SIDLEYCHEM®

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SIDLEYCHEM®

# OILDRILLING ADDITIVES

/ Polyanionic Cellulose
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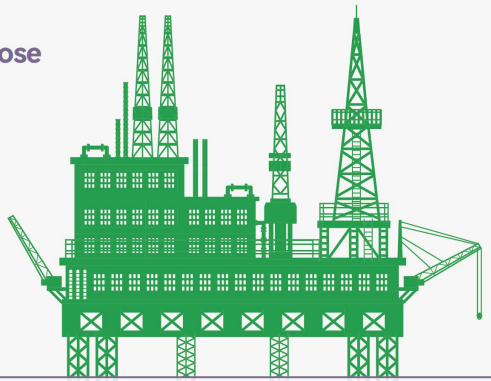
/ Hydroxyethyl Cellulose



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# Company Profile

SIDLEYCHEM was established in 2005. The company focuses on the production of cellulose ether and starch ether products, which are widely used in the field of petroleum drilling. SIDLEYCHEM has an advanced analysis laboratory to ensure the stability of product quality. The product fully complies with API-13A standards.

SIDLEYCHEM is a high-quality supplier of international oil drilling companies. Our products are highly praised by customers and are widely used in international oil fields such as Saudi Arabia, Iraq, Egypt, and Russia, etc.. In order to develop the European market, SIDLEYCHEM has completed REACH registration in 2020.




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# Polyanionic Cellulose

## Overview

Polyanionic Cellulose can be used in drilling fluid, fixing fluid and fracturing fluid. In drilling fluid, it works as viscosifier, filtration reducer, and rheology controller; in fixing fluid, it is used to control fluid viscosity, suspend heavy objects, and avoid fluid loss; in fracturing fluid, it is used to carry stuffing and avoid fluid loss. It meets API international standard.

## Specification

| Technical Specifications of PAC | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Item \ Type | PAC-SH*LV | PAC-SLV | PAC-MLV | PAC-LV | PAC-HLV | PAC-GLV (Granular) | PAC-SHV | PAC-MHV | PAC-HV | PAC-HHV | PAC-GHV (Granular) |
| Purity(%) | ≥ 65.0 | ≥ 65.0 | ≥ 85.0 | ≥ 95.0 | ≥ 98.0 | ≥ 95.0 | ≥ 75.0 | ≥ 85.0 | ≥ 95.0 | ≥ 98.0 | ≥ 95.0 |
| Apparent Viscosity (mPa • s) | ≤ 40 | ≤ 40 | ≤ 40 | ≤ 40 | ≤ 40 | ≤ 40 | ≥ 35 | ≥ 50 | ≥ 50 | ≥ 50 | ≥ 50 |
| Fluid Loss (FL),(mL) | ≤ 12 | ≤ 16 | ≤ 16 | ≤ 16 | ≤ 16 | ≤ 16 | ≤ 23 | ≤ 23 | ≤ 23 | ≤ 23 | ≤ 23 |
| Loss on Drying(%) | ≤ 10.0 | | | | | ≤ 12.0 | ≤ 10.0 | | | | ≤ 12.0 |
| Degree of Substitution | ≥ 0.90 | | | | | | | | | | |
| pH Value(1%) | 6.5 - 9.0 | | | | | | | | | | |
| Remarks | SH* is High-temperature resistant product<br>Conforms to API Spec. 13A standard | | | | | | | | | | |

| High-Performance Polyanionic Cellulose | | | |
|---|---|---|---|
| Type | Purity(%) | Brookfield LVT/25℃ Viscosity(mPa • s) | Properties |
| PL-30000<br>Extremely high Viscosity | 98 | Min2500 | *A fluid loss agent with a very high yield<br>*An excellent 1，Viscosifier<br>*With shale inhibiting properties |
| PL-100<br>Low Viscosity | 98 | 80 - 160 | *A fluid loss agent with a good yield and also extremely good rheological properties for low filtration values |
| PL-30<br>Ultra Low Viscosity | 98 | 20 - 60 | *A fluid loss agent for extremely low filtration values<br>*No disturbing increase in viscosity |


# Sodium Carboxymethyl Cellulose

## Overview

Sodium Carboxymethyl Cellulose is a high quality water soluble cellulose derivative. It has good thermal-stability and high salt resistance. It is soluble in water to form thick liquid, and widely used in water-base drilling fluid so as to enhance the drilling fluid viscosity and control the fluid loss.

## Specification

| Technical Specifications of CMC-HV,CMC-LV | | | |
|---|---|---|---|
| Specification \ Type | CMC-HV | | CMC-LV |
| Viscometer dial reading at 600 r/min. | In distilled water | ≥ 30 | ≤ 90 |
| | In 40g / L salt water | ≥ 30 | |
| | In saturated salt water | ≥ 30 | |
| Fluid Loss (ml) | ≤ 10.0 | | ≤ 10.0 |
| Remarks | Conforms to API Spec. 13A standard | | |





# Carboxymethyl Starch /CMS-R

## Overview

Carboxymethyl Starch is an anionic starch ether. it can be hydrated in cold water and is not easy to mildew. It has obvious effect of reducing fluid loss in drilling fluid, and has little effect on the viscosity of drilling fluid. CMS-R has the characteristics of high-temperature resistance and salt resistance, and is suitable for the preparation of various environmentally friendly drilling fluid systems; it has a high acid solubility and is beneficial to protecting hydrocarbon reservoir. The general addition amount is 1-2%.

## Specification

| Technical Specifications of Carboxymethyl starch CMS-R | | |
|---|---|---|
| Appearance | White or light yellow powder | |
| Residue greater than 2000 μm | No residue | |
| Moisture, % | ≤ 12 | |
| Viscometer dial reading at 600 r/min. | In 40 g/L salt water | ≤ 18 |
| | In saturated salt water | ≤ 20 |
| Fluid Loss (ml) | In 40 g/L salt water | ≤ 10 |
| | In saturated salt water | ≤ 10 |
| Remarks | Conforms to API Spec. 13A standard | |

# High-Temperature Resistant Carboxymethyl Starch /CMS-H

## Overview

By chemically modifying Carboxymethyl Starch, the high-temperature resistance can be increased to over 130℃. Whether it is in fresh water or salt water, the fluid loss reduction performance is excellent, and it is biodegradable, which meets the requirements of marine drilling for environmental protection.The general addition amount is 1-2%.

## Specification

| Technical Specifications of Carboxymethyl starch CMS-H | | |
|---|---|---|
| Appearance | White or light yellow powder | |
| Residue greater than 2000 μm | No residue | |
| Moisture, % | ≤ 12 | |
| Viscometer dial reading at 600r/min. Aging testing for 16 hours at 130℃ | In 40g/L salt water | ≤ 10 |
| | In saturated salt water | ≤ 12 |
| Fluid Loss (ml) Aging testing for 16 hours at 130℃ | In 40g/L salt water | ≤ 15 |
| | In saturated salt water | ≤ 20 |
| Remarks | Conforms to API Spec. 13A standard | |

# Hydroxyethyl Cellulose

## Overview

Hydroxyethyl Cellulose is an non-ionic water-soluble polymer, it is white to slightly yellow, odorless and tasteless powdered solid. It is mainly used as viscosifier and fluid loss agent in oildrilling.

## Specification

| Typt | Viscosity mpa.s | Moisture, % ≤ | Ash, % ≤ | pH |
|---|---|---|---|---|
| O300 | 150-400（2%） | 6.0 | 6.0 | 6.0 - 8.5 |
| O100000 | 4500 ~ 6000（1%） | | | |

Remarks: Brookfield Viscometer at 25℃, LVTD.

# Liquid Hydroxyethy Cellulose

## Overview

Liquid HEC is made by mixing HEC, mineral oil and surfactant. It can be rapidly disperse in and thicken a variety of brines, including sea water and other light brines, with minimum shear and without forming fisheye.

## Specification

| Liquid Hydroxyethy Cellulose | |
|---|---|
| Item | Specification |
| Appearance | Cream to light yellow liquid |
| HEC content max（%） | 40 |
| PH | 6.0 - 8.0 |
| Solubility | Soluble in fresh&salt water |
| Acid solubility | Soluble in 15% HCL |
| Temperature stability | 93 - 110℃ |
| Specific gravity | 0.93-0.98 |



# Fluid Loss Agent /CP-8

## Overview

CP-8 is a white powdery solid formed by the reaction of acrylic acid and acrylamide. It is suitable for various drilling fluid systems, has good compatibility, can significantly reduce the fluid loss of drilling fluid, and excellent temperature resistance and salt/calcium resistance; It has low dosage (0.2-0.3%); and no pollution to the environment. CP-8 is not also applicable for polymer mud,and all types of water-based drilling fluid system. The highest operation temperature of CP-8 in drilling fluid could be 150℃.

## Specification

| Item | | | Specification |
|---|---|---|---|
| Apparent | | | White powder |
| Water content, % | | | ≤ 10.0 |
| Screen residue,( Φ0.45mm mesh)% | | | ≤ 20.0 |
| Water soluble | | | Water soluble |
| Ph (1% water) | | | ≤ 10.0 |
| Distilled Water | Base mud | Apparent viscosity, mPa.s | 6.0 - 8.0 |
| | | Plastic Viscosity, mPa.s | 3.0 - 5.0 |
| | | API Filtrate volume, ml | 22 - 28 |
| | Base mud+0.4% sample | Apparent viscosity, mPa.s | ≥ 10.0 |
| | | Plastic Viscosity, mPa.s | ≥ 5.0 |
| | | API Filtrate volume, ml | ≤ 12.0 |
| Salt Base Mud | Salt base mud | Apparent viscosity, mPa.s | 4.0 - 6.0 |
| | | Plastic Viscosity, mPa.s | 2.0 - 4.0 |
| | | API Filtrate volume, ml | 52 - 58 |
| | Base mud+2.0% sample, 150℃ Hot rolling 16h | Apparent viscosity, mPa.s | ≥ 5.0 |
| | | Plastic Viscosity, mPa.s | ≥ 2.0 |
| | | API Filtrate volume, ml | ≤ 12.0 |