

# StarPak<sup>®</sup>

## Extreme

StarPak<sup>®</sup> Extreme is a premium, highly modified polymer specifically designed for filtration control and enhanced low shear rate rheology in high temperature water-based drilling and completion fluids. StarPak Extreme exhibits thermal stability to more than 300° F (150° C).

### Features

- Temperature stable to 300° F
- Cost effective alternative for PAC/CMC
- Enzyme and fermentation resistant without addition of biocide.
- Inhibition/Encapsulation of clay surfaces
- Compatible in a wide range of water-based fluids
- Enhanced low shear rheology

### Appearance

StarPak Extreme is supplied as an off-white powder. Aqueous solutions are translucent and demonstrate excellent stability.

### Compatibility

StarPak Extreme is effective in a wide range of water-based drill in and completion fluids. It is particularly suited for use in brine-type systems such as calcium chloride/bromide and formates. It generally exhibits excellent compatibility in all other mono- and di- valent salt systems.

### Filtration Control

StarPak Extreme provides excellent filtration efficiency across a variety of systems requiring temperature tolerance.

Due to its highly modified nature, StarPak Extreme exhibits a unique filtration control profile. StarPak Extreme exhibits a time and temperature dependent hydration mechanism and requires moderate exposure to heat and shear to fully hydrate into solution. Filtration improves over time as the polymer continues to hydrate.

StarPak Extreme provides filter cakes are thin and exhibit excellent lubricity and is an excellent choice to replace CMC and PAC materials.

### Temperature Stability

Within certain fluid systems, StarPak Extreme exhibits stability to 300° F. StarPak Extreme has been uniquely modified to provide long-term thermal stability to extend the functional lifetime of the polymer. Because of the highly modified state of the polymer, StarPak Extreme requires exposure to heat to fully yield the polymer into solution. Understanding the unique hydration of StarPak Extreme is important when designing a fluid.

### Rheology/Viscosity

At low shear rates StarPak Extreme exhibits a synergistic relationship with low levels of xanthan gum, bentonite, buffers, and carbonate based solids. The added viscosity provided by StarPak Extreme allows formulators to decrease the concentration of traditional biopolymers used for low-end rheology.



### Fermentation and Enzyme Stability

Biocide addition is not generally necessary when using StarPak Extreme. The unique modification of StarPak Extreme provides natural fermentation and enzyme resistance to solutions without the need of preservatives. This feature provides an advantage where biocides cannot be used.

### Inhibition/Encapsulation

StarPak Extreme is an anionic polymer that readily adsorbs onto clay surfaces. This adsorption efficiently coats clay particles preventing sloughing into the fluid and also encapsulates drilled solids to effect better removal on solids control equipment.

### Cost Effective

Intermediate in price between non-derivatized starch and cellulosic polymers, the use of StarPak Extreme provides significant economy in fluid loss control in all types of water-based systems. In addition, a reduction of expensive biopolymers is possible due to the enhanced low-shear rheology obtained through the use of StarPak Extreme. The thermal stability of StarPak Extreme extends the lifetime of the polymer, reducing consumption while maintaining fluid properties.

### Storage, Handling and Safety

Due to the hygroscopic nature of StarPak Extreme, it is highly recommended that the material be stored in its original package in a dry facility. Shelf life can be affected by storage conditions such as temperature, humidity and overall surroundings of the storage area. Long-term storage may lead to hardening of the material within the bag. A Safety Data Sheet is available from Chemstar and should be consulted prior to handling or using StarPak Extreme.

### Availability

StarPak Extreme is available in 50 lb multi-wall poly-lined paper bags or 2,000 lb super sacks for truckload and LTL shipments. For additional information, samples or technical assistance in using StarPak Extreme or any other Chemstar product please contact 1-800-328-5037 or [info@chemstar.com](mailto:info@chemstar.com)

### Typical Analysis

| StarPak Extreme                     |   |
|-------------------------------------|---|
| Nature                              | Highly modified, anionic polysaccharide       |
| Form                                | Granular Powder                               |
| Moisture (%)                        | 10 Max  |
| Bulk Density (lbs/ft <sup>3</sup> ) | 30 – 45                                       |
| Particle Size (% thru)              | 100% (-) 850 micron<br>65% min (-) 150 micron |
| Appearance                          | Off White                                     |
| Ionic Character                     | Anionic                                       |

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