L-VALINE, FEED GRADE 98 %

APPEARANCE
White to light grey crystalline powder
Bulk density: 600 kg / m3 ± 10 %
Angle of repose: 40 °
Part. size distribution: min. 70 % 0 – 500 μm
Solubility: approx. 54.0 g/L water at 25 °C

SPECIFICATION

<table>
<thead>
<tr>
<th>Substance</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assay (%) min. (as is)</td>
<td>96.5</td>
</tr>
<tr>
<td>Assay (%) min. (on dry matter basis)</td>
<td>98.0</td>
</tr>
<tr>
<td>Loss on drying (%) max.</td>
<td>1.5</td>
</tr>
</tbody>
</table>

MOLECULAR DATA
Molecular formula: C₅H₁₁NO₂
Molecular weight: 117.15 g/mol

PRODUCTION
ValAMINO® is produced by a fermentation process.

USE
ValAMINO® serves for the adequate supply of the essential amino acid valine. In particular, protein reduced diets for piglets, growing pigs as well as broilers and layers, based on high corn contents that are optimized for an ecologically desirable low nitrogen excretion show a considerable deficiency in valine. This deficiency can perfectly be countered by using ValAMINO®.

NUTRITIONAL MATRIX

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Matrix value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valine content (dry matter): min.</td>
<td>98.0 %</td>
</tr>
<tr>
<td>Digestibility</td>
<td>100.0 %</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>72.1 %</td>
</tr>
<tr>
<td>Metabolizable energy</td>
<td>[MJ/kg] [kcal/kg]</td>
</tr>
<tr>
<td>ME poultry</td>
<td>22.0 5,260</td>
</tr>
<tr>
<td>DE pig</td>
<td>24.4 5,830</td>
</tr>
<tr>
<td>ME pig</td>
<td>22.9 5,480</td>
</tr>
<tr>
<td>NE pig</td>
<td>17.7 4,235</td>
</tr>
</tbody>
</table>

PROCESSING
ValAMINO® can be processed into premixes, mineral feeds and compound feeds, also in milk replacers, by any technical procedure. Its technical properties guarantee homogeneous mixability and stability against reseparation.

STORAGE AND STABILITY
ValAMINO® should be kept cool and dry in unopened original packaging. Storage conditions of 5 ° – 30 °C and 20 – 75 % rel. humidity are recommended. Under these conditions its active content is guaranteed for 2 years from the manufacturing date. The manufacturing date is part of the lot number found on each package.

PACKAGING
Valve type paperbag 2 ply one line PE-coated, 25 kg net.
Bulk bag / FIBC 500 kg net.
Product Information

ValAMINO®

REGULATORY AFFAIRS
CAS-No. 72-18-4
Customs tariff number: 29224985
ValAMINO® is approved as Feed Additive according to European feed law and labeled accordingly.
ValAMINO® is not subject to dangerous goods regulations.

SAFETY AND ENVIRONMENT
ValAMINO® can be handled safely.
According to EU chemicals legislation, it is non-toxic, and, if correctly handled, it does not irritate the skin and mucous membranes. Skin sensitization has never been reported, and is unlikely to occur. Accordingly, it is not classified as a hazardous chemical. The usual regulations of safety and hygiene involving handling chemicals should be followed.

For additional information, please contact us directly.

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10/ 2017