

Proteases – Helping Define The Unknown Sequences



Worthington-Biochem.com

Tel: 800.445.9603 • 732.942.1660 • Fax: 800.368.3108 • 732.942.9270



Worthington Protease Products, Specifications and Applications Table

Enzyme	Specificity	Molecular Weight KDa	pH Optimum	Extinction Coefficient E1%, 280nm	Common Substrates	Activators	Inhibitors	Product Code/ Applications
Partially Purified for Tissue Dissociation and Protein Digestion								
Collagenase	-Pro-X-†-Gly-Pro-Y- X = neutral Y = nonspecific	68-130	6.3-7.5	13.20 (ColH, Theoretical) 13.40 (ColG, Theoretical)	Collagen FALGPA Wünsch	Ca ²⁺ , Zn ²⁺	α2-macroglobulin Cysteine, histidine DTT, 2-mercapto EDTA, EGTA Hg ²⁺ & other heavy metal ions o-phenanthroline	Tissue dissociation/ Primary cell isolation applications (see Tissue Dissociation Guide for specific references)
Elastase	Elastin, -X-†-Y- X = uncharged, nonaromatic Y = nonspecific	25.9	8.0-8.5	21.8 (Theoretical)	Casein Denatured collagen Elastin, Fibrin Suc-Ala3-NA	None required	α-antitrypsin DFP α2-macroglobulin PMSF	ES/ESL, suspension/lyo powder, Tissue Dissociation/Primary cell isolation applications (see Tissue Dissociation Guide for specific references)
Neutral Protease (Dispase®)	-X-†-Leu/Phe-†-Y- X/Y = nonspecific	36.0	5.9-7.0	13.96 (Theoretical)	BAEE Casein	Ca ²⁺ , Mg ²⁺ , Mn ²⁺ , Fe ²⁺ , and Al ³⁺	EDTA, EGTA Hg ²⁺ & other heavy metal ions o-phenanthroline	NPRO/NPRO2, Tissue Dissociation/Primary cell isolation and cell harvesting applications (see Tissue Dissociation Guide for specific references)
Papain	-X-†-Y- X = nonspecific but Arg, Lys and Phe preferred Y = nonspecific	23.0	6.0-7.0	22.88 (Theoretical)	BAEE	Cysteine EDTA Reducing agents GSH, NBS	AEBSF, Antipain Cystatin, Leupeptin α2-macroglobulin Hg ²⁺ & other heavy metal ions DFP, PMSF TLCK, TPCK, E-64	PAP/PAPL, suspension/lyo powder, Neural tissue dissociation/ primary cell isolation applications (see Tissue Dissociation Guide for specific references) Antibody cleavage RBC modification
Pepsin	-X-†-Y- X = nonspecific but aromatic & hydrophobic preferred Y ≠ Ala, Gly, Val	34.6	1.0-4.0 unstable ≥5	14.39 (Theoretical)	Casein Hemoglobin	None required	Pepstatin A Diazoketones Epoxides	PM, Collagen bioprocessing/purification Antibody cleavage
Proteinase K	-X-†-Y- X = nonspecific but aliphatic, aromatic & hydrophobic preferred Y = nonspecific	28.9	7.5-12	12.6 (Theoretical)	Casein Hemoglobin Keratin	Ca ²⁺ Active in 0.5-1% SDS	DFP EGTA PMSF	PROKR, PROKRS, DNA/RNA purification
Trypsin	-X-†-Y- X = Arg, Lys Y = nonspecific	23.8	7.5-8.5	14.3	BAEE Casein TAME	Ca ²⁺ Lanthanide	Aprotinin, Benzamidine DFP, EDTA, Leupeptin α2-macroglobulin PMSF, TLCK Trypsin Inhibitors (LBI, OI, SI/SIC)	TRL, TRL3, TRLS, Protein Digestion/ Sequencing (purified) Tissue dissociation/ Primary cell isolation applications (see Tissue Dissociation Guide for specific references)

Enzyme	Specificity	Molecular Weight KDa	pH Optimum	Extinction Coefficient E1%, 280nm	Common Substrates	Activators	Inhibitors	Product Code/ Applications
Proteases For Protein Sequencing								
Carboxy-peptidase B	H2-N-Rn-Y-†-X-COOH X = basic amino acids (Arg, Lys, Orn) Y = nonspecific	34.3	7.0-9.0	21.4 (Folk 1971)	Hippuryl-L-arginine	None required	EDTA Hg ²⁺ & other heavy metal ions EDTA, EGTA o-phenanthroline	COBC, Sequence analysis by successive cleavage of C-terminal basic amino acids Insulin production
Carboxy-peptidase Y	H2-N-Rn-Y-†-X-COOH X, Y = non-specific, prefers aromatic	64.0	4.5-6.0	15.0 (Hayashi <i>et al.</i> 1973, and Kuhn <i>et al.</i> 1973)	ATEE Bz-Phe-Ala-Leu Z-Phe-Ala	None required	APCK, Aprotinin DFP 4-Hydroxymercuribenzoate PMSF	COY, C-terminal sequencing & Modification/labeling of peptides and proteins
Chymotrypsin TLCK treated	-X-†-Y- X = aromatic Y = nonspecific	25.6	7.8-8.0	20.57 (Theoretical)	ATEE BTEE	None required	α-antitrypsin Aprotinin DFP, PMSF, TPCK α2-macroglobulin	CDSEQ, CDTLCK, Sequence analysis Peptide synthesis, mapping/fingerprinting
Endo-Arg-C (Clostripain)	-Arg-†-Y- Y = nonspecific	53	7.4-7.8	16.57 (Theoretical)	BAEE	Ca ²⁺ Reducing agents	EDTA, TLCK, Tris Hg ²⁺ & other heavy metal ions	CPSEQ, CP, Peptide mapping & synthesis Sequence analysis Hydrolysis/condensation of amide bonds
Endo-Glu-C (Staph. Protease V8)	-Glu-†-Y- (NH4 buffers pH 4, 7.8) -Asp-†-Y- (PO4 buffer pH 7.8)	27.0	4.0 & 7.8	4.26 (Houmard 1976)	Casein Z-Phe-Leu-Glu-4NA	None required	DFP F-, Cl-, Br-, CH3COO- NO3- α2-macroglobulin	STSEQ, STAP, Peptide mapping & sequence analysis
Endo-Lys-C	-Lys-†-Y- Y = nonspecific	30.0	7.0-9.0	18.63 (Theoretical)	N-p-Tosyl-Gly-Pro-Lys pNA	None required	DFP, TLCK, Aprotinin, Leupeptin	LYS-C, LYSEQ, Peptide mapping and sequence analysis
SequENZ® Trypsin, Sequencing Grade, Modified							Aprotinin, Benzamidine DFP, EDTA, Leupeptin α2-macroglobulin PMSF, TLCK Trypsin Inhibitors (egg white, lima bean, pancreatic, soybean)	TRSEQZ, TRSEQZS, Modified Sequencing Grade, chemically modified to reduce autolysis Peptide mapping & sequence analysis Cleavage fusion proteins
Trypsin, Sequencing Grade, Native	-X-†-Y- X = Arg, Lys Y = nonspecific	23.8	7.5-8.5	14.3	BAEE Casein TAME	Ca ²⁺ Lanthanide		TRSEQII, Sequencing Grade, Native, Peptide mapping & sequence analysis Cleavage fusion proteins
Trypsin, TPCK Treated								TRTPCK, TPCK Treated, Peptide mapping & sequence analysis Cleavage fusion proteins