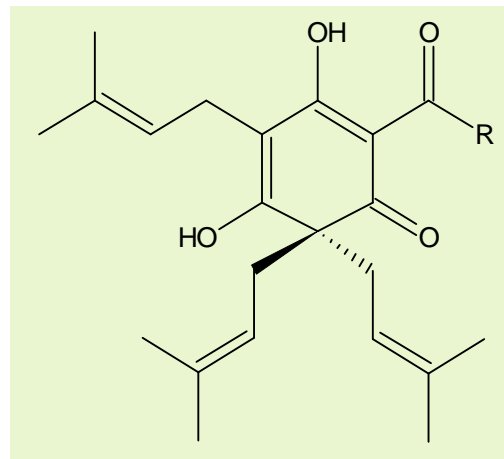


## Beta Bio 10 %

### ❖ Overview

- **Beta Bio 10 %** is produced from CO<sub>2</sub> extract of hops. It contains the natural β-acids fraction of hops formulated in alkaline water.
- β-acids are the most antibacterial compound found in hops. Less than 10 ppm of **Beta Bio 10 %** can inhibit the growth of most gram positive bacteria in laboratory testing. Beta acids have also been shown to inhibit the growth of certain algae at ~ 200 ppm.
- **Beta Bio 10 %** is typically added to molasses based feed stocks for the production of yeast or alcohol at a 50 to 100 ppm dose rate.



Structure of β-acids

R = -CH-(CH<sub>3</sub>)<sub>2</sub> (Colupulone)  
 R = -CH<sub>2</sub>-CH-(CH<sub>3</sub>)<sub>2</sub> (Lupulone)  
 R = -CH(CH<sub>3</sub>)-CH<sub>2</sub>-CH<sub>3</sub> (Adlupulone)

### ❖ Specification

- **Description:** A brown, clear solution containing the potassium salts of hop β-acids
- **Beta-acids:** 10 ± 0.5% (w/w) by HPLC
- **Density (at 20°C):** 1.03 (± 0.01) g/ml
- **Viscosity (at 20°C):** typically about 300 cP
- **pH in water:** 10.0 ± 0.5

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## ❖ Properties

### □ Appearance

A clear brown liquid at room temperature, becoming more mobile when heated.

### □ Organoleptic Properties

Pleasant, floral aroma. Subtle bitter taste with floral overtones when diluted 1000 x into water.

### □ Stability

When stored in the original unopened containers **Beta Bio 10 %** is very stable. Use any opened containers as soon as possible.

### □ Quality

All Hopsteiner® products are produced in plants accredited to internationally accepted quality standards. **Beta Bio 10 %** is certified as Kosher, including Passover, GRAS, Food Grade and is not an antibiotic.

## ❖ Packaging

**Beta Bio 10%** is regularly available in 20-kg pails (HDPE) or 200-kg drums (PP). Other package sizes (including totes) are available on request.

## ❖ Product Use

We recommend that **Beta Bio 10 %** be used in its undiluted form. It is not difficult to pump and is compatible with the usual materials used in food processing plants.

### □ Dosage

Actual dosage will depend on the application, but typically 50-100 ppm of **Beta Bio 10 %** is effective as an antibacterial agent.

### □ Application

**Beta Bio 10 %** may be dosed directly into process streams or added to solid or semi-solid products in a suitable blender. When dosing into pipelines or vessels it is best to ensure that there is vigorous mixing so as to disperse the product quickly. This can be achieved by injecting into the bulk fluid at high pressure through a suitable nozzle or small bore pipe so that a high degree of turbulence is generated.

### □ Storage

**Beta Bio 10 %** has excellent storage stability and may be kept for at least one year at ambient temperature in unopened, original containers. Bulk storage in heated tanks (up to 40°C) is also possible provided the product is not directly exposed to air and used within about 3 months.

### □ Safety

**Beta Bio 10 %** should be handled with due care, especially to prevent contact with the eyes. Any contamination of the skin should be washed off with soap and water. If **Beta Bio 10 %** gets into the eyes, irrigate with excess water until clear and seek immediate medical attention.

For full safety information please see the relevant Steiner material safety data sheet.

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## ❖ Supplementary Information

### ❑ **Beta-acids**

$\beta$ -acids are a natural major constituent of hops and are present in amounts ranging from about 2 – 12 % depending on the variety. They are soluble in organic solvents and are readily extracted by liquid or supercritical carbon dioxide. CO<sub>2</sub> hop extract produced commercially for use in brewing beer typically contain from 15 – 35 %  $\beta$ -acids, of which there are three major homologs – colupulone, lupulone and adlupulone. All three are active as anti-bacterial agents.

## ❖ Analytical Method

The active ingredient in **Beta Bio 10 %** may be assessed by either of the following methods:

- ❑  $\beta$ -acids - by HPLC using the current hops extract ICE standard according to the ASBC Hops-14 or EBC 7.8 methods.\*

\*ICE = International Calibration Extract

ASBC = American Society of Brewing Chemists

EBC = European Brewery Convention

## ❖ Technical Support

We will be pleased to offer help and advice on the full range of Hopsteiner® products:

- ❑ Copies of all relevant analytical procedures
- ❑ Material Safety Data Sheets (MSDS)
- ❑ Assistance with pilot or commercial trials
- ❑ Specialist analytical services

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