

ExStar[®]

ExStar[®] is specifically designed for filtration control and enhanced low shear rate rheology in high temperature water-based drilling and completion fluids. ExStar exhibits thermal stability to more than 275° F (135° C).

ExStar exhibits synergy with a number of different components used in fluid systems. In particular, ExStar provides enhanced low-shear rheological profiles without the use of traditional gums. ExStar is an excellent choice for mono- and di-valent brine systems.

Usage Rates

- 4-6 lbs/bbl recommended in muds with BHT above 250° F (120° C).
- Moderate Temperatures (175° F) are required to fully activate ExStar.
- Activation depends on temperature, shear and fluid system

Appearance

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

Compatibility

ExStar effectively controls fluid loss in a wide range of water-based 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

ExStar exhibits a unique filtration profile due to its highly modified nature. Understanding this hydration profile is the key to its successful use. ExStar exhibits a time and temperature dependent hydration mechanism. The polymer requires moderate exposure to heat and shear to fully hydrate into solution. Filtration improves over time as the polymer continues to hydrate.

Thermal Stability

Generally, ExStar exhibits stability to 275° F (135° C) well exceeding the point at which conventional filtration control starches decompose. Times and temperatures are not absolute and vary depending upon the type and compositions of the fluid system being used.

Rheology/Viscosity

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

Fluids

Due to its non-ionic nature, ExStar is suitable for use in any fluid requiring high temperature tolerance.

Mono- and Di-valent brines

ExStar is an excellent choice for use in sodium, calcium, and zinc chloride and bromide brines.

Formates

ExStar provides rheology and filtration control in sodium and potassium formate systems.



Fermentation and Enzyme Stability

ExStar is not biocide treated. If the potential exists for microbial growth within the fluid, biocide addition in the field is recommended. ExStar is also available with a biocide treatment.

Storage, Handling and Safety

Due to the hygroscopic nature of ExStar, 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. A Safety Data Sheet is available from Chemstar and should be consulted prior to use.

Availability

ExStar 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 ExStar or any other Chemstar product please contact 1-800-328-5037 or info@chemstar.com

Typical Analysis

| ExStar | |
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| Nature | Highly modified, nonionic polysaccharide |
| Form | Granular Powder |
| Viscosity (cps), 5% Solids LVT, 60 rpm, #2 spindle | 50 - 75 |
| Bulk Density (lbs/ft ³) | 30 - 45 |
| pH (5% Solution) | 5.0 - 8.0 |
| Particle Size (% thru) | 100% (-) 600 micron |
| Appearance | Off White |
| Solubility | Complete |

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