

TECHNICAL INFORMATION SHEET

CASKLEER PASTE - ISINGLASS FININGS

Description

CASKLEER PASTE is a very concentrated form of isinglass for clarifying yeast from beer.

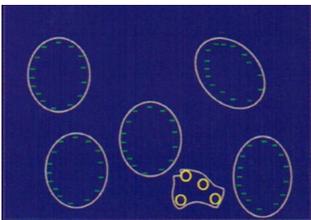
Benefits

- A traditional and natural product
- Blended specifically for clarifying yeast from beer
- Large savings in both cooling energy costs and capital investment may be achieved by shorter conditioning tank residence time
- Filter performance is enhanced
- Enhances beer foam stability
- Easily and quickly mixed to make ready-for-use finings
- Very concentrated isinglass, saving on storage space and transport volumes
- High stability provides a long shelf life

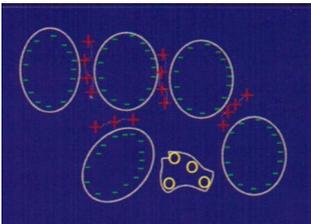
Principle

Isinglass has for many years, been used as a clarification agent for beer. The active ingredient is the protein molecule collagen. Collagen is very sensitive and is denatured at moderate temperatures into gelatine which has little or no fining activity. This has significant implications for the manufacture and storage of isinglass finings.

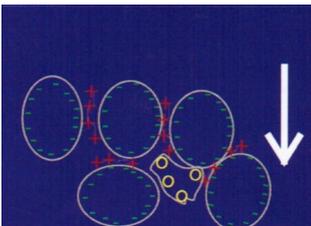
Reaction Mechanism



Unfinned, unfiltered beer may be thought of as consisting of negatively charged yeast cells and uncharged non-microbiological particles in a buffered alcoholic solution.



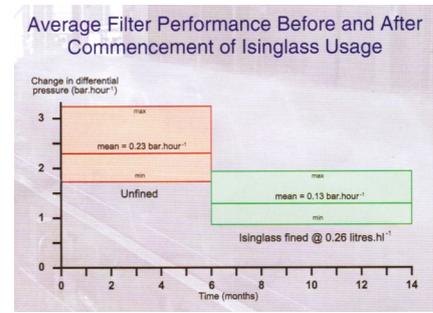
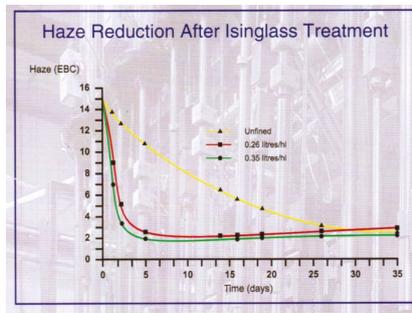
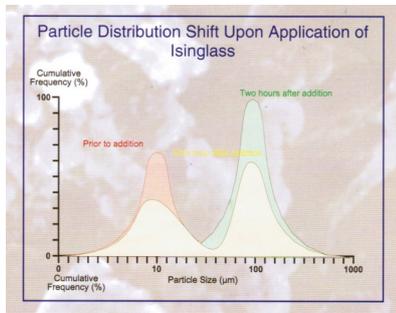
Positively charged isinglass is attracted to the yeast cell walls which possess a negative charge and adheres the cells together, thereby increasing the floc radius.



According to Stokes' Law the larger aggregates settle faster; as they do, they enmesh the uncharged protein particles.



The left electron micrograph shows the entanglement of yeast cells amongst collagen fibres.



The shift in particle size is a rapid reaction and is for the most part complete within two hours. The rapid settlement of yeast and protein is seen by a rapid decrease in beer haze such that conditioning time can be reduced to as short as 3 days.

Very large savings in both cooling energy costs and capital investment in tankage may be made as a result of shorter conditioning time that can be gained by treatment with isinglass; filter performance is also enhanced. Faster filter throughput, lower differential filter pressures and a greater beer volume through the filter between recharge/cleaning are all obtainable.

Application

(a) How to dilute and mix Caskleer Paste

Before it can be used, Caskleer paste must be diluted with water and then acidified.

Method 1 - High Shear Mixing

Set up a mixing tank with a high shear mixer

Fill the mixing tank with 29 units of water at a temperature of 12 to 15 °C

Turn on the mixer

Add to the tank, 1 unit of Caskleer Paste

Mix until the tank contents appear to be homogenous

Add to the tank 0.1 units of citric acid and mix for a short time to dissolve

Method 2 - Recirculation Pump Method

Set up a mixing tank with a high speed recirculating pump (e.g. centrifugal)

The pump feed should be at the bottom of the tank

The pump return should be below the liquid level, to avoid formation of foam

Filling the mixing tank with 29 units of water at a temperature of 12 to 15 °C

Turn on the recirculation pump

Add to the tank 1 unit of Caskleer Paste

Mix until the tank contents appear to be homogenous

At the end of the mixing process, the tank will contain ready –for-use isinglass. If kept at the recommended storage temperature of 5 to 15°C and sealed to prevent loss of sulphur dioxide, this solution will have a shelf life of 4 weeks. It is however advised that isinglass solutions are prepared more frequently, once per week being typical.

Note: In larger installations, phosphoric acid can be used as an alternative to citric acid. This is particularly recommended where dilution and mixing is automated.

(b) Where and when to add diluted Caskleer paste

Ready-for-use isinglass can be added at one of several points. See also section (c) *Using isinglass with auxiliary finings*:-

Into the beer main feeding the racking heads

This method is combined with proportional metering to ensure the correct rate of addition. If the distance to the racking head is short, a static mixer should be used.

Into the cask as part of the racking process

Ready-for-use isinglass is metered into the beer as it fills the cask. The turbulence of the filling process ensures good mixing.

Into the cask before the cask is filled

The appropriate quantity of ready-for-use isinglass is put into the cask before filling. Mixing can be poor if the filling rate is slow and further agitation is then recommended.

Into the cask after it has been filled

The least reliable method as mixing is then totally dependent on agitation or rolling of the cask after filling. With full casks and little headspace, effective mixing of the isinglass takes much more agitation than is generally realised.

Using isinglass with auxiliary fining in cask conditioned beer

With many cask conditioned beers, the best clarity is achieved by using an auxiliary fining product such as **Alginex**, **Cellabrite**, **Finings Adjunct** or **Superkleer** in combination with isinglass. These products enhance the action of the isinglass. Auxiliary finings can be added at one of several points:-

Into the fermentation vessel

In order to avoid the difficulties of mixing auxiliary and isinglass finings in cask, the auxiliary can be added to the fermentation vessel. The addition should be made at the end of fermentation, just as the vessel goes onto chill. In most cases, the residual fermentation and convection currents on cooling are sufficient to mix the product. With larger vessels, it is recommended to recirculate the tank contents if possible or to rouse with CO₂ from the tank bottom.

Into the beer main feeding the racking heads

This method is combined with proportional metering to ensure the correct rate of addition. Typically, the auxiliary is added first with a static mixer positioned between the addition point and the isinglass addition point downstream. If the distance to the racking head is short, another static mixer should be used after the isinglass.

Into the cask before it is filled

The appropriate quantity of auxiliary is put into the cask before filling. If the filling rate is fast and turbulent, isinglass can then be added towards the end of the fill or after.

*N.B. Auxiliary finings should not be mixed with isinglass prior to mixing with beer.

Rates of Use

The exact rate for a given beer will vary according to the brewery, the recipe and the types of yeasts and adjuncts used. If isinglass rates are too high the sediment will be fluffy and voluminous, causing wastage and poor filtration. Most cask conditioned beers will require additions of ready-for-use isinglass at rates between 1ml and 4ml of isinglass to 300ml beer. Yeast count and quality will also affect the isinglass performance. Observations have shown that providing yeast counts are maintained within reasonable limits, (0.5-3.0 x 10⁶ cell/ml), satisfactory finings performance is obtained. Very low yeast counts can result in poorly developed flocs which are easily disturbed. Isinglass finings optimisations should be carried out to determine this more accurately.

Optimisation guides can be obtained from Murphy and Son Ltd. Yeast count and viability kits can also be purchased from Murphy and Son Ltd.

Guidelines for use

- Check that the product is within its shelf life before use
- Remember that isinglass solutions are temperature sensitive
- Carry out optimisation trials to determine the correct rate of use, adding too much isinglass can cause tank bottoms to become very loose with high beer losses.
- Do not mix auxiliary and isinglass finings before they are added to beer, It is advised NOT to add isinglass before auxiliary finings - it rarely works
- 200 litres and IBC's must be mixed before use.
- Read the Material Safety Data sheet prior to use

Specification

COMPOSITION	A blend of finely milled isinglass, water and sodium metabisulphate + citric acid (packed separately)
APPEARANCE	A stiff off-white paste + white crystalline powder (citric acid)
ODOUR	Marine odour and Sulphur dioxide
<u>Analysis</u>	
Specific Gravity @15.5°C	1.0
Viscosity (Cp) (@ 10°C)	3800 at low sheer; 2000 at high sheer
Total Nitrogen (ppm)	16,000 ± 800
Total Soluble Nitrogen	95 ± 5% of Total Nitrogen
Soluble Collagen	75% minimum of Total Nitrogen
Sulphur Dioxide (ppm)	5000 ± 500 *
pH	5.5 ± 0.5
Flavour	Does not adversely affect beer flavour

Microbiological

Total plate count (cfu/ml) <10,000

Maximum Limits of Impurities

As (ppm)	3
Pb (ppm)	10
Cu (ppm)	50
Zn (ppm)	25
Cu + Zn (ppm)	50

* The sulphur dioxide specification is that at the time of manufacture. Because of its volatile nature, the level at delivery may be less than this figure

Regulations

This product is classed as acceptable for use in food 'Report on the Review of Additives and Processing Aids used in the Production of Beer' (FAC/REP/26).

Sulphur dioxide and sulphites at concentrations of more than 10 mg/kg or 10 mg/litre expressed as SO₂ must be labelled as allergenic (European Directive (2003/89/EC)).

Storage & Shelf life

- Store in cool conditions away from direct sunlight
- Keep in original container
- Keep containers sealed when not in use
- Maximum storage temperature for paste is 25°C
- Recommended storage temperature for paste is 5°C - 20°C
- Minimum storage temperature is 1°C
- Do not allow the product to freeze
- The shelf life of the paste at the recommended storage temperature is 6 months from the date of manufacture
- Once diluted to ready to use strength, we recommend storing at 5°C - 15°C for a maximum of 4 weeks
- The product may separate slightly on storage; remix before use
- For best quality, only make up sufficient for immediate use

Technical Support

For Health & Safety information on this product, please see the Safety Data Sheet (SDS)

For support and advice on the use of this product, please call or e-mail our Technical Support:-

Telephone:- + 44 (0)115 978 5494

techsupport@murphyandson.co.uk

For up to date information regarding, Kosher, Halal, Vegetarian, GMO status, or anything not mentioned on this tech sheet please email:-

compliance@murphyandson.co.uk or call +44 (0)115 978 5494

Reference

PRODUCT	CASKLEER PASTE	PRODUCT CODE	CKPAS
ISSUE No.	8.0	DATE	09/07/2015
CREATED BY	F.M.Maud	AUTHORISED BY	Dr Christine Fleming