kalsec®

Kalsec Advanced Hop Bitter Extracts

Tetralone 46-112

Tetralone is the registered Kalsec trade name for tetra-hyrdo-isoalpha-acid (generic). The concentration of effective material is 9.5% w/w by HPLC in aqueous solution. Tetralone should only be used for post fermentation addition, when added to the kettle the utilization is too low (only 10-15%).

Application for light stability, bitterness, foam enhancement in beer

- Tetralone is an isomerized and reduced product and is therefore suitable to be applied in the production of light stable beer; this is to prevent the formation of the lightstruck (skunky) character in the beer.
- Tetralone also offers a higher organoleptic bitterness than iso-alpha-acid. The organoleptic bitterness is 1.7 which means it has 1.7 times the bitterness level of iso-alpha-acid which is 1.0. Simply expressed 1.0 ppm of pure Tetralone retained in the beer amounts to 1.7 bittering units organoleptically, however, the HPLC will only read 1.0 ppm. Some brewers believe the organoleptic bitterness of Tetralone is really 1.2 to 1.5, they apply these values in their calculation.
- Tetralone is also an excellent foam enhancer. Many brewers add Tetralone to traditionally hopped beers in the post fermentation stage (ideally prior to final filtration) in order to increase the foam capacity. 1 ppm Tetralone retained in the beer usually increases the NIBEM value by 10-12 seconds. This means 4 ppm retained in the beer would increase the NIBEM value from – 270-310 seconds. We normally recommend the addition of 3-4 ppm of Tetralone for foam enhancement. 0.1g of effective material per one hectoliter beer is equal to 1 ppm. Tetralone enhances the foam stand as well as cling. An average utilization of 70-75% is typical.

Based on our experience we believe the Tetralone level in the finished beer should not exceed 7.0 ppm. A level higher than that could cause some beers an astringent character in the bitterness perception. Of course, this depends a lot on the beer type, malt, etc, and some brewers successfully exceed this level.

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Reduced Isolone 46-08

Reduced Isolone is the registered Kalsec trade name for dihydra-iso-alpha-acid (generic). The concentration of effective material is 30.0% w/w by HPLC in aqueous solution. Reduced Isolone 46-08 should only be used for kettle addition due to its lower solubility level.

Application for light stability and bitterness in beer

- Reduced Isolone is an isomerized and reduced product and is therefore suitable to be applied in the production of light stable beer; this to prevent the formation of lightstruck (skunky) character in the beer.
- Reduced Isolone has a lower organoleptic bitterness then iso-alpha-acid. The organoleptic bitterness is 0.7 which means it has only 0.7 times the bitterness level of iso-alpha-acid which is 1.0. Simply expressed 1.0 ppm of pure Reduced Isolone retained in the beer amounts to 0.7 bittering units organoleptically, however the HPLC will read 1.0 ppm.
- Reduced Isolone is not a foam enhancer. It is ideal for kettle addition because it allows a 50-60% utilization in the brew kettle which is the only isomerized and reduced product doing so.
- Based on our experience every light stable beer should be produced with a certain level of bitterness (1/4 – 1/2) added to the brew kettle. This eliminates the worty character which appears in beer which has been hopped post fermentation only.
- There is no limit to the quantity which can be added to the brew kettle. 0.1g of effective material per one hectoliter of beer is equal to 1 ppm.

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Isolone 46-122

Isolone is the registered Kalsec trade name for iso-alpha-acid (generic). The concentration of effective material is 30% w/w by HPLC in aqueous solution. Isolone can be applied in the brew kettle as well as post fermentation.

Application to obtain bitterness in beer

- Isolone is an isomerized but unreduced product which cannot be applied to produce a light stable beer. The organoleptic bitterness is 1.0 which means 1.0 ppm of pure Isolone retained in the beer amounts to 1.0 bittering units; it will also appear on the HPLC as 1.0 ppm.
- Isolone is not a foam enhancer, but dosed at higher levels can have slightly positive effect on foam. The utilization in the kettle can be expected between 60 and 70%, post fermentation between 80-90%. 0.1g of effective material per one hectoliter is equal to 1 ppm.

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Hexalone 46-05

Hexalone is the registered trade name for hexa hydro-iso-alpha acid (generic). The concentration of effective material is 20% by w/w by HPLC in a PG solution. Hexalone should only be used for post fermentation addition, when added to the kettle the utilization rate is too low.

Application for light stability, bitterness, foam enhancement in beer.

- Hexalone is an isomerized and reduced product and is therefore suitable to be applied in the production of lightstable beer; this is to prevent the formation of lightstruck (skunky) character in the beer.
- In organoleptic bitterness Hexalone is equal to iso-alpha-acid. The organoleptic bitterness is 1.0 which means 1.0 ppm of pure Hexalone retained in the beer amounts to 1.0 bittering units; it will also appear on the HPLC as 1.0 ppm.
- Hexalone is also an excellent foam enhancer. It can be added to traditionally hopped beers in the post fermentation stage (ideally prior to final filtration) in order to increase the foam capacity. 1 ppm Hexalone retained in the beer usually increases the NIBEM value by 10-12 seconds. This means 4 ppm retained in the beer would increase the NIBEM value from 270 to 310 seconds. We recommend the addition of 3-4 ppm of Hexalone for foam enhancement. 0.1 gram of effective material per one hectoliter beer is equal to 1 ppm. Hexalone enhances foam stand as well as cling.
- An average utilization of 70-75% should be considered. Some brewers believe that Hexalone gives a better, more rounded mouthfeel than Tetralone (less astringent) while others prefer Tetralone over Hexalone.

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