



压裂用稠化剂（聚丙烯酰胺类）

Thickener for fracturing (Poly-acrylamide)

产品说明和使用方法

Product description and usage

概述 summary:

该压裂用稠化剂是以丙烯酸、丙烯酰胺、抗盐单体采取特殊的共聚技术生产出来的一种高新技术产品。高抗盐的压裂用稠化剂有着起黏快，配制工艺简单（不用添加其它压裂助剂），优异的耐温，减阻和防膨效果以及良好的反排能力。压裂后对油气层伤害小，无污染和成本低等特点。低抗盐的压裂用稠化剂同样有着高粘度，低摩擦，良好的悬砂能力，较小的滤失性以及残渣少等特性。两种产品都有着在低浓度配制可以作为减阻剂，高浓度配制可以作为携砂液，满足一体化施工技术要求。

The thickener for fracturing is a high-tech product manufactured by special co-polymerization of acrylamide, acrylic acid and salt resistant monomers. The thickener with high salt resistance has the characteristics of fast viscosity starting, simple preparation process (no need to add other fracturing additives), excellent temperature resistance, drag reduction and anti swelling effect, and good reverse drainage ability. After fracturing, it has small damage to oil and gas reservoir, no pollution and low cost. Fracturing thickener with low salt resistance also has the characteristics of high viscosity, low friction, good sand suspension capacity, small filtration rate and less residue. Both products can be used as drag reducing agent in low concentration and sand carrying fluid in high concentration, which can meet the technical requirements of integrated construction.

高/低抗盐型压裂用稠化剂的技术指标:

Technical index of thickener for high / low salt resistance fracturing:

项目 Item	高抗盐 (HCHH-979) High salt resistance	低抗盐 (HCHH-233) Low salt resistance
外观 appearance	乳状液 Emulsion	
PH值 PH value	5--8	
表观粘度 (1%, 去离子水, 30°C, mPa·s) Apparent viscosity (1%, deionized water, 30 °C, MPA · s)	≥75	
抗盐性能 (1.5%, 10%标准盐水, 30°C, mPa·s) Salt resistance (1.5%, 10% standard saline, 30 °C, MPA · s)	≥48	/
稠化时间, min Thickening time, min	≤5	
乳液稳定性(°C) Emulsion stability (°C)	≤-15	
破胶性能 (90°C, 0.04%APS, 2h) Gel breaker performance (90 °C, 0.04% APS, 2h)	表面张力, (mN/m) Surface tension, (mN / M)	≤32
	粘度 (mPa·s) Viscosity (MPA · s)	≤5
耐温耐剪切能力 Temperature and shear resistance	1% (去离子水, 90°C, mPa·s) 1% (deionized water, 90 °C, MPA · s)	20---70
	1.5% (10%标准盐水, 90°C, mPa·s) 1.5% (10% standard saline, 90 °C, mPa · s)	10---40
	1.5% (10%标准盐水, 90 °C, mPa · s)	/

适用范围 Scope of application:



用作油气井水为压裂作业中的水基压裂液，同时适应煤层气、碳酸盐储层等需要大排量、大规模增产改造的压裂体系。

It can be used as water-based fracturing fluid in hydraulic fracturing of oil and gas wells, and also adapt to the fracturing system with large displacement and large-scale stimulation for coalbed methane and carbonate reservoirs.

推荐用量 Recommended dosage:



1. 用作压裂携砂液，根据井深、岩层厚度等地质条件，推荐用量为0.6-1.3%。

The recommended dosage is 0.6 ~ 1.3% according to the geological conditions such as well depth and rock layer thickness.

2. 作为滑溜水减阻剂，推荐用量为0.1-0.3%。

The recommended dosage is 0.1 ~ 0.3%.

压裂现场使用方法 Fracturing site application method:



配滑溜水和低粘液时，首先配液车排量为设定量如300L/min，射流真空将稠化剂缓慢加入（控制量如100kg加入时间为3.0 min），防止形成鱼眼，循环30min。滑溜水粘度大于6 mPa·s，低粘液粘度大于42 mPa·s。

When adding slippery water and low mucus, first the displacement of the dispensing truck is set as 300 L / min, and the thickener is slowly added by jet vacuum (the control amount is 100 kg, and the adding time is 3.0 min), so as to prevent fish eye formation and circulate for 30 min.

The viscosity of smooth water is more than 6 MPa. S, and that of low viscosity is more than 42 MPa. S.



应用案例1

Application case 1:

该产品在苏里格气田采气二厂直井与水平井压裂中，前置液滑溜水减阻剂与携砂剂配料表：

This product is used in the fracturing of vertical and horizontal wells in No.2 gas production plant of Sulige gas field

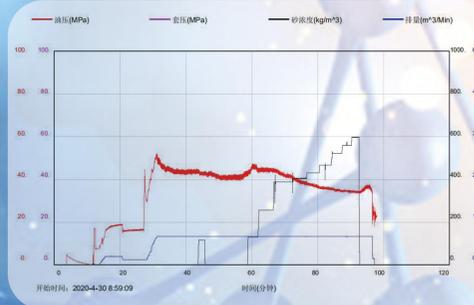
某气井清洁可回收压裂液体系

Clean and recoverable fracturing fluid system in a gas well

名称 name	添加剂 additive	浓度 concentration
活性水 Active water	KCl 气井粘土稳定剂 Clay stabilizer for KCl gas well	1.0%
	TGF-1 气井高效助排剂 TGF-1 high efficiency drainage aid for gas well	0.1%
	压裂用稠化剂 Thickener for fracturing	0.3%
滑溜水 slickwater	压裂用稠化剂 Thickener for fracturing	0.3%
低粘液 Low mucus	压裂用稠化剂 Thickener for fracturing	1.2%
破胶剂 Gel breaker	过硫酸铵 Ammonium persulfate	/
	胶囊破胶剂 Capsule breaker	

施工曲线1:

Construction curve 1:



施工曲线3:

Construction curve 3:



应用案例2

Application case 2:

该产品在长庆油田第二采气厂直井与水平井压裂中，前置液滑溜水减阻剂与携砂剂配料表：

This product is used in the fracturing of vertical and horizontal wells in the second gas production plant of Changqing Oilfield

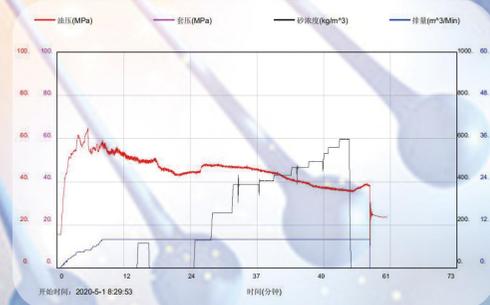
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	压裂用稠化剂 Thickener for fracturing	0.2%
滑溜水 slickwater	压裂用稠化剂 Thickener for fracturing	0.2%
低粘液 Low mucus	压裂用稠化剂 Thickener for fracturing	0.8%
破胶剂 Gel breaker	过硫酸铵 Ammonium persulfate	/
	胶囊破胶剂 Capsule breaker	

施工曲线2:

Construction curve 2:



施工曲线4:

Construction curve 4:

