

压裂用支撑剂陶粒砂

Ceramsite sand for fracturing proppant

产品概述

【外观】本品外观一般呈暗红色、赭红色、灰黄色、黑色、灰白色、灰青色的流动性强的圆型颗粒。

【物理化学性质】本品由铝矾土、粉煤灰等制成，具有高抗压、耐磨、圆度高及优良的抗震和抗渗透性，具有很高的压裂强度，主要用于油田井下支撑，在石油、天然气等资源的开采和压裂作业中发挥着重要作用。

性能特点

- 1、产品具有高强度和耐腐蚀性；

2、密度较低，可以减轻对地层的压力和损伤；

3、具有良好的渗透性抗腐蚀性好；

4、可以减少对环境的污染。
- 【用法及用量】需要根据具体的井深、地层特性、预期的裂缝长度和宽度等因素进行计算。

技术指标

压裂用支撑剂技术指标											
粒径规格及试验标准筛组合											
粒径规格 m	3350/1700	2360/1180	1700/ 1000	1700/ 850	1180/ 850	1180/ 600	850/ 425	600/ 300	425\ 250	425/ 212	212/106
参考筛目，目	6/12	8/16	12/18	12/20	16/12	16/30	20/40	30/50	40/60	40/70	70/140
筛析试验 标准筛 组合 m	4750	3350	2360	2360	1700	1700	1180	850	600	600	300
	3350	2360	2000	2000	1180	1180	850	600	425	425	212
	2360	2000	1700	1700	1000	1000	710	500	355	355	180
	2000	1700	1400	1400	850	850	600	425	300	300	150
	1700	1400	1180	1180	710	710	500	355	250	250	125
	1400	1180	850	850	600	600	425	300	212	212	106
	1180	850	600	600	425	425	300	212	150	150	75
	底盘	底盘	底盘	底盘	底盘	底盘	底盘	底盘	底盘	底盘	底盘
备注	1: 表中加下划线黑体数字为相应粒径规格的上下限；										
	2: 所用标准筛符合 GB/T 6033.1-1997										
陶粒砂的球度与圆度											
球度、圆度	人造陶粒砂的球度、圆度不应低于 0.8										
支撑剂酸溶解度指标											
支撑剂粒径规格/ μ m						酸溶解度，%					
3350~1700， 2360~1180， 1700~1000， 1700~580， 1180~850， 1180~600， 850~425， 600~300						≤5.0					
425~250， 425~212， 212~106						≤7.0					
支撑剂密度指标											
支撑剂类型				体积密度范围 g/cm³				视密度范围 g/cm³			
低密度支撑剂				≤1.65				≤3.00			
中密度支撑剂				1.65<ρ b≤1.80				3.00<ρ a≤3.35			
高密度支撑剂				>1.80				>3.35			
陶粒支撑剂抗破碎测试压力及指标											
粒径规格	体积密度 g/cm³			视密度 g/cm³		闭合压力 Mpa		破碎室受力 a kN		破碎率 %	
3350~1700（6/12）目	——			——		52		105			
52						105					
52						105					
52						105					
2360~1180（8/16）目	——			——		52		105			
69						140					
52						105					
69						140					
1700~1000（12/18）目	——			——		52		105			
69						140					
52						105					
69						140					
1700~850（12/20）目	——			——		52		105			
69						140					
52						105					
69						140					
850~425（20/40）目	≤1.65			ρ ≤3.00		52		105			
						69		140			
						86		174			
	1.65<ρ b≤1.80			3.00<ρ a≤3.35		52		105			
						69		140			
						86		174			
	>1.80			>3.35		69		140			
						86		174			
						103		208			
600~300（30/50）目	≤1.65			≤3.00		52		105			
						69		140			
						86		174			
	1.65<ρ b≤1.80			3.00<ρ a≤3.35		52		105			
						69		140			
						86		174			
	>1.80			>3.35		69		140			
						86		174			
						103		208			
425~250（40/60）目	——			——		69		140			
						86		174			
						103		208			
425~212（40/70）目	——			——		69		140			
						86		174			
						103		208			
212~106（70/140）目	——			——		69		140			
						86		174			
						103		208			
* 表中破碎率受力值只适用于 50.8mm 直径的破碎室，其他直径的破碎室按 SY/T5108-2006 式（7）进行计算。											
支撑剂筛选性能指标											
项 目						指 标					
粒径均值						实测值 ^a					
短期导流能力						实测值 ^b					
^a 粒径均值越高，支撑剂性能越好											
^b 短期导流能力越大，支撑剂性能越好											



Product Overview

[Appearance] The appearance of this product is generally dark red, ochre red, grayish yellow, black, grayish white, and grayish green, with strong fluidity and round particles.

[Physicochemical Properties] This product is made from bauxite, fly ash, etc., and possesses high compressive strength, wear resistance, high roundness, excellent shock resistance, and impermeability. It has high fracturing strength and is mainly used for underground support in oil fields. It plays an important role in the exploration and fracturing operations of oil, natural gas, and other resources.

Characteristics

1. The product has high strength and corrosion resistance;

2. With a lower density, it can reduce the pressure and damage on the formation;

3. It has good permeability and corrosion resistance;

4. It can reduce environmental pollution.
- [Usage and Dosage] Calculations need to be made based on specific factors such as well depth, formation characteristics, expected fracture length and width.

Technical Specification

Particle size specification and test standard sieve combination											
Particle size specification m	3350/ 1700	2360/1 180	1700/ 1000	1700/ 850	1180/ 850	1180/ 600	850/ 425	600/ 300	425\ 250	425/ 212	212/106
Reference sieve mesh, mesh	6/12	8/16	12/18	12/20	16/12	16/30	20/40	30/50	40/60	40/70	70/140
Sieve analysis test Standard sieve Combination M	4750	3350	2360	2360	1700	1700	1180	850	600	600	300
	3350	2360	2000	2000	1180	1180	850	600	425	425	212
	2360	2000	1700	1700	1000	1000	710	500	355	355	180
	2000	1700	1400	1400	850	850	600	425	300	300	150
	1700	1400	1180	1180	710	710	500	355	250	250	125
	1400	1180	850	850	600	600	425	300	212	212	106
	1180	850	600	600	425	425	300	212	150	150	75
	chassi s	chassis	chassi s	chassi s	chassi s	chassis	chassi s	chassi s	chassi s	chassi s	chassis
notes	1: The underlined bold numbers in the table indicate the upper and lower limits of the corresponding particle size specifications;										
	2: The standard sieve used complies with GB/T 6033.1-1997										
The sphericity and roundness of ceramic sand											
Sphericity, roundness	lower than 0.8		The sphericity and roundness of artificial ceramic aggregate sand should not be								
Proppant acid solubility index											
Proppant particle size specification/μ m						Acid solubility,%					
3350~1700 , 2360~1180 , 1700~1000 , 1700~580 , 1180~850 , 1180~600 , 850~425 , 600~300						≤5.0					
425~250 , 425~212 , 212~106						≤7.0					
Proppant density index											
Proppant type			Volume density range g/cm ³					Visual density range g/cm ³			
Low density proppant			≤1.65					≤3.00			
Medium density proppant			1.65<p b≤1.80					3.00<p a≤3.35			
High density proppant			>1.80					>3.35			
Anti crushing test pressure and indicators of ceramic particle support agent											
Particle size specification	Volume density g/cm ³		Visual density g/cm ³		Closing pressure Mpa		Crushing chamber force a kN		Fragmentation rate%		
3350-1700 (6/12) mesh 2360-1180 (8/16) mesh 1700-1000 (12/18) mesh 1700-850 (12/20) mesh	—		—		52		105				
					52		105				
					52		105				
					52		105				
1180-850 (16/20) mesh	—		—		52 69		105 140				
1180-600 (16/30) mesh	—		—		52 69		105 140				
850-425 (20/40) mesh	≤1.65		p≤3.00		52 69 86		105 140 174				
	1.65<p b≤1.80		3.00<p a≤3.35		52		105				
					69		140				
					86		174				
	>1.80		>3.35		103		208				
					69		140				
86					174						
103		208									
600-300 (30/50) mesh	≤1.65		≤3.00		52 69 86		105 140 174				
	1.65<p b≤1.80		3.00<p a≤3.35		52		105				
					69		140				
					86		174				
	>1.80		>3.35		103		208				
					52		105				
69					140						
86		174									
103		208									
425-250 (40/60) mesh	—		—		69 86 103		140 174 208				
425-212 (40/70) mesh	—		—		69 86 103		140 174 208				
212-106 (70/140) mesh	—		—		69 86 103		140 174 208				
The force values of the crushing rate in Table ^ are only applicable to crushing chambers with a diameter of 50.8mm. For crushing chambers with other diameters, the calculation shall be carried out according to equation (7) of SY/T5108-2006.											

产品用途

采油用聚合物驱油剂的用途主要是通过增加注入水的粘度，改善油水流动度比，从而提高原油采收率。聚合物驱油剂通常是通过在注入水中加入一定量的高分子聚合物（如聚丙烯酰胺），以增加注入水的粘度，调整吸水剖面，扩大波及体积。聚合物由于其固有的粘弹性，在流动过程中产生对油膜或油滴的拉伸作用，增加了携带力，从而提高微观洗油效率。

【用法及用量】本产品除自身性质之外，控水、调驱效果与原油性质及地层结构密切相关，使用前需进行试验，确定加入量及使用方案；本产品推荐加量为 1000~2000ppm,用调剖泵随注入水注入地层。

包装与贮存

【包装】本产品一般用铁桶或塑料桶包装，可分净重 1000kg 吨桶和净重 200kg 、25kg 的不同规格桶，也可根据客户要求定制包装，运输过程中应轻装轻卸、避免碰撞、切勿倒置。

【存储条件】本产品应储存于干燥、阴凉、通风的库房，远离火种和热源。

【保质期】1 年。



The force values of the crushing rate in Table A are only applicable to crushing chambers with a diameter of 50.8mm. For crushing chambers with other diameters, the calculation shall be carried out according to equation (7) of SY/T5108-2006.

Performance indicators for screening proppants

project	Indicator
Mean particle size	Actual measured value ^a
Short term diversion capacity	Actual measured value ^b
The higher the average particle size, the better the performance of the proppant	
The greater the short-term diversion capacity of ^b , the better the	

Applications

The primary purpose of using polymer flooding agents in oil extraction is to enhance oil recovery by increasing the viscosity of the injected water and improving the oil-water flow ratio. Polymer flooding agents are typically prepared by adding a certain amount of high molecular weight polymers (such as polyacrylamide) to the injected water, which increases the viscosity of the injected water, adjusts the water absorption profile, and expands the swept volume. Due to their inherent viscoelasticity, polymers exert a stretching effect on oil films or oil droplets during flow, increasing the carrying capacity and thus improving the micro-oil washing efficiency.

[Usage and Dosage] Apart from its inherent properties, the water control and profile control effects of this product are closely related to the properties of crude oil and the formation structure. Before use, it is necessary to conduct tests to determine the dosage and usage plan. The recommended dosage of this product is 1000-2000ppm, and it should be injected into the formation along with the injection water using a profile control pump.

Package and Storage

[Packaging] This product is generally packaged in iron drums or plastic drums, available in different specifications such as 1000kg net weight ton drums, 200kg and 25kg net weight drums. Customized packaging can also be provided according to customer requirements. During transportation, it should be handled gently, avoid collisions, and do not invert.

[Storage Conditions] This product should be stored in a dry, cool, and well-ventilated warehouse, away from sources of ignition and heat.

[Shelf life] 1 year.



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