Rovabio™ Excel AP

Rovabio™ Excel AP is a concentrated powder whose main enzymatic activities are xylanase and β-glucanase obtained from a fermentation broth of Penicillium funiculosum. This product hydrolyses pentosans and β glucans in vegetal raw materials.

SPECIFICATION

<table>
<thead>
<tr>
<th>Appearance</th>
<th>powder</th>
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<tbody>
<tr>
<td>Color</td>
<td>From light to dark beige due to natural wheat flour color variation</td>
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<tr>
<td>Minimum activities:</td>
<td></td>
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<tr>
<td>Endo - 1,4 - β - xylanase N° EC 3.2.1.8</td>
<td>22 000 units visco/g (equivalent to 1400 units AXC/g)</td>
</tr>
<tr>
<td>Endo - 1,3 (4)- β-glucanase N° EC 3.2.1.6</td>
<td>2 000 AGL units/g</td>
</tr>
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</table>

1 unit of endo 1,4 - β - xylanase is defined as the amount of enzyme which will hydrolyse the substrate, reducing the viscosity of the solution, to give a change in relative fluidity of 1 (dimensionless unit)/mn/g of enzyme under the conditions of the assay (viscometer developed by orange leaf company).
1 AXC unit is defined as the release of oligomers from of chromophore-bound xylan which are not precipitable by ethanol, equivalent to an absorbance of 1.23 units at 590 nm.
1 AGL unit is defined as the release of oligomers from a chromophore-bound glucan which are not precipitable by ethanol, equivalent to an absorbance of 0.82 at 590 nm.

TYPICAL ANALYSIS

<table>
<thead>
<tr>
<th>Dried fermentation broth, free of active microorganisms, diluted on a wheat flour carrier</th>
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<tbody>
<tr>
<td>Density :</td>
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<tr>
<td>Particle size :</td>
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<td>. above 500 µ :</td>
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<td>. between 100 and 500 µ :</td>
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</tbody>
</table>

* This information is the result of tests made on representative batches. It is given as an indicative measure and it should not be considered as a warranty or a commercial specification.
DURATION OF GUARANTEE
12 months within the manufacturing date, in closed packaging, below 30°C and protected from humidity.

CONDITION FOR USE THE PRODUCT
Animal Feeding

- Incorporation into mash feeds or pellets produced at temperature below 85°C
- Target species: chickens for fattening, laying hens, turkeys for fattening and pigs for fattening.
- Dose in feed: Xylanase: 1,100 units visco./kg of feed (equivalent to 70 AXC units/kg), β-glucanase: 100 AGL units/kg of feed. Equivalent to 50 g of Rovabio™ Excel AP per tonne of feed.
- This product must be diluted in a premix before incorporation in feeds

METHODS OF ANALYSIS

Method for endo - 1,4 - β - xylanase activity:
Reference: RPCL - Q4.50 – issue 2.4

- The assay is based on the enzymatic hydrolysis of a standard wheat arabinoxylan solution, the activity being determined by the reduction in relative viscosity (viscometer developed by Orange Leaf company).

Reference: RPCL - Q4.33 - issue 3.3

- Measuring absorbance at 590 nm enables endo-1,4-β-xylanase activity to be determined by a colorimetric method with a chromophore substratum

Method for endo - 1,3 (4) - β-glucanase activity
Reference : RPCL - Q4.32 – issue 4.1

- Measuring absorbance at 590 nm enables endo - 1,3 (4)-β-glucanase activity to be determined by a colorimetric method with a chromophore substratum.

Method for Cellulase DNS CMC activity
Reference Q4.22B – issue 3.6

- The reaction, catalysed by cellulase, involves the endohydrolysis of the 1,4-β-D-glucosidic bonds in cellulose (lichenin and cereal β-D-glucans) forming β-1,4 glucan oligosaccharides.

SAFETY
Handling of the product may cause allergic reactions by inhalation.
Use in the feed: once incorporated into the feed, the product offers all original guarantees of safety.