

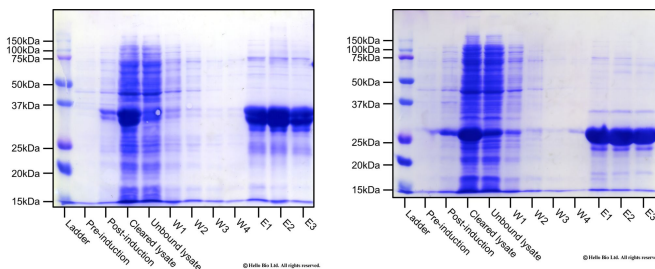
## DATASHEET

### IPTG

## Product overview

|                          |   |
|--------------------------|---|
| <b>Name</b>              | IPTG  |
| <b>Cat No</b>            | HB3941  |
| <b>Alternative names</b> | Isopropylthiogalactoside  |
| <b>Biological action</b> | Inducer   |
| <b>Purity</b>            | >99%  |
| <b>Description</b>       | Protein expression inducer. Frequently used with X-Gal in cloning procedures. |

## Images



## Biological Data

### Biological description

As an allolactose mimic, IPTG can induce the lac operon and is therefore commonly used to induce protein expression.

### Application notes

IPTG is commonly used with X-Gal in blue/white screening for colony selection.

#### #Protocol 1: IPTG induction of protein production in *E. coli*

- BL21 *E. coli* were transformed with plasmids containing GST or a GST fusion protein under the control of the lac operon using standard protocols (see [Froger and Hall., 2007](#)).
- Transformed colonies were cultured in 2xYT medium containing 50µg/ml kanamycin ([HB4429](#)) at 10ml scale before this was transferred into 1L cultures and cultured at 37 °C.
- Cells were cultured until OD<sub>600</sub> reached 0.6 before protein expression was induced with the addition of 0.5mM IPTG and the temperature was reduced to 25°C.
- Cells were grown for a further 4 hours before being spun at 6,400g for 15 minutes at 4 °C to pellet cells. This was then resuspended in lysis buffer (25mM Tris, 150mM NaCl, 10% glycerol, 1% triton X-100, 1x protease inhibitors ([HB9081](#)), pH7.5), sonicated and allowed to solubilise before then being spun at 48,300g for 25 minutes at 4 °C.
- The supernatant was removed and subsequently purified using glutathione beads.
- Samples from all stages of the protein production process were loaded onto a 15% acrylamide gel, run at 90/170V then transferred to PVDF (400mA/90 mins) before being visualised using Coomassie dye ([HB0739](#)).

## Solubility & Handling

### Storage instructions

+4 °C

**Solubility overview**  
**Important**

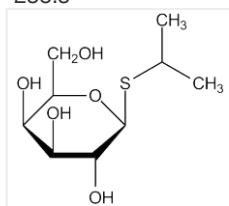
Soluble in water (100 mM)  
This product is for RESEARCH USE ONLY and is not intended for therapeutic or diagnostic use. Not for human or veterinary use.

---

## Chemical Data

**Chemical name**  
**Molecular Weight**  
**Chemical structure**

Isopropyl-beta-D-thiogalactopyranoside  
238.3



**Molecular Formula**  
**CAS Number**  
**PubChem identifier**  
**SMILES**  
**InChi**

C<sub>9</sub>H<sub>18</sub>O<sub>5</sub>S  
367-93-1  
656894  
O[C@@H]1[C@H](O)[C@@H](O)[C@H](SC(C)C)O[C@@H]1CO  
InChi=1S/C9H18O5S/c1-4(2)15-9-8(13)7(12)6(11)5(3-10)14-9/h4-13H,3H2,1-2H3/t5-,6+,7+,8-,9+/m1/s1

**InChiKey**  
**MDL number**  
**Appearance**

BPHPUYQFMNQIOC-IVORRVBJSA-N  
MFCD00063273  
White crystalline powder

---

## References

### A self-inducible heterologous protein expression system in Escherichia coli

Briand L *et al* (2016) Sci Rep. 6

**PubMedID** [27611846](#)

### The E. coli pET expression system revisited-mechanistic correlation between glucose and lactose uptake

Wurm DJ *et al* (2016) Appl Microbiol Biotechnol 100(20)

**PubMedID** [27229726](#)

### Efficient and rapid procedure for blue-white screening of recombinant bacterial clones

Maas S (1999) Biotechniques 27(6)

**PubMedID** [10631489](#)

---