

## 油井水泥缓凝剂 Oil well cement retarder

### 产品概述

本品外观为白色、淡黄色、棕色粉末或颗粒。  
油井水泥缓凝剂分高温缓凝剂和中温缓凝剂。

油井水泥高温缓凝剂由磺酸盐、有机酸等聚合而成。一般加量 1%~1.0% (BWOC)。在 60℃~180℃ (BHCT) 井温下使用效果较好。在中深井中、深井中使用，能有效延长稠化时间，增加可泵时间。可配制出直角稠化水泥浆体系。有较强的分散性能，若水泥浆有沉降现象，可加适量 (油井水泥降失水剂) 调节。

油井水泥中温缓凝剂由纤维素衍生物、羟基羧酸等多种化合物组成。一般加量为 1%~1.0% (BWOC)，在中深井固井时与 USZ 减阻剂配伍使用效果更佳。可降低水泥浆稠度，改善水泥浆流变性。可有效延长水泥浆稠化时间。一般用于井底循环温度低于 110℃ 的油气井。适于干混。无 毒、无嗅、无腐蚀性。

### 性能特点

- 延长水泥浆凝固时间；
- 提高固井质量；
- 适应复杂地质条件；
- 有多重类型和功能；
- 对水泥强度无不良影响。

### 技术指标

油井水泥高温缓凝剂技术要求	
项目	指标
外观	白色颗粒
水分，%	≤8.0
细度（0.315mm 筛余），%	≤10.0
稠化时间可调性	可调
40Bc~100Bc 的时间，min	≤40
稠化线形	正常
游离液，%	≤1.4
抗压强度，MPa/144℃.21MPa.48h	≥14
油井水泥中温缓凝剂技术要求	
外观	淡黄色粉末
水分，%	≤10.0
细度（0.315mm 筛余），%	≤10.0
初始稠度，Bc/80℃.46.5Mpa.45min	≤30
稠化时间可调性	可调
稠化线形	正常
游离液，%	≤1.4
抗压强度，Mpa/102℃.21Mpa.24h	≥14

### 产品用途

油井水泥用缓凝剂的主要作用是延缓水泥水化反应，从而延长水泥浆的凝固时间，确保固井作业的安全和有效性。具体来说，缓凝剂通过吸附、螯合、分散和润湿等作用，在水泥水化初期通过扩散双电层分散水泥颗粒，并在水泥颗粒表面与钙离子形成溶剂化膜，优先吸附于铝酸三钙，减缓水化作用，从而延缓水泥的凝结时间。

- 调节凝固时间：缓凝剂能够显著延长水泥浆的凝固时间，为施工提供更大的灵活性，确保每一环节都精准无误。
- 提高固井质量：通过促进水泥颗粒的均匀分布，减少裂缝和空隙的产生，增强固井结构的整体性，防止地层流体的侵入，保护油井的长期稳定运行。
- 适应复杂地质条件：在高温、高压或含腐蚀性流体的地层中，缓凝剂能够帮助应对各种复杂情况，确保固井作业的顺利进行。

### 包装与贮存

- 25kg/袋，采用三合一复合牛皮纸防潮袋包装，也可根据用户要求使用其它包装。
- 本产品储存保管时应注意防潮、防火、防高温，要求存放在通风、干燥处。
- 保质期:1 年。



### Product Overview

The appearance of this product is white, light yellow, or brown powder or granules. Oil well cement retarders are categorized into high-temperature retarders and medium-temperature retarders.

The high-temperature retarder for oil well cement is polymerized from sulfonates, organic acids, and other components. The typical dosage is 1% to 1.0% (BWOC). It performs well at well temperatures ranging from 60°C to 180°C (BHCT). When used in medium and deep wells, it can effectively prolong the thickening time and increase the pumpable time. It can be formulated into a right-angle thickening cement slurry system. It has strong dispersibility, and if the cement slurry exhibits sedimentation, an appropriate amount of (oil well cement fluid loss agent) can be added for adjustment.

The medium-temperature retarder for oil well cement consists of various compounds such as cellulose derivatives and hydroxy carboxylic acids. The general dosage is 1% to 1.0% (BWOC). When used in conjunction with USZ drag reducers during cementing operations in medium and deep wells, it achieves better results. It can reduce the viscosity of the cement slurry, improve its rheological properties, and effectively prolong the thickening time of the cement slurry. It is generally used in oil and gas wells where the bottom hole circulating temperature is below 110°C. It is suitable for dry mixing and is non-toxic, odorless, and non-corrosive.

### Characteristics

- Extend the setting time of the cement slurry;
- Improve cementing quality;
- Adapt to complex geological conditions;
- There are multiple types and functions;
- It has no adverse effect on cement strength.

### Technical Specification

Technical requirements for high-temperature retarder for oil well cement	
Item	Specification
Apparence	White particles
Moisture content，%	≤8.0
Fineness (0.315mm sieve residue)，%	≤10.0
Adjustability of thickening time	adjustable
The time period from 40Bc to 100Bc，min	≤40
Thickened linear shape	normal
Free fluid，%	≤1.4
Compressive strength，MPa/144℃.21MPa.48h	≥14
Technical requirements for moderate temperature retarder in oil well cement	
Apparence	淡黄色粉末
Moisture content，%	≤10.0
Fineness (0.315mm sieve residue)，%	≤10.0
Initial consistency，Bc/80℃.46.5Mpa.45min	≤30
Adjustability of thickening time	adjustable
Thickened linear shape	normal
Free fluid，%	≤1.4
Compressive strength，Mpa/102℃.21Mpa.24h	≥14

### Applications

The primary function of retarders used in oil well cement is to delay the cement hydration reaction, thereby extending the setting time of the cement slurry and ensuring the safety and effectiveness of cementing operations. Specifically, through adsorption, chelation, dispersion, and wetting, retarders disperse cement particles by diffusing the double layer at the early stage of cement hydration. They form a solvation film on the surface of cement particles with calcium ions, preferentially adsorbing onto tricalcium aluminate, slowing down the hydration process, and thus delaying the setting time of cement.

- Adjusting setting time: Retarders can significantly extend the setting time of cement slurry, providing greater flexibility for construction and ensuring precision in every step.
- Improve cementing quality: By promoting uniform distribution of cement particles, reducing the occurrence of fractures and voids, enhancing the integrity of the cementing structure, preventing the intrusion of formation fluids, and protecting the long-term stable operation of the oil well.
- Adaptation to complex geological conditions: In formations with high temperature, high pressure, or corrosive fluids, retarders can help cope with various complex situations and ensure the smooth progress of cementing operations.

### Package and Storage

- Package: 25kg/bag, packaged in a three-in-one composite kraft paper moisture-proof bag, or other packaging can be used according to user requirements.
- Storage: When storing and keeping this product, attention should be paid to moisture prevention, fire prevention, and high temperature prevention. It is required to be stored in a ventilated and dry place.
- Shelf - life：one (1) year .



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