Product Information

Isopropyl β-D-1-thiogalactopyranoside
Catalog Numbers I5502 AND I6758
Storage Temperature 2-8 °C

CAS #: 367-93-1
Synonym: IPTG

Molecular Formula: C₉H₁₈O₅S
Molecular Weight: 238.30
Appearance: white to off-white powder.¹
Melting Point:
I5502: Not more than a 4° range between 116 to 126°C¹
I6758: Approximately 110°C. (lot-to-lot variability has been observed).

I5502 is supplied as a powder that contains residual (10-22%) 1,4-dioxane, a known carcinogen. I6758 is an essentially dioxane-free (<0.1% 1,4-dioxane) powder.

IPTG is a non-metabolizable galactose analog that induces expression of the lac operon in Escherichia coli.² ³ IPTG functions by binding to the lac repressor and altering its conformation.⁴⁻⁹ This inactivation prevents the repression of the β-galactosidase coding lac gene. While not a substrate for β-glactosidase,² it is a substrate for thiogalactoside transacetylase¹⁰ and has been reported to be an inducer of penicillinase activity in bacteria.¹¹

IPTG is a commonly used reagent in cloning procedures that require induction of β-galactosidase activity and is used in conjunction with X-Gal, Catalog Number B9146, or Bluo-Gal, Catalog Number B2904, in blue-white color selection of recombinant bacterial colonies.

Preparation Instructions
IPTG is soluble at 250 mg/ml in water and may be sterilized by filtration through a 0.22 µm filter. The solution may be aliquoted and stored at −20 °C.¹² IPTG solutions can be stored at room temperature for up to one month. When preparing culture plates, aliquots of X-Gal and IPTG may be added to the agar solution after it has been cooled to ~45 °C.

Storage/Stability
As supplied, these products should be stored at 2-8 °C and will have shelf-lives of 5 years.

References
1. Sigma Quality Control specifications.

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