

Modified Starch

DESCRIPTION

Modified Starch is a highly derivatized polysaccharide specifically developed as a filtration control additive for drilling and completion fluids.

PROPERTIES

<p>Physical Appearance: Off-white powder; slight odour Bulk Density: 480-640 kg/m³ Moisture Content: 6%</p>	<p>Chemical Type: Modified polysaccharide Solubility: Soluble (100% water) pH: 9.0-10 Microtox: 10.68 kg/m³</p>
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APPLICATION

Modified Starch is more efficient than regular starches and nearly as efficient as PAC at controlling fluid loss in fresh water. In brines, it controls fluid losses more efficiently than both regular starches and PAC. It has a synergistic effect with bentonite and other polymers which enhances the shear thinning properties of drilling fluids and results in excellent hole cleaning at low shear rates. **Modified Starch** can also coat clay and shale particles to control clay dispersion, slow well bore destabilization, and facilitate the removal of drilled solids on surface.

Modified Starch is effective in all types of water-based fluids and at temperature up to 150°C with the use of an oxygen scavenger. It is non-fermenting and requires no biocide under normal conditions. Filter cakes containing **Modified Starch** can be easily removed using Can-Break ECA.

Modified Starch is used in concentrations ranging from 4.0-12.0 kg/m³, depending on fluid loss requirements, salt content and the amount of solids in the system.

Table1 compares the rheological properties of **Modified Starch** against an industry leading starch in saturated KCl solution at 12 kg/m³ loading.



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Table 1. Rheological properties of **Modified Starch** vs an industry leading product in 24% KCL solution and 12 kg/m³ loading.

Before Hot-Roll	Modified Starch	Industry Leading Starch
600 RPM	6.0	7.8
300 RPM	3.2	4.4
200 RPM	2.3	3.0
100 RPM	1.3	1.8
6 RPM	0.2	0.2
3 RPM	0.2	0.2
PV (mPa·s)	2.8	3.4
YP (Pa)	0.2	0.5
Fluid Loss / mL	12.9	Total Fluid Loss in less than 10 minutes
After Hot-Roll @ 176 °F	Modified Starch	Industry Leading Starch
600 RPM	7.2	7.9
300 RPM	4.0	4.3
200 RPM	2.7	3.0
100 RPM	1.6	1.7
6 RPM	0.2	0.2
3 RPM	0.2	0.2
PV (mPa·s)	3.2	3.6
YP (Pa)	0.4	0.35
Fluid Loss / mL	10.6	Total Fluid Loss in less than 10 minutes

Figure 1 compares the fluid retention ability of **Modified Starch** against an industry leading starch.

The results show that rheological properties of **Modified Starch** are comparable to those of an industry leading product. However, **Modified Starch** is superior to the industry leading product when it comes to controlling fluid losses in drilling fluids with increased salt content.



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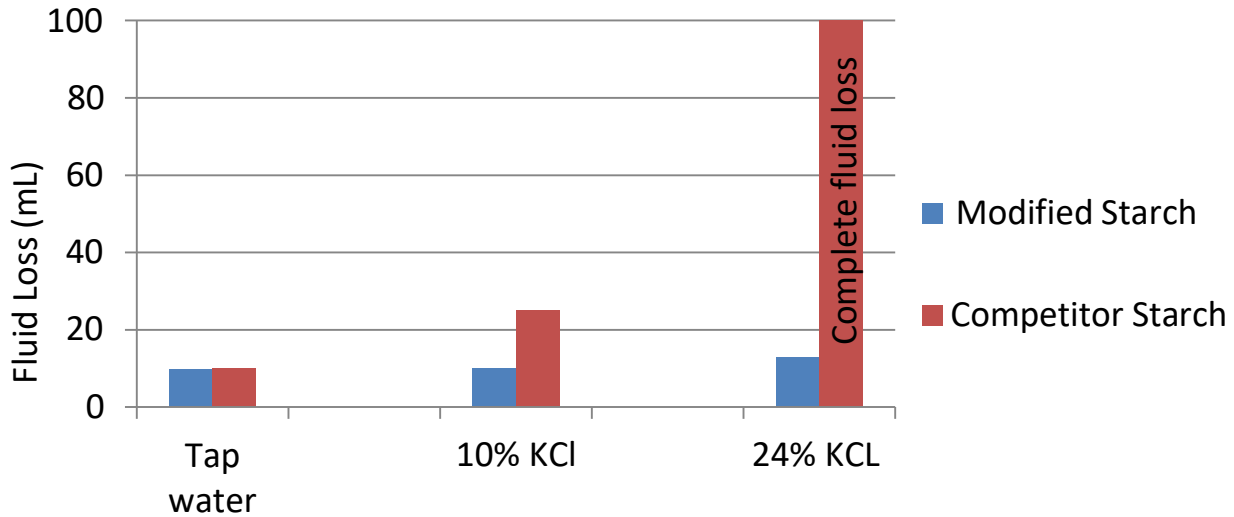


Fig 1. Fluid loss properties of **Modified Starch** vs industry leading product.

MIXING AND HANDLING

Modified Starch mixes readily and may be added to a mud system through the hopper at 10-15 minutes per bag. It is advisable to use a dust mask and eye protection while mixing all powdered products.

WHMIS: Not controlled	TDG: Not regulated	PACKAGING: 50 lb sack
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