

# Polyclar™ 10

## single-use beer stabilizer



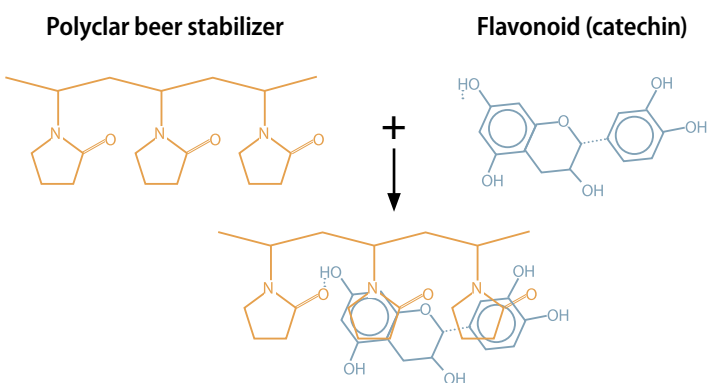
### Description

Polyclar 10 single-use beer stabilizer is a highly effective, 100% polyvinylpyrrolidone (PVPP) stabilizer. It is optimized for single use, either on its own or in conjunction with other stabilizers, to offer a highly effective means of preventing non-biological haze in all types of beer.

Non-biological haze formation results primarily from the hydrogen bonding between haze-producing proteins and the polyphenol constituents of beer. To achieve colloidal stability, it is necessary to reduce these protein/polyphenol complexes or prevent them from forming. This can be done by reducing the problematic polyphenols, proteins or both.

### Mode of Action

Polyclar 10 single-use beer stabilizer complexes with specific polyphenols in beer via hydrogen bonding and is subsequently removed during filtration. The hydrogen bonding occurs between the carbonyl groups of Polyclar 10 single-use beer stabilizer and the hydroxyl groups of polyphenols. Through reduction of these polyphenolic haze precursors, a substantially more stable beer is achievable.

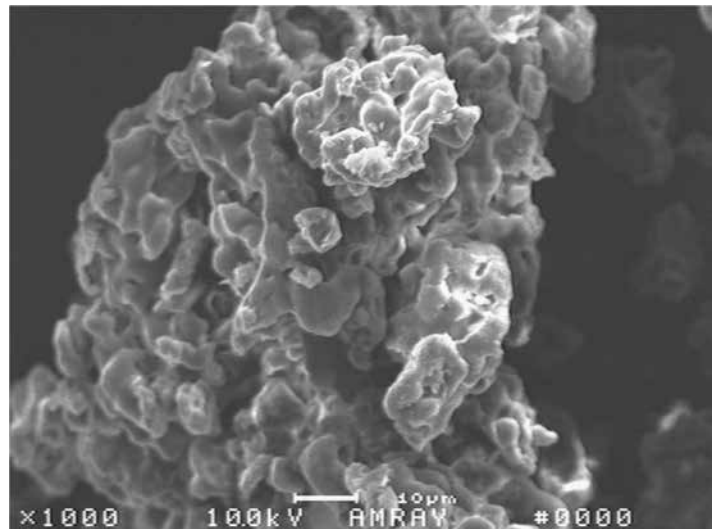


*Polyclar beer stabilizer forms strong bonds with the more problematic polyphenols that can cause visual and flavor problems in beer.*

### Key Benefits

Polyclar 10 single-use beer stabilizer represents a significant development in preserving the quality and character of beer after packaging. It offers the following key benefits:

- Single-use PVPP stabilizer
- Effective and highly selective removal of haze-producing polyphenols
- Protects against chill haze and permanent haze development
- Prevents against oxidation of flavanoids, which contributes to harsh, astringent and stale flavors in beer
- No negative impact on foam, flavor or other quality parameters
- Compatible with all filter technologies, including cross-flow
- Completely insoluble in all types of beer
- No labeling required—completely removed by filtration
- Excellent technical service from industry specialists



*Polyclar beer stabilizer has a large surface area for polyphenol absorption making it an effective stabilizer.*

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## Methods of Use

Polyclar 10 single-use beer stabilizer can be added to beer during transfer from fermentation vessel (FV) to maturation vessel (MV) or en route to the diatomaceous earth (DE)/Kieselguhr filter or crossflow. The use of a trap filter after the main filter is recommended.

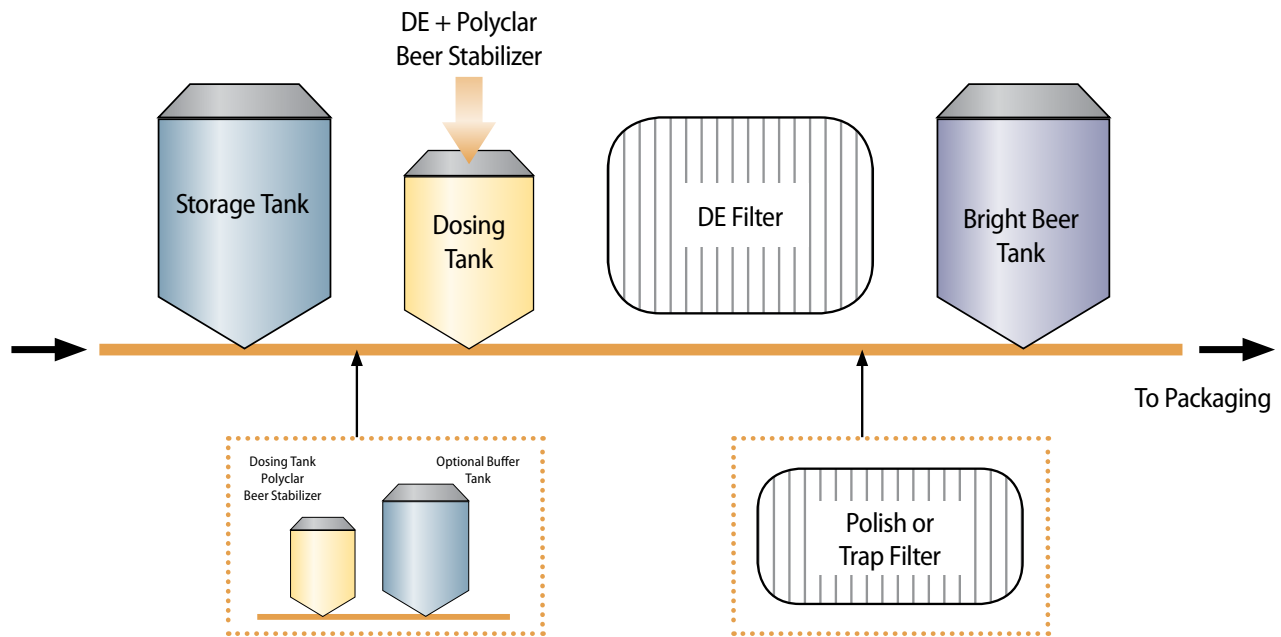
Polyclar 10 single-use beer stabilizer is made up as an 8% to 12% slurry in de-aerated water. The minimum recommended hydration time is 60 minutes and the slurry should be kept constantly agitated to ensure proper hydration and mixing. Sparging with CO<sub>2</sub> may be used in the dosing vessel to minimize oxygen pick-up.

The Polyclar beer stabilizer slurry can be prepared in either hot or cold water and can be added directly to the maturation vessel. It can

also be added via a separate stabilizer-dosing tank, or by addition to DE/Kieselguhr slurry tank for combined dosing with filter aid (both as pre-coat and body feed).

Optimal contact between stabilizer and beer can be achieved by proportional dosing of the stabilizer into the beer stream on entry into the maturation vessel.

Added to the beer stream en route to filtration, Polyclar 10 single-use beer stabilizer is effective with a contact time of a few minutes. However, for maximum benefit, a contact time of 10 minutes is recommended.





## Dosage Rates

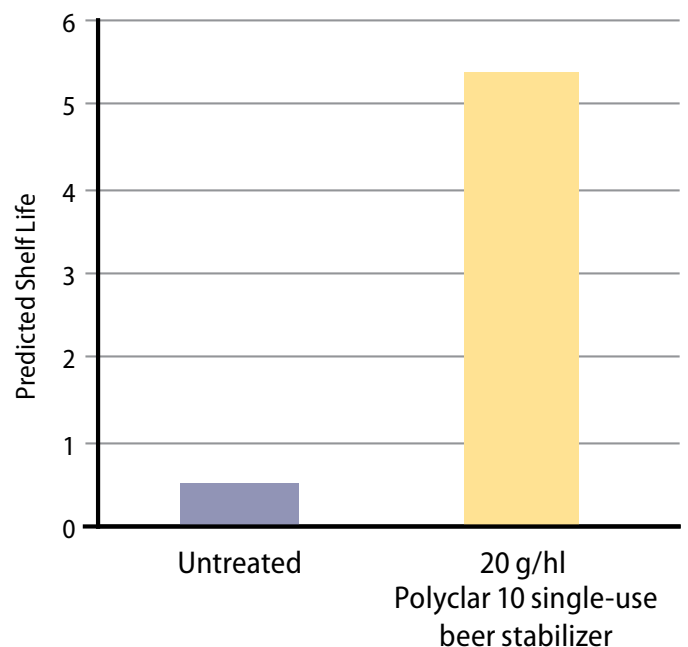
The exact dosing rate for Polyclar 10 single-use beer stabilizer is dependent upon the brewing raw materials used, process conditions and the shelf life requirement.

The normal dosage level range for 100% malt beer is 15 to 40 g/hl (3.9 to 10.4 lbs/100 US bbls). For beer with low polyphenol content, the normal dosage level range is 5 to 20 g/hl (1.3 to 5.2 lbs/100 US bbls).

Through the reduction of the polyphenolic haze precursors, beer stabilized with Polyclar 10 single-use beer stabilizer is substantially less likely to undergo undesirable protein/polyphenol complexation with time.

Used in combination with silica gel, a shelf life of 9 to 12 months is achievable.

Polyclar 10 single-use beer stabilizer Treatment (g/hl)	Silica Hydrogel Treatment (g/hl)	Target Stability (months)
0	50	2 - 3
10	50	6 - 9
15	50	9 - 12
20 - 40	50 -100	> 12



*Polyclar 10 single-use beer stabilizer use significantly improves the shelf life of beer.*



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## Quality, Safety and Service

### Quality

Polyclear 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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