ISOTEC®
Stable Isotope Amino Acids
For Mass Spectrometry (MS)
## Stable Isotope Amino Acids

The use of stable isotope tracer methods has been crucial to the advancement in the fields of nutrition science, proteomics and metabolomics. Understanding metabolic mechanisms has been enhanced due to accurate metabolite identification and superior quantification with highly enriched amino acids. Stable isotope enriched amino acids enable selective isotope labeling of proteins by biosynthetic incorporation of a single or multiple amino acids, leaving all others unlabeled. Metabolism can thereby be studied in several approaches such as the whole organism, the individual protein level or in the small molecule pathways of amino acid conversions. We proudly offer the following labeled amino acids to address your challenging and complex questions within your Mass Spectrometry research.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Amino Acid Mixtures</strong></td>
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<tr>
<td>426199</td>
<td>Algal amino acid mixture-13C 98 atom % 13C</td>
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<td>Algal amino acid mixture-13C,15N, d 98 atom % 13C, 97 atom % D, 98 atom % 15N</td>
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<td>L-Alanine-d7, 98 atom % D, 98 % (CP)</td>
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<td>N-Acetyl-DL-alanine-3,3,3-d₃, 98 atom % D</td>
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<td>β-Alanine-3, 98 atom % ¹³N, 99 % (CP)</td>
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<td>DL-Aspartic acid-4-¹³C, 99 atom % ¹³C</td>
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<td>L-Aspartic acid-2, 98 atom % ¹³C, 98 atom % ¹⁵N</td>
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<td>L-Aspartic acid-4-¹³C, 99 atom % ¹³C</td>
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<td><strong>Cysteine</strong></td>
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<td>L-Cysteine-3, 98 atom % ¹³C, 95 % (CP)</td>
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<td>L-Cysteine-4, 98 atom % ¹³C, 98 atom % ¹⁵N, 95 % (CP)</td>
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<td>L-Cysteine-5, 98 atom % ¹³C, 98 atom % ¹⁵N, 95 % (CP)</td>
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<td>S-Allyl-d₅-L-cysteine 98 atom % D, 95 % (CP)</td>
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**Glutamic acid**

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<td>DL-Glutamic acid-2,3,3,4,4-d5, 98 atom % D</td>
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<td>604968</td>
<td>L-Glutamic acid-1-13C, 99 atom % 13C, 98 % (CP)</td>
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<td>604860</td>
<td>L-Glutamic acid-13C5, 98 atom % 13C, 95 % (CP)</td>
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<td>L-Glutamic acid-15N,d10, 98 atom % 15N, 98 atom % D</td>
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<td>L-Glutamic acid-4-13C, 99 atom % 13C</td>
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<td>L-Glutamic acid-5-13C, 99 atom % 13C (CP)</td>
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**Glycine**

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<td>Glycine-1-13C,15N, 99 atom % 13C, 98 atom % 15N</td>
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<td>283827</td>
<td>Glycine-13C5, 98 atom % 13C</td>
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<td>Glycine-13C5,15N, 98 atom % 13C, 98 atom % 15N</td>
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<td>Glycine-13C5,15N, ethyl ester hydrochloride 98 atom % 13C, 99 atom % 15N</td>
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<td>Glycine-13C5,15N,2,2-d2, 99 atom % 13C, 98 atom % D, 98 atom % 15N, 95 % (CP)</td>
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<td>Glycine-15N,d10, 98 atom % 15N, 98 atom % D</td>
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<td>Glycine-2,2-d2, 98 atom % D</td>
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<td>Glycine-2-13C, 99 atom % 13C</td>
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<td>Glycine-d4, 98 atom % D</td>
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**Glutamine**

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<td>L-Glutamine-1,2-13C2, ≥98 atom % 13C</td>
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<td>L-Glutamine-1-13C, 99 atom % 13C, 98 % (CP)</td>
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<td>L-Glutamine-2-13C, 98 atom % 13C, 95 % (CP)</td>
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**Histidine**

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<td>L-Histidine-13C5N, ≥ 95 atom % 15N, ≥ 96 atom % 13C, 95 % (CP)</td>
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<td>707848</td>
<td>L-Histidine-13C5N, hydrochloride monohydrate 98 atom % 13C, 98 atom % 15N, 98 % (CP)</td>
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<td>L-Histidine-amine-(^{15}\text{N}), 98 atom % (^{15}\text{N}), 98 % (CP)</td>
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<td>N-Methyl-d(_5)-L-histidine 98 atom % D, 99 % (CP)</td>
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<td><strong>Isoleucine</strong></td>
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<td>DL-Isoleucine-2(^{13}\text{C})/DL-Alloisoleucine-2(^{13}\text{C}) (approx. 1:1), 99 atom % (^{13}\text{C})</td>
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<td>609013</td>
<td>L-Isoleucine-(^{13}\text{C}_6), 98 atom % (^{13}\text{C}), 98 % (CP)</td>
</tr>
<tr>
<td><strong>Leucine</strong></td>
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</tr>
<tr>
<td>492361</td>
<td>D-Leucine-1(^{13}\text{C}), 99 atom % (^{13}\text{C})</td>
</tr>
<tr>
<td>492388</td>
<td>D-Leucine-(^{15}\text{N}), 98 atom % (^{15}\text{N})</td>
</tr>
<tr>
<td>492396</td>
<td>D-Leucine-2-d(_5), 98 atom % D</td>
</tr>
<tr>
<td>488992</td>
<td>DL-Leucine-(^{15}\text{N}), 98 atom % (^{15}\text{N})</td>
</tr>
<tr>
<td>489018</td>
<td>DL-Leucine-2(^{13}\text{C}), 99 atom % (^{13}\text{C})</td>
</tr>
<tr>
<td>492426</td>
<td>DL-Leucine-d(_5), 98 atom % D</td>
</tr>
<tr>
<td>490059</td>
<td>L-Leucine-1(^{13}\text{C}), 99 atom % (^{13}\text{C})</td>
</tr>
<tr>
<td>608068</td>
<td>L-Leucine-(^{13}\text{C}_6), (^{15}\text{N}), 98 atom % (^{13}\text{C}), 98 atom % (^{15}\text{N}), 95 % (CP)</td>
</tr>
<tr>
<td>749915</td>
<td>L-Leucine-(^{13}\text{C}_6), (^{15}\text{N}), (^{13}\text{C}_2), (^{15}\text{N}), (^{13}\text{C}_4), (^{15}\text{N}), (^{13}\text{C}_5), (^{15}\text{N}), (^{13}\text{C}_7), (^{15}\text{N}), methyl-d(_3), 99 atom % (^{13}\text{C}), 98 atom % D, 98 atom % (^{15}\text{N}), 95 % (CP)</td>
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<tr>
<td>340960</td>
<td>L-Leucine-(^{13}\text{C}_6), 98 atom % (^{13}\text{C})</td>
</tr>
<tr>
<td>486817</td>
<td>L-Leucine-2(^{13}\text{C}), 99 atom % (^{13}\text{C})</td>
</tr>
<tr>
<td>704504</td>
<td>L-Leucine-2-d, 97 atom % D, 98 % (CP)</td>
</tr>
<tr>
<td>604828</td>
<td>L-Leucine-3(^{13}\text{C}), 99 atom % (^{13}\text{C}), 99 % (CP)</td>
</tr>
<tr>
<td>608173</td>
<td>L-Leucine-3(^{13}\text{C}), (^{15}\text{N}), 98 atom % (^{13}\text{C}), 99 atom % (^{15}\text{N})</td>
</tr>
<tr>
<td>616079</td>
<td>L-Leucine-3-d(_5), 99 atom % D, 99 % (CP)</td>
</tr>
<tr>
<td>615978</td>
<td>L-Leucine-4-d, 99 atom % D</td>
</tr>
<tr>
<td>486825</td>
<td>L-Leucine-5,5,5-d(_5), 99 atom % D</td>
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<tr>
<td><strong>L-Methionine</strong></td>
<td></td>
</tr>
<tr>
<td>489069</td>
<td>DL-Methionine-1(^{13}\text{C}), dihydrochloride 99 atom % (^{13}\text{C})</td>
</tr>
<tr>
<td>609250</td>
<td>DL-Methionine-(^{15}\text{N}), 98 atom % (^{15}\text{N})</td>
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<tr>
<td>589780</td>
<td>D-Methionine-(methyl-(^{13}\text{C})), 99 atom % (^{13}\text{C})</td>
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<tr>
<td>589810</td>
<td>D-Methionine-(methyl-d(_3)), 98 atom % D</td>
</tr>
<tr>
<td>608149</td>
<td>L-Methionine-(carboxy-(^{13}\text{C}), methyl-d(_3)), 99 atom % (^{13}\text{C}), 99 atom % D</td>
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<tr>
<td>299146</td>
<td>L-Methionine-(methyl-(^{13}\text{C}), d(_1)), 99 atom % (^{13}\text{C})</td>
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<tr>
<td>651400</td>
<td>L-Methionine-(methyl-(^{13}\text{C}), d(_2)), 98 atom % D, 99 atom % (^{13}\text{C})</td>
</tr>
<tr>
<td>721271</td>
<td>L-Methionine-(methyl-(^{13}\text{C}), d(_3)), 98 atom % (^{13}\text{C}), 98 atom % D</td>
</tr>
<tr>
<td>Cat. No.</td>
<td>Description</td>
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<tr>
<td>---------</td>
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</tr>
<tr>
<td>299154</td>
<td>L-Methionine-(methyl-13C,d3), 99 atom % D, 99 atom % 13C</td>
</tr>
<tr>
<td>300616</td>
<td>L-Methionine-(methyl-d), 98 atom % D</td>
</tr>
<tr>
<td>490083</td>
<td>L-Methionine-1-13C, 99 atom % 13C</td>
</tr>
<tr>
<td>608106</td>
<td>L-Methionine-13C2,15N, 98 atom % 13C, 98 atom % 15N, 95 % (CP)</td>
</tr>
<tr>
<td>749893</td>
<td>L-Methionine-13C2,3,3,3,4,4-d4-(methyl-d), 98 atom % D, 98 atom % 13N, 99 atom % 13C, 95 % (CP)</td>
</tr>
<tr>
<td>609242</td>
<td>L-Methionine-13N, 98 atom % 13N, 98 % (CP)</td>
</tr>
</tbody>
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**Phenylalanine**

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>684597</td>
<td>DL-Phenyl-13C4,3-d3-alanine, 99 atom % 13C, 98 atom % D</td>
</tr>
<tr>
<td>589411</td>
<td>DL-Phenylalanine-3,3-d2, 98 atom % D</td>
</tr>
<tr>
<td>490909</td>
<td>L-Phenylalanine-1-13C, 99 atom % 13C</td>
</tr>
<tr>
<td>795844</td>
<td>L-Phenylalanine-13C2, 98 atom % 13C, 95 % (CP)</td>
</tr>
<tr>
<td>608017</td>
<td>L-Phenylalanine-13C3,2,3-d4, 98 atom % D</td>
</tr>
<tr>
<td>655627</td>
<td>L-Phenylalanine-13C3, 98 atom % 13C, 98 atom % 13N, 95 % (CP)</td>
</tr>
<tr>
<td>605042</td>
<td>L-Phenylalanine-1-13C, 99 atom % 13C</td>
</tr>
<tr>
<td>604879</td>
<td>L-Phenylalanine-13C3, 98 atom % 13C, 95 % (CP)</td>
</tr>
<tr>
<td>490091</td>
<td>L-Phenylalanine-1-13C, 99 atom % 13C</td>
</tr>
<tr>
<td>749877</td>
<td>L-Phenylalanine-13C3,2,3,3,3-d5, 98 atom % D, 98 atom % 13N, 99 atom % 13C, 95 % (CP)</td>
</tr>
<tr>
<td>609005</td>
<td>L-Phenylalanine-13N, 98 atom % 13N, 98 % (CP)</td>
</tr>
<tr>
<td>605174</td>
<td>L-Phenylalanine-13N, 98 atom % 13C</td>
</tr>
<tr>
<td>604712</td>
<td>L-Phenylalanine-2,13C, 99 atom % 13C</td>
</tr>
<tr>
<td>485985</td>
<td>L-Phenylalanine-2-13C,99 atom % 13C, 96 % (CP)</td>
</tr>
<tr>
<td>604720</td>
<td>L-Phenylalanine-3-13C, 99 atom % 13C</td>
</tr>
</tbody>
</table>

**Threonine**

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>605034</td>
<td>L-Threonine-1-13C, 99 atom % 13C, 97 % (CP)</td>
</tr>
<tr>
<td>607770</td>
<td>L-Threonine-13C4,15N, 98 atom % 13C, 98 atom % 15N</td>
</tr>
<tr>
<td>749869</td>
<td>L-Threonine-13C4,15N,2,3,4,4,4-d5, 98 atom % 13N, 99 atom % 13C, 97 atom % D, 98 atom % 15N, 97 atom % 13C, 98 atom % D, 98 % (CP)</td>
</tr>
<tr>
<td>609099</td>
<td>L-Threonine-13N, 98 atom % 13N, 98 % (CP)</td>
</tr>
</tbody>
</table>

**Tryptophan**

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>604674</td>
<td>DL-Tryptophan-2-13C, 99 atom % 13C</td>
</tr>
<tr>
<td>604844</td>
<td>L-Tryptophan-(indole ring-2-13C), 98 atom % 13C, 96 % (CP)</td>
</tr>
<tr>
<td>615862</td>
<td>L-Tryptophan-(indole-d3), 97 atom % D</td>
</tr>
<tr>
<td>604836</td>
<td>L-Tryptophan-1-13C, 99 atom % 13C, 98 % (CP)</td>
</tr>
<tr>
<td>574597</td>
<td>L-Tryptophan-13C11,15N2, 95 atom % 13N, 97 atom % 15N, 97 atom % 13C, 95 % (CP)</td>
</tr>
<tr>
<td>749931</td>
<td>L-Tryptophan-13C11,15N2,3,4,4,4-d5, 98 atom % 15N, 97 atom % 13C, 97 atom % 13C, 97 atom % D, 98 % (CP)</td>
</tr>
<tr>
<td>574600</td>
<td>L-Tryptophan-13N2, 95 atom % 13N, 95 % (CP)</td>
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</tbody>
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**Proline**

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>654183</td>
<td>D-Proline-1-13C, 99 atom % 13C</td>
</tr>
<tr>
<td>604801</td>
<td>L-Proline-2-13C, 99 atom % 13C, 99 % (CP)</td>
</tr>
<tr>
<td>608114</td>
<td>L-Proline-2-13C3, 98 atom % 13C, 98 atom % 13N, 95 % (CP)</td>
</tr>
<tr>
<td>749843</td>
<td>L-Proline-2-13C3,15N,2,3,4,4,4-d5, 98 atom % D, 98 atom % 13N, 99 atom % 13C, 95 % (CP)</td>
</tr>
<tr>
<td>608998</td>
<td>L-Proline-2-13N, ≥ 95 atom % 13N, 98 % (CP)</td>
</tr>
<tr>
<td>791261</td>
<td>L-Proline-2,5,5-d2, 98 atom % D, 97 %</td>
</tr>
<tr>
<td>Cat. No.</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td><strong>Tyrosine</strong></td>
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</tr>
<tr>
<td>492329</td>
<td>DL-Tyrosine-15N, 98 atom % 15N</td>
</tr>
<tr>
<td>604631</td>
<td>DL-Tyrosine-2-13C, 99 atom % 13C</td>
</tr>
<tr>
<td>488909</td>
<td>DL-Tyrosine-3-13C, 98 atom % 13C</td>
</tr>
<tr>
<td>792721</td>
<td>D-Tyrosine-(phenyl-d6), 99 atom % β, 97 % (CP)</td>
</tr>
<tr>
<td>609846</td>
<td>L-Tyrosine-(hydroxy-17O), 40 atom % 17O</td>
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<tr>
<td>609919</td>
<td>L-Tyrosine-(hydroxy-18O), 95 atom % 18O</td>
</tr>
<tr>
<td>489794</td>
<td>L-Tyrosine-(phenyl-13C), 99 atom % 13C, 99 % (CP)</td>
</tr>
<tr>
<td>489816</td>
<td>L-Tyrosine-(phenyl-3,5-d2), 98 atom % D, 99 % (CP)</td>
</tr>
<tr>
<td>605093</td>
<td>L-Tyrosine-(phenyl-4-13C), 99 atom % 13C</td>
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<tr>
<td>489808</td>
<td>L-Tyrosine-(phenyl-d4), 98 atom % D</td>
</tr>
<tr>
<td>492868</td>
<td>L-Tyrosine-13C9, 98 atom % 13C, 95 % (CP)</td>
</tr>
<tr>
<td>658944</td>
<td>L-Tyrosine-13C9,15N, 98 atom % 13C, 98 atom % 15N, optical purity ee: 99 % (L)</td>
</tr>
<tr>
<td>607991</td>
<td>L-Tyrosine-13C9,15N, 98 atom % 15N, 98 atom % 13C, 95 % (CP)</td>
</tr>
<tr>
<td>749966</td>
<td>L-Tyrosine-13C9,15N,α,β,β,2,3,5,6-d7, 99 atom % 13C, 98 atom % 15N, 99 atom % 13C, 95 % (CP)</td>
</tr>
<tr>
<td>490172</td>
<td>L-Valine-13C, 98 atom % 13C</td>
</tr>
<tr>
<td>609188</td>
<td>D-Phenylglycine-13C, 98 atom % 13C, 98 % (CP)</td>
</tr>
<tr>
<td>683620</td>
<td>Glutathione-(glycine-13C17O) trifluoroacetate salt ≥ 98 atom % 17O, ≥ 99 atom % 13C, ≥ 95 % (CP)</td>
</tr>
<tr>
<td>605891</td>
<td>Glycocholic acid-(glycyl-13C), 99 atom % 13C</td>
</tr>
<tr>
<td>741833</td>
<td>L-Citrulline-5,5-d2, 97 atom % D (partial deuteration at C5), 97 % (CP)</td>
</tr>
<tr>
<td>33786</td>
<td>L-Dopa-(phenyl-d3), 98 atom % D, 98 % (CP)</td>
</tr>
<tr>
<td>70117</td>
<td>L-Norvaline-13C, 99 atom % 13C</td>
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<tr>
<td>736147</td>
<td>L-Ornithine-13C17O, hydrochloride 99 atom % 13C, 98 % (CP)</td>
</tr>
<tr>
<td>736147</td>
<td>L-Ornithine-13C17O, hydrochloride 99 atom % 13C, 98 % (CP)</td>
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<tr>
<td>809012</td>
<td>L-Ornithine-13C17O, hydrochloride ≥ 98 atom % 13C, ≥ 99 atom % 13C, ≥ 98 % (CP)</td>
</tr>
<tr>
<td>749443</td>
<td>L-Ornithine-3,3,4,4,5,5-d6, hydrochloride 98 atom % D, 98 % (CP)</td>
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<tr>
<td>634093</td>
<td>L-Selenomethionine-(methyl-13C), 99 atom % 13C</td>
</tr>
<tr>
<td>592471</td>
<td>N,N-Dimethyl-d6-glycine hydrochloride 99 atom % D</td>
</tr>
<tr>
<td>778176</td>
<td>N-Acetyl-Asp-Glu-OH-15N2 98 atom % 15N, 95 % (CP)</td>
</tr>
<tr>
<td>900169</td>
<td>Oxytocin-(leucine-5,5,5-d3, glycine-2,2-d2) trifluoroacetate salt ≥ 98 atom % D, ≥ 95 % (CP)</td>
</tr>
<tr>
<td>737607</td>
<td>Pentaglycine-3,6,9,12,15,18-d6, O-d 97 atom % D, 95 % (CP)</td>
</tr>
<tr>
<td>681695</td>
<td>S-(+)-2-Phenylglycine-(phenyl-13C), 99 atom % 13C</td>
</tr>
</tbody>
</table>
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