

The background of the advertisement features a world map with green continents and a blue ocean. In the foreground, two glasses of beer with white foam are placed on a reflective surface. The lighting is dramatic, with a strong blue glow from the right and golden highlights from the beer. The text is overlaid on the right side of the image.

*The Clear  
Advantage  
in Brewing*

**BRITE** **SORB**®  
**BEER STABILIZERS**

 PQ Corporation

# MAKE SURE THE QUALITY COMES THROUGH... CLEARLY

## **BRITESORB**<sup>®</sup>

### **BEER STABILIZERS**

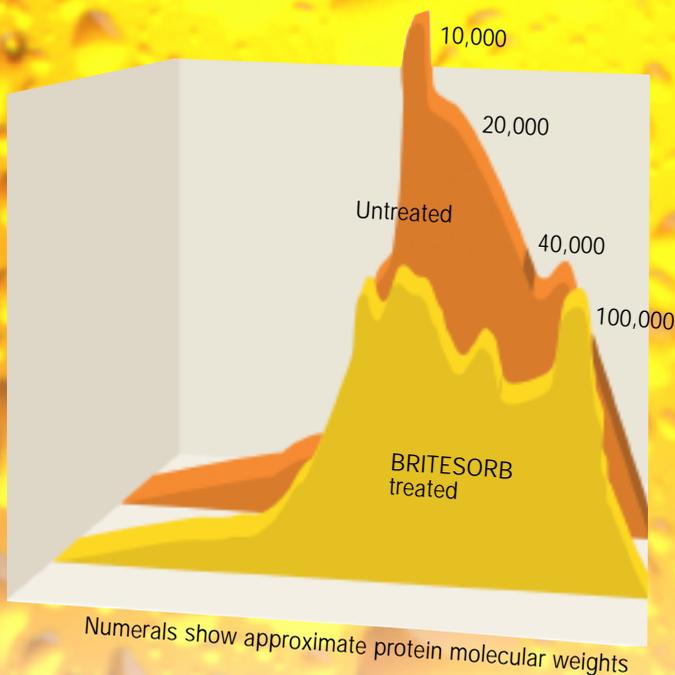
adsorb chill-haze proteins, and nothing else, and they've chillproofed more beer than any other silica gel in the world.

The ingredients, recipes, and processes used by brewers the world over are as varied as the beers they make. Flavor, aroma, body, color, and foam are just a few of the quality standards that define the brewer's art.

There is however, one standard of quality that applies to all beers, and crosses all borders. Clarity. When chill-haze compromises your beer's clarity, it compromises the premium ingredients carefully selected for your beer's unique character. Given the fact that most consumers prefer chilled beer, effective, reliable chillproofing is more important than ever.

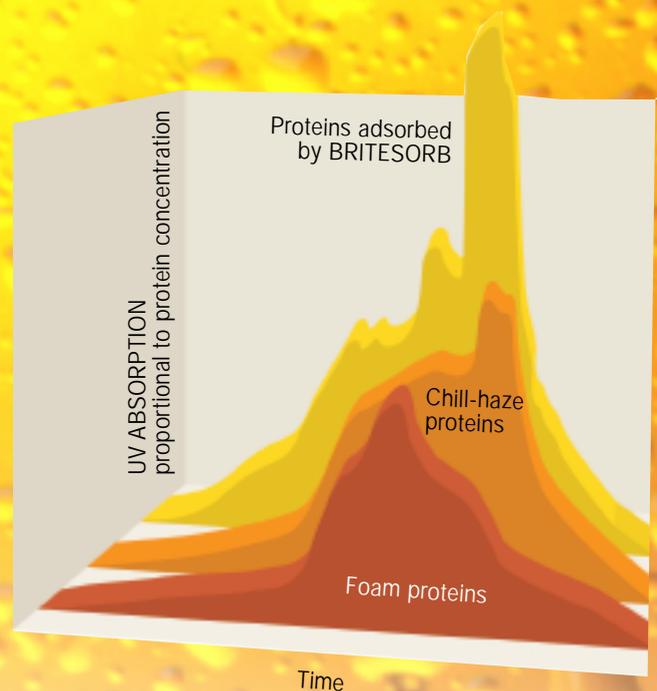
Chill-haze... without treatment it's unavoidable. The natural reaction between protein and tannin (polyphenol) creates a chill-haze complex in unchillproofed beers. Oxidation during processing, the presence of metal ions, or elevated storage temperatures accelerate the reaction. Since this complex is insoluble at cold serving temperatures, unchillproofed beer will appear hazy to your customers.

**The answer: BRITESORB<sup>®</sup> beer stabilizers from PQ Corporation.**



Numerals show approximate protein molecular weights

This chart shows the size selectivity of BRITESORB for the proteins that cause chill-haze. The back curve shows the total proteins of untreated beer. The front curve shows the proteins remaining after treatment with BRITESORB. (Determined by gel permeation chromatography.)



This chart shows the attraction between BRITESORB and chill-haze proteins is far greater than the attraction between BRITESORB and foam proteins. (Determined by reversed phase chromatography.)

# Full flavor. Excellent foam stability. Chillproof with BRITESORB...

## Britesorb Beer Stabilizers

These synthetic amorphous silica gel powder adsorbents provide you with all the chill-haze protection you need, regardless of where you brew, how you brew, or the type of beer you brew.

### BRITESORB A100 and BK75 Beer Stabilizers

For chillproofing lighter style beers, BRITESORB A100, and in Europe BRITESORB BK75, are the most effective choices you can make.

This unique silica hydrogel only removes proteins that cause chill-haze. That's because the surface of BRITESORB A100 is engineered with moderately sized pore openings that block the larger foam-enhancing proteins from entry. At the same time, the large surface area

Silicon dioxide, ignited basis (%)	>94
pH	3
Surface area (m <sup>2</sup> /g)	770
Pore volume (mL/g)	1.6
Avg. pore diameter (Å)	85
Loss on drying @ 105°C (%)	61
Median particle diameter (µm)	16
Permeability (D'Arcy)	0.15

Silicon dioxide, ignited basis (%)	>94
pH	8.5
Surface area (m <sup>2</sup> /g)	475
Pore volume (mL/g)	1.2
Magnesium (%)	1.2
Loss on drying @ 105°C (%)	10
Median particle diameter (µm)	12
Permeability (D'Arcy)	0.05

inside the pores ensures the adsorption of virtually all proteins that cause chillhaze. Because it's a hydrogel, it is non-dusting and has a minimum content of fine particles. That means you can expect higher filtration rates and longer filter runs.

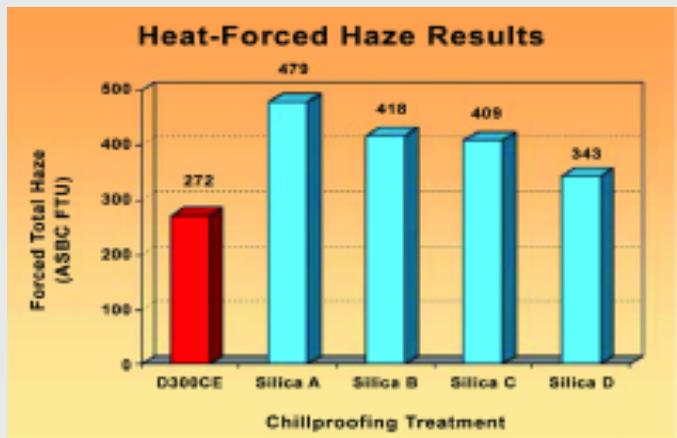
### BRITESORB D300 and BRITESORB D300CE Beer Stabilizers

For chillproofing a wide range of higher malt ratio beers, BRITESORB D300, and in Asia-Pacific BRITESORB D300CE, can't be equaled.

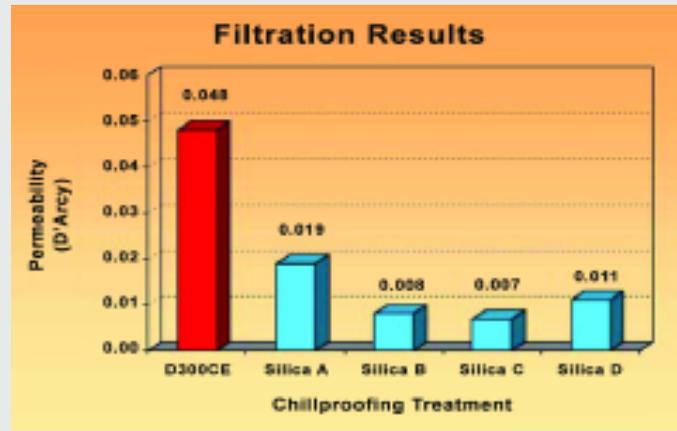
This silica xerogel uses the same adsorption principles as BRITESORB A100. In addition, the surface structure is activated by a patented process to increase chillproofing effectiveness. Filtration is also improved because, unlike other xerogels, BRITESORB D300 is manufactured to a larger particle size that won't slow flow rates.

BRITESORB hydrogels are non-dusting and offer fast filtration, while BRITESORB xerogels work at shorter contact times and offer higher activity on difficult-to-chillproof beers. BRITESORB BK200 is an intermediate between hydrogel and xerogel, combining the advantages of both beer stabilizers, i.e. high stabilization performance at low dosages, good filterability, and less dusting.

BRITESORB silica gels are prepared from high quality PQ sodium silicate. The BRITESORB products are manufactured under the strictest quality control standards in ISO 9002-certified facilities to meet all the regulatory requirements for food-grade silica. Careful attention and specific procedures are applied in order to prevent any kind of microbial contamination. BRITESORB shows consistent high quality and performance. Batch after batch. Order after order.



BRITESORB D300CE provides superior chill-haze removal (lower FTU) in beer compared to other silica gel chillproofers.



Permeability (in D'Arcy units) is a measure of flow vs. pressure for a given filter bed depth. BRITESORB D300CE gives superior permeability (faster flow) compared to other silica gel chillproofers.

# THE CLEAR CHOICE FOR WORLD-CLASS BEER...

BRITESORB stabilizers are highly selective silica gel adsorbents. Neither the proteins which ensure foam stability, nor the tannins (polyphenols) which are natural anti-oxidants get lost or changed in any way when you chillproof with BRITESORB.

## Consider the Alternatives...

**Proteolytic Enzyme.** This agent prevents chill-haze by breaking down proteins. Because it is non-selective, your beer can end up with poor foam quality. Adding foam stabilizers helps, but this increases treatment costs and leaves an additive in the beer.

**Tannic Acid.** This treatment method precipitates beer proteins. Finished beer must be drawn off after the precipitate settles. Not only is this process slow and costly, it results in a high rate of beer loss.

**PVPP.** This method chillproofs by adsorbing polyphenols. Disadvantages include higher costs and the partial loss of natural anti-oxidants in the beer.



## METHODS OF TREATMENT

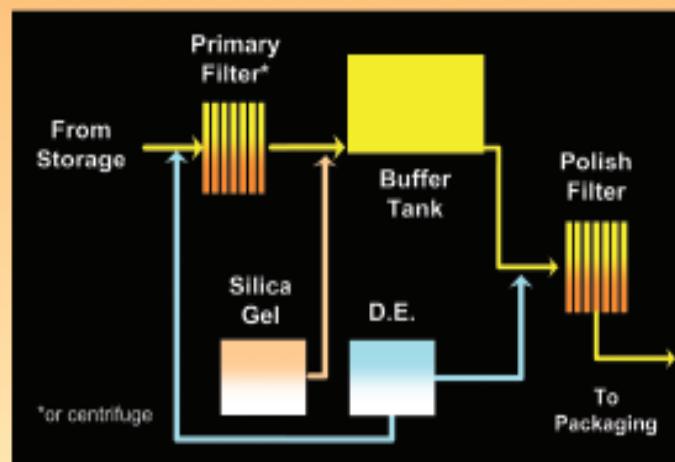
### Preparation of BRITESORB slurry

BRITESORB should be slurried with deaerated water at 10 percent of total slurry weight (100 grams per liter). The slurry should be continuously agitated during mixing and dosing to keep it in suspension. Carbon dioxide should be bubbled through the slurry to minimize oxygen pick-up.

### Continuous In-Line Method

The BRITESORB slurry is proportioned into the beer on its way to final filtration. In order to provide the required contact time, a contact tank is recommended. The BRITESORB manufacturing process optimizes particle size for compatibility with your current filter aid usage.

## How to Treat Beer with Silica Gel



### Batch Method

Add BRITESORB slurry to beer while filling the finishing tank. Slurry should be proportioned into the beer throughout the entire filling operation. Once the adsorption process is complete, particles settle and are easily removed during tank cleaning. Inadvertent over-dosing or contact time of several days causes no negative effects in the beer.

BRITESORB works best when added near the end of brewing, so there is no need for new equipment or changes to present procedures. It is also easy to filter BRITESORB out once processing is complete, so beer loss is kept to a minimum.

### Dose rate

Malt-adjunct ratio, type of beer, and brewing process influence optimum dosage. Most beers are effectively treated with 20 to 60 grams of BRITESORB per hectoliter (200 to 600 grams per tonne). PQ can provide a dose recommendation after an audit of your process.

### Storage

BRITESORB can be stored at ambient temperatures.

**For Customer Service, Please Call:**

**01-800-944-7411**

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**Joliet, Illinois, USA plant**



**Warrington, UK plant**

### **About PQ Corporation**

PQ Corporation ([www.pqcorp.com](http://www.pqcorp.com)) is a leading producer of specialty inorganic chemicals, catalysts, and engineered glass products, with annual sales revenues in excess of US \$1 billion. The company conducts operations through three principal businesses: the Performance Chemicals division, which develops, manufactures and sells high performance silicate-based specialty chemicals; the Catalysts division, a leading producer of high performance zeolite- and silica-based catalysts; and the Potters division, which manufactures and sells highly engineered solid and hollow glass spheres. The company's products are used in a variety of applications in a diverse range of industrial, consumer and governmental end-markets. The company operates over 60 manufacturing sites in 21 countries on five continents and has one of the most comprehensive global manufacturing and distribution networks serving customers in the company's end-markets.

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