

# Oilfield Chemicals

## Performance Chemicals for Drilling

[www.basf.com/oilfieldchemicals](http://www.basf.com/oilfieldchemicals)

 **BASF**  
The Chemical Company

# Drilling fluids additives

## Portfolio



### Viscosifiers for WBM:

[Alcomer<sup>®</sup> 120 types]

Alcomer<sup>®</sup> 130

DC<sup>®</sup>-150

### Viscosifiers for OBM:

Alcomer<sup>®</sup> 274

Alcomer<sup>®</sup> 275

### Bentonite extenders:

Alcomer<sup>®</sup> 180

Alcomer<sup>®</sup> 1771

### Deflocculant/ thinners:

Basogan<sup>®</sup> DR 130

Polythin<sup>®</sup>

Alcomer<sup>®</sup> 74 types

### Shale inhibitors:

Alcomer<sup>®</sup> 60RD

Alcomer<sup>®</sup> 110RD

Alcomer<sup>®</sup> 115

Alcomer<sup>®</sup> 120 types

Basodrill<sup>®</sup> types

### Fluid-loss additives:

Polydrill<sup>®</sup>

Alcomer<sup>®</sup> 242

Alcomer<sup>®</sup> 507

### Defoamers:

Basopur<sup>®</sup> DF 5

Basopur<sup>®</sup> DF 9010 F

### Emulsifiers:

S-MAZ<sup>®</sup> types

T-MAZ<sup>®</sup> types

### Wetting agents:

Alcomer<sup>®</sup> D1235

### Corrosion inhibitors:

Basocorr<sup>®</sup> types

### Coagulants:

Alcomer<sup>®</sup> 7100 types

### Flocculants:

Alcomer<sup>®</sup> 24

Alcomer<sup>®</sup> 80 types

Alcomer<sup>®</sup> 90 types

Alcomer<sup>®</sup> 750 types

Alcomer<sup>®</sup> 780 types

Alcomer<sup>®</sup> 810 types

Alcomer<sup>®</sup> 880 types

### Bit Lubricants:

Basoplur<sup>®</sup> types

Basotron<sup>®</sup> K1

[Basodrill<sup>®</sup> types]

### Biocides:

Protectol<sup>®</sup> types

Myacide<sup>®</sup> types [USA]

**ALCOMER<sup>®</sup> types** includes a wide variety of product forms consisting: solid grades in both bead and powder form, liquid grades in dispersions, inverse emulsions and solution forms.

# Drilling fluids additives

Alcomer® types – product forms



## Solid form

### ■ Powder Grade

High MW Polymer made by polymerizing monomer solution. The resultant polymer gel is then cut and dried. (**RD** version is readily dispersible).

### ■ Bead Grade

Medium to low MW Polymer made by suspension polymerization. Solvent and Water removed to give dry spherical product.

## Liquid form

### ■ Inverse emulsion

As bead but micro-fine polymerization without drying used to give liquid product ~35% active in water and oil.

### ■ Liquid dispersion

As above but water removed – 50% active in oil.

### ■ Aqueous Emulsion (“Latex”)

Insoluble monomer is emulsified into water and polymerized. 20-40% active

# Beads for drilling

Advantages vs. powders and liquids



## Bead advantages

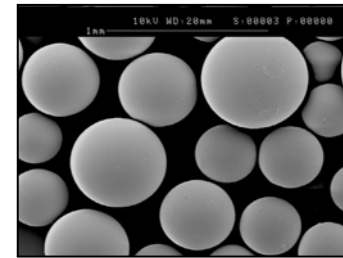
### ...versus powders

- Flow easily (regular particle shape)
- Relatively dust free
- More accurate dosing
- More efficient dry blending
- Higher bulk density than powders
- Better solubility than powders

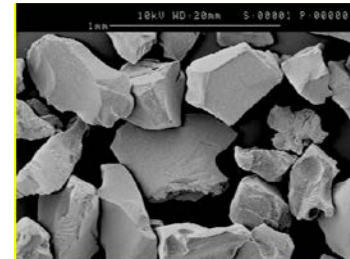
### ...versus Liquids

- No freeze / thaw issues
- Long shelf-life
- Easy storage

Bead: superior particles



Powder: irregular shape



**BASF offers an extensive range of **Bead polymer products****

# Beads polymer products

## Portfolio



### Viscosifiers for WBM:

Alcomer<sup>®</sup> 120B

### Bentonite extenders:

Alcomer<sup>®</sup> 1771

### Shale inhibitors:

Alcomer<sup>®</sup> 120B

### Deflocculant/ thinners:

Alcomer<sup>®</sup> 74

### Fluid-loss additives:

Alcomer<sup>®</sup> 242

Alcomer<sup>®</sup> 507

### Flocculants:

Alcomer<sup>®</sup> 24 - anionic

Alcomer<sup>®</sup> 750 types - cationic

## Bead - key parameters

**Appearance:** Off-white, free flowing, mainly dust-free micro beads with excellent solubility

**Particle size:** 98% < 1000  $\mu\text{m}$

**Bulk Density:** Approx. 0.8  $\text{g}/\text{cm}^3$

**Available in all regions world wide**

# Viscosifiers for WBM

## Portfolio



Product Name	Product Form	Product Description	REGION			
			EMEA	APAC	NAFTA	LATAM
<b>Alcomer® 130</b>	Powder	Anionic polyacrylamide copolymer. Offers more viscosity than the Alcomer 120B. Good for fresh water low hardness.	■	■	■	■
<b>Alcomer® 123LA</b>	Inverse emulsion s.c. 30%	Anionic polyacrylamide copolymer supplied in a mineral oil. It mixes readily and dissolves quickly into water based drilling fluids.			■	
<b>Alcomer® 120L UK</b>	LDP, s.c. 50%	Anionic polyacrylamide copolymer supplied as <b>water-free</b> dispersion of polymer in a low-toxicity mineral oil. It has <b>excellent freeze-thaw stability</b> and a improved long term stability. It is a viscosifier for <b>low salinity clear-water drilling</b> operations.	■	■		
<b>Alcomer® 120L</b>	LDP, s.c. 50%				■	■
<b>Alcomer® 120L OS</b>	LDP, s.c. 35%				CA	
<b>Alcomer® 120B</b>	Bead	Anionic polyacrylamide copolymer. It is a viscosifier for low salinity clear-water drilling operations	■	■	■	■
<b>DC®-150</b>	Powder	Attapulgate based viscosifier for <b>high temperature, high salinity clear-water drilling</b> operations with a good dynamic and static carrying capacity for solids	■	■	■	■

# Viscosifiers for WBM

## Portfolio



Product Name	Product Form	Waterbased mud						REGION			
		Polymer properties			Electrolyte tolerance			EMEA	APAC	NAFTA	LATAM
		Mw	Ionicity	Temp	K+	Ca2+	salt				
<b>Alcomer® 130</b>	Powder	Ultra High	Medium	120°C (150°C)	+	o	+	■	■	■	■
<b>Alcomer® 123LA</b>	Inverse emulsion s.c. 30%	Ultra High	Medium Low	120°C (150°C)	+	o	+			■	
<b>Alcomer® 120L UK</b>	LDP, s.c. 50%	High	Medium Low	120°C (150°C)	+	o	+	■	■		
<b>Alcomer® 120L</b>	LDP, s.c. 50%									■	■
<b>Alcomer® 120L OS</b>	LDP, s.c. 35%									CA	
<b>Alcomer® 120B</b>	Bead	Medium	Medium Low	120°C (150°C)	+	o	+	■	■	■	■
<b>DC®-150</b>	Powder	-	-	>200°C 400°F	++	++	++	■	■	■	■

# Bentonite extenders

## Portfolio



Product Name	Product Form	Product Description	REGION			
			EMEA	APAC	NAFTA	LATAM
<b>Alcomer® 180</b>	Powder	Extenders are usually long-chain anionic polymers that link clay platelets together in large networks. Anionic polymers are highly effective Both are fully anionic polyacrylate. Primarily for low-solids, non-dispersed fluids to extend the yield of bentonite and to encapsulate low-yield drilled solids for subsequent removal.	■	■	■	■
<b>Alcomer® 1771</b>	Bead		■	■	■	■

Product Name	Product Form	Waterbased mud						REGION			
		Polymer properties			Electrolyte tolerance			EMEA	APAC	NAFTA	LATAM
		Mw	Ionicity	Temp	K+	Ca2+	Salt				
<b>Alcomer® 180</b>	Powder	Medium High	High	120°C	+	-	+	■	■	■	■
<b>Alcomer® 1771</b>	Bead	Low	High	120°C	+	-	+	■	■	■	■



# Shale inhibitors

## Portfolio



Product Name	Product Form	Product Description	REGION			
			EMEA	APAC	NAFTA	LATAM
<b>Alcomer® 60RD</b>	Bead	Specifically processed to achieve excellent dispersibility. It provides all the benefits associated with PHPA's but avoids excessive viscosity.	■	■	■	■
<b>Alcomer® 110RD</b>	Powder RD	Because of the improved dispersibility of Alcomer® 110RD over conventional PHPA's the particles wet separately and dissolution can proceed rapidly without the formation of lumps or fish eyes.	■	■	■	■
<b>Alcomer® 115</b>	Powder	Alcomer 115 is a multi-functional synthetic polymer developed for use in fresh-, KCl- and salt water-based drilling fluids to provide viscosity and shale inhibition	■	■	■	■
<b>Alcomer® 120B</b>	Bead	It can be used alone or in conjunction with KCl to stabilize active shales	■	■	■	■
<b>Alcomer® 120L UK</b>	LDP, s.c. 50%	Anionic polyacrylamide copolymer supplied as <b>water-free</b> dispersion of polymer in a low-toxicity mineral oil. It has <b>excellent freeze-thaw stability</b> and a improved long term stability. It can be used <b>alone</b> or in conjunction with KCl to stabilize active shales			■	■
<b>Alcomer® 120L</b>	LDP, s.c. 50%		■	■		■
<b>Alcomer® 120L OS</b>	LDP, s.c. 35%				CA	
<b>Basodrill® 2200</b>	Liquid	Butanol alkoxyolate, very cost-effective shale inhibitor and lubricant and is usually used in conjunction with PHPA and brine phase (KCl) or amines	■	■	■	■
<b>Basodrill® 3000</b>	Liquid	Butanol alkoxyolate, very cost-effective shale inhibitor and lubricant and is usually used in conjunction with PHPA and brine phase (KCl) or amines	■	■	■	■

# Shale inhibitors

Test results based on the **API 13/ISO 10416**



Product Name	Product Form	Waterbased mud						REGION			
		Polymer properties			Shale recovered [%]			EMEA	APAC	NAFTA	LATAM
		Mw	Ionicity	Temp	0,5 ppb	1,0 ppb	1,5 ppb				
<b>Alcomer® 60RD</b>	Bead	Low	Medium Low	120°C (150°C)	77	83	85	■	■	■	■
<b>Alcomer® 110RD</b>	Powder RD	High	Low	120°C (150°C)	74	77	84	■	■	■	■
<b>Alcomer® 115</b>	Powder	High	Medium Low	120°C (150°C)	80	83	83	■	■	■	■
<b>Alcomer® 120B</b>	Bead	Medium	Medium Low	120°C (150°C)	80	85	84	■	■	■	■
<b>Alcomer® 120L UK</b>	LDP, s.c. 50%	High	Medium Low	120°C (150°C)	84	85	84			■	■
<b>Alcomer® 120L</b>	LDP, s.c. 50%							■	■		■
<b>Alcomer® 120L OS</b>	LDP, s.c. 35%									CA	
<b>Basodrill® 2200</b>	Liquid	Low	Nonionic	-	-	-	-	■	■	■	■
<b>Basodrill® 3000</b>	Liquid	High	Nonionic	-	-	-	-	■	■	■	■

# Fluid loss additives

## Portfolio



Product Name	Product Form	Product Description	REGION			
			EMEA	APAC	NAFTA	LATAM
<b>Alcomer® 507</b>	Bead	Use in low solids non-dispersed fresh water systems. Ca levels should be controlled below 300 ppm. It displays weak flocculant properties and can be used to extend the yield of bentonite. Dose 0,5-2ppb	■	■	■	■
<b>Alcomer® 242</b>	Bead	Improve the fluid loss of water based drilling fluids. It is stable to temperatures in excess of 200°C, exhibits excellent tolerance to Ca and Mg ions and is effective in salt concentrations up to saturation. Dose 1-5ppb	■	■	■	■
<b>Polydrill®</b>	Powder	Provides excellent FLC in dispersed muds <b>without viscosity increase</b> . Under high temperature conditions, the polymer does not generate carbon dioxide and is exceptionally salt tolerant.	■	■	■	■

***POLYDRILL can be combined with POLYTHIN to result in a systems approach.***

# Fluid loss additives

## Portfolio



Product Name	Product Form	Waterbased mud						REGION			
		Polymer properties			Electrolyte tolerance			EMEA	APAC	NAFTA	LATAM
		Mw	Ionicity	Temp	K+	Ca2+	Salt				
<b>Alcomer® 507</b>	Bead	Low	High	150°C	○	-	○	■	■	■	■
<b>Alcomer® 242</b>	Bead	Low	High	200°C 460°F	++	++	++	■	■	■	■
<b>Polydrill®</b>	Powder	Medium	High	200°C 400°F	++	++	++	■	■	■	■

***POLYDRILL can be combined with POLYTHIN to result in a systems approach.***

# Polydrill® - Fluid loss additives

More than 1000 HTHP wells have been drilled successfully

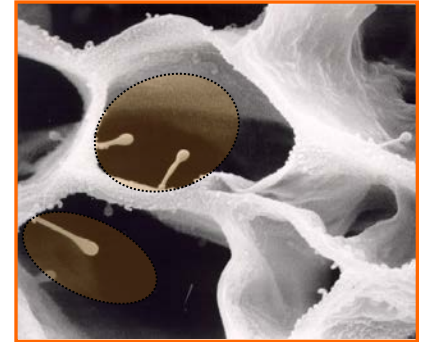


## ■ The chemistry

Sulfonated & hydroxylated polycondensate.

## ■ The mode of action

The anionic polymer - which is surrounded by hydration spheres - plugs pore spaces in the bentonite structure, thus reducing the filter cake permeability considerably.



## ■ Performance

- Temperature stability exceeding **400 °F** (200 °C)
- Builds superior filter cake qualities
- Stabilizes rheology / does not generate viscosity
- Tolerates NaCl and KCl to saturation
- Calcium / Magnesium tolerance to 100.000 ppm
- Has a stabilizing effect on PAC and CMC

### Field-proven HT-stability:

Example: **19 ppg Saturated Salt Mud**

- 7 ppb bentonite
- 12 ppb **POLYDRILL**
- 3.5 ppb **POLYTHIN**
- NaCl and barite

Mud Properties: **AHR 16 hrs @ 450 °F**

- PV / YP = 43 / 10
- Gels (10"/10') = 3 / 18
- HTHP-FL (350°F) = **14 ml**

# Deflocculants & thinners

## Portfolio



Product Name	Product Form	Product Description	REGION			
			EMEA	APAC	NAFTA	LATAM
<b>Basogan® DR 130</b>	Liquid	Dispersing agent for use in aqueous systems of sparingly soluble solids that are inorganic in nature.	■	■	■	■
<b>Polythin®</b>	Powder	Prevents high temperature induced gelation of bentonite and other clays. It is stable at temperatures up to 250°C (500°F). High electrolyte tolerance and assists fluid loss additives. Environmentally safe and non-toxic.	■	■	■	■
<b>Alcomer® 74</b>	Bead	Offers a very high divalent metal ion resistance in particular at elevated temperatures. Thermal stability to 250°C (500°F). Optimng thinning at pH 7-8 and are accepted as the cleanest and most effective route to mud viscosity control.	■	■	■	■
<b>Alcomer® 74L</b>	Liquid		■	■	■	■

Deflocculants also tend to reduce the fluid lost from a mud system by dispersing the clays finely enabling a tightly packed filter cake to be formed.

# Deflocculants & thinners

## Portfolio



Product Name	Product Form	Waterbased mud						REGION			
		Polymer properties			Electrolyte tolerance			EMEA	APAC	NAFTA	LATAM
		Mw	Ionicity	Temp	K+	Ca2+	Salt				
<b>Basogan® DR 130</b>	Liquid	Medium	High	120°C	+	-	-	■	■	■	■
<b>Polythin®</b>	Powder	Medium	High	250°C 500°F	++	-	>10000 ppm	■	■	■	■
<b>Alcomer® 74</b>	Bead	Low	High	250°C 500°F	++	>1000 ppm	>10000 ppm	■	■	■	■
<b>Alcomer® 74L</b>	Liquid							■	■	■	■

Deflocculants also tend to reduce the fluid lost from a mud system by dispersing the clays finely enabling a tightly packed filter cake to be formed.

# Deflocculants & thinners

## Summary



### Prevention of mud gelation

Polythin Dosage	Static Shear Strength	PV	YP	API FL	HTHP FL 300°F
ppb	lbs/100ft <sup>2</sup>	cP	lbs/100ft <sup>2</sup>	ml	ml
0	<b>955</b>	62	60	7	<b>38</b>
0,6	205	72	18	5	28
1,20	<b>102</b>	70	13	4	<b>22</b>

### Reconditioning of a gelled WBM

Polythin Dosage	Static Shear Strength	PV	YP	API FL	HTHP FL 300°F
ppb	lbs/100ft <sup>2</sup>	cP	lbs/100ft <sup>2</sup>	ml	ml
gelled fluid <u>without</u> Polythin, 350°F aged					
0	<b>350</b>	72	35	-	<b>115</b>
Polythin added, then second aging					
1,3	<b>21</b>	70	31	-	<b>45</b>

- Synthetic thinners such as Polythin and Alcomer 74L, are **thinners** and function at most pH levels (4 ->10)
- Caustic alone can thin mud but it reacts with the clays leading to high chemical maintenance dosages
- **Polythin as deflocculant**
  - Superior deflocculation of bentonite at temperatures up to 500°F (250°C)
  - Pumpable mud with low static shear strength and low viscosity in high solids muds
  - Assists fluid loss additives



# Basopur<sup>®</sup> DF 5

## Defoamer

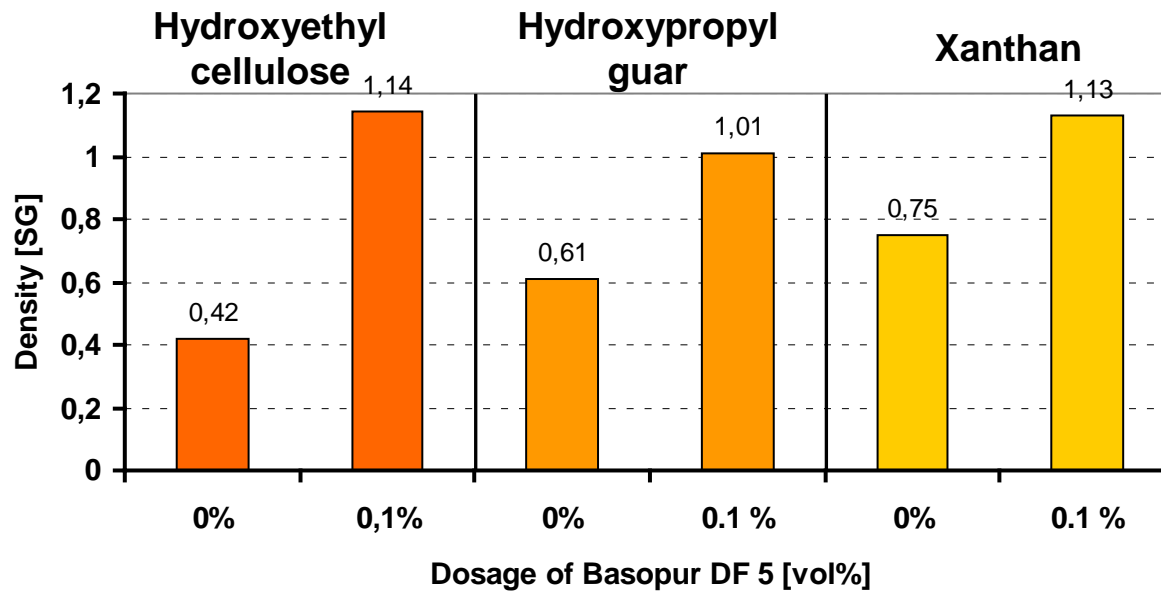


Product Name	Product Form	Product Description	REGION			
			EMEA	APAC	NAFTA	LATAM
Basopur <sup>®</sup> DF 5	DEFOAMER (Liquid)	Basopur DF 5 prohibits the formation of foam during preparation of well cementing fluids. Furthermore, it is highly salt tolerant, thus being effective with up to 32% salt in a variety of slurry compositions. Non-hazardous.	■	■	■	■
Basopur <sup>®</sup> DF 9010 F	DEFOAMER (Solid)	Basopur DF 9010 prohibits the formation of foam during preparation of well cementing fluids. It is stable up to 500 °F. Furthermore, it is highly salt tolerant, thus being effective with up to 32% salt in a variety of slurry compositions. Non-hazardous.	■	■	■	■

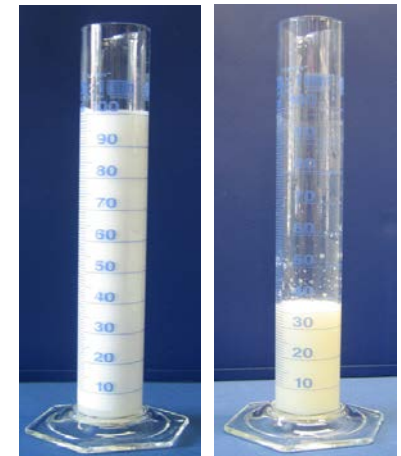
# Basopur<sup>®</sup> DF 5

Defoamer

**BASF**  
The Chemical Company



Foaming of hydroxyethyl cellulose



without  
with  
Basopur DF 5

# Lubricants

## Portfolio



Product Name	Product Form	Product Description	REGION			
			EMEA	APAC	NAFTA	LATAM
<b>Basodrill® 2200</b>	Liquid	Butanol alkoxyate	■	■	■	■
<b>Basodrill® 3000</b>	Liquid	Butanol alkoxyate	■	■	■	■
<b>Basoplur® E 400</b>	Liquid	Polyethylenglycol	■	■	■	■
<b>Basoplur® US P 2000</b>	Liquid	Polypropylenglycol	■	■	■	■
<b>Basotron® K1</b>	Liquid	Modified Polyethylenglycol	■	■	■	■

# Corrosion inhibitors

## Portfolio



Product Name	Product Form & Hazard	Product Description	REGION			
			EMEA	APAC	NAFTA	LATAM
<b>Basocorr® AM</b>	Liquid, Xi	Excellent inhibition on stainless steel in <b>saline media</b>	■	■	■	■
<b>Basocorr® PP</b>	Liquid, Xn	Good protection in acid media, especially HCl and not sensitive to water hardness. Higher efficiency. Basocorr PP is based on propargyl alcohol derivatives	■	■	■	■
<b>Basocorr® PA</b>	Liquid, T / N	Good protection in acid media and not sensitive to water hardness. Basocorr PP has higher efficiency. Basocorr PA is propargyl alcohol	■	■	■	■
<b>Basocorr® ETO</b>	Liquid, Xi / N	Corrosion inhibitor for oil & synthetic based muds. Basocorr ETO is a in oil soluble acetilenic compound	■	■	■	■
<b>Basocorr® ME *</b>	Liquid, T / N	Basocorr ME is comprising of 2-mercaptoethanol. Due to its very low molecular weight it can be used as an intermediate in areas like corrosion inhibition	■	■	■	■

# Corrosion inhibitors

## Portfolio

Product Name	Product Form & Hazard	Brines			WBM			REGION			
		ZnBr sat.	CaBr	NaCl	Fresh water	Salt water		EMEA	APAC	NAFTA	LATAM
						without CO2	with CO2				
<b>Basocorr® AM</b>	Liquid, Xi	-	-	O	++	++	++	■	■	■	■
<b>Basocorr® PP</b>	Liquid, Xn	+	++	not miscible	-	-	-	■	■	■	■
<b>Basocorr® PA</b>	Liquid, T / N	PP recom.	PP recom.	PP recom.	-	-	-	■	■	■	■
<b>Basocorr® ETO</b>	Liquid, Xi / N	not tested	not tested	not tested	not tested	not tested	not tested	■	■	■	■
<b>Basocorr® ME *</b>	Liquid, T / N							■	■	■	■

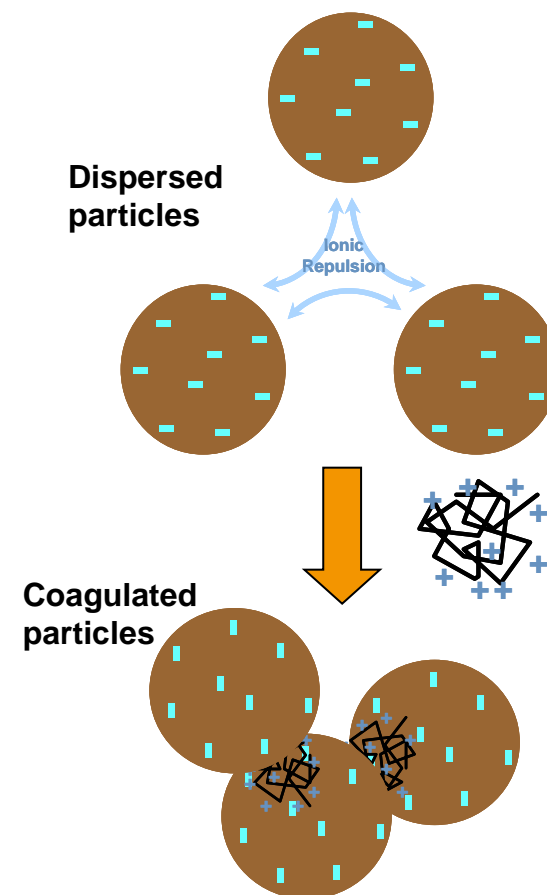
1 vol% Corrosion inhibitor, CO<sub>2</sub> 300 psi / Material: N80 / 70°C / 48 h

# Coagulants – cationic polymers

## Portfolio

Product Name	Product Form	Cationic	Ionicity	Mw	Activ content [%]
Alcomer® 7109	Aqu. solution	■	very High	low	15
Alcomer® 7115	Aqu. solution	■	high	very low	20
Alcomer® 7125	Aqu. solution	■	high	very low	40
Alcomer® 7187	Aqu. solution	■	very High	very low	40
Alcomer® 7197	Aqu. solution	■	very High	very low	50
Alcomer® 7198 US	Aqu. solution	■	very High	very low	50
Alcomer® 7199	Aqu. solution	■	very High	very low	50

### Mechanism: Patch Coagulation

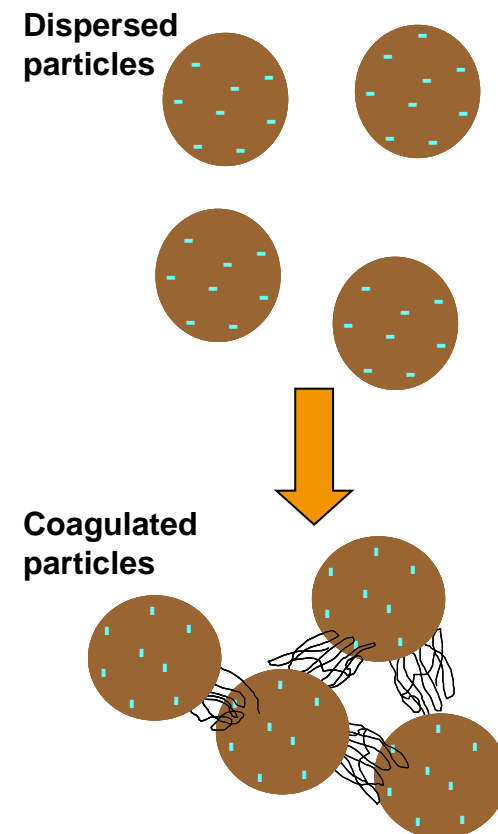


# Flocculants

## Portfolio

Product Name	Product Form	Ionicity type	Ionicity grade	Mw	Activ content [%]
<b>Alcomer® 80</b>	Powder	Non ionic	non	very high	-
<b>Alcomer® 85</b>	Powder	Anionic	very Low	very high	-
<b>Alcomer® 90P</b>	Powder	Anionic	Low	ultra high	-
<b>Alcomer® 90L</b>	LDP [50% activ]	Anionic	Low	very high	50
<b>Alcomer® 24 UK</b>	Bead	Anionic	Low	high	-
<b>Alcomer® 752</b>	Bead	Cationic	Low	medium	-
<b>Alcomer® 755</b>	Bead	Cationic	Medium	medium	-
<b>Alcomer® 758</b>	Bead	Cationic	High	medium	-
<b>Alcomer® 787</b>	LDP [50% activ]	Cationic	High	high	50
<b>Alcomer® 788</b>	LDP [50% activ]	Cationic	very High	Medium-Low	50
<b>Alcomer® 812</b>	Powder	Cationic	Low	medium-high	-
<b>Alcomer® 814</b>	Powder	Cationic	Medium	medium-high	-
<b>Alcomer® 819</b>	Powder	Cationic	High	medium-high	-
<b>Alcomer® 888</b>	inverse Emulsion	Cationic	High	high	45
<b>Alcomer® 889</b>	inverse Emulsion	Cationic	very High	high	45

### Mechanism: Bridging Flocculation



# Biocides - nonoxidizing

## Portfolio



Product Name	Product Form	Product Description	REGION			
			EMEA	APAC	NAFTA	LATAM
<b>Protectol® GA 24</b>	Liquid, s.c. 24%	<b>Glutaraldehyde</b> is an extremely potent antimicrobial with a broad-spectrum of activity against Gram - and Gram + bacteria, SRB, yeasts and fungi. Protectol GA is fast acting, making it ideal for water injection systems and topside applications.	■	■	■	■
<b>Protectol® GA 50</b>	Liquid, s.c. 50%		■	■	■	■
<b>Protectol® BN</b>	Powder	<b>Bronopol</b> , is readily water-soluble and shows a high affinity for polar solvents. Its antibacterial efficacy is well established in oilfield facilities, where the ability to preserve drilling muds, fracturing and completion fluids, combined with an excellent safety and compatibility profile, have been key success factors.	■	■	■	■
<b>Protectol® BN 18</b>	Liquid, sc.18%		■	■	■	■
<b>Protectol® BN 30</b>	Liquid, sc.30%		■	■	■	■
<b>Protectol® DB</b>	Powder	White crystalline powder containing a minimum 99% <b>2,2-dibromo-3-nitrilopropionamide</b> . It is an effective microbiocide and the preservation of drilling muds and other associated fluids.	■	■	■	■



# Biocides - nonoxidizing

## Portfolio



Product Name	Product Form	Log Pow	Solubility in Water	Typical use pH range	Antibacteri <sup>a</sup> (M.I.C.)	Application	REGION			
							EMEA	APAC	NAFTA	LATAM
<b>Protectol® GA 24</b>	Liquid, s.c. 24%	-0,22	100%	3-8	50-1250 ppm	Water injection Production EOR	■	■	■	■
<b>Protectol® GA 50</b>	Liquid, s.c. 50%									
<b>Protectol® BN</b>	Powder	0,18	28%	2-9	12,5-25 ppm	Drilling Completion fluids Hydraulic frac.	■	■	■	■
<b>Protectol® BN 18</b>	Liquid, sc.18%		100%							
<b>Protectol® BN 30</b>	Liquid, sc.30%		100%							
<b>Protectol® DB</b>	Powder	6,31	1.5%	7-8,5	7,8-62,5 ppm	Drilling & Completion fluids	■	■	■	■

# Viscosifiers for OBM

## Portfolio



Product Name	Product Form	Product Description	REGION			
			EMEA	APAC	NAFTA	LATAM
<b>Alcomer® 274</b>	Aqueous Emulsion	They are designed to give a rapid and predictable increase in viscosity to oil based invert emulsion drilling fluids. Alcomer 275 is NPE free.			■	■
<b>Alcomer® 275</b>			■	■	■	■

Product Name	Product Form	Oilbased mud						REGION			
		Polymer properties			Mineral oil	Synthec. oil	CaCl <sub>2</sub>	EMEA	APAC	NAFTA	LATAM
		Mw	Ionicity	Temp							
<b>Alcomer® 274</b>	Aqueous Emulsion	High	Medium Low	120°C (150°C)	++	++	+			■	■
<b>Alcomer® 275</b>								■	■	■	■

# Primary Emulsifiers

## Portfolio



Product Name	Product Form	Product Description	REGION			
			EMEA	APAC	NAFTA	LATAM
<b>T-Maz® 20</b>	Liquid	T-Maz ethoxylated sorbitan fatty acid esters are emulsifiers with a wide range of hydrophilic characteristics. They are used individually or with S-Maz sorbitan fatty acid esters to cover a wide range of oil-in-water emulsification systems	■	■	■	■
<b>S-Maz® 20</b>	Liquid		■	■	■	■
<b>T-Maz® 80</b>	Liquid	S-Maz sorbitan fatty acid esters are emulsifiers with a wide range of lypophilic characteristics. They are used individually or with T-Maz ethoxylated sorbitan fatty acid esters to cover a wide range of water-in-oil emulsification systems	■	■	■	■
<b>S-Maz® 80</b>	Liquid		■	■	■	■
<b>T-Maz® 85 K</b>	Liquid		■	■	■	■
<b>S-Maz® 85</b>	Liquid		■	■	■	■

# Primary Emulsifiers

## Portfolio



Product Name	Product Form	Sorbitan type	HLB value	POE grade	Saponification [mg KOH/g]	Hydroxyl value [mg KOH/g]	REGION			
							EMEA	APAC	NAFTA	LATAM
<b>T-Maz® 20</b>	Liquid	monolaurate	16,7	20	40-50	96-108	■	■	■	■
<b>S-Maz® 20</b>	Liquid	monolaurate	8	-	158-170	330-358	■	■	■	■
<b>T-Maz® 80</b>	Liquid	monooleate	15,0	20	45-55	65-80	■	■	■	■
<b>S-Maz® 80</b>	Liquid	monooleate	4,6	-	145-160	190-210	■	■	■	■
<b>T-Maz® 85 K</b>	Liquid	trioleate	11,1	20	83-93	39-52	■	■	■	■
<b>S-Maz® 85</b>	Liquid	trioleate	2,1	-	172-186	56-68	■	■	■	■

### Example: How to obtain a desired HLB-value of 6,7

$$\text{S-Maz 80/T-Maz 80 (Ratio 4:1)} \quad 6,68 = [(4,6*4)+(15*1)]/5$$

Mixing the products at different ratios is possible to tune the HLB-value to the adequate Base-oil

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