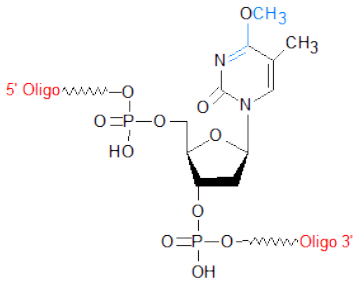
O4 Methyl dT

Category	Minor Bases
Modification Code	O4-Me-dT
Reference Catalog Number	26-6410
5 Prime	Y
3 Prime	Y
Internal	Y
Molecular Weight(mw)	318.22



O4 Methyl deoxythymine dT
[26-6410-XX]

This product has been discontinued. See related modifications for alternate modifications. N3-Methyl dT (m3dT).

O4-Methyl-deoxythymidine (O4-Me-dT) is classified as an O-alkyl pyrimidine, and O4-Me-dT-modified oligonucleotides are primarily used in studies of the role of DNA alkylating agents in mutagenesis and carcinogenesis, and in studies into possible enzymatic mechanisms involved in repair of DNA alkylation damage. Both in vitro and in vivo, O4-Me-dT DNA lesions are formed by reaction with N-nitrosoureas (known carcinogens) (1). O4-Me-dT can mispair with G (leading to T-to-C transitions) (2). In prokaryotes, O4-Me-dT lesions are removed by specific excision of the O4-methyl group by the methyltransferases Ogt or Ada, and the native thymine base restored (3). In yeast and human, inactivation of methyltransferases in the presence of O4-Me-dT-modified oligonucleotides suggests that a corresponding repair mechanism for O4-Me-dT lesions may exist in higher eukaryotes as well (3). **References**

1. Singer, B. O-Alkyl Pyrimidines in Mutagenesis and Carcinogenesis: Occurrence and Significance. *Proc. Natl Acad. Sci. USA* (1989), **86**: 6230-6234.
2. Preston, B.D., Singer, B., Loeb, L.A. Mutagenic potential of O4-methylthymine in vivo determined by an enzymatic approach to site-specific mutagenesis. *Proc. Natl. Acad. Sci. USA* (1986), **83**: 8501-8505.
3. Sassanfar, M., Dosanhh, M.K., Essigmann, J.M., Samson, L. Relative efficiencies of the bacterial, yeast, and human DNA methyltransferases for the repair of O6-methylguanine and O4-methylthymine. Suggestive evidence for O4-methylthymine repair by eukaryotic methyltransferases. *J. Biol. Chem.* (1991), **266**: 2767-2771.