

Trypsin-ultra™,  
Mass Spectrometry  
Grade



1-800-632-7799  
info@neb.com  
www.neb.com



P8101S 007150616061

**P8101S**

100 µg Lot: 0071506 Exp: 6/16

5 x 20 µg Store at -20°C

**Description:** Trypsin-ultra, Mass Spectrometry Grade is a serine endopeptidase. It selectively cleaves peptide bonds C-terminal to lysine and arginine residues (1). Trypsin-ultra is treated with L-(tosylamido-2-phenyl) ethyl chloromethyl ketone (TPCK) to inactivate any remaining chymotryptic activity. It is modified by acetylation of the ε-amino groups of lysine residues to prevent autolysis. Trypsin-ultra cleaves at Lys-Pro and Arg-Pro bonds at a much slower rate than other amino acid residues (2).

**Source:** Isolated from bovine (*Bos taurus*) pancreas

**Applications:**

- Digestion of proteins for proteomic analysis by Mass Spectrometry
- Protein and peptide identification

**Reaction Conditions:** 1X Trypsin-ultra, Reaction Buffer. Incubate at 37°C.

**Reagents Supplied with Enzyme:** 2X Trypsin-ultra, Reaction Buffer.

**1X Trypsin-ultra, Reaction Buffer:**

50 mM Tris-HCl  
20 mM CaCl<sub>2</sub>  
pH 8.0 @ 25°C

**Note:** Substrate must be in phosphate-free buffer to prevent calcium precipitation with both reconstituted enzyme and enzyme buffer.

**Molecular Weight:** 23,675 daltons

**Reconstitution:** Trypsin-ultra, Mass Spectrometry Grade should be reconstituted by the addition of 20–200 µl of high purity water. Rapid autolysis is a function of enzyme concentration.

**Storage Conditions:** Supplied freeze-dried from a sodium acetate and calcium chloride buffer. Store at -20°C.

Can be stored frozen in solution at -20°C for up to 2 weeks. A decrease in activity will occur if stored in solution. Use only freshly reconstituted protease for best results.

**Quality Assurance:** Trypsin-ultra, Mass Spectrometry Grade is free of glycerol and detergents which may interfere with Matrix-assisted laser desorption/ionization time-of-flight (MALDI-TOF) Mass Spectrometry (MS) or liquid chromatography (LC) methods.

**Quality Controls**

**Functional Test (Calcitonin Peptide Digestion):** A 20 µl reaction in Trypsin-ultra, Mass Spectrometry Grade Reaction Buffer containing 2 µg of human calcitonin peptide and 0.1 µg of Trypsin incubated for 16 hours at 37°C results in the expected digestion products determined by MALDI-TOF MS analysis.

**Functional Test (Cytochrome C Digestion):** A 20 µl reaction in Trypsin-ultra, Mass Spectrometry Grade Reaction Buffer containing 2 µg of Cytochrome C and 0.1 µg of Trypsin incubated for 16 hours at 37°C results in the expected digestion products determined by MALDI-TOF MS analysis.

**Specific Activity:** The specific activity of Trypsin-ultra, Mass Spectrometry Grade is between 1.8 µmol min<sup>-1</sup> mg<sup>-1</sup> and 3.0 µmol min<sup>-1</sup> mg<sup>-1</sup>.

**Note:** Trypsin-ultra, Mass Spectrometry Grade is acetylated on multiple lysine residues. This protein appears as a single band on SDS-PAGE. This sequence is also available at [www.neb.com](http://www.neb.com).

(see other side)

CERTIFICATE OF ANALYSIS

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(see other side)

CERTIFICATE OF ANALYSIS

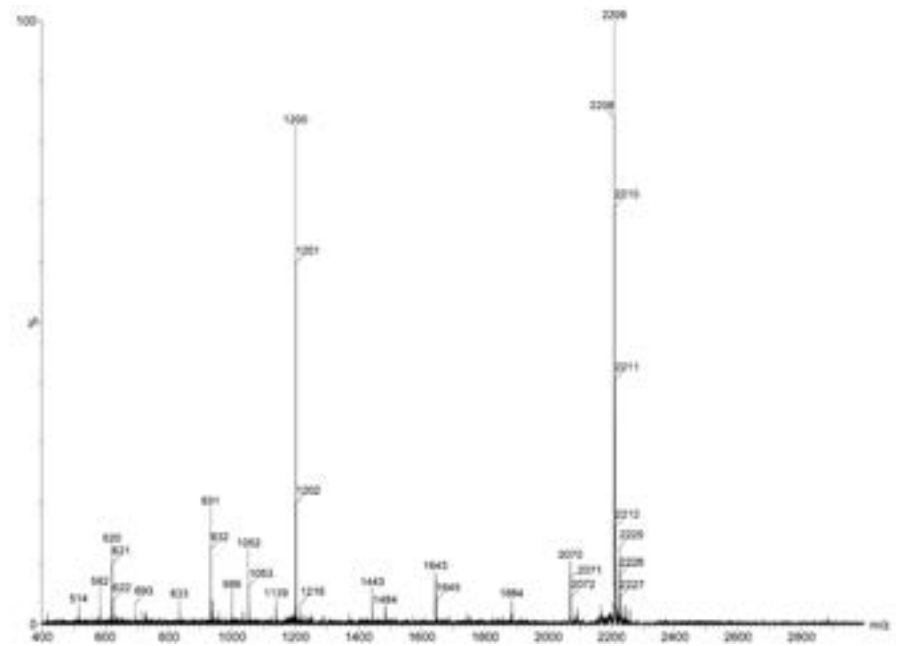
**Trypsin-ultra, Mass Spectrometry Grade Protein Sequence:**

1 IVGGYTCAENSVPYQVSLNAGYHFCGGSLINDQWVVSAAHCYQYHIQVRLGEYNID  
61 VLEGGEQFIDASKIIRHPKYSSWTLNDNDILLIKLSTPAVINARVSTLLLPSACASA  
121 GTECLISGWGNTLSSGVNYPDLLQCLVAPLLSHADCEASYPGQITNNMICAGFLEG  
181 GKDSCQGDSSGGPVACNGQLQGIVSWGYGCAQKKGKPGVYTKVCNYVDWIIQETIAANS

**References:**

1. Northrop J. H. and Kunitz, M. (1931). *Science* 73, 262–263.
2. Perona J. J. and Craik, C.S. (1995). *Protein Sci.* 4, 337–360.

**MALDI-TOF MS: *Issatchenka orientalis* Cytochrome c subjected to digestion by Trypsin-ultra, Mass Spectrometry Grade for 16 hours, dried and subjected to MALDI-TOF MS.**



**Trypsin-ultra, Mass Spectrometry Grade Protein Sequence:**

1 IVGGYTCAENSVPYQVSLNAGYHFCGGSLINDQWVVSAAHCYQYHIQVRLGEYNID  
61 VLEGGEQFIDASKIIRHPKYSSWTLNDNDILLIKLSTPAVINARVSTLLLPSACASA  
121 GTECLISGWGNTLSSGVNYPDLLQCLVAPLLSHADCEASYPGQITNNMICAGFLEG  
181 GKDSCQGDSSGGPVACNGQLQGIVSWGYGCAQKKGKPGVYTKVCNYVDWIIQETIAANS

**References:**

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