cell death in breast cancer cultures and xenografts via inhibition of the proteasome activity. *Cancer Res.* **66**(21), 10425-10433 (2006).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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