Homobifunctional imidoester cross-linkers

Product Description

Catalog number: 18628A, 1g
Name: DTBP
Formula: Dimethyl-3,3’-DithioBisPropionamidate.2HCl
M.W.= 309.28, CAS[38285-78-8]
Spacer length: 11.9 Å (8 atoms)

Storage: +4°C (possible at –20°C), protect from moisture and light

DTBP features:
● Amine-reactive imidoester
● DTBP crosslinker is water soluble for compatibility with aqueous solutions
● DTBP crosslinking can be easily reversed with DTT, TCEP or other reducing agents

Applications for DTBP:
● Reversibly crosslink and stabilize protein-protein interactions

Directions for use

Applications
Dimethyl dithiobispropionimidate (DTBP) is a homobifunctional, cleavable and membrane permeable cross-linker. DTBP crosslinks amine-containing molecules but then can be easily reversed with DTT, TCEP or other reducing agents. Once a conjugate has been made with DTPB, it may be useful to use in in vivo or in vitro systems, and separation techniques where a cleavage of the conjugate may be useful to remove one component. DTPB is used to modify proteins in order to immobilize them on supports (Resins, Chips), create conjugates, and for structure or functional studies (i.e. stabilizes protein-protein interactions). It has been used to stabilize protein interactions prior to ChIP assays.

Technical information
● DTBP crosslinker is water soluble.

● DTBP contains an amine-reactive imidoester at each end that react rapidly with primary amines at pH 8–10 to form stable amidine bonds. Lysine residues from proteins (side chain ε-NH2-Lys) are modified without change in their ionic charge (the amidine is protonated and has a positive charge at physiological pH). The imidoester also reacts with the N-terminus of polypeptides. Refer to the literature for protocols. As a general guideline, standard conditions are 1 hour, pH 8.5, room temperature.

● DTBP contains a 8-atom spacer arm with a central disulfide bond that can be cleaved with reducing agents. Hence, DTBP crosslinks can be easily reversed by the addition of 125 mM DTT (#UP28425) at 37°C for 30 minutes. DMS, the non-cleavable analog of DTBP is available for applications that require a stable, non-cleavable bond.

See also DTSSP, the NHS-ester analog of DTBP, that has similar crosslinking activity toward primary amines, but is recommended for crosslinking at physiologic pH and for greater stability of the crosslinked product at elevated pH.
**Literature – DTBP**


Markwell M.A. et al; Protein-protein interactions within paramyxoviruses identified by native disulfide bonding or reversible chemical cross-linking. J.Virol (1980) 33: 152-166; [Abstract](#)


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**MSDS – DTBP**

**Section 1. Chemical Product and Company Identification**

Sulfo-LC-SPDP HCl salt, Dimethyl-3,3'-DithioBisPropionamidate.2HCl, CAS[38285-78-8]

**Section 2. Composition, Information on Ingredients**

No hazardous ingredient according to 29 CFR 1910.1200 Hazard Communication Standard (USA) and Directives 1999/45/EC-2001/59/EC (EU)

**Section 3. Hazards identification**

Not classified (EU), No specific hazard (US)

Physical/chemical hazards: Not applicable.

Human health hazards: Not applicable.

Environmental hazards: Not applicable.

**Section 4. First aid measures**

**Inhalation:** If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

**Ingestion:** Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.

**Skin contact:** In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention. Eye contact: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Notes to physician: Not available.

Protective of first-aiders: Not available.

**Section 5. Fire fighting measures**

May be combustible at high temperature

Use an extinguishing agent suitable for surrounding fires.

Hazardous thermal decomposition products: These products are carbon oxides (CO, CO2), nitrogen oxides (NO, NO2...), sulfur oxides (SO2, SO3...).

Some metallic oxides

**Section 6. Accidental release measures**

Small spill and leak: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Personal precautions: Safety glasses, Lab coat.

Keep container tightly closed. Keep container in a cool, well-ventilated area. Wash thoroughly after handling.

**Section 7. Handling and storage**

Handling: Wash thoroughly after handling.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Contact your local distributor Uptima, powered by Uptima@interchim.com
Section 8. Exposure Controls, Personal Protection
Engineering Controls: use standard lab equipments

Section 9. Physical and chemical properties
Physical state: Powdered solid
Molecular formula C14 H16 N3 Na O8 S3
Molecular weight: 527.57 g/mole
Soluble in cold water, hot water.

Section 10. Stability and reactivity
The product is stable.

Section 11. Toxicological information
Not available data. No known significant effects or critical hazards. To the best of our knowledge, the toxicological properties of this product have not been thoroughly investigated.

Section 12. Ecological information
Not available data. No known significant effects or critical hazards.
Germany water class: VCI WGK: No products were found.

Section 13. Disposal considerations
To present knowledge of the supplier, this product is not regarded as hazardous waste as defined by EU Directive 91/689/EC, nor by (Norway) by SFT’s Directive on special waste. The generation of waste should be avoided or minimized wherever possible.

Section 14. Transport information
Contact the supplier for all information regarding the proper transportation method

Section 15. Regulatory information
This product is not classified according to the EU regulations DSCL (EEC)
Not found in US federal regulations:
SARA 302/304/311/312 , 302/304 , 302/304/311/312 , 311/312
TCSCA, Clean Water Act (CWA) 307, 311, 112
Not controlled under WHMIS (Canada).

Section 16. Other information
US Hazardous material information: Health: 1, Fire hazard: 0, Reactivity: 0, Personal protection: 0
Validation: revision,05E(06023)

Related products and documents
See BioSciences Innovations catalogue and e-search tool.

*Other crosslinkers – Amine reactive
  • Homobifunctional crosslinkers; Amines reactive, i.e. NHS-PEO-NHS (BH8811) and DSS (54940A)
  • Sulphydrols reactive, i.e. MAL-PEO-MAL (L7736A) and BMOE (L7730A)
  • Heterobifunctional crosslinkers, Amines & Sulphydrols reactive, i.e. NHS-PEO-MAL (AL6581) and SMCC (17412A)
  • PhotoActivable (PA) crosslinkers: NH2 reactive NHS-ASA (42252A) and SDA Diazirines (DW8561),…
  • Hydrazone chemistry: Conjugation kit (BL1501) and HysNic crosslinkers (SANH #BL9270, MHPH #BL9401 SH-reactive)

*Amino group modifiers:
  • 2-Iminothiolane (Traut’s reagent) #UP42425A to convert amino group to un-protected sulphydryl group
  • SANTA #84235A to converts amino group to protected sulphydryl group
  • SulfoSuccinimidyl-Acetate (SulfoNHS-Acetate) #UP69380A to block amino group
  • 6-(N-trifluoroacetyl)caproic acid NHS (TFCS) #L7727B to protect amino group that can then be unmasked at pH 7.8-8.1

*Reducing agents
DTT (UP28425)

*Desalting tools: CelluSep dialysis tubings, gelfiltration columns #UP84874
• Buffers: PBS (Phosphate Buffer Saline) #UP68723A
• Preservatives: AEBS #401070 and other protease inhibitors, SodiumAzide #08112A

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