

# Polyclar™ Brewbrite

## wort clarifier and beer stabilizers

With over 50 years of experience providing wort clarifiers and beer stabilizers to the brewing industry, Ashland's Polyclar™ stabilizers are the leading brand in clarification and stabilization technology for beer. Different grades within our extensive portfolio of Polyclar stabilizers are designed for single use or to be recoverable by filtration. In addition, various grades can be used at different stages of the brewing process. Use of Polyclar stabilizers reduces chill haze and permanent haze and results in a better beer product.

### Product and Application Information

Polyclar Brewbrite wort clarifier and beer stabilizer from Ashland is a highly effective proprietary wort clarifier and polyvinylpyrrolidone (PVPP) stabilizer. It is an optimized composite of purified food grade carrageenan and specially modified PVPP. Polyclar Brewbrite wort clarifier and beer stabilizer protects against the development of chill haze and permanent haze.

Non-biological haze formation results primarily from the hydrogen bonding between haze-producing proteins and the polyphenol constituents of beer: Non-microbiological products (NMPs) act as templates on which these protein-polyphenol complexes may attach, thereby accelerating haze development in beer.

To achieve colloidal stability in beer, it is necessary to reduce these protein-polyphenol complexes, or prevent them from forming.

### Methods of Use

Polyclar Brewbrite wort clarifier and beer stabilizer is made up as a 10% slurry in room temperature water.

The Polyclar Brewbrite wort clarifier and beer stabilizer slurry is added to wort during boiling, 5–10 minutes before the end of the boil.

Dispersion is achieved by the vigorous boiling action in the kettle (copper) and during recirculation in the whirlpool.

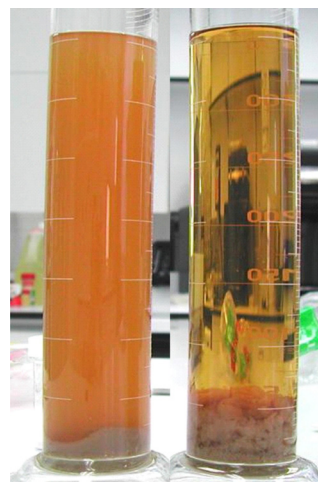
It may also be added directly to the whirlpool at the cast stage.

*Note: Polyclar Brewbrite wort clarifier and beer stabilizer is designed for single use within the Brewhouse. Additional stabilization can be achieved, if required, at filtration using Polyclar 10 beer stabilizer or Polyclar Plus 730 beer stabilizer, or other stabilizers.*

### Key Benefits

Polyclar Brewbrite wort clarifier and beer stabilizer represents a significant development in preserving the quality and character of beer after packaging. It offers the following benefits:

- Upstream wort clarification and beer stabilization with a single addition of the product to the wort
- Protection against chill haze and permanent haze
- Improved beer colloidal stability
- Improved fermentation characteristics
- Increased wort collection
- No specialized equipment required (ie. slurry tanks, dosing pumps)
- Removed with the trub
- Longer filter run lengths
- No labeling required
- Excellent technical service from dedicated industry specialists



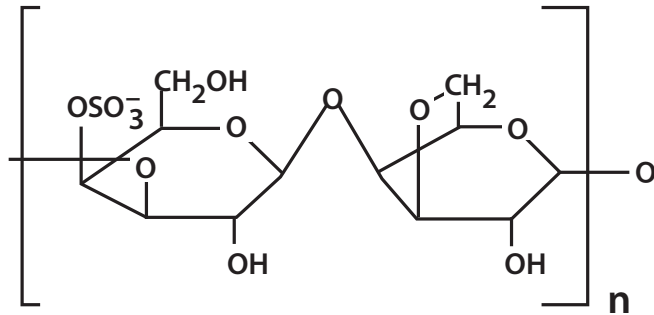
*Polyclar Brewbrite wort clarifier and beer stabilizer has a dramatic effect on wort clarity.*

## About PVPP

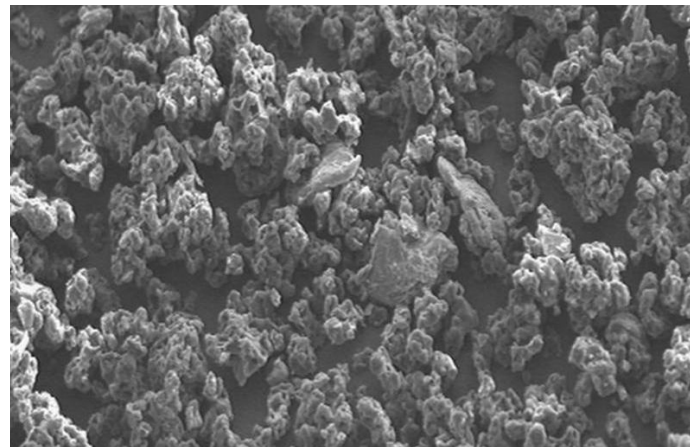
Polyvinylpyrrolidone, or crosslinked PVP, is a synthetic polymer that specifically binds to haze-producing polyphenols. PVPP has a long history of use and is regarded as the method of choice for the colloidal stabilization of beer.

## About Kappa Carrageenan

Kappa carrageenan, a hydrocolloid extracted from red seaweed, is very effective at reducing the size of NMPs in wort; these comprise protein, polyphenol, polysaccharide and other materials. Kappa carrageenan is a polymer composed of galactose and galactose sulfate monomers.



Structure of Kappa carrageenan



The large surface area of Polyclar Brewbrite wort clarifier and beer stabilizer helps in the efficient adsorption and flocculation of haze precursors.



Polyclar Brewbrite wort clarifier and beer stabilizer is added to the kettle 10 minutes before the end of the boil.

## Dosage Rates

The exact amount of Polyclar Brewbrite wort clarifier and beer stabilizer required would depend upon the brewing raw materials used, process conditions and the shelf life requirement.

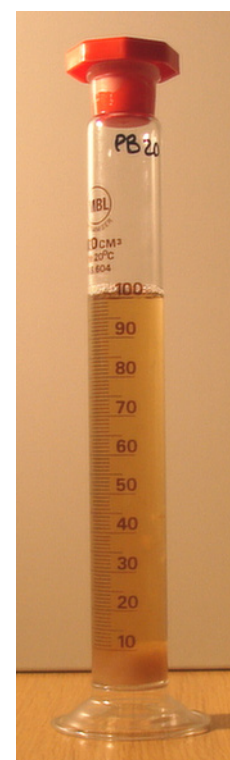
The typical addition rate will be between 10 and 20 g/hl (usually 15 g/hl).

The optimized addition rate can be determined by a simple laboratory testing procedure:

1. Collect a wort sample about 10 minutes before the end of the boil.
2. Transfer 500 ml samples of the hot wort into 5 x 500 ml bottles.
3. Add 10, 15, 20 and 25 g/hl of Polyclar Brewbrite wort clarifier and beer stabilizer to the 500 ml samples.

(The control is untreated)

4. Mix by swirling and allow to settle for 10 minutes.
5. Decant part of the clear hot wort into 100 ml glass measuring cylinders, stopper and leave to stand for 60 minutes – assess the clarity and sediment – HOT BREAK.
6. Cool the measuring cylinders by immersing in cold water for 10 minutes. Agitate intermittently.
7. Remove the cylinders from the water bath and stand for ~12 – 18 hours at ambient temperature.
8. Assess the clarity of the wort and COLD BREAK sediment volume.
9. The target is to achieve a bright wort, with a compact sediment.



Bright wort, with compact sediment.

## Assessment

The performance of Polyclar Brewbrite wort clarifier and beer stabilizer can also be assessed in process samples by evaluating:

- **Hot break** – Collect 1 liter of wort at cast into an Imhoff cone and let stand for 60 minutes. Assess wort clarity and sediment appearance.
- **Cold break** – Collect 1 liter of wort from the cold side of the paraflow into an Imhoff cone and let stand for 12 to 18 hours. Assess wort clarity and sediment.
- **Wort collection** – The volume of wort collected after run-off from the whirlpool should be measured.
- **Wort tannoids** – Measure wort tannoids before Polyclar Brewbrite wort clarifier and beer stabilizer addition and in samples from the paraflow. Compare against a control wort.
- **Total polyphenol content** can also be measured using a spectrometer, but is less specific for haze polyphenols than tannoid measurement.

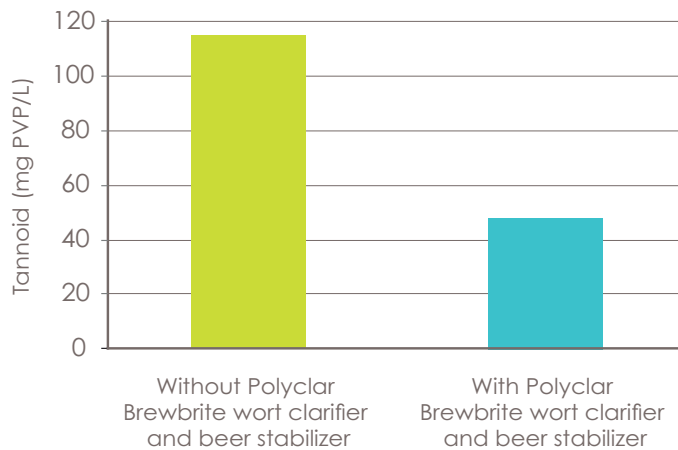
## Fermentation and Beer Stabilization

Polyclar Brewbrite wort clarifier and beer stabilizer may also benefit yeast growth during fermentation by adsorbing inhibitory materials from the wort. This can be determined by:

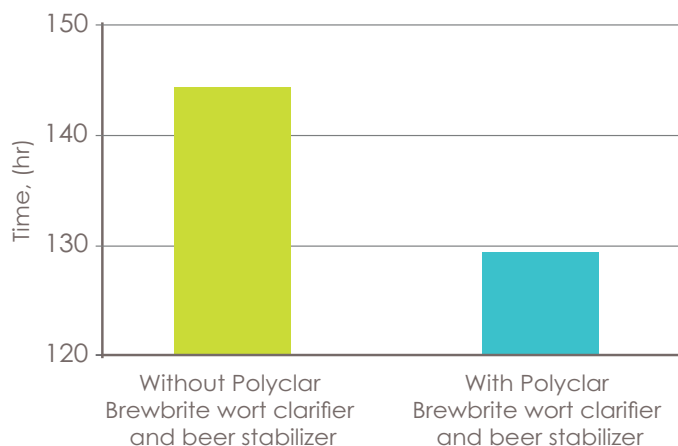
- **Monitoring wort gravity and cell numbers** during primary fermentation.
- **Measuring the ethanol concentration** in the green beer.

The efficacy of beer stabilization can be assessed by:

- **Heat-forcing tests** on the packaged beer.
- **Tannoid measurement** in packaged beer.
- Other procedures such as the use of the PT-Standard Nephelometer.



*Polyclar Brewbrite wort clarifier and beer stabilizer dramatically reduced haze-producing tannoids at low addition rates.*



*Use of Polyclar Brewbrite wort clarifier and beer stabilizer reduced the time to rack gravity by 10% .*

## Quality, Safety and Service

### Quality

Polyclar stabilizer products are manufactured to internationally recognized quality standards. Details are available upon request.

### Regulatory

PVPP is permitted for use in beverages in all countries with regulations covering the use of additives and process aids. Always seek guidance from your local regulatory authorities.

### Safety

Material Safety Data Sheets are available upon request.

### Technical Support

Technical support for Ashland's beverage product portfolio is provided by a team of dedicated industry specialists, from locations in Europe, the U.S. and Asia. For further information on the use of our products, please contact your local Ashland representative or authorized distributor.

Ashland also supplies products and services to the wine, beverage and wider food industries. We are constantly introducing innovative new products to better serve our increasing number of customers in these markets.

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