



immobilized enzymes - custom immobilization - enzymatic process development – chiral compounds

# ChiralVision

*innovative biocatalysis!*

## - Chiral Intermediates -

### *Introduction*

ChiralVision has an extensive experience in the field of enzyme applications including:

- enzyme selection and sourcing
- immobilization
- enzymatic resolution
- enzymatic process development
- scale up
- enzymatic production of chiral compounds.

Many enzyme classes are available for the various biocatalysis application:

Hydrolases: synthesis of chiral amines, esters, alcohols, amides, carboxylic acids (lipases, esterases, proteases and amidases):

Ene reductase: asymmetric double bond reduction

Ketoreductase: asymmetric ketone reduction into chiral alcohols

Nitrile hydratases: synthesis of chiral amides from nitriles

Nitrilase: synthesis of chiral carboxylic acids from nitriles

Oxynitrilase: asymmetric synthesis of chiral cyanohydrins

$\omega$ -Transaminase: synthesis of chiral amines from ketones, ketoacids

Our chiral knowledge is available for you. Contact us to find out if our technology can be applied to prepare your compound of interest.



## Chiral Intermediates list

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### $\alpha$ -amino acids

Prod. No.	Product name [IUPAC]	Specifications	Structure
CV0601	D-Isoleucine [(2R,3R)-2-amino-3-methylpentanoic acid] H-D-Ile-OH	Form: C <sub>6</sub> H <sub>13</sub> NO <sub>2</sub> MW: 131.17 Cas. No: 319-78-8 e.e.: 99 % ee d.e.: 98 % ee	
CV1101	BOC-D-Isoleucine <i>hemihydrate</i> [BOC-(2R,3R)-2-amino-3-methylpentanoic acid] BOC-D-Ile-OH	F: C <sub>11</sub> H <sub>21</sub> NO <sub>4</sub> . 1/2H <sub>2</sub> O MW: 231.29 +9 Cas. No: 55721-65-8 e.e.: 99 % ee d.e.: 98 % ee	
CV2101	FMOC-D-Isoleucine [FMOC-(2R,3R)-2-amino-3-methylpentanoic acid] FMOC-D-Ile-OH	Form: C <sub>21</sub> H <sub>23</sub> NO <sub>4</sub> MW: 353.41 Cas. No: 143688-83-9 e.e.: 99 % ee d.e.: 98 % ee	
CV0602	L-allo-Isoleucine [(2S,3R)-2-amino-3-methylpentanoic acid] H-allo-Ile-OH	Form: C <sub>6</sub> H <sub>13</sub> NO <sub>2</sub> MW: 131.17 Cas. No: 1509-34-8 e.e.: 99 % ee d.e.: 98 % ee	
CV1102	BOC-L-allo-Isoleucine [BOC-(2S,3R)-2-amino-3-methylpentanoic acid] BOC-allo-Ile-OH	Form: C <sub>11</sub> H <sub>21</sub> NO <sub>4</sub> MW: 231.29 Cas. No: 35264-07-4 e.e.: 99 % ee d.e.: 98 % ee	
CV2102	FMOC-L-allo-Isoleucine [FMOC-(2S,3R)-2-amino-3-methylpentanoic acid] FMOC-allo-Ile-OH	Form: C <sub>21</sub> H <sub>23</sub> NO <sub>4</sub> MW: 353.41 Cas. No: 251316-98-0 e.e.: 99 % ee d.e.: 98 % ee	



Prod. No.	Product name [IUPAC]	Specifications	Structure
CV0603	D-allo-Isoleucine [(2R,3S)-2-amino-3-methylpentanoic acid] H-D-allo-Ile-OH	Form: C <sub>6</sub> H <sub>13</sub> NO <sub>2</sub> MW: 131.17 Cas. No: 1509-35-9 e.e.: 99 % ee d.e.: 98 % ee	
CV1103	BOC-D-allo-Isoleucine [BOC-(2R,3S)-2-amino-3-methylpentanoic acid] BOC-D-allo-Ile-OH	Form: C <sub>11</sub> H <sub>21</sub> NO <sub>4</sub> MW: 231.29 Cas. No: 55780-90-0 e.e.: 99 % ee d.e.: 98 % ee	
CV2103	FMOC-D-allo-Isoleucine [FMOC-(2R,3S)-2-amino-3-methylpentanoic acid] FMOC-D-allo-Ile-OH	Form: C <sub>21</sub> H <sub>23</sub> NO <sub>4</sub> MW: 353.41 Cas. No: 118904-37-3 e.e.: 99 % ee d.e.: 98 % ee	
CV0604	D-tert-Leucine [(R)-2-amino-3,3-dimethylbutanoic acid] H-tBu-D-Gly-OH H-D-Tle-OH	Form: C <sub>6</sub> H <sub>13</sub> NO <sub>2</sub> MW: 131.17 Cas. No: 26782-71-8 e.e.: >99 %	
CV1106	BOC-D-tert-Leucine [BOC-(R)-2-amino-3,3-dimethylbutanoic acid] Boc-tBu-D-Gly-OH Boc-D-Tle-OH	Form: C <sub>11</sub> H <sub>21</sub> NO <sub>4</sub> MW: 231.29 Cas. No: 124655-17-0 e.e.: >99 %	
CV2104	FMOC-D-tert-Leucine [FMOC-(R)-2-amino-3,3-dimethylbutanoic acid] Fmoc-tBu-D-Gly-OH Fmoc-D-Tle-OH	Form: C <sub>21</sub> H <sub>23</sub> NO <sub>4</sub> MW: 353.42 Cas. No: 198543-64-5 e.e.: >99 %	
CV0503	L-Norvaline [(S)-2-Aminopentanoic acid]	Form: C <sub>5</sub> H <sub>11</sub> NO <sub>2</sub> MW: 117.15 Cas. No: 6600-40-4 e.e.: >99 %	
CV1007	BOC-L-Norvaline [BOC-(S)-2-Aminopentanoic acid]	Form: C <sub>10</sub> H <sub>19</sub> NO <sub>4</sub> MW: 217.26 Cas. No: 53308-95-5 e.e.: >99 %	
CV2001	Fmoc-L-Norvaline [FMOC-(S)-2-Aminopentanoic acid]	Form: C <sub>20</sub> H <sub>21</sub> NO <sub>4</sub> MW: 339.39 Cas. No: 135112-28-6 e.e.: >99 %	

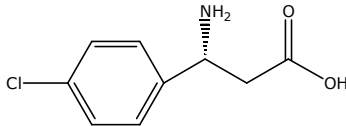
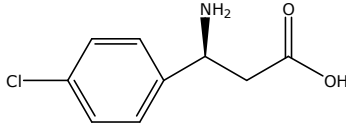
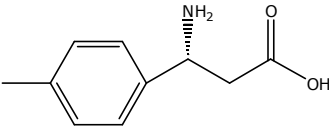


Prod. No.	Product name [IUPAC]	Specifications	Structure
CV0504	D-Norvaline [(R)-2-Aminopentanoic acid]	Form: C <sub>5</sub> H <sub>11</sub> NO <sub>2</sub> MW: 117.15 Cas. No: 2013-12-9 e.e.: >99 %	
CV1008	BOC-D-Norvaline [BOC-(R)-2-Aminopentanoic acid]	Form: C <sub>10</sub> H <sub>19</sub> NO <sub>4</sub> MW: 217.26 Cas. No: 57521-85-4 e.e.: >99 %	
CV2002	Fmoc-D-Norvaline [FMOC-(R)-2-Aminopentanoic acid]	Form: C <sub>20</sub> H <sub>21</sub> NO <sub>4</sub> MW: 339.39 Cas. No: 144701-24-6 e.e.: >99 %	

## β-amino acids

Prod. No.	Product name [IUPAC]	Specifications	Structure
CV0901	(R)-β-phenylalanine [(R)-3-amino-3-phenylpropanoic acid]	Form: C <sub>9</sub> H <sub>11</sub> NO <sub>2</sub> MW: 165.19 Cas. No: 13921-90-9 e.e.: 99%	
CV1401	BOC-(R)-β-phenylalanine [BOC-(3R)-3-amino-3-phenylpropanoic acid]	Form: C <sub>14</sub> H <sub>19</sub> NO <sub>4</sub> MW: 265.31 Cas. No: 161024-80-2 e.e.: 99%	
CV2401	FMOC-(R)-β-phenylalanine [FMOC-(3R)-3-amino-3-phenylpropanoic acid]	Form: C <sub>24</sub> H <sub>21</sub> NO <sub>4</sub> MW: 387.44 Cas. No: 220498-02-2 e.e.: 99%	
CV1104	(R)-β-phenylalanine ethyl ester [ethyl (3R)-3-amino-3-phenylpropionate]	Form: C <sub>11</sub> H <sub>15</sub> NO <sub>2</sub> MW: 193.25 Cas. No: - e.e.: 99%	
CV0902	(S)-β-phenylalanine [(S)-3-amino-3-phenylpropanoic acid]	Form: C <sub>9</sub> H <sub>11</sub> NO <sub>2</sub> MW: 165.19 Cas. No: 40856-44-8 e.e.: >99 %	
CV1402	BOC-S-β-phenylalanine [BOC-(3S)-3-amino-3-phenylpropanoic acid]	Form: C <sub>14</sub> H <sub>19</sub> NO <sub>4</sub> MW: 265.31 Cas. No: 103365-47-5 e.e.: >99 %	



Prod. No.	Product name [IUPAC]	Specifications	Structure
CV2402	Fmoc-S-β-phenylalanine [Fmoc-(3S)-3-amino-3-phenylpropanoic acid]	Form: C <sub>24</sub> H <sub>21</sub> NO <sub>4</sub> MW: 387.44 Cas. No: 209252-15-3 e.e.: >99 %	
CV1105	(S)-β-phenylalanine ethyl ester [ethyl (3R)-3-amino-3-phenylpropionate]	Form: C <sub>11</sub> H <sub>15</sub> NO <sub>2</sub> MW: 193.25 Cas. No: - e.e.: >99 %	
CV0903	(R)-β-(p-chlorophenyl)alanine [(R)-3-Amino-3-(4-chloro-phenyl)-propionic acid]	Form: C <sub>9</sub> H <sub>10</sub> NO <sub>2</sub> Cl MW: 199.64 Cas. No: 131690-61-4 e.e.: >>98 %	
CV1403	BOC-(R)-β-(p-chlorophenyl)alanine [BOC-(R)-3-Amino-3-(4-chloro-phenyl)-propionic acid]	Form: C <sub>14</sub> H <sub>18</sub> ClNO <sub>4</sub> MW: 299.75 Cas. No: 479064-93-2 e.e.: >>98 %	
CV2403	Fmoc-(R)-β-(p-chlorophenyl)alanine [Fmoc-(R)-3-Amino-3-(4-chloro-phenyl)-propionic acid]	Form: C <sub>24</sub> H <sub>20</sub> ClNO <sub>4</sub> MW: 421.88 Cas. No: 479064-92-1 e.e.: >>98 %	
CV1107	(R)-β-(p-chlorophenyl)alanine ethyl ester [ethyl (R)-3-Amino-3-(4-chloro-phenyl)-propionate]	Form: C <sub>11</sub> H <sub>14</sub> ClNO <sub>2</sub> MW: 227.69 Cas. No: - e.e.: >>98 %	
CV0904	(S)-β-(p-chlorophenyl)alanine [(S)-3-Amino-3-(4-chloro-phenyl)-propionic acid]	Form: C <sub>9</sub> H <sub>10</sub> NO <sub>2</sub> Cl MW: 199.64 Cas. No: 131690-60-3 e.e.: >>98 %	
CV1404	BOC-(S)-β-(p-chlorophenyl)alanine [BOC-(S)-3-Amino-3-(4-chloro-phenyl)-propionic acid]	Form: C <sub>14</sub> H <sub>18</sub> ClNO <sub>4</sub> MW: 299.75 Cas. No: 479064-90-9 e.e.: >>98 %	
CV2404	Fmoc-(S)-β-(p-chlorophenyl)alanine [Fmoc-(S)-3-Amino-3-(4-chloro-phenyl)-propionic acid]	Form: C <sub>24</sub> H <sub>20</sub> ClNO <sub>4</sub> MW: 421.88 Cas. No: 479064-91-0 e.e.: >>98 %	
CV1108	(S)-β-(p-chlorophenyl)alanine ethyl ester [ethyl (S)-3-Amino-3-(4-chloro-phenyl)-propionate]	Form: C <sub>11</sub> H <sub>14</sub> ClNO <sub>2</sub> MW: 227.69 Cas. No: - e.e.: >>98 %	
CV1003	(R)-β-(p-methylphenyl)alanine [(R)-3-Amino-3-(4-methyl-phenyl)-propionic acid]	Form: C <sub>10</sub> H <sub>13</sub> NO <sub>2</sub> MW: 179.22 Cas. No: 479064-87-4 e.e.: >99 %	



Prod. No.	Product name [IUPAC]	Specifications	Structure
CV1503	BOC-(R)-β-(p-methylphenyl)alanine [BOC-(R)-3-Amino-3-(4-methyl-phenyl)-propionic acid]	Form: C <sub>15</sub> H <sub>21</sub> N <sub>1</sub> O <sub>4</sub> MW: 279.33 Cas. No: 479064-97-6 e.e.: >99 %	
CV2503	FMOC-(R)-β-(p-methylphenyl)alanine [FMOC-(R)-3-Amino-3-(4-methyl-phenyl)-propionic acid]	Form: C <sub>25</sub> H <sub>23</sub> N <sub>1</sub> O <sub>4</sub> MW: 401.45 Cas. No: 479064-98-7 e.e.: >99 %	
CV1203	(R)-β-(p-methylphenyl)alanine ethyl ester [ethyl (R)-3-Amino-3-(4-methyl-phenyl)-propionate]	Form: C <sub>12</sub> H <sub>17</sub> N <sub>1</sub> O <sub>2</sub> MW: 207.27 Cas. No: - e.e.: >99 %	
CV1004	(S)-β-(p-methylphenyl)alanine [(S)-3-Amino-3-(4-methyl-phenyl)-propionic acid]	Form: C <sub>10</sub> H <sub>13</sub> N <sub>1</sub> O <sub>2</sub> MW: 179.22 Cas. No: 479065-00-4 e.e.: >99 %	
CV1504	BOC-(S)-β-(p-methylphenyl)alanine [BOC-(S)-3-Amino-3-(4-methyl-phenyl)-propionic acid]	Form: C <sub>15</sub> H <sub>21</sub> N <sub>1</sub> O <sub>4</sub> MW: 279.33 Cas. No: 479064-96-5 e.e.: >99 %	
CV2504	FMOC-(S)-β-(p-methylphenyl)alanine [FMOC-(S)-3-Amino-3-(4-methyl-phenyl)-propionic acid]	Form: C <sub>25</sub> H <sub>23</sub> N <sub>1</sub> O <sub>4</sub> MW: 401.45 Cas. No: 479064-99-8 e.e.: >99 %	
CV1204	(S)-β-(p-methylphenyl)alanine ethyl ester [ethyl (S)-3-Amino-3-(4-methyl-phenyl)-propionate]	Form: C <sub>12</sub> H <sub>17</sub> N <sub>1</sub> O <sub>2</sub> MW: 207.27 Cas. No: - e.e.: >99 %	
CV1001	(R)-β-(p-methoxyphenyl)alanine [(R)-3-Amino-3-(4-methoxy-phenyl)-propionic acid]	Form: C <sub>10</sub> H <sub>13</sub> N <sub>1</sub> O <sub>3</sub> MW: 195.22 Cas. No: 131690-57-8 e.e.: >99 %	
CV1501	BOC-(R)-β-(p-methoxyphenyl)alanine [BOC-(R)-3-Amino-3-(4-methoxy-phenyl)-propionic acid]	Form: C <sub>15</sub> H <sub>21</sub> N <sub>1</sub> O <sub>5</sub> MW: 295.33 Cas. No: 500788-87-4 e.e.: >99 %	
CV2501	FMOC-(R)-β-(p-methoxyphenyl)alanine [FMOC-(R)-3-Amino-3-(4-methoxy-phenyl)-propionic acid]	Form: C <sub>25</sub> H <sub>23</sub> N <sub>1</sub> O <sub>5</sub> MW: 417.46 Cas. No: 511272-33-6 e.e.: >99 %	
CV1201	(R)-β-(p-methoxyphenyl)alanine ethyl ester [ethyl (R)-3-Amino-3-(4-methoxy-phenyl)-propionate]	Form: C <sub>12</sub> H <sub>17</sub> N <sub>1</sub> O <sub>3</sub> MW: 223.27 Cas. No: - e.e.: >99 %	



Prod. No.	Product name [IUPAC]	Specifications	Structure
CV1002	(S)-β-(p-methoxyphenyl)alanine [(S)-3-Amino-3-(4-methoxy-phenyl)-propionic acid]	Form: C <sub>10</sub> H <sub>13</sub> NO <sub>3</sub> MW: 195.22 Cas. No: 131690-56-7 e.e.: >98 %	
CV1502	BOC-(S)-β-(p-methoxyphenyl)alanine [BOC-(S)-3-Amino-3-(4-methoxy-phenyl)-propionic acid]	Form: C <sub>15</sub> H <sub>21</sub> NO <sub>5</sub> MW: 295.33 Cas. No: - e.e.: >98 %	
CV2502	FMOC-(S)-β-(p-methoxyphenyl)alanine [FMOC-(S)-3-Amino-3-(4-methoxy-phenyl)-propionic acid]	Form: C <sub>25</sub> H <sub>23</sub> NO <sub>5</sub> MW: 417.46 Cas. No: - e.e.: >98 %	
CV1202	(S)-β-(p-methoxyphenyl)alanine ethyl ester [ethyl (S)-3-Amino-3-(4-methoxy-phenyl)-propionate]	Form: C <sub>12</sub> H <sub>17</sub> NO <sub>3</sub> MW: 223.27 Cas. No: - e.e.: >98 %	
CV0701	(R)-3-Amino-3-(2-thienyl)-propionic acid	Form: C <sub>7</sub> H <sub>9</sub> NO <sub>2</sub> S MW: 171.22 Cas. No: 73495-10-0	
CV1205	Boc-(R)-3-Amino-3-(2-thienyl)-propionic acid	Form: C <sub>12</sub> H <sub>17</sub> NO <sub>4</sub> S MW: 271.33 Cas. No: n.a.	
CV2201	Fmoc-(R)-3-Amino-3-(2-thienyl)-propionic acid	Form: C <sub>22</sub> H <sub>19</sub> NO <sub>4</sub> S MW: 393.46 Cas. No: n.a.	
CV0702	(S)-3-Amino-3-(2-thienyl)-propionic acid	Form: C <sub>7</sub> H <sub>9</sub> NO <sub>2</sub> S MW: 171.22 Cas. No: 131829-50-0	
CV1206	Boc-(S)-3-Amino-3-(2-thienyl)-propionic acid	Form: C <sub>12</sub> H <sub>17</sub> NO <sub>4</sub> S MW: 271.33 Cas. No: n.a.	
CV2202	Fmoc-(S)-3-Amino-3-(2-thienyl)-propionic acid	Form: C <sub>22</sub> H <sub>19</sub> NO <sub>4</sub> S MW: 393.46 Cas. No: n.a.	

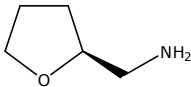


Prod. No.	Product name [IUPAC]	Specifications	Structure
CV1307	(R)-3-Amino-3-(1-naphthyl)-propionic acid	Form: C <sub>13</sub> H <sub>13</sub> NO <sub>2</sub> MW: 215.25 Cas. No: 775280-91-6	
CV1801	Boc-(R)-3-Amino-3-(1-naphthyl)-propionic acid	Form: C <sub>18</sub> H <sub>21</sub> NO <sub>4</sub> MW: 315.37 Cas. No: 500789-00-4	
CV2801	Fmoc-(R)-3-Amino-3-(1-naphthyl)-propionic acid	Form: C <sub>28</sub> H <sub>23</sub> NO <sub>4</sub> MW: 437.49 Cas. No: 511272-47-2	
CV1525	ethyl (R)-3-amino-3-(1-naphthyl)-propionate	Form: C <sub>15</sub> H <sub>17</sub> NO <sub>2</sub> MW: 243.31 Cas. No: 275826-40-9	
CV1308	(S)-3-Amino-3-(1-naphthyl)-propionic acid	Form: C <sub>13</sub> H <sub>13</sub> NO <sub>2</sub> MW: 215.25 Cas. No: 275826-46-5	
CV1802	Boc-(S)-3-Amino-3-(1-naphthyl)-propionic acid	Form: C <sub>18</sub> H <sub>21</sub> NO <sub>4</sub> MW: 315.37 Cas. No: 500770-68-3	
CV2802	Fmoc-(S)-3-Amino-3-(1-naphthyl)-propionic acid	Form: C <sub>28</sub> H <sub>23</sub> NO <sub>4</sub> MW: 437.49 Cas. No: 507472-10-8	
CV1526	ethyl (S)-3-amino-3-(1-naphthyl)-propionate	Form: C <sub>15</sub> H <sub>17</sub> NO <sub>2</sub> MW: 243.31 Cas. No: n.a.	

## amines

Prod. No.	Prod. No.	Prod. No.	Prod. No.
CV0501	(R)-tetrahydrofurfurylamine [(R)-2-(aminomethyl)tetrahydrofuran]	Form: C <sub>5</sub> H <sub>11</sub> NO MW: 101.15 Cas. No: 7202-43-9 e.e.: >98 %	



<b>Prod. No.</b>	<b>Product name [IUPAC]</b>	<b>Specifications</b>	<b>Structure</b>
CV0502	(S)-tetrahydrofurfurylamine [(S)-2-(aminomethyl)tetrahydrofuran]	Form: C <sub>5</sub> H <sub>11</sub> NO MW: 101.15 Cas. No: 7175-81-7 e.e.: >98 %	



## Ordering information

*Orders can be send to:*

- email: sales@chiralvision.com (preferred)
- fax: +31 71 332 2125 or +31 84 758 7301

*Please provide:*

- contact person (+phone number and email address))
- shipping address
- billing address
- internal ordering number
- VAT number

*Shipping cost (express delivery): see website*

*\*\*\* Contact us for a quote in US dollars \*\*\**

ChiralVision' general Terms of Sale (see website) apply. Payment terms: 30 days. Prices are subject to change without notice.

### **Sales and technical support:**

ChiralVision  
J.H. Oortweg 21  
2333 CH Leiden  
The Netherlands

info@chiralvision.com  
Tel: +31 71 332 2124  
Mob. +31 64 603 8991  
Fax: +31 71 332 2125 OR +31 84 758 7301