



TRYPSIN

Cell Biology/Protein Science

Worthington purifies crystalline trypsin from bovine pancreas. Our enzyme is extensively used in protein sequencing work and for tissue dissociation. For protein sequencing, the Worthington product Code: TRTPCK has been used successfully for many years. Worthington now offers two 'Sequencing Grades' which are purified and characterized to meet the most stringent sequencing application requirements.

Likewise, for tissue culture work, Worthington trypsin has been used by many researchers through the years. We do not offer crude grades such as NF 1:250. Difficulties are often encountered when using these crude preparations including incomplete solubility, lot-to-lot variability, and cell toxicity. While purified trypsin alone may have limited effectiveness for tissue dissociation since it shows little reactivity with intercellular proteins, combinations of purified trypsin and other enzymes such as collagenase and elastase have proven effective for dissociation. The purified enzyme is especially useful for cell harvesting by a process called "trypsinization".

For applications requiring particularly clean trypsin, Worthington offers VMF (Virus and Mycoplasma Free) Trypsin which is a specially processed crystallized trypsin. The product is irradiated to eliminate all organisms and is quality control tested specifically against Bovine Diarrhea virus, Infectious Bovine Rhinotracheitis (IBR) virus, Herpes virus, Enterovirus, Adenoviruses, Bovine syncytial virus, Parainfluenza type 3 (PI3-SF) and Parvovirus. Additionally, the material is tested to be free of mycoplasma. As a result of the recrystallization process, extraneous proteases and nucleases which could be harmful to cell lines are removed. The trypsin specific activity is very high allowing lower working concentration (0.01% range) resulting in less cell damage. An irradiated form of our TPCK-treated trypsin is also available. See product code TRTVMF.

| <u>Description</u> | <u>Activity</u> | <u>Code</u> | <u>Cat #</u> | <u>Size</u> | <u>Price</u> |
|---|---------------------------------|-------------|--|----------------------------------|---|
| SequENZ Modified, Sequencing Grade Worthington TPCK-treated trypsin, code TRTPCK, chemically modified to reduce autolysis and increase stability while retaining its specificity. Supplied as a lyophilized powder. Exhibits a single band on SDS-PAGE. Store at 2-8°C. | ≥ 4 Casein units per mg protein | TRSEQZ | LS02120 LS02122 | 4 x 25 ug 4 x 100 ug | \$ 53.00 180.00 |
| Sequencing Grade II Trypsin, Sequencing Grade I, treated with L-(tosylamido 2-phenyl) ethyl chloromethyl ketone (TPCK) to inhibit contaminant chymotryptic activity according to Kostka and Carpenter, <i>J. Biol. Chem.</i> , 239, 1799, (1964). Supplied as a lyophilized powder. Store at 2-8°C. | ≥ 150 TAME units per mg protein | TRSEQII | LS02115 LS02117 | 4 x 25 ug 4 x 100 ug | \$ 50.00 153.00 |
| TPCK Treated Treated with L-(tosylamido 2-phenyl) ethyl chloromethyl ketone (TPCK) to inhibit contaminant chymotryptic activity according to Kostka and Carpenter, <i>J. Biol. Chem.</i> , 239, 1799, (1964). Dialyzed against 1mM HCl and lyophilized. <u>Protect from moisture.</u> Store at 2 - 8°C. | ≥ 180 TAME units per mg protein | TRTPCK | LS003740 LS003741 LS003744 LS003742 | 100 mg 500 mg 1 gm Bulk | \$ 70.00 225.00 395.00 Inquire |

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| Description | Activity | Code | Cat # | Size | Price |
|---|---------------------------------|--------|----------|----------|----------|
| 3X crystallized. Dialyzed against 1mM HCl and lyophilized. <u>Protect from moisture</u> . Store at 2 - 8°C. | ≥ 180 TAME units per mg protein | TRL3 | LS003708 | 100 mg | \$ 24.00 |
| | | | LS003707 | 1 gm | 135.00 |
| | | | LS003709 | Bulk | Inquire |
| 2X crystallized. Dialyzed against 1mM HCl and lyophilized. <u>Protect from moisture</u> . Store at 2 - 8°C. | ≥ 180 TAME units per mg protein | TRL | LS003702 | 100 mg | \$ 20.00 |
| | | | LS003703 | 1 gm | 120.00 |
| | | | LS003706 | Bulk | Inquire |
| 1X crystallized. Dialyzed against 1mM HCl and lyophilized. Store at 2 - 8°C. | ≥ 150 TAME units per mg protein | TL | LS003665 | 100 mg | \$ 16.00 |
| | | | LS003667 | 1 gm | 40.00 |
| | | | LS003670 | Bulk | Inquire |
| Filtered. Code TRL3 filtered through 0.22µm pore size membrane. Dialyzed against 1mM HCl and lyophilized. 50mg/vial. Store at 2 - 8°C. | ≥ 180 TAME units per mg protein | TRLS | LS003736 | 1 vial | \$ 24.00 |
| | | | LS003734 | 5 vials | 90.00 |
| Sterile, lyophilized and irradiated. Free of virus and mycoplasma. 2X crystallized. Store at 2 - 8°C. | ≥ 180 TAME units per mg protein | TRLVMF | LS004454 | 100 mg | \$ 78.00 |
| | | | LS004452 | 5x100 mg | 284.00 |
| Sterile, lyophilized and irradiated, TPCK-treated Trypsin, Code: TRTPCK. 3X crystallized. Store at 2-8°C. | ≥180 TAME units per mg protein | TRTVMF | LS003750 | 100mg | \$ 84.00 |
| | | | LS003752 | 5x100mg | 350.00 |

Trypsin is a pancreatic serine protease with substrate specificity based upon positively charged lysine and arginine side chains. The molecular weight of trypsinogen is 24,000 daltons and 23,800 daltons for trypsin. The optimum pH is 8.0. Trypsin is inhibited by organophosphorus compounds such as diisopropyl fluorophosphate (DFP) and natural inhibitors from pancreas. Soybean, lima bean, and egg white are also sources of natural inhibitors.

Stability: Most grades of Worthington trypsin are stable for 2 - 3 years when stored at 2 - 8°C.

Storage: Store at 2 - 8°C. Protect from moisture.

Unit Definition: 1 unit hydrolyzes 1µmole of p-toluene-sulfonyl-L-arginine methyl ester (TAME) per minute at 25°C, pH 8.2, in the presence of 10mM calcium ion. 1mg trypsin ≥180 TAME units, 10,350 BAEE units, 3,450 USP/NF units.

TRSEQZ: One unit is equivalent to one micromole of TCA soluble products, measured as tyrosine, released from 2% casein per minute, in 0.05M Tris-HCl, pH 7.6, at 37°C, in a 30 minute reaction. Note: While most trypsin activity is expressed in terms of esterase activity (TAME, BAEE, etc.), Worthington SeqENZ Grade modified trypsin's activity is expressed in its more functional proteolytic activity. Worthington 3X crystallized trypsin, Code: TRL3, with 250 u/mgP TAME activity is equivalent to 4 u/mgP using the proteolytic assay.

Technical Notes: The virus and mycoplasma free trypsins (Codes: TRLVMF/TRTVMF) have been subjected to gamma irradiation and filtered through 22µm pore size membrane and tested for sterility. One TAME unit equals 19.17 NF/USP (BAEE) units or 57.5 BAEE units.

Reference

Kostka, V., and Carpenter, F.H.: Inhibition of Chymotryptic Activity in Crystalline Trypsin Preparations. *J. Biol. Chem.*, 239, 1799 (1964).

Related Products

Chymotrypsin
Clostripain
Collagenase
Dispase
Elastase
Hyaluronidase
Nucleases
Papain
Pepsin
Staph. Protease V8 (Endo-Glu-C)
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Hepatocyte Isolation System
Neonatal Cardiomyocyte Isolation System
Papain (Neural) Dissociation System

Complete Catalog, Tissue Dissociation Guide and Enzyme Manual available on-line at:

www.worthington-biochem.com
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