

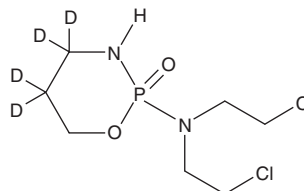
# PRODUCT INFORMATION



## Cyclophosphamide-d<sub>4</sub>

Item No. 22114

**CAS Registry No.:** 173547-45-0  
**Formal Name:** N,N-bis(2-chloroethyl)tetrahydro-4,5-d<sub>2</sub>-2H-1,3,2-oxazaphosphorin-4,5-d<sub>2</sub>-2-amine 2-oxide  
**MF:** C<sub>7</sub>H<sub>11</sub>Cl<sub>2</sub>D<sub>4</sub>N<sub>2</sub>O<sub>2</sub>P  
**FW:** 265.1  
**Chemical Purity:** ≥98% (Cyclophosphamide)  
**Deuterium Incorporation:** ≥99% deuterated forms (d<sub>1</sub>-d<sub>4</sub>); ≤1% d<sub>0</sub>  
**Supplied as:** A 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

Cyclophosphamide-d<sub>4</sub> is intended for use as an internal standard for the quantification of cyclophosphamide (Item No. 13849) by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated versus unlabeled).

Cyclophosphamide-d<sub>4</sub> is supplied as a solid. A stock solution may be made by dissolving the cyclophosphamide-d<sub>4</sub> in the solvent of choice, which should be purged with an inert gas. Cyclophosphamide-d<sub>4</sub> is slightly soluble in chloroform and methanol.

### Description

Cyclophosphamide is a nitrogen mustard alkylating agent.<sup>1</sup> It acts as a prodrug and is converted to the active metabolite phosphoramidate mustard (Item No. 34078) via 4-hydroxycyclophosphamide and aldophosphamide intermediates by cytochrome P450s (CYP450s) in the liver. Cyclophosphamide (50 mg/kg) induces the formation of DNA interstrand crosslinks in leukemia cells isolated from an L1210 leukemia mouse model.<sup>2</sup> It decreases the percentage of isolated peripheral blood lymphocytes expressing CD3, CD4, or CD19 when administered to mice at doses of 100 or 150 mg/kg.<sup>3</sup> Cyclophosphamide (200 mg/kg) induces nephrotoxicity and hepatotoxicity in rats.<sup>4</sup> It is teratogenic to embryos when administered to pregnant dams on day 11 of gestation at doses of 5, 10, or 20 mg/kg.<sup>5</sup> Formulations containing cyclophosphamide have been used in the treatment of cancer and autoimmune disorders.

### References

1. de Jonge, M.E., Huitema, A.D.R., Rodenhuis, S., et al. *Clin. Pharmacokinet.* **44**(11), 1135-1164 (2005).
2. DeNeve, W., Valeriote, F., Edelstein, M., et al. *Cancer Res.* **49**(13), 3452-3456 (1989).
3. Huyen, X.-H., Lin, Y.-P., Gao, T., et al. *Int. Immunopharmacol.* **11**(9), 1293-1297 (2011).
4. Caglayan, C., Temel, Y., Kandemir, F.M., et al. *Environ. Sci. Pollut. Res. Int.* **25**(21), 20968-20984 (2018).
5. Gibson, J.E. and Becker, B.A. Teratogenicity of structural truncates of cyclophosphamide in mice. *Teratology* **4**(2), 141-150 (1971).

#### 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

Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

Copyright Cayman Chemical Company, 12/15/2022

#### CAYMAN CHEMICAL

1180 EAST ELLSWORTH RD  
ANN ARBOR, MI 48108 · USA

**PHONE:** [800] 364-9897  
[734] 971-3335

**FAX:** [734] 971-3640

CUSTSERV@CAYMANCHEM.COM  
WWW.CAYMANCHEM.COM