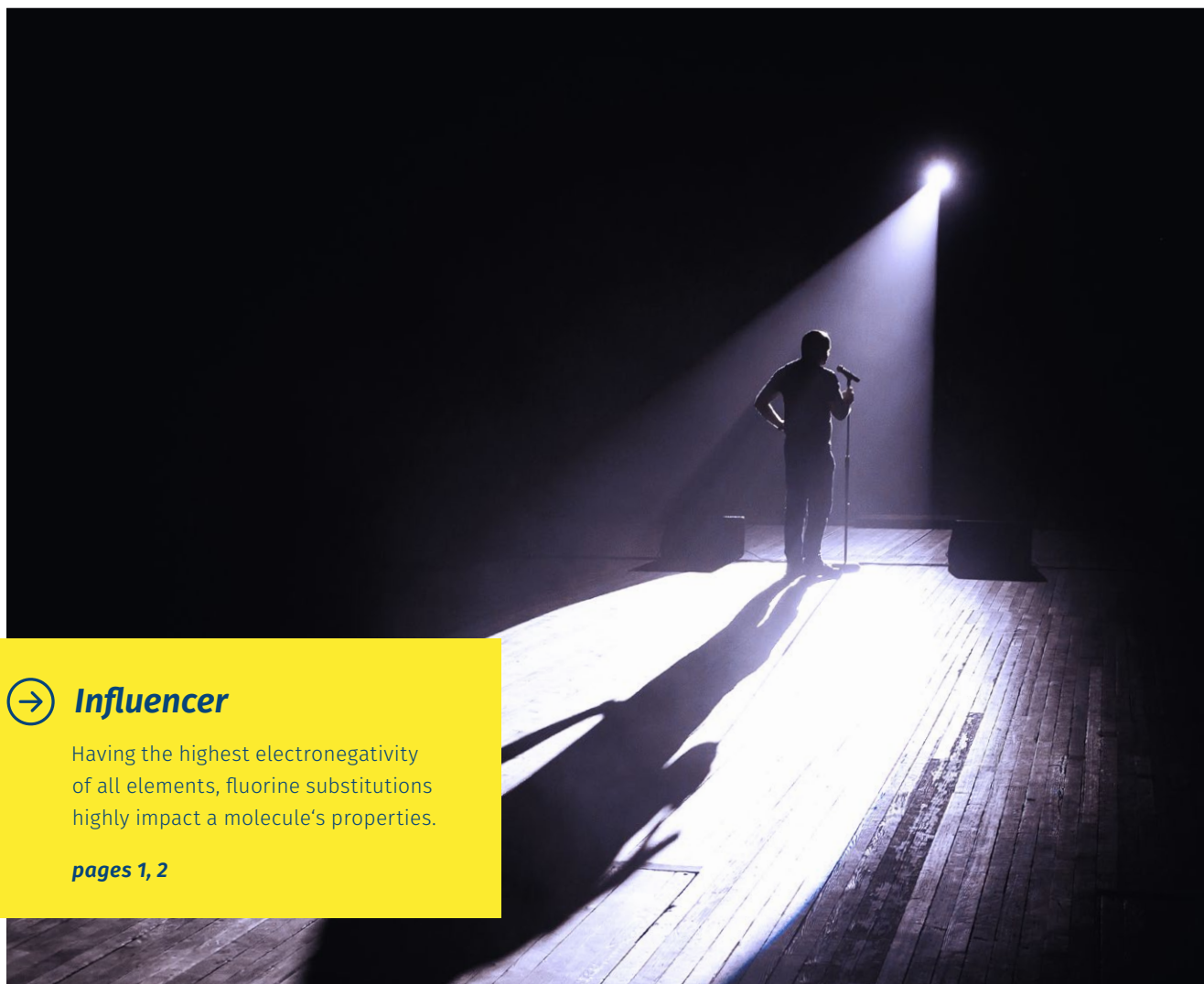




**Iris**  
Biotech

# TRIFLUOROMETHYL-

*and other Fluoro-Amino Acids*



## → **Influencer**

Having the highest electronegativity of all elements, fluorine substitutions highly impact a molecule's properties.

**pages 1, 2**

*Enhanced metabolic stability and increased lipophilicity.*

**page 1**

*Increased steric demand favoring cis-amide conformation.*

**page 1**

*Label for <sup>19</sup>F NMR spectroscopy.*

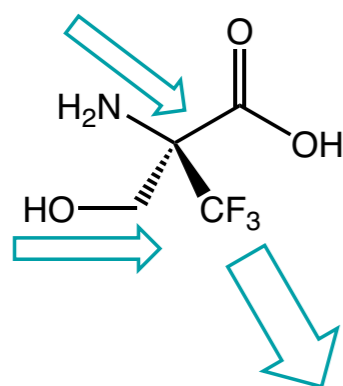
**page 1**



Version: 1F17\_4

## Trifluoromethyl- and other Fluoro-Amino Acids

The development of new peptide drugs is often hampered by limited affinity, stability, and rapid digestion by human proteases. The introduction of non-proteinogenic amino acids with derivatized side-chain functionalities is reported as a powerful tool to improve kinetic and thermodynamic properties of the respective peptides as well as to increase proteolytic and structural stability. Within this context, the modification of amino acids with fluorine for enhanced metabolic stability and increased lipophilicity has gained widespread attention dating back to the 1950s, when J. Fried and J. Sabo reported the first fluorine-containing drug fludrocortisone.



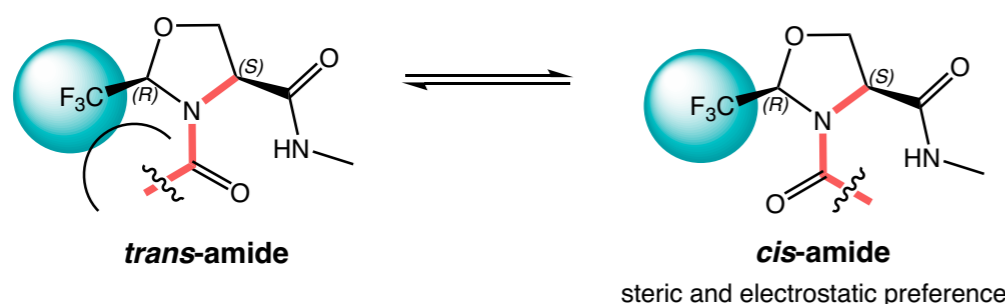
High electronegativity of fluorine.

### Fluorine Properties:

- Highest electronegativity of all elements
- High polarity

### Characteristics:

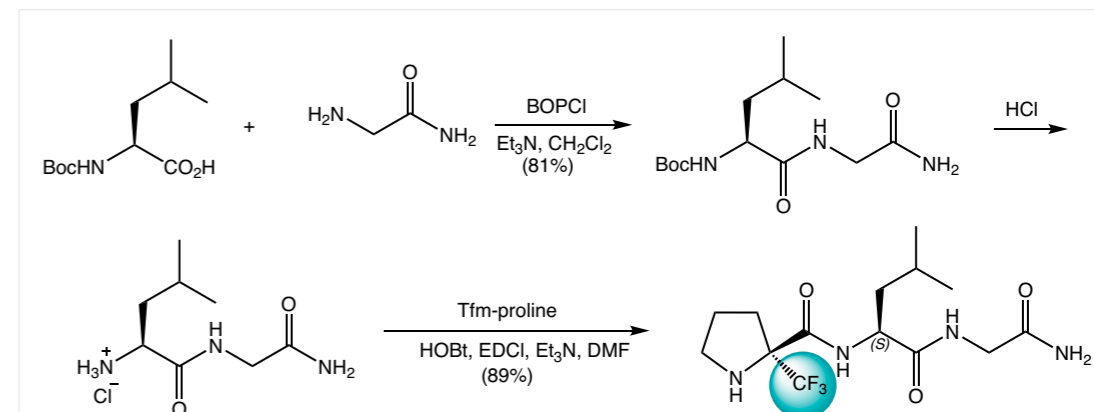
- C-F bond is characterized by high dipole moment + hydrophobic character
- Low nucleophilicity of neighboring amino and hydroxy groups
- No protection in standard SPPS required
- Increased sterical demand of CF<sub>3</sub> compared to CH<sub>3</sub> favors *cis*-amide bond and induces the formation of β turns; especially beneficial for the synthesis of cyclic peptides
- Improved pharmacokinetics + increased stability towards degradation by proteases
- Enhanced lipophilicity; thus higher affinity to lipid membranes and stronger interactions with receptors
- Label for <sup>19</sup>F NMR spectroscopy



CF<sub>3</sub> favors *cis*-amide formation.

Whereas fluorination on the β-position might lead to racemization on the α-position, even double substitution on the γ-position results in derivatives, which maintain their optical configuration. Below, please find an exemplary excerpt of our portfolio of fluorinated amino acids. Almost endless combinations are available or can be synthesized based on your custom inquiry.

An example from literature is CF<sub>3</sub>-MIF-1, a trifluoromethyl-proline-containing pharmacologic active peptide (*Eur J Med Chem* 2013; 62: 122-9).

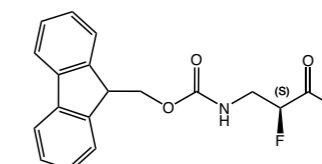


Literature example for the synthesis of CF<sub>3</sub>-MIF-1.

### FAA4490 Fmoc-beta-Ala(2-F)-OH (S)

(S)-N-(9-Fluorenylmethoxycarbonyl)-2-fluoro-beta-alanine

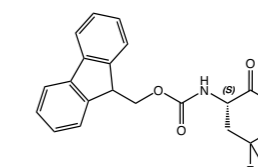
CAS-No. 1414874-21-7  
Formula C<sub>18</sub>H<sub>16</sub>FNO<sub>4</sub>  
Mol. weight 329,32 g/mol



### FAA3460 Fmoc-L-TfAbu-OH

(S)-2-(9-Fluorenylmethoxycarbonyl)amino-4,4,4-trifluorobutyric acid

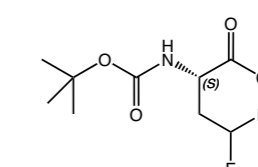
CAS-No. 181128-48-3  
Formula C<sub>19</sub>H<sub>16</sub>F<sub>3</sub>NO<sub>4</sub>  
Mol. weight 379,33 g/mol



### BAA2240 Boc-L-DfAbu-OH

(S)-2-t-Butyloxycarbonylamino-4,4-difluoro-butyric acid

CAS-No. 467442-20-2  
Formula C<sub>9</sub>H<sub>15</sub>F<sub>2</sub>NO<sub>4</sub>  
Mol. weight 239,22 g/mol

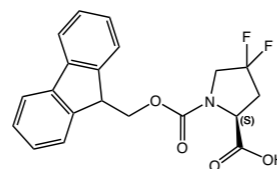


Product details

**FAA4290 Fmoc-L-Pro(4,4-F<sub>2</sub>)-OH**

(S)-1-(9-Fluorenylmethyloxycarbonyl)-4,4-difluoro-pyrrolidine-2-carboxylic acid

CAS-No. 203866-21-1  
Formula C<sub>20</sub>H<sub>17</sub>F<sub>2</sub>NO<sub>4</sub>  
Mol. weight 373,36 g/mol



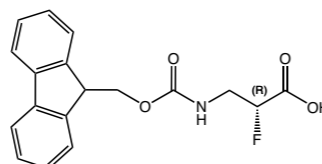
Product details



**FAA4480 Fmoc-beta-Ala(2-F)-OH (R)**

(R)-N-(9-Fluorenylmethyloxycarbonyl)-2-fluoro-beta-alanine

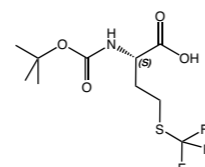
CAS-No. 1414874-24-0  
Formula C<sub>18</sub>H<sub>16</sub>FNO<sub>4</sub>  
Mol. weight 329,32 g/mol



**BAA3060 Boc-L-TFM-OH**

N-alpha-(t-Butyloxycarbonyl)-S-trifluoromethyl-L-methionine

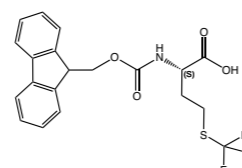
CAS-No. 201870-90-8  
Formula C<sub>10</sub>H<sub>16</sub>F<sub>3</sub>NO<sub>4</sub>S  
Mol. weight 303,30 g/mol



**FAA4570 Fmoc-L-TFM-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-S-trifluoromethyl-L-methionine

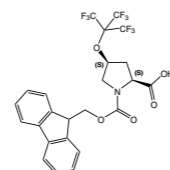
CAS-No. 928654-78-8  
Formula C<sub>20</sub>H<sub>18</sub>F<sub>3</sub>NO<sub>4</sub>S  
Mol. weight 425,42 g/mol



**FAA4550 Fmoc-L-cis-Hyp(Nfb)-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-O-(nonafluoro-t-butyl)-cis-L-hydroxyproline

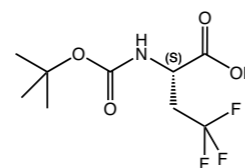
CAS-No. 1610605-22-5  
Formula C<sub>24</sub>H<sub>18</sub>F<sub>9</sub>NO<sub>5</sub>  
Mol. weight 571,39 g/mol



**BAA2140 Boc-L-TfAbu-OH**

(S)-2-(t-Butyloxycarbonyl)amino-4,4,4-trifluorobutyric acid

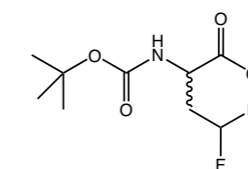
CAS-No. 181128-25-6  
Formula C<sub>9</sub>H<sub>14</sub>F<sub>3</sub>NO<sub>4</sub>  
Mol. weight 257,21 g/mol



**BAA2130 Boc-DfAbu-OH (rac)**

(RS)-2-t-Butyloxycarbonylamino-4,4-difluoro-butyric acid

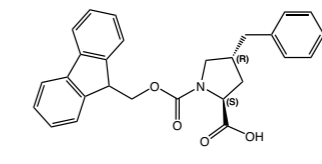
CAS-No. 252357-43-0  
Formula C<sub>9</sub>H<sub>15</sub>F<sub>2</sub>NO<sub>4</sub>  
Mol. weight 239,22 g/mol



**FAA4330 Fmoc-L-Pro(4-p-F-Ph)-OH (2S,4R)**

(2S,4R)-1-(9-Fluorenylmethyloxycarbonyl)-4-(4-fluorobenzyl)-pyrrolidine-2-carboxylic acid

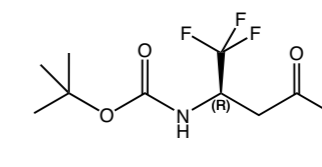
CAS-No. 959576-18-2  
Formula C<sub>27</sub>H<sub>24</sub>FNO<sub>4</sub>  
Mol. weight 445,49 g/mol



**BAA2890 Boc-3-amino-4,4,4-trifluoro-butyric acid (R)**

(R)-3-t-Butyloxycarbonylamino-4,4,4-trifluoro-butyric acid

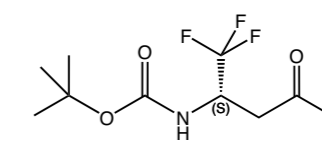
CAS-No. 1310680-29-5  
Formula C<sub>9</sub>H<sub>14</sub>F<sub>3</sub>NO<sub>4</sub>  
Mol. weight 257,21 g/mol



**BAA2900 Boc-3-amino-4,4,4-trifluoro-butyric acid (S)**

(S)-3-t-Butyloxycarbonylamino-4,4,4-trifluoro-butyric acid

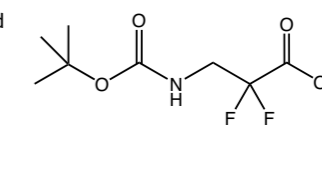
CAS-No. 1310680-43-3  
Formula C<sub>9</sub>H<sub>14</sub>F<sub>3</sub>NO<sub>4</sub>  
Mol. weight 257,21 g/mol



**BAA2910 Boc-beta-Ala(F<sub>2</sub>)-OK**

3-t-Butyloxycarbonylamino-2,2-difluoro-propionic acid potassium salt

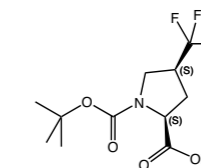
CAS-No. 1435806-88-4  
Formula C<sub>8</sub>H<sub>12</sub>F<sub>2</sub>KNO<sub>4</sub>  
Mol. weight 263,28 g/mol



**BAA2920 Boc-L-Pro(4-CF<sub>3</sub>)-OH (2S,4S)**

(2S,4S)-1-t-Butyloxycarbonyl-4-trifluoromethyl-pyrrolidine-2-carboxylic acid

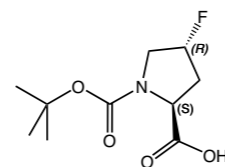
CAS-No. 470482-41-8  
Formula C<sub>11</sub>H<sub>16</sub>F<sub>3</sub>NO<sub>4</sub>  
Mol. weight 283,24 g/mol



**BAA2930 Boc-L-Pro(4-F)-OH (2S,4R)**

(2S,4R)-1-t-Butyloxycarbonyl-4-fluoro-pyrrolidine-2-carboxylic acid

CAS-No. 203866-14-2  
Formula C<sub>10</sub>H<sub>16</sub>FNO<sub>4</sub>  
Mol. weight 233,24 g/mol



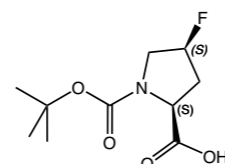
Product details



**BAA2940 Boc-L-Pro(4-F)-OH (2S,4S)**

(2S,4S)-1-t-Butyloxycarbonyl-4-fluoro-pyrrolidine-2-carboxylic acid

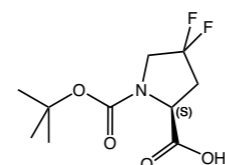
CAS-No. 203866-13-1  
Formula C<sub>10</sub>H<sub>16</sub>FNO<sub>4</sub>  
Mol. weight 233,24 g/mol



**BAA2950 Boc-L-Pro(4,4-F<sub>2</sub>)-OH**

(S)-1-t-Butyloxycarbonyl-4,4-difluoro-pyrrolidine-2-carboxylic acid

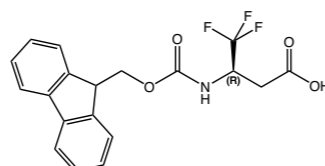
CAS-No. 203866-15-3  
Formula C<sub>10</sub>H<sub>15</sub>F<sub>2</sub>NO<sub>4</sub>  
Mol. weight 251,23 g/mol



**FAA4260 Fmoc-3-amino-4,4,4-trifluoro-butyrac acid (R)**

(R)-3-(9-Fluorenylmethyloxycarbonyl)amino-4,4,4-trifluoro-butyrac acid

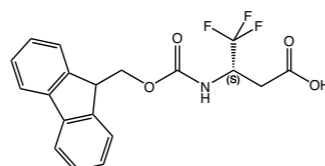
CAS-No. 1310680-34-2  
Formula C<sub>19</sub>H<sub>16</sub>F<sub>3</sub>NO<sub>4</sub>  
Mol. weight 379,33 g/mol



**FAA4270 Fmoc-3-amino-4,4,4-trifluoro-butyrac acid (S)**

(S)-3-(9-Fluorenylmethyloxycarbonyl)amino-4,4,4-trifluoro-butyrac acid

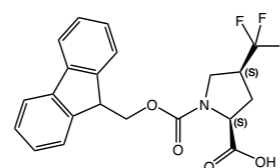
CAS-No. 1310680-31-9  
Formula C<sub>19</sub>H<sub>16</sub>F<sub>3</sub>NO<sub>4</sub>  
Mol. weight 379,33 g/mol



**FAA4320 Fmoc-L-Pro(4-CF<sub>3</sub>)-OH (2S,4S)**

(2S,4S)-1-(9-Fluorenylmethyloxycarbonyl)-4-trifluoromethyl-pyrrolidine-2-carboxylic acid

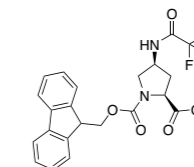
CAS-No. 1242934-32-2  
Formula C<sub>21</sub>H<sub>18</sub>F<sub>3</sub>NO<sub>4</sub>  
Mol. weight 405,37 g/mol



**FAA8940 Fmoc-L-Pro(4-NH-TFA)-OH (2S,4S)**

(2S,4S)-1-(((9H-fluoren-9-yl)methoxy)carbonyl)-4-(2,2,2-trifluoroacetamido)pyrrolidine-2-carboxylic acid

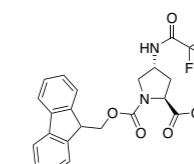
Formula C<sub>22</sub>H<sub>19</sub>F<sub>3</sub>N<sub>2</sub>O<sub>5</sub>  
Mol. weight 448,40 g/mol



**FAA8950 Fmoc-L-Pro(4-NH-TFA)-OH (2S,4R)**

(2S,4R)-1-(((9H-fluoren-9-yl)methoxy)carbonyl)-4-(2,2,2-trifluoroacetamido)pyrrolidine-2-carboxylic acid

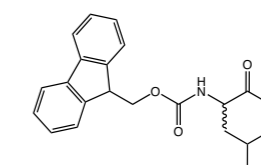
CAS-No. 2864345-48-0  
Formula C<sub>22</sub>H<sub>19</sub>F<sub>3</sub>N<sub>2</sub>O<sub>5</sub>  
Mol. weight 448,40 g/mol



**FAA3450 Fmoc-DfAbu-OH (rac)**

(RS)-2-(9-Fluorenylmethyloxycarbonyl)amino-4,4-difluoro-butyrac acid

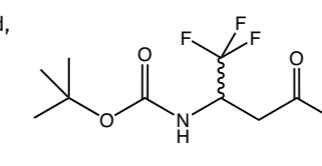
CAS-No. 1260640-43-4  
Formula C<sub>19</sub>H<sub>17</sub>F<sub>2</sub>NO<sub>4</sub>  
Mol. weight 361,34 g/mol



**BAA3400 Boc-3-amino-4,4,4-trifluoro-butyrac acid (RS)**

3-t-Butyloxycarbonylamino-4,4,4-trifluoro-butyrac acid, rac.

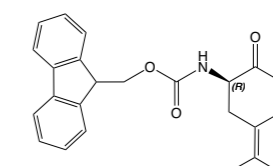
CAS-No. 1185296-42-7  
Formula C<sub>9</sub>H<sub>14</sub>F<sub>3</sub>NO<sub>4</sub>  
Mol. weight 257,21 g/mol



**FAA6330 Fmoc-D-Phe(2-F)-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-2-fluoro-D-phenylalanine

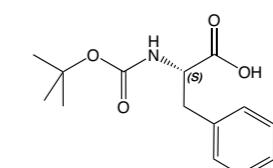
CAS-No. 198545-46-9  
Formula C<sub>24</sub>H<sub>20</sub>FNO<sub>4</sub>  
Mol. weight 405,43 g/mol



**BAA1124 Boc-L-Phe(3-F)-OH**

N-alpha-t-Butyloxycarbonyl-3-fluoro-L-phenylalanine

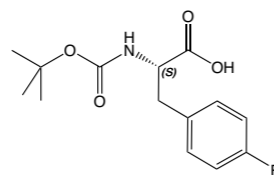
CAS-No. 114873-01-7  
Formula C<sub>14</sub>H<sub>16</sub>FNO<sub>4</sub>  
Mol. weight 283,29 g/mol



**BAA1126 Boc-L-Phe(4-F)-OH**

N-alpha-t-Butyloxycarbonyl-L-4-fluorophenylalanine

CAS-No. 41153-30-4  
Formula  $C_{16}H_{18}FN_2O_4$   
Mol. weight 283,29 g/mol



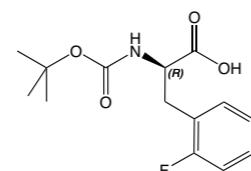
Product details



**BAA1363 Boc-D-Phe(2-F)-OH**

N-alpha-t-Butyloxycarbonyl-2-fluoro-D-phenylalanine

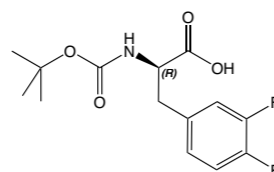
CAS-No. 114873-10-8  
Formula  $C_{16}H_{18}FNO_4$   
Mol. weight 283,29 g/mol



**BAA1365 Boc-D-Phe(3,4-F2)-OH**

N-alpha-t-Butyloxycarbonyl-3,4-difluoro-D-phenylalanine

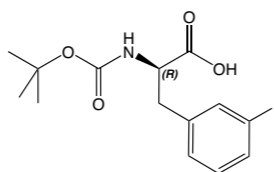
CAS-No. 205445-51-8  
Formula  $C_{16}H_{17}F_2NO_4$   
Mol. weight 301,29 g/mol



**BAA1366 Boc-D-Phe(3-F)-OH**

N-alpha-t-Butyloxycarbonyl-3-fluoro-D-phenylalanine

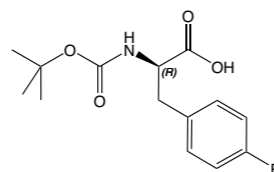
CAS-No. 114873-11-9  
Formula  $C_{16}H_{18}FNO_4$   
Mol. weight 283,29 g/mol



**BAA1369 Boc-D-Phe(4-F)-OH**

N-alpha-t-Butyloxycarbonyl-4-fluoro-D-phenylalanine

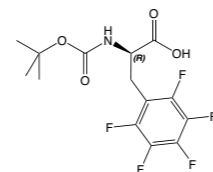
CAS-No. 57292-45-2  
Formula  $C_{16}H_{18}FNO_4$   
Mol. weight 283,29 g/mol



**BAA1375 Boc-D-Phe(F5)-OH**

N-alpha-t-Butyloxycarbonyl-pentafluoro-D-phenylalanine

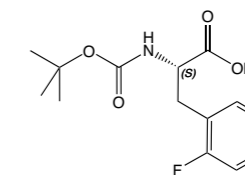
CAS-No. 136207-26-6  
Formula  $C_{14}H_{14}F_5NO_4$   
Mol. weight 355,25 g/mol



**BAA1416 Boc-L-Phe(2-F)-OH**

N-alpha-t-Butyloxycarbonyl-2-fluoro-L-phenylalanine

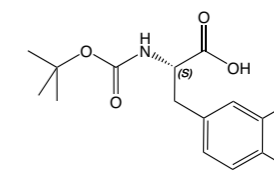
CAS-No. 114873-00-6  
Formula  $C_{16}H_{18}FNO_4$   
Mol. weight 283,29 g/mol



**BAA1418 Boc-L-Phe(3,4-F2)-OH**

N-alpha-t-Butyloxycarbonyl-3,4-difluoro-L-phenylalanine

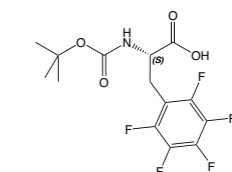
CAS-No. 198474-90-7  
Formula  $C_{16}H_{17}F_2NO_4$   
Mol. weight 301,29 g/mol



**BAA1431 Boc-L-Phe(F5)-OH**

N-alpha-t-Butyloxycarbonyl-pentafluoro-L-phenylalanine

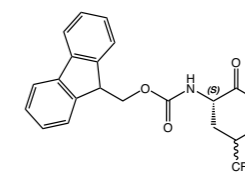
CAS-No. 34702-60-8  
Formula  $C_{14}H_{14}F_5NO_4$   
Mol. weight 355,25 g/mol



**FAA8335 Fmoc-L-Leu(F3)-OH**

N-(9-Fluorenylmethyloxycarbonyl)-5,5,5-trifluoro-L-leucine

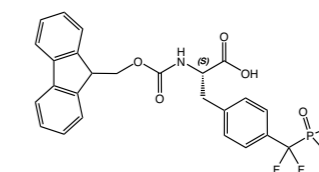
CAS-No. 777946-04-0  
Formula  $C_{21}H_{20}F_3NO_4$   
Mol. weight 407,38 g/mol



**FAA5595 Fmoc-L-F2Pmp-OH**

4-(Difluorophosphonomethyl)-N-(9-fluorenylmethyloxycarbonyl)-L-phenylalanine

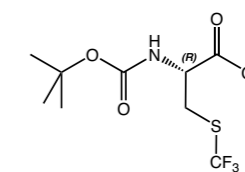
CAS-No. 160751-44-0  
Formula  $C_{25}H_{22}F_2NO_7P$   
Mol. weight 517,42 g/mol



**BAA4360 Boc-L-Cys(CF3)-OH**

N-alpha-t-Butyloxycarbonyl-S-trifluoromethyl-L-cysteine

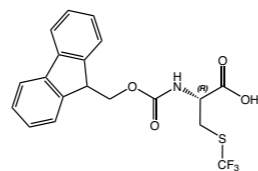
CAS-No. 943926-18-9  
Formula  $C_9H_{14}F_3NO_3S$   
Mol. weight 289,27 g/mol



**FAA8225 Fmoc-L-Cys(CF<sub>3</sub>)-OH**

N-alpha-(9-Fluorenylmethoxycarbonyl)-S-trifluoromethyl-L-cysteine

CAS-No. 1994331-25-7  
Formula C<sub>19</sub>H<sub>16</sub>F<sub>3</sub>NO<sub>4</sub>S  
Mol. weight 411,4 g/mol



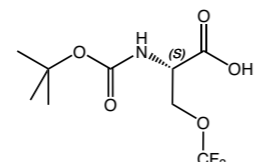
Product details



**BAA4370 Boc-L-Ser(CF<sub>3</sub>)-OH**

N-alpha-t-Butyloxycarbonyl-O-trifluoromethyl-L-serine

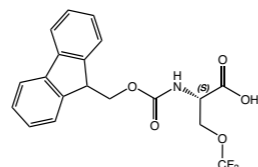
CAS-No. 2131238-29-2  
Formula C<sub>9</sub>H<sub>14</sub>F<sub>3</sub>NO<sub>5</sub>  
Mol. weight 273,21 g/mol



**FAA8285 Fmoc-L-Ser(CF<sub>3</sub>)-OH**

N-alpha-(9-Fluorenylmethoxycarbonyl)-O-trifluoromethyl-L-serine

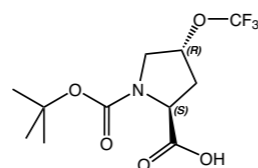
CAS-No. 2550997-61-8  
Formula C<sub>19</sub>H<sub>16</sub>F<sub>3</sub>NO<sub>5</sub>  
Mol. weight 395,33 g/mol



**BAA4390 Boc-L-Pro(4-OCF<sub>3</sub>)-OH (2S,4R)**

(2S,4R)-1-(tert-butoxycarbonyl)-4-(trifluoromethoxy)pyrrolidine-2-carboxylic acid

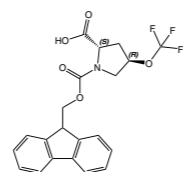
CAS-No. 2287237-19-6  
Formula C<sub>11</sub>H<sub>16</sub>F<sub>3</sub>NO<sub>5</sub>  
Mol. weight 299,25 g/mol



**FAA8305 Fmoc-L-Pro(4-OCF<sub>3</sub>)-OH (2S,4R)**

(2S,4R)-1-(9-Fluorenylmethoxycarbonyl)-4-trifluoromethoxy-pyrrolidine-2-carboxylic acid

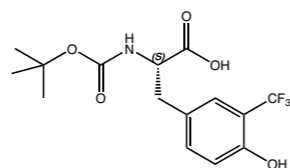
CAS-No. 2580090-37-3  
Formula C<sub>21</sub>H<sub>18</sub>F<sub>3</sub>NO<sub>5</sub>  
Mol. weight 421,37 g/mol



**BAA4400 Boc-L-Tyr(3-CF<sub>3</sub>)-OH**

N-alpha-t-Butyloxycarbonyl-3-trifluoromethyl-L-tyrosine

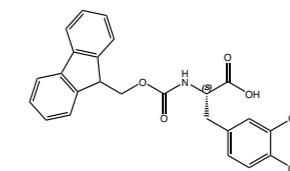
CAS-No. 174748-28-8  
Formula C<sub>15</sub>H<sub>18</sub>F<sub>3</sub>NO<sub>5</sub>  
Mol. weight 349,31 g/mol



**FAA8300 Fmoc-L-Tyr(3-CF<sub>3</sub>)-OH**

N-alpha-(9-Fluorenylmethoxycarbonyl)-3-trifluoromethyl-L-tyrosine

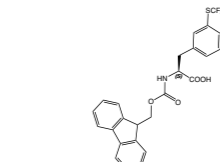
CAS-No. 2576507-89-4  
Formula C<sub>25</sub>H<sub>20</sub>F<sub>3</sub>NO<sub>5</sub>  
Mol. weight 471,43 g/mol



**FAA9230 Fmoc-L-Tyr(3-SCF<sub>3</sub>)-OH**

(S)-2-(((9H-fluoren-9-yl)methoxy)carbonyl)amino-3-(4-hydroxy-3-((trifluoromethyl)thio)phenyl)propanoic acid

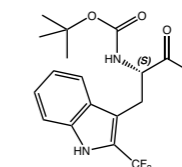
Formula C<sub>25</sub>H<sub>20</sub>F<sub>3</sub>NO<sub>5</sub>S  
Mol. weight 503,49 g/mol



**BAA4410 Boc-L-Trp(2-CF<sub>3</sub>)-OH**

N-alpha-t-Butyloxycarbonyl-2-trifluoromethyl-L-tryptophane

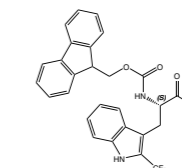
CAS-No. 1032947-73-1  
Formula C<sub>17</sub>H<sub>19</sub>F<sub>3</sub>N<sub>2</sub>O<sub>4</sub>  
Mol. weight 372,34 g/mol



**FAA8290 Fmoc-L-Trp(2-CF<sub>3</sub>)-OH**

N-alpha-(9-Fluorenylmethoxycarbonyl)-2-trifluoromethyl-L-tryptophane

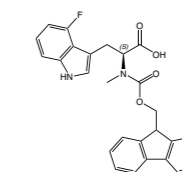
CAS-No. 2576508-09-1  
Formula C<sub>27</sub>H<sub>21</sub>F<sub>3</sub>N<sub>2</sub>O<sub>4</sub>  
Mol. weight 494,47 g/mol



**FAA9020 Fmoc-L-MeTrp(4-F)-OH**

N-alpha-(9-Fluorenylmethoxycarbonyl)-N-alpha-methyl-4-fluorotryptophan

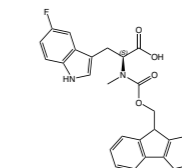
CAS-No. 3012560-98-1  
Formula C<sub>27</sub>H<sub>23</sub>FN<sub>2</sub>O<sub>4</sub>  
Mol. weight 458,49 g/mol



**FAA9025 Fmoc-L-MeTrp(5-F)-OH**

N-alpha-(9-Fluorenylmethoxycarbonyl)-N-alpha-methyl-5-fluorotryptophan

CAS-No. 2097294-20-5  
Formula C<sub>27</sub>H<sub>23</sub>FN<sub>2</sub>O<sub>4</sub>  
Mol. weight 458,49 g/mol

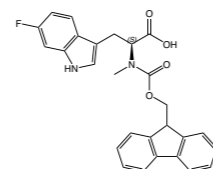




**FAA9030 Fmoc-L-MeTrp(6-F)-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-N-alpha-methyl-6-fluorotryptophan

CAS-No. 3012561-04-2  
Formula  $C_{27}H_{23}FN_2O_4$   
Mol. weight 458,49 g/mol



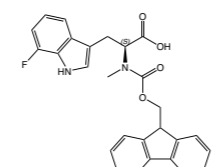
Product details



**FAA9035 Fmoc-L-MeTrp(7-F)-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-N-alpha-methyl-7-fluorotryptophan

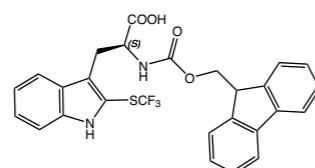
CAS-No. 3012561-08-6  
Formula  $C_{27}H_{23}FN_2O_4$   
Mol. weight 458,49 g/mol



**FAA9220 Fmoc-L-Trp(2-SCF<sub>3</sub>)-OH**

(S)-2-(((9H-fluoren-9-yl)methoxy)carbonyl)amino-3-(2-((trifluoromethyl)thio)-1H-indol-3-yl)propanoic acid

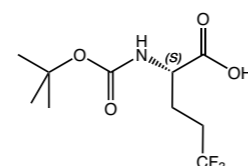
Formula  $C_{27}H_{21}F_3N_2O_5$   
Mol. weight 526,53 g/mol



**BAA4430 Boc-L-TfNva-OH**

N-alpha-t-Butyloxycarbonyl-5,5,5-trifluoro-L-norvaline

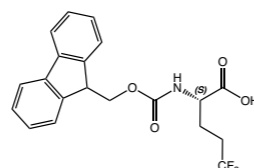
CAS-No. 453556-65-5  
Formula  $C_{10}H_{16}F_3NO_4$   
Mol. weight 271,24 g/mol



**FAA8315 Fmoc-L-TfNva-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-5,5,5-trifluoro-L-norvaline

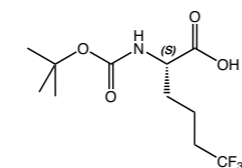
CAS-No. 144207-41-0  
Formula  $C_{20}H_{18}F_3NO_4$   
Mol. weight 393,36 g/mol



**BAA4440 Boc-L-TfNle-OH**

N-alpha-t-Butyloxycarbonyl-6,6,6-trifluoro-L-norleucine

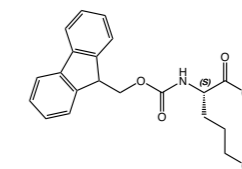
CAS-No. 1056467-60-7  
Formula  $C_{11}H_{18}F_3NO_4$   
Mol. weight 285,26 g/mol



**FAA8325 Fmoc-L-TfNle-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-6,6,6-trifluoro-L-norleucine

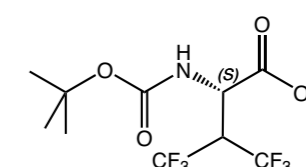
CAS-No. 2230472-61-2  
Formula  $C_{21}H_{20}F_3NO_4$   
Mol. weight 407,39 g/mol



**BAA4450 Boc-L-HfVal-OH**

N-alpha-t-Butyloxycarbonyl-4,4,4,4',4',4'-hexafluoro-L-valine

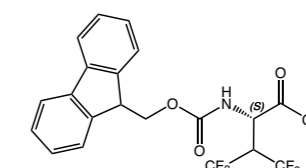
CAS-No. 1098184-03-2  
Formula  $C_{10}H_{13}F_6NO_4$   
Mol. weight 325,21 g/mol



**FAA8320 Fmoc-L-HfVal-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-4,4,4,4',4',4'-hexafluoro-L-valine

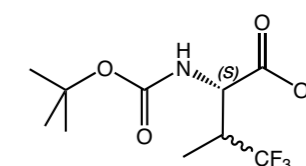
CAS-No. 1212153-68-8  
Formula  $C_{20}H_{15}F_6NO_4$   
Mol. weight 447,33 g/mol



**BAA4460 Boc-L-TfVal-OH (3SR)**

N-alpha-t-Butyloxycarbonyl-4,4,4-trifluoro-L-valine (3SR)

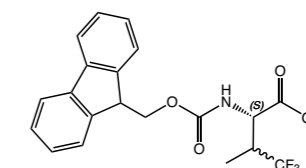
CAS-No. 343328-84-7  
Formula  $C_{10}H_{16}F_3NO_4$   
Mol. weight 271,24



**FAA8330 Fmoc-L-TfVal-OH (3SR)**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-4,4,4-trifluoro-L-valine (3SR)

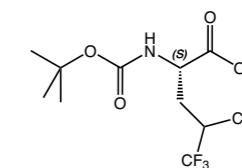
CAS-No. 2382819-01-2  
Formula  $C_{20}H_{18}F_3NO_4$   
Mol. weight 393,36 g/mol



**BAA4470 Boc-L-HfLeu-OH**

N-alpha-t-Butyloxycarbonyl-5,5,5,5',5',5'-hexafluoro-L-leucine

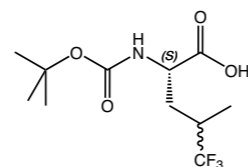
CAS-No. 340714-55-8  
Formula  $C_{11}H_{15}F_6NO_4$   
Mol. weight 339,23 g/mol



**BAA4480 Boc-TfLeu-OH (4SR)**

N-alpha-t-Butyloxycarbonyl-5,5,5-trifluoro-L-leucine (4SR)

CAS-No. 343328-83-6  
Formula C<sub>11</sub>H<sub>18</sub>F<sub>3</sub>NO<sub>4</sub>  
Mol. weight 285,26 g/mol



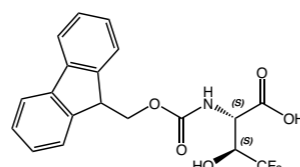
Product details



**FAA8345 Fmoc-L-TfThr-OH (2S,3S)**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-4,4,4-trifluoro-L-threonine (2S,3S)

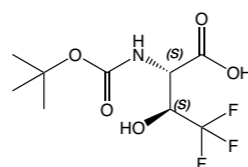
CAS-No. 2801182-08-9  
Formula C<sub>19</sub>H<sub>16</sub>F<sub>3</sub>NO<sub>5</sub>  
Mol. weight 395,33 g/mol



**BAA4490 Boc-L-TfThr-OH (2S,3S)**

N-alpha-t-Butyloxycarbonyl-4,4,4-trifluoro-L-threonine (2S,3S)

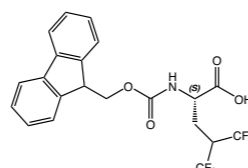
CAS-No. 920314-22-3  
Formula C<sub>9</sub>H<sub>14</sub>F<sub>3</sub>NO<sub>5</sub>  
Mol. weight 273,21 g/mol



**FAA8130 Fmoc-L-HfLeu-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-5,5,5,5',5'-hexafluoro-L-leucine

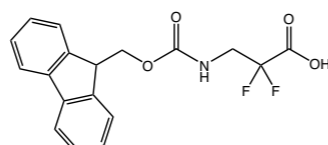
CAS-No. 918667-71-7  
Formula C<sub>21</sub>H<sub>17</sub>F<sub>6</sub>NO<sub>4</sub>  
Mol. weight 461,36 g/mol



**FAA4280 Fmoc-beta-Ala(F<sub>2</sub>)-OH**

3-(9-Fluorenylmethyloxycarbonyl)amino-2,2-difluoro-propionic acid

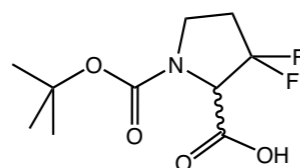
CAS-No. 1310680-49-9  
Formula C<sub>18</sub>H<sub>15</sub>F<sub>2</sub>NO<sub>4</sub>  
Mol. weight 347,32 g/mol



**BAA4420 Boc-Pro(3,3-F<sub>2</sub>)-OH (RS)**

1-t-Butyloxycarbonyl-3,3-difluoro-pyrrolidine-2-carboxylic acid, rac.

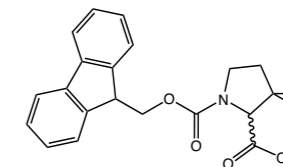
CAS-No. 1822567-84-9  
Formula C<sub>10</sub>H<sub>15</sub>F<sub>2</sub>NO<sub>4</sub>  
Mol. weight 251,23 g/mol



**FAA8360 Fmoc-Pro(3,3-F<sub>2</sub>)-OH (RS)**

1-(9-Fluorenylmethyloxycarbonyl)-3,3-difluoro-pyrrolidine-2-carboxylic acid, rac.

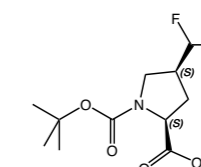
CAS-No. 2137451-60-4  
Formula C<sub>20</sub>H<sub>17</sub>F<sub>2</sub>NO<sub>4</sub>  
Mol. weight 373,36 g/mol



**BAA4510 Boc-L-Pro(4-CF<sub>2</sub>H)-OH (2S,4S)**

(2S,4S)-1-(tert-butyloxycarbonyl)-4-(difluoromethyl)pyrrolidine-2-carboxylic acid

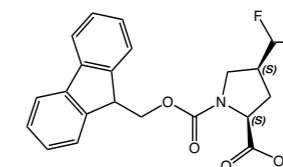
CAS-No. 474417-79-3  
Formula C<sub>11</sub>H<sub>17</sub>F<sub>2</sub>NO<sub>4</sub>  
Mol. weight 265,26 g/mol



**FAA8370 Fmoc-L-Pro(4-CF<sub>2</sub>H)-OH (2S,4S)**

(2S,4S)-1-(9-Fluorenylmethyloxycarbonyl)-4-difluoromethyl-pyrrolidine-2-carboxylic acid

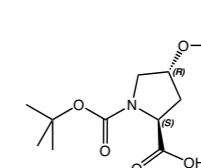
CAS-No. 2808651-95-6  
Formula C<sub>21</sub>H<sub>19</sub>F<sub>2</sub>NO<sub>4</sub>  
Mol. weight 387,38 g/mol



**BAA4540 Boc-L-Pro(4-OCF<sub>2</sub>H)-OH**

(2S,4R) (2S,4R)-1-t-Butyloxycarbonyl-4-difluoromethoxy-pyrrolidine-2-carboxylic acid

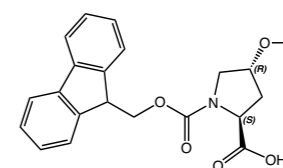
CAS-No. 1807939-39-4  
Formula C<sub>11</sub>H<sub>17</sub>F<sub>2</sub>NO<sub>5</sub>  
Mol. weight 281,26 g/mol



**FAA8400 Fmoc-L-Pro(4-OCF<sub>2</sub>H)-OH (2S,4R)**

(2S,4R)-1-(9-Fluorenylmethyloxycarbonyl)-4-difluoromethoxy-pyrrolidine-2-carboxylic acid

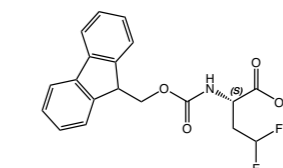
CAS-No. 2382632-22-4  
Formula C<sub>21</sub>H<sub>19</sub>F<sub>2</sub>NO<sub>5</sub>  
Mol. weight 403,38 g/mol



**FAA8365 Fmoc-L-DfAbu-OH**

S)-2-(9-Fluorenylmethyloxycarbonyl)amino-4,4-difluorobutyric acid

CAS-No. 467442-21-3  
Formula C<sub>19</sub>H<sub>17</sub>F<sub>2</sub>NO<sub>4</sub>  
Mol. weight 361,34 g/mol

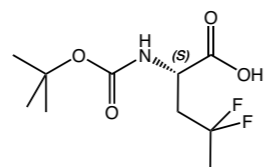




**BAA4380 Boc-L-4,4-DfNva-OH**

(S)-2-t-Butyloxycarbonylamino-4,4-difluoropentanoic acid

CAS-No. 208521-08-8  
Formula C<sub>10</sub>H<sub>17</sub>F<sub>2</sub>NO<sub>4</sub>  
Mol. weight 253,25 g/mol



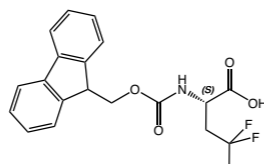
Product details



**FAA8375 Fmoc-L-4,4-DfNva-OH**

(S)-2-(9-Fluorenylmethyloxycarbonylamino)-4,4-difluoropentanoic acid

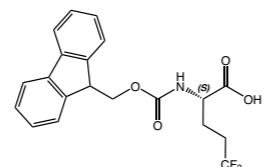
CAS-No. 1234323-60-4  
Formula C<sub>20</sub>H<sub>19</sub>F<sub>2</sub>NO<sub>4</sub>  
Mol. weight 375,37 g/mol



**FAA8315 Fmoc-L-TfNva-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-5,5,5-trifluoro-L-norvaline

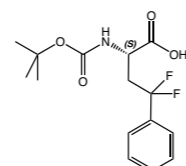
CAS-No. 144207-41-0  
Formula C<sub>20</sub>H<sub>18</sub>F<sub>3</sub>NO<sub>4</sub>  
Mol. weight 393,36 g/mol



**BAA4500 Boc-4,4-DfHPhe-OH (rac.)**

N-alpha-t-Butyloxycarbonyl-4,4-difluoro-homophenylalanine, racemic

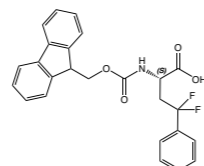
CAS-No. 1694038-02-2  
Formula C<sub>15</sub>H<sub>19</sub>F<sub>2</sub>NO<sub>4</sub>  
Mol. weight 315,32 g/mol



**FAA8385 Fmoc-4,4-DfHPhe-OH (rac.)**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-4,4-difluoro-homophenylalanine, racemic

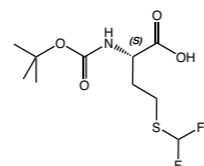
CAS-No. 1699434-70-2  
Formula C<sub>25</sub>H<sub>21</sub>F<sub>2</sub>NO<sub>4</sub>  
Mol. weight 437,44



**BAA4520 Boc-L-DFM-OH**

N-alpha-t-Butyloxycarbonyl-S-difluoromethyl-L-methionine

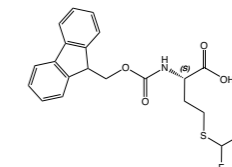
CAS-No. 201870-89-5  
Formula C<sub>10</sub>H<sub>17</sub>F<sub>2</sub>NO<sub>4</sub>S  
Mol. weight 285,31 g/mol



**FAA8380 Fmoc-L-DFM-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-S-difluoromethyl-L-methionine

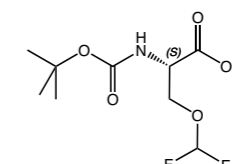
CAS-No. 928654-74-4  
Formula C<sub>20</sub>H<sub>19</sub>F<sub>2</sub>NO<sub>4</sub>S  
Mol. weight 407,43 g/mol



**BAA4530 Boc-L-Ser(CF<sub>2</sub>H)-OH**

N-alpha-t-Butyloxycarbonyl-O-difluoromethyl-L-serine

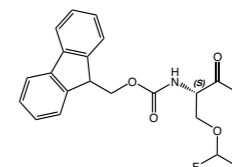
CAS-No. 1510842-52-0  
Formula C<sub>9</sub>H<sub>15</sub>F<sub>2</sub>NO<sub>5</sub>  
Mol. weight 255,22 g/mol



**FAA8390 Fmoc-L-Ser(CF<sub>2</sub>H)-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-O-difluoromethyl-L-serine

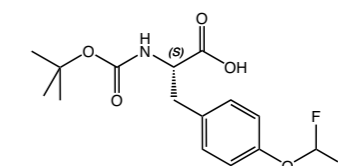
CAS-No. 2426661-45-0  
Formula C<sub>19</sub>H<sub>17</sub>F<sub>2</sub>NO<sub>5</sub>  
Mol. weight 377,34



**BAA4550 Boc-L-Tyr(CF<sub>2</sub>H)-OH**

N-alpha-t-Butyloxycarbonyl-O-difluoromethyl-L-tyrosine

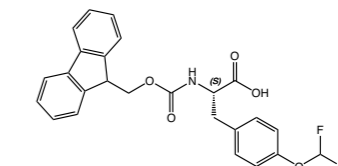
CAS-No. 136581-57-2  
Formula C<sub>15</sub>H<sub>19</sub>F<sub>2</sub>NO<sub>5</sub>  
Mol. weight 331,32



**FAA8395 Fmoc-L-Tyr(CF<sub>2</sub>H)-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-O-difluoromethyl-L-tyrosine

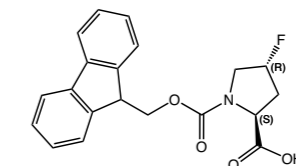
CAS-No. 1496564-27-2  
Formula C<sub>25</sub>H<sub>21</sub>F<sub>2</sub>NO<sub>5</sub>  
Mol. weight 453,44



**FAA4300 Fmoc-L-Pro(4-F)-OH (2S,4R)**

(2S,4R)-1-(9-Fluorenylmethyloxycarbonyl)-4-fluoro-pyrrolidine-2-carboxylic acid

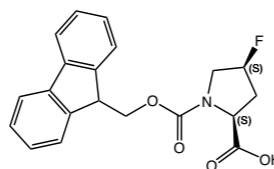
CAS-No. 203866-20-0  
Formula C<sub>20</sub>H<sub>18</sub>FNO<sub>4</sub>  
Mol. weight 355,36 g/mol



**FAA4310 Fmoc-L-Pro(4-F)-OH (2S,4S)**

(2S,4S)-1-(9-Fluorenylmethoxycarbonyl)-4-fluoro-pyrrolidine-2-carboxylic acid

CAS-No. 203866-19-7  
Formula  $C_{20}H_{18}FNO_4$   
Mol. weight 355,36 g/mol



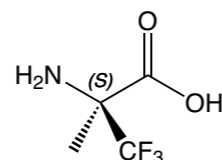
Product details



**HAA1925 H-alpha-Tfm-L-Ala-OH**

(S)-Trifluoromethylalanine

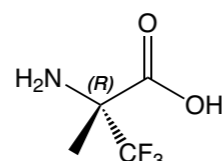
CAS-No. 102210-03-7  
Formula  $C_4H_6F_3NO_2$   
Mol. weight 157,09 g/mol



**HAA1920 H-alpha-Tfm-D-Ala-OH**

(R)-Trifluoromethylalanine

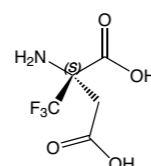
CAS-No. 102210-02-6  
Formula  $C_4H_6F_3NO_2$   
Mol. weight 157,09 g/mol



**HAA1950 H-alpha-Tfm-L-Asp-OH\*HCl**

(S)-Trifluoromethylaspartic acid hydrochloride

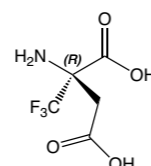
CAS-No. 686318-88-7  
Formula  $C_5H_6F_3NO_4 \cdot HCl$   
Mol. weight 210,10\*36,45 g/mol



**HAA1955 H-alpha-Tfm-D-Asp-OH\*HCl**

(R)-Trifluoromethylaspartic acid hydrochloride

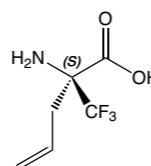
CAS-No. 686318-89-8  
Formula  $C_5H_6F_3NO_4 \cdot HCl$   
Mol. weight 210,10\*36,45 g/mol



**HAA1935 H-alpha-Tfm-L-AlIGly-OH**

(S)-Trifluoromethylallylglycine

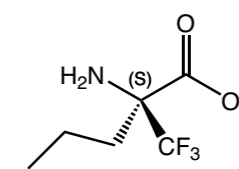
CAS-No. 921224-78-4  
Formula  $C_6H_8F_3NO_2$   
Mol. weight 183,13 g/mol



**HAA2760 H-alpha-Tfm-L-Nva-OH**

(S)-Trifluoromethylnorvaline

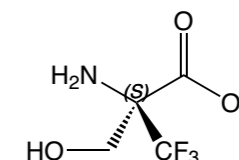
CAS-No. 343567-09-9  
Formula  $C_6H_{10}F_3NO_2$   
Mol. weight 185,14 g/mol



**HAA1960 H-alpha-Tfm-L-Ser-OH**

(S)-Trifluoromethylserine

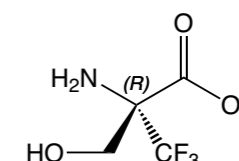
CAS-No. 168074-56-4  
Formula  $C_4H_6F_3NO_3$   
Mol. weight 173,09 g/mol



**HAA1965 H-alpha-Tfm-D-Ser-OH**

(R)-Trifluoromethylserine

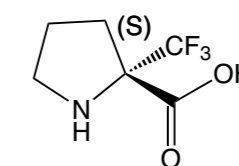
CAS-No. 168074-55-3  
Formula  $C_4H_6F_3NO_3$   
Mol. weight 173,09 g/mol



**HAA1945 H-alpha-Tfm-L-Pro-OH**

(S)-Trifluoromethylproline

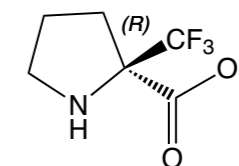
CAS-No. 921224-82-0  
Formula  $C_6H_8F_3NO_2$   
Mol. weight 183,13 g/mol



**HAA1940 H-alpha-Tfm-D-Pro-OH**

(R)-Trifluoromethylproline

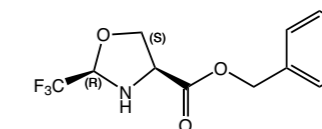
CAS-No. 921224-91-1  
Formula  $C_6H_8F_3NO_2$   
Mol. weight 183,13 g/mol



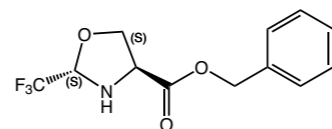
**HAA2765 Tfm-PsiPro-OBn (S,R)**

(2S,4R)-4-Trifluoromethyl-pseudoproline-benzyl ester

CAS-No. 1228376-93-9  
Formula  $C_{12}H_{12}F_3NO_3$   
Mol. weight 175,22 g/mol



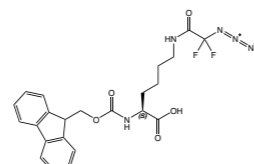
**HAA2770 Tfm-PsiPro-OBn (S,S)**  
 (2S,4S)-4-Trifluoromethyl-pseudoproline-benzyl ester  
 CAS-No. 1228376-92-8  
 Formula  $C_{12}H_{12}F_3NO_3$   
 Mol. weight 175,22 g/mol



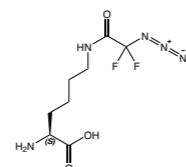
Product details



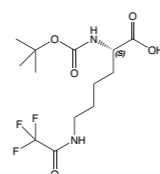
**FAA8825 Fmoc-L-Lys(COCF<sub>2</sub>N<sub>3</sub>)-OH**  
 N2-(((9H-fluoren-9-yl)methoxy)carbonyl)-N6-(2-azido-2,2-difluoroacetyl)-L-lysine  
 Formula  $C_{23}H_{23}F_2N_5O_5$   
 Mol. weight 487,46 g/mol



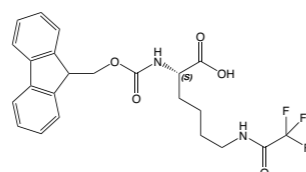
**HAA9295 H-Lys(COCF<sub>2</sub>N<sub>3</sub>)-OH\*HCl**  
 N6-(2-azido-2,2-difluoroacetyl)-L-lysine  
 Formula  $C_8H_{13}F_2N_5O_3^*HCl$   
 Mol. weight 265,22\*36,46 g/mol



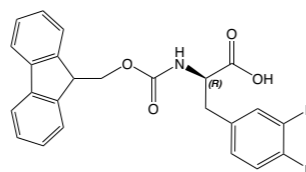
**BAA5790 Boc-L-Lys(TFA)-OH**  
 N-alpha-t-Butyloxycarbonyl-N-epsilon-trifluoroacetyl-L-lysine  
 CAS-No. 16965-06-3  
 Formula  $C_{13}H_{21}F_3N_2O_5$   
 Mol. weight 342,31 g/mol



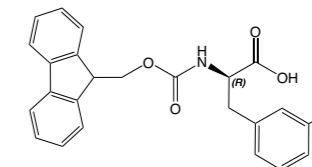
**FAA1588 Fmoc-L-Lys(TFA)-OH**  
 N-alpha-(9-Fluorenylmethyloxycarbonyl)-N-epsilon-trifluoroacetyl-L-lysine  
 CAS-No. 76265-69-5  
 Formula  $C_{23}H_{23}F_3N_2O_5$   
 Mol. weight 464,45 g/mol



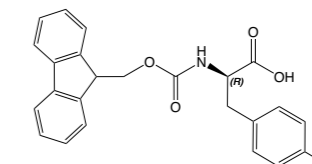
**FAA1678 Fmoc-D-Phe(3,4-F<sub>2</sub>)-OH**  
 N-alpha-(9-Fluorenylmethyloxycarbonyl)-3,4-difluoro-D-phenylalanine  
 CAS-No. 198545-59-4  
 Formula  $C_{24}H_{19}F_2NO_4$   
 Mol. weight 423,39 g/mol



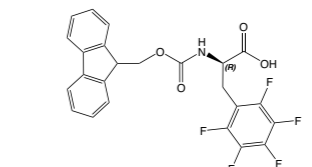
**FAA1680 Fmoc-D-Phe(3-F)-OH**  
 N-alpha-(9-Fluorenylmethyloxycarbonyl)-3-fluoro-D-phenylalanine  
 CAS-No. 198545-72-1  
 Formula  $C_{24}H_{20}FNO_4$   
 Mol. weight 405,43 g/mol



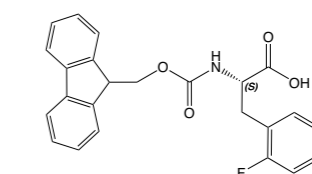
**FAA1682 Fmoc-D-Phe(4-F)-OH**  
 N-alpha-(9-Fluorenylmethyloxycarbonyl)-4-fluoro-D-phenylalanine  
 CAS-No. 177966-64-2  
 Formula  $C_{24}H_{20}FNO_4$   
 Mol. weight 405,43 g/mol



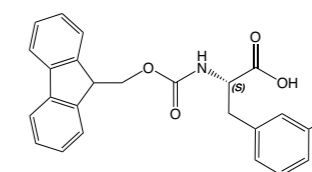
**FAA1686 Fmoc-D-Phe(F<sub>5</sub>)-OH**  
 N-alpha-(9-Fluorenylmethyloxycarbonyl)-pentafluoro-D-phenylalanine  
 CAS-No. 198545-85-6  
 Formula  $C_{24}H_{16}F_5NO_4$   
 Mol. weight 477,36 g/mol



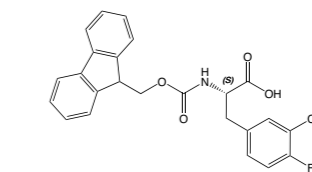
**FAA1733 Fmoc-L-Phe(2-F)-OH**  
 N-alpha-(9-Fluorenylmethyloxycarbonyl)-2-fluoro-L-phenylalanine  
 CAS-No. 205526-26-7  
 Formula  $C_{24}H_{20}FNO_4$   
 Mol. weight 405,43 g/mol



**FAA1736 Fmoc-L-Phe(3-F)-OH**  
 N-alpha-(9-Fluorenylmethyloxycarbonyl)-3-fluoro-L-phenylalanine  
 CAS-No. 198560-68-8  
 Formula  $C_{24}H_{20}FNO_4$   
 Mol. weight 405,43 g/mol



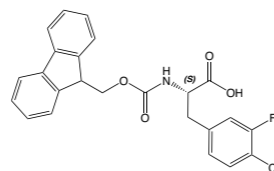
**FAA9130 Fmoc-L-Phe(3-Cl,4-F)-OH**  
 N-alpha-(9-Fluorenylmethyloxycarbonyl)-3-chloro-4-fluoro-L-phenylalanine  
 CAS-No. 1629658-17-8  
 Formula  $C_{24}H_{19}ClFNO_4$   
 Mol. weight 439,87 g/mol



**FAA9135 Fmoc-L-Phe(3-F,4-Cl)-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-3-fluoro-4-chloro-L-phenylalanine

CAS-No. 1629658-27-0  
Formula  $C_{24}H_{19}ClFNO_4$   
Mol. weight 439,87 g/mol



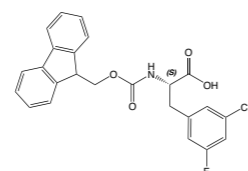
Product details



**FAA9140 Fmoc-L-Phe(3-Cl,5-F)-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-3-chloro-5-fluoro-L-phenylalanine

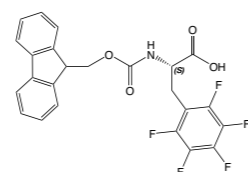
CAS-No. 1998650-51-3  
Formula  $C_{24}H_{19}ClFNO_4$   
Mol. weight 439,87 g/mol



**FAA1743 Fmoc-L-Phe(F5)-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-pentafluoro-L-phenylalanine

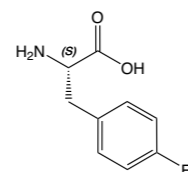
CAS-No. 205526-32-5  
Formula  $C_{24}H_{16}F_5NO_4$   
Mol. weight 477,38 g/mol



**HAA1119 H-L-Phe(4-F)-OH**

4-Fluoro-L-phenylalanine

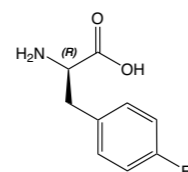
CAS-No. 1132-68-9  
Formula  $C_9H_{10}FNO_2$   
Mol. weight 183,18 g/mol



**HAA1510 H-D-Phe(4-F)-OH**

4-Fluoro-D-phenylalanine

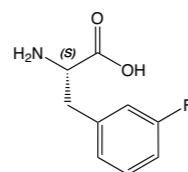
CAS-No. 18125-46-7  
Formula  $C_9H_{10}FNO_2$   
Mol. weight 183,18 g/mol



**HAA1528 H-L-Phe(3-F)-OH**

3-Fluoro-L-phenylalanine

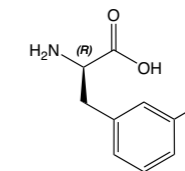
CAS-No. 19883-77-3  
Formula  $C_9H_{10}FNO_2$   
Mol. weight 183,18 g/mol



**HAA1567 H-D-Phe(3-F)-OH**

3-Fluoro-D-phenylalanine

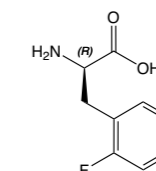
CAS-No. 110117-84-5  
Formula  $C_9H_{10}FNO_2$   
Mol. weight 183,18 g/mol



**HAA1566 H-D-Phe(2-F)-OH\*HCl**

2-Fluoro-D-phenylalanine hydrochloride

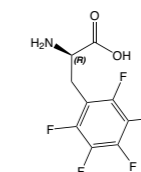
CAS-No. 122839-51-4  
Formula  $C_9H_{10}FNO_2 \cdot HCl$   
Mol. weight 183,18\*36,45 g/mol



**HAA6420 H-D-Phe(F5)-OH**

Pentafluoro-D-phenylalanine

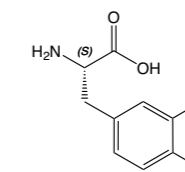
CAS-No. 40332-58-9  
Formula  $C_9H_6F_5NO_2$   
Mol. weight 255,14 g/mol



**HAA7010 H-L-Phe(3,4-F2)-OH**

3,4-Difluoro-L-phenylalanine

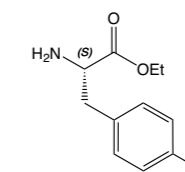
CAS-No. 31105-90-5  
Formula  $C_9H_9F_2NO_2$   
Mol. weight 201,17 g/mol



**HAA7030 H-L-Phe(4-F)-OEt\*HCl**

4-Fluoro-L-phenylalanine ethyl ester hydrochloride

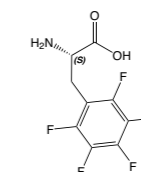
CAS-No. 1534-90-3  
Formula  $C_{11}H_{14}FNO_2 \cdot HCl$   
Mol. weight 211,23\*36,45 g/mol



**HAA7070 H-L-Phe(F5)-OH**

Pentafluoro-L-phenylalanine

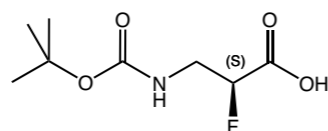
CAS-No. 34702-59-5  
Formula  $C_9H_6F_5NO_2$   
Mol. weight 255,14 g/mol



**BAA3010 Boc-beta-Ala(2-F)-OH (S)**

(S)-N-t-Butyloxycarbonyl-2-fluoro-beta-alanine

CAS-No. 294858-41-6  
Formula  $C_8H_{14}FNO_4$   
Mol. weight 207,20 g/mol



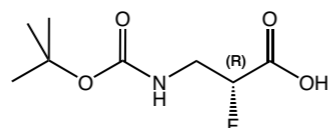
Product details



**BAA3000 Boc-beta-Ala(2-F)-OH (R)**

(R)-N-t-Butyloxycarbonyl-2-fluoro-beta-alanine

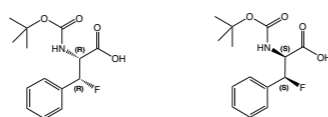
CAS-No. 412352-68-2  
Formula  $C_8H_{14}FNO_4$   
Mol. weight 207,20 g/mol



**BAA3020 Boc-beta-fluoro-Phe-OH**

(RR,SS)-N-t-Butyloxycarbonyl-3-fluoro-phenylalanine

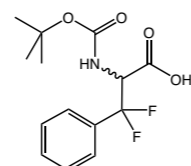
CAS-No. 1609549-23-6  
Formula  $C_{14}H_{18}FNO_4$   
Mol. weight 283,30 g/mol



**BAA2990 Boc-beta,beta-difluoro-Phe-OH (rac)**

N-t-Butyloxycarbonyl-3,3-difluoro-DL-phenylalanine

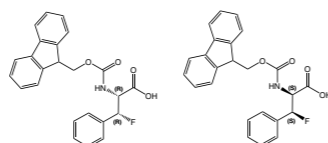
CAS-No. 2351921-13-4  
Formula  $C_{14}H_{17}F_2NO_4$   
Mol. weight 301,29 g/mol



**FAA4500 Fmoc-beta-fluoro-Phe-OH (RR,SS)**

(RR,SS)-N-(9-Fluorenylmethyloxycarbonyl)-3-fluoro-phenylalanine

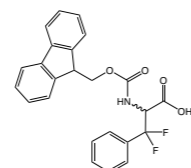
CAS-No. 160464-28-8  
Formula  $C_{24}H_{20}FNO_4$   
Mol. weight 405,42 g/mol



**FAA4470 Fmoc-beta,beta-difluoro-Phe-OH (rac)**

N-(9-Fluorenylmethyloxycarbonyl)-3,3-difluoro-DL-phenylalanine

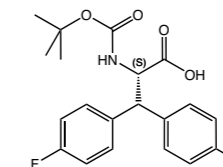
CAS-No. 140647-56-9  
Formula  $C_{24}H_{19}F_2NO_4$   
Mol. weight 423,41 g/mol



**BAA3030 Boc-L-Dip(4-F,4'-F)-OH**

N-alpha-t-Butyloxycarbonyl-3,3-di-(p-fluorophenyl)-L-alanine

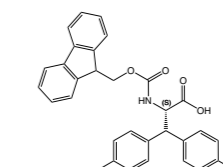
CAS-No. 481055-29-2  
Formula  $C_{20}H_{21}F_2NO_4$   
Mol. weight 377,38 g/mol



**FAA4530 Fmoc-L-Dip(4-F,4'-F)-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-3,3-di-(p-fluorophenyl)-L-alanine

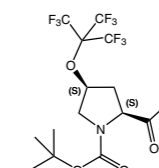
CAS-No. 2250437-36-4  
Formula  $C_{30}H_{23}F_2NO_4$   
Mol. weight 499,51 g/mol



**BAA3040 Boc-L-cis-Hyp(Nfb)-OH**

N-alpha-t-Butyloxycarbonyl-O-(nonafluoro-t-butyl)-cis-L-hydroxyproline

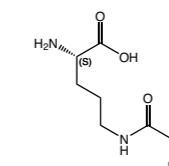
CAS-No. 1610605-20-3  
Formula  $C_{14}H_{16}F_9NO_5$   
Mol. weight 449,27 g/mol



**HAA3650 H-L-Orn(Tfa)-OH**

N-delta-Trifluoroacetyl-ornithine

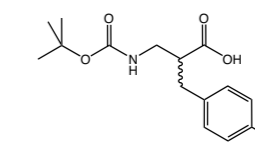
CAS-No. 5123-49-9  
Formula  $C_7H_{11}F_3N_2O_3$   
Mol. weight 228,17 g/mol



**BAA3770 Boc-beta2-HPhe(4-CF<sub>3</sub>)-OH**

N-t-Butyloxycarbonyl-beta2-4-trifluoromethyl-homophenylalanine, racemic

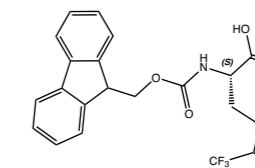
CAS-No. 1233506-08-5  
Formula  $C_{16}H_{20}F_3NO_4$   
Mol. weight 347,33 g/mol



**FAA8005 Fmoc-L-Phe(2-CF<sub>3</sub>)-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-2-trifluoromethyl-L-phenylalanine

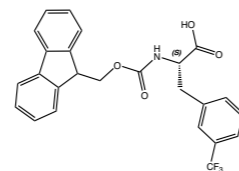
CAS-No. 352523-16-1  
Formula  $C_{25}H_{20}F_3NO_4$   
Mol. weight 455,43 g/mol



**FAA8050 Fmoc-L-Phe(3-CF<sub>3</sub>)-OH**

N-alpha-(9-Fluorenylmethoxycarbonyl)-3-trifluoromethyl-L-phenylalanine

CAS-No. 205526-27-8  
Formula C<sub>25</sub>H<sub>20</sub>F<sub>3</sub>NO<sub>4</sub>  
Mol. weight 455,43 g/mol



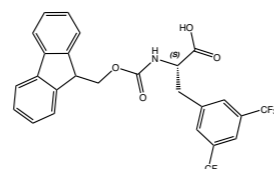
Product details



**FAA8055 Fmoc-L-Phe(3,5-(CF<sub>3</sub>)<sub>2</sub>)-OH**

N-alpha-(9-Fluorenylmethoxycarbonyl)-3,5-bis-(trifluoromethyl)-L-phenylalanine

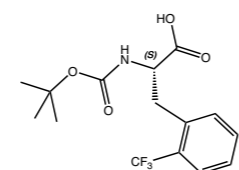
CAS-No. 1260615-32-4  
Formula C<sub>26</sub>H<sub>19</sub>F<sub>6</sub>NO<sub>4</sub>  
Mol. weight 523,43 g/mol



**BAA4030 Boc-L-Phe(2-CF<sub>3</sub>)-OH**

N-alpha-t-Butyloxycarbonyl-2-trifluoromethyl-L-phenylalanine

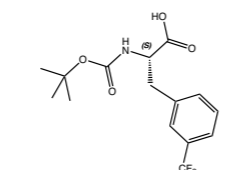
CAS-No. 167993-21-7  
Formula C<sub>15</sub>H<sub>18</sub>F<sub>3</sub>NO<sub>4</sub>  
Mol. weight 333,31 g/mol



**BAA4110 Boc-L-Phe(3-CF<sub>3</sub>)-OH**

N-alpha-t-Butyloxycarbonyl-3-trifluoromethyl-L-phenylalanine

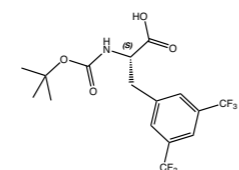
CAS-No. 142995-31-1  
Formula C<sub>15</sub>H<sub>18</sub>F<sub>3</sub>NO<sub>4</sub>  
Mol. weight 333,31 g/mol



**BAA4120 Boc-L-Phe(3,5-(CF<sub>3</sub>)<sub>2</sub>)-OH**

N-alpha-t-Butyloxycarbonyl-3,5-bis-(trifluoromethyl)-L-phenylalanine

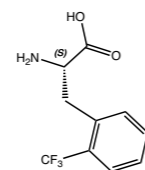
CAS-No. 1207604-30-5  
Formula C<sub>16</sub>H<sub>17</sub>F<sub>6</sub>NO<sub>4</sub>  
Mol. weight 401,31 g/mol



**HAA8990 H-L-Phe(2-CF<sub>3</sub>)-OH**

2-(Trifluoromethyl)-L-phenylalanine

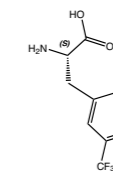
CAS-No. 119009-47-1  
Formula C<sub>10</sub>H<sub>10</sub>F<sub>3</sub>NO<sub>2</sub>  
Mol. weight 233,19 g/mol



**HAA9050 H-L-Phe(3-CF<sub>3</sub>)-OH**

3-(trifluoromethyl)-L-phenylalanine

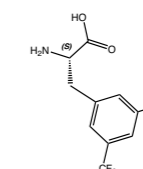
CAS-No. 122839-48-9  
Formula C<sub>10</sub>H<sub>10</sub>F<sub>3</sub>NO<sub>2</sub>  
Mol. weight 233,19 g/mol



**HAA9055 H-L-Phe(3,5-(CF<sub>3</sub>)<sub>2</sub>)-OH**

3,5-bis-(trifluoromethyl)-L-phenylalanine

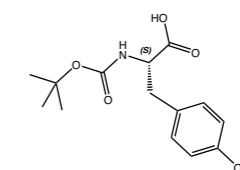
CAS-No. 1241680-98-7  
Formula C<sub>11</sub>H<sub>9</sub>F<sub>6</sub>NO<sub>2</sub>  
Mol. weight 301,19 g/mol



**BAA4200 Boc-L-Phe(4-OCF<sub>3</sub>)-OH**

N-alpha-t-Butyloxycarbonyl-4-trifluoromethoxy-L-phenylalanine

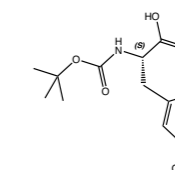
CAS-No. 1041011-20-4  
Formula C<sub>15</sub>H<sub>18</sub>F<sub>3</sub>NO<sub>5</sub>  
Mol. weight 349,31 g/mol



**BAA4100 Boc-L-Phe(3-OCF<sub>3</sub>)-OH**

N-alpha-t-Butyloxycarbonyl-3-trifluoromethoxy-L-phenylalanine

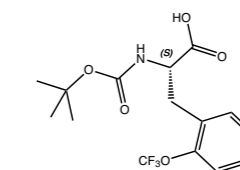
CAS-No. 1212864-57-7  
Formula C<sub>15</sub>H<sub>18</sub>F<sub>3</sub>NO<sub>5</sub>  
Mol. weight 349,31 g/mol



**BAA4020 Boc-L-Phe(2-OCF<sub>3</sub>)-OH**

N-alpha-t-Butyloxycarbonyl-2-trifluoromethoxy-L-phenylalanine

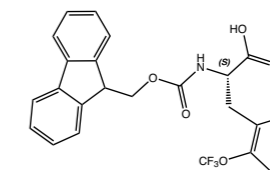
CAS-No. 1213060-08-2  
Formula C<sub>15</sub>H<sub>18</sub>F<sub>3</sub>NO<sub>5</sub>  
Mol. weight 349,31 g/mol



**FAA8000 Fmoc-L-Phe(2-OCF<sub>3</sub>)-OH**

N-alpha-(9-Fluorenylmethoxycarbonyl)-2-trifluoromethoxy-L-phenylalanine

CAS-No. 1260593-24-5  
Formula C<sub>25</sub>H<sub>20</sub>F<sub>3</sub>NO<sub>5</sub>  
Mol. weight 471,43 g/mol





## Product details

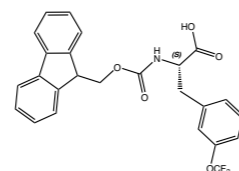
**FAA8045 Fmoc-L-Phe(3-OCF<sub>3</sub>)-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-3-trifluoromethoxy-L-phenylalanine

CAS-No. 1260592-32-2

Formula C<sub>25</sub>H<sub>20</sub>F<sub>3</sub>NO<sub>5</sub>

Mol. weight 471,43 g/mol

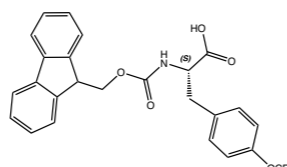
**FAA8095 Fmoc-L-Phe(4-OCF<sub>3</sub>)-OH**

N-alpha-(9-Fluorenylmethyloxycarbonyl)-4-trifluoromethoxy-L-phenylalanine

CAS-No. 1260614-87-6

Formula C<sub>25</sub>H<sub>20</sub>F<sub>3</sub>NO<sub>5</sub>

Mol. weight 471,43 g/mol

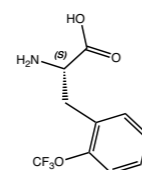
**HAA8980 H-L-Phe(2-OCF<sub>3</sub>)-OH**

2-(Trifluoromethoxy)-L-phenylalanine

CAS-No. 1103894-71-8

Formula C<sub>10</sub>H<sub>10</sub>F<sub>3</sub>NO<sub>3</sub>

Mol. weight 249,19 g/mol

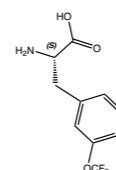
**HAA9045 H-L-Phe(3-OCF<sub>3</sub>)-OH**

3-(Trifluoromethoxy)-L-phenylalanine

CAS-No. 1241678-35-2

Formula C<sub>10</sub>H<sub>10</sub>F<sub>3</sub>NO<sub>3</sub>

Mol. weight 249,19 g/mol

**References:**

- Fluorine in Peptide Design and Protein Engineering; C. Jäckel and B. Kokschi; *Eur J. Org. Chem.* 2005; **21**: 4483-4503. <https://doi.org/10.1002/ejoc.200500205>
- Conformational properties of peptides incorporating a fluorinated pseudoproline residue; G. Chaume, D. Feytens, G. Chassaing, S. Lavielle, T. Brigaud, E. Miclet; *New J. Chem.* 2013; **37**: 1336-1342. <https://doi.org/10.1039/C3NJ41084F>
- Impact of fluorination on proteolytic stability of peptides in human blood plasma; V. Asante, J. Mortier, H. Schlüter, B. Kokschi; *Bioorg. Med. Chem.* 2013; **21**: 3542-3546. <https://doi.org/10.1016/j.bmc.2013.03.051>
- Fluorinated Proteins: From Design and Synthesis to Structure and Stability; E. N. G. Marsh; *Acc. Chem. Res.* 2014; **47**: 2878-2886. <https://doi.org/10.1021/ar500125m>
- How Ca-Fluoroalkyl Amino Acids and Peptides Interact with Enzymes: Studies Concerning the Influence on Proteolytic Stability, Enzymatic Resolution and Peptide Coupling; R. Smits, B. Kokschi; *Current Topics in Medicinal Chemistry* 2006; **6**: 1483-1498. <https://doi.org/10.2174/15680260677951055>
- Approaches to Obtaining Fluorinated  $\alpha$ -Amino Acids; J. Moschner, V. Stulberg, R. Fernandes, S. Huhmann, J. Leppkes, B. Kokschi; *Chem. Rev.* 2019; **119**: 10718-10801. <https://doi.org/10.1021/acs.chemrev.9b00024>
- Applications of fluorine-containing amino acids for drug design; H. Mei, J. Han, K. D. Klika, K. Izawa, T. Sato, N. A. Meanwell, V. A. Soloshonok; *Eur. J. Med. Chem.* 2020; **186**: 111826. <https://doi.org/10.1016/j.ejmech.2019.111826>
- Fluorinated amino acids: compatibility with native protein structures and effects on protein-protein interactions; M. Salwiczek, E. K. Nyakatura, U. I. M. Gerling, S. Ye, B. Kokschi; *Chem. Soc. Rev.* 2012; **41**: 2135-2171. <https://doi.org/10.1039/C1CS15241F>
- Substitution Effect of the Trifluoromethyl Group on the Bioactivity in Medicinal Chemistry: Statistical Analysis and Energy Calculations; A. Abula, Z. Xu, Z. Zhu, C. Peng, Z. Chen, W. Zhu, H. A. Aisa; *J. Chem. Inf. Model* 2020; <https://doi.org/10.1021/acs.jcim.0c00898>
- Synthesis of an MIF-1 analogue containing enantiopure (S)- $\alpha$ -trifluoromethyl-proline and biological evaluation on nociception; I. Jlalía, N. Lensen, G. Chaume, E. Dzhambazova, L. Astasidi, R. Hadjiolova, A. Bocheva, T. Brigaud; *Eur J Med Chem* 2013; **62**: 122-9. <https://doi.org/10.1016/j.ejmech.2012.12.041>

## Notes

Two columns of horizontal dotted lines for taking notes.

# **Empowering Peptide Innovation**