

Technical Data Sheet

Black Ultra™ Proppants

Description

Black Ultra™ proppants are available in 16/30, 20/40, 30/50 and 40/70 mesh sizes. These resin coated proppants utilize an advanced resin system, which bonds at low temperatures without the use of a consolidation aid for proppant flowback control.

Typical Applications

Fracture treatments:

At closure stress up to:

- 8,000 psi [55 MPa] (16/30 and 20/40)
- 10,000 psi [69 MPa] (30/50 and 40/70)

At bottom-hole static temperatures* from:

- 90 - 450°F [32 - 232°C]

*Does not require low temperature consolidation aid down to recommended temperatures.

Technical Advantages and Benefits

- Proppant flowback control in low temperature reservoirs without a consolidation aid
- High conductivity
- Proppant fines reduction
- Cyclic stress resistance
- Minimizes proppant embedment
- Reduces respirable silica dust exposure below PEL limits

Typical Properties

Black Ultra™ Proppants
<https://www.hexion.com/en-US/product/blackultra>

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Property	Value	Unit
Specific Volume	0.386 [0.0463], 0.383 [0.0439], 0.386 [0.0463], 0.385 [0.0461]	cm ³ /g [gal/lb]
API Mesh Size	16/30, 20/40, 30/50, 40/70	
Bulk Density	1.46 [12.2], 1.53 [12.8], 1.48 [12.4], 1.47 [12.3]	g/cm ³ [lb/gal]
Color	tan to reddish tan	
Composition	resin coated, northern white frac sand	
Median Particle Diameter	0.7660, 0.5775, 0.3825	mm
Particle Size Distribution	meets or exceeds API RP 19C	
Physical State	solid granule	
Pipe Fill Factor	0.685 [0.0821], 0.654 [0.0784], 0.676 [0.0810], 0.681 [0.0816]	cm ³ /g [gal/lb]
Resin Type	thermosetting, curable	
Solubility in Water, Brine & HCl	0.0	weight %
Specific gravity	2.59, 2.61, 2.59, 2.60	
Turbidity	≤ 250	NTU (FTU)

Technical Considerations

- Grain-to-grain contact must occur and closure stress must be applied during the cure period for proper bonding
- Consolidation of curable product at bottom-hole static temperatures below 90°F [32°C] is achieved by use of Hexion's AcTivator™ low temperature consolidation aid

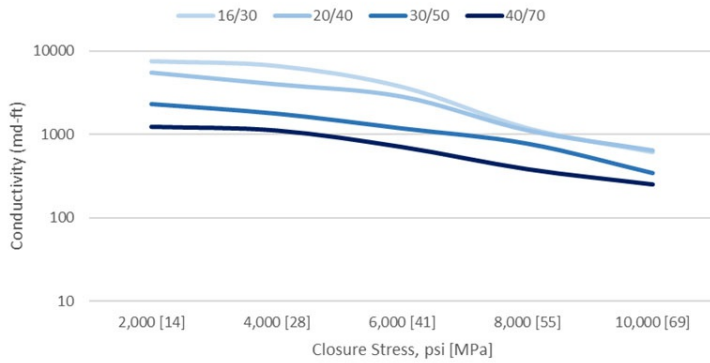
Conductivity

PropTester, Inc. Long-Term Baseline Procedure

Proppant Concentration: 2 lb_m/ft² [9.8 kg/m²], Temp: 150°F [66°C]

Closure Stress, psi [MPa]	2,000 [14]	4,000 [28]	6,000 [41]	8,000 [55]	10,000 [69]
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Size	Conductivity (md-ft)				
16/30	7,841	6,575	3,697	1,189	615
20/40	5,449	3,941	2,811	1,109	637
30/50	2,315	1,778	1,185	779	346
40/70	1,227	1,107	704	383	252



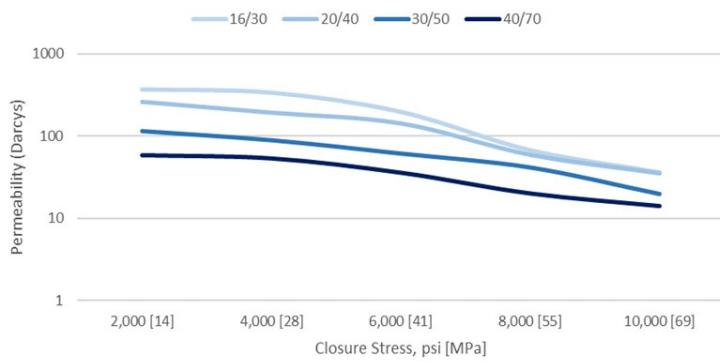
Permeability

PropTester, Inc. Long-Term Baseline Procedure

Proppant Concentration: 2 lb_m/ft² [9.8 kg/m²], Temp: 150°F [66°C]

Closure Stress, psi [MPa]	2,000 [14]	4,000 [28]	6,000 [41]	8,000 [55]	10,000 [69]
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Size	Permeability (Darcy)				
16/30	365	333	195	67	36
20/40	260	192	142	59	35
30/50	116	90	62	42	20
40/70	59	54	36	20	14



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