Presentation

for

The Old and The New - how to get the best out of your finings products
Who are ab Vickers - What do we do?

Design, manufacture and market products for:

• Wort/beer clarification
• Colloidal, flavour and colour stabilisation
• Foam stabilisation
• Anti foam
• Yeast nutrition
• Brewing enzymes

AND

Provide technical support and consultancy on all aspects of the brewing process
Brewery fining products

- Carrageenan
- Isinglass
- Auxiliaries
- Alternatives
Carrageenan/Copper Finings/ Compac CG CGT

- Widely used
  - Meat
  - Dairy
  - Confectionery
  - Juice and Beverages
  - Sauces / Dressings
  - Cosmetic/Pharmaceutical/Nonfood

- Many applications
  - Suspension
  - Texturising
  - Thickening
  - Binding
  - Gelling
  - Clarification
Carrageenan - Mechanism,
Benefits

- Clarification of wort by removal of haze forming particles
- Improved beer filtration
- Brighter beer downstream

wort clarification

hot break compaction

- Hot break compaction
- Increased wort yield
- Reduced trub carry over

Unfined   Fined
Comapc CG - Options

• Granules
  • Added to copper 5-10mins before end of boil. Can be added to whirlpool as well
  • 100% active material

• Tablets
  • As with granules but contains dispersant – can be added to copper or whirlpool. Whirlpool must be dry otherwise tablets can stick.
Factors affecting the efficiency of Comapc CG

- Add correct form for particular application

- Check addition rate regularly, particularly when changing:
  - Brewhouse procedures
    - Boil Time
    - Evaporation Rate
  - or raw materials.
    - Malt season / Variety
    - Adjunct / Malt ratio
    - Liquor treatment
    - Hop Loading
Copper fining optimisation method

Materials

1000ppm copper fining liquid, 1-2lt wort sample 5 minutes before the end of the boil, 100ml glass bottles + caps, 5ml syringe, kettle and 100ml graduated cylinder

1. Label the bottles and dose a range of with copper finings liquid (1ml = 10ppm)

2. Bring the untreated wort to the boil

3. Transfer the hot wort sample into plastic jug

4. Measure 100ml hot wort and transfer into glass bottles

5. Cap bottles and shake well (3-5 secs)

Place bottles under running cold water for 10-15 minutes while agitation
Copper Fining
Optimum Addition Rate

Summary
• in the range 10 – 50 ppm
• Under dose
  • Cloudy wort / hazy beer
  • waste of money
• Overdose
  • fluffy sediments in cask
  • money wasted
Monitoring - clarity

visual

meter
ISINGLASS
Whole Maw
Forms of Isinglass

• Paste
  – Concentrated 1:25 dilution
  – Not heat sensitive
  – Long shelf life
  – More input from customer
  – Problems - SO2 cutting

• Concentrated
  – 1600TN requires 1:3 breakdown
  – Must keep cold
  – Shorter shellfire

• RFU
  – 650TN - use as is
  – Shorter shellfire
But how does it work???
Collagen Helical Structure

Acid Hydrolysis

[Diagram showing the helical structure of collagen with acid hydrolysis points indicated.]
Addition to Cask

- Ensure cask is cold.
- If using auxiliary it should be added at start of fill, isinglass at the end of fill.
- If auxiliary is used in FV or RT, then isinglass can be added near to the start.
- Always use RFU strength - a less viscous material mixes better.
Addition FV-CT

• Ideally isinglass should be added in line throughout the beer transfer between FV and CT ideally at point of turbulence

• Main points
  – A less viscous solution will be easier to disperse
  – Beer first isinglass second
  – Rouse if possible

• Beer should be chilled prior to isinglass addition, or immediately afterwards – chill haze formation
Optimisation

- Depends on style of beer
- Large Fluffy Bottoms in cask
- Too little not bright or poor filterability
- Factors which can affect addition rate
  - pH
  - Yeast count
  - Solids loading of beer
  - Process changes
  - Malt variety
Auxiliary Finings

Why use auxiliary finings.....

- increases fining speed
- final beer clarity
- can cause fluffy sediments

• Options
  - type
  - addition point/contact time
  - addition rate
  - storage
Auxiliary Finings

Types

- Acidified sodium silicate solution
  - Strong ionic charge / aggressive / high sediments
  - high negative charge density
  - Shorter shelflife

- Blends

- Polysaccharides
  - carrageenan, gum arabic, methyl celluloses

Addition point

- Prior to isinglass, contact time a few minutes, a few hours (ideal), a few days - layering in tank

Storage

- Temperature and shelf life requirements
- SO2 depletion
- Mild steel
Auxiliary Findings

- Typical rates ¼ to 1 ½ pints per barrel
- Overdose
  - fluffy sediments in cask
- Underdose
  - sub-optimum clarity
  - slower flocculation
  - slower resettlement
## Isinglass / Auxiliary Optimisation Matrix

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<thead>
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<th>SAF mls/hl</th>
<th>GKF 2/5 pts/brl</th>
<th>FV Brew No 9233 Day 1</th>
<th>Re-settle</th>
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Isinglass/ auxiliary optimisation method

1. Measuring jug
2. Beer to be tested (taken before rack)
3. Isinglass finings (ready for use)
4. Syringe (1ml and 2ml)
5. Measuring cylinder
6. 100ml Glass bottles and lids / measuring cylinders
7. Fining Matrix (see page 2)

Label the bottles and dose a range of with Isinglass finings liquid 0.35ml/100ml = 1pt/brl

Measure 100ml of beer and transfer into glass bottles
Cap bottles and shake well (3-5 secs)

Assess for clarity (visual scoring or haze meter) and sediment @24hrs, shake and assess again at 48hrs

Assess for flocculation speed and clarity @1hr
Fining Matrix

- **Isinglass Optimisation**

- **Auxiliary / Isinglass Optimisation**

  - Note, add auxiliary finings first, add beer, shake, leave 30mins add isinglass shake

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<th>Bottle No</th>
<th>Beer X</th>
<th>Yeast Count =</th>
<th>Haze (EBC/Visual)</th>
<th>Sediment (mls)</th>
<th>Haze (EBC/Visual)</th>
<th>Sediment (mls)</th>
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Alternatives

• Centrifugation
• Vegan / vegetarian fining products
  – Silica Sols/ poly sach and sol blends
  – Protofine - Pectin.
PROTOFINE

- Novel Fining agent
- Vegan / Vegetarian compliant
- Pectin derived
- Comparable fining performance to isinglass - for Keg and filtration
- Addition rates – tighter control than isinglass
- Sediments can be a little higher
Protofine – further data
Protofine - a novel application

- Can be used as a traditional fining agent
- Could be used as a coagulant pre centrifugation
  - Improves clarity more than 50% than centrifuging alone
  - Reduces sediment losses
  - No conditioning time

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