

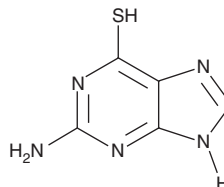
# PRODUCT INFORMATION



## 6-Thioguanine

Item No. 15774

**CAS Registry No.:** 154-42-7  
**Formal Name:** 2-amino-1,9-dihydro-6H-purine-6-thione  
**Synonyms:** NSC 752, NSC 76504, 6-TG  
**MF:** C<sub>5</sub>H<sub>5</sub>N<sub>5</sub>S  
**FW:** 167.2  
**Purity:** ≥95%  
**UV/Vis.:** λ<sub>max</sub>: 257, 347 nm  
**Supplied as:** A crystalline solid  
**Storage:** -20°C  
**Stability:** ≥4 years



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

### Laboratory Procedures

6-Thioguanine (6-TG) is supplied as a crystalline solid. A stock solution may be made by dissolving the 6-TG in the solvent of choice. 6-TG is soluble in 1 M sodium hydroxide at a concentration of approximately 50 mg/ml.

### Description

6-TG is a thio analog of the purine base guanine that incorporates into DNA during replication, inducing double-strand breaks that destabilize its structure and result in cytotoxicity.<sup>1,2</sup> Upon incorporation into DNA, 6-TG has been shown to disrupt cytosine methylation by DNA methyltransferases, interfering with the epigenetic pathway of gene regulation.<sup>3,4</sup> This compound has been used as a chemotherapeutic for acute leukemia and other types of cancer, including BRCA2-mutated tumors.<sup>5</sup>

### References

1. Bohon, J. and de los Santos, C.R. Effect of 6-thioguanine on the stability of duplex DNA. *Nucleic Acids Res.* **33(9)**, 2880-2886 (2005).
2. LePage, G.A. Incorporation of 6-thioguanine into nucleic acids. *Cancer Res.* **20**, 403-408 (1960).
3. Wang, H. and Wang, Y. 6-Thioguanine perturbs cytosine methylation at the CpG dinucleotide site by DNA methyltransferases *in vitro* and acts as a DNA demethylating agent *in vivo*. *Biochemistry* **48(10)**, 2290-2299 (2009).
4. Yuan, B., Zhang, J., Wang, H., *et al.* 6-Thioguanine reactivates epigenetically silenced genes in acute lymphoblastic leukemia cells by facilitating proteasome-mediated degradation of DNMT1. *Cancer Res.* **71(5)**, 1904-1911 (2011).
5. Issaeva, N., Thomas, H.D., Djureinovic, T., *et al.* 6-thioguanine selectively kills BRCA2-defective tumors and overcomes PARP inhibitor resistance. *Cancer Res.* **70(15)**, 6268-6276 (2010).

#### 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.

#### WARRANTY AND LIMITATION OF REMEDY

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