TECHNICAL DATA SHEET

CARBOECONOPROP

Low-density ceramic proppant

Features

- Bulk density and specific gravity similar to frac sand
- Chemically inert
- Available in three standard sizes—20/40, 30/50 and 40/70

Benefits

- Developed for largest well concentration
- Cost-effective alternative for resin-coated sand
- Will not react with fracturing fluid crosslinkers and breakers
- High conductivity for increased production

Ideally suited for moderate-depth natural gas wells

Both the bulk density and specific gravity of CARBOECONOPROP®, a low-density ceramic proppant, are similar to frac sand, yet its high conductivity makes it more cost-effective than resin-coated sand proppant. CARBOECONOPROP is non-reactive to fracturing fluid crosslinkers and breakers.

Long-term conductivity

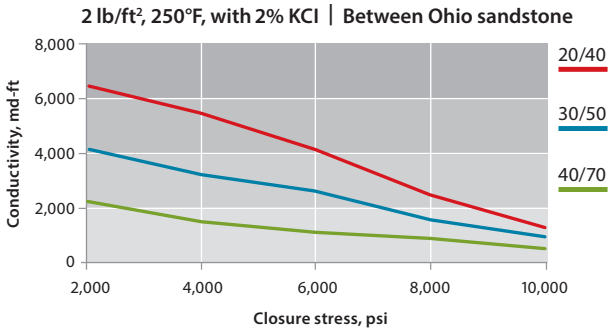
Reference conductivity, md-ft @ 250˚F

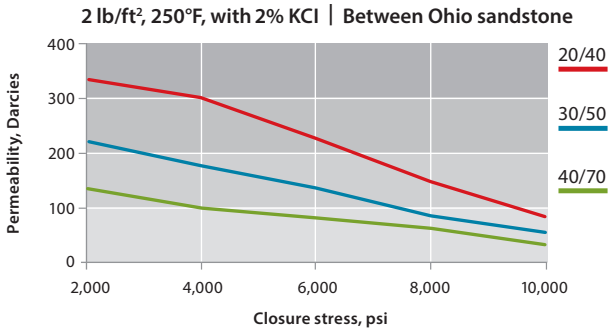
Closure stress [psi]	2 lb/ft² 20/40	2 lb/ft² 30/50	2 lb/ft² 40/70
2,000	6,300	4,150	2,200
4,000	5,500	3,300	1,660
6,000	4,100	2,550	1,270
8,000	2,500	1,600	870
10,000	1,300	975	555

Reference permeability, Darcies @ 250˚F

Closure stress [psi]	2 lb/ft² 20/40	2 lb/ft² 30/50	2 lb/ft² 40/70
2,000	340	220	135
4,000	300	180	100
6,000	230	140	80
8,000	150	90	60
10,000	85	65	35

Reference conductivity and permeability are measured with a single phase fluid under laminar flow conditions in accordance with API RP 19D. In an actual fracture, the effective conductivity will be much lower due to non-Darcy and multiphase flow effects. For more information, please refer to SPE Paper #106301 - "Determining Realistic Fracture Conductivity and Understanding its Impact on Well Performance –Theory and Field Examples."





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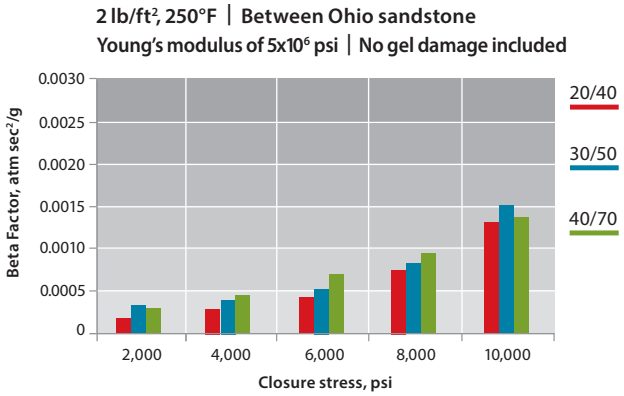
Beta factors

Closure stress [psi]	Beta factor [atm sec²/g] 20/40	30/50	40/70
2,000	0.00024	0.00035	0.00034
4,000	0.00029	0.00040	0.00046
6,000	0.00043	0.00050	0.00070
8,000	0.00075	0.00080	0.00092
10,000	0.00129	0.00150	0.00131



Beta factor data reported by Stim-Lab Consortium, PredK Feb 2002.

Physical and chemical properties

Typical sieve analysis [weight % retained]

U.S. Mesh [mesh]	Microns	20/40	30/50	40/70
-16+20 mesh	-1180+850	5		
-20+30 mesh	-850+600	60	3	
-30+40 mesh	-600+425	35	79	5
-40+50 mesh	-425+300		17	72
-50+70 mesh	-300+212		1	22
-70 mesh	-212			1
Median particle diameter [microns]		635	473	332
API/ISO crush test % by weight fines generated	@5,000 psi	1.0	0.8	0.4
	@7,500 psi	5.2	2.8	2.0

Sizing requirements: A minimum of 90% of the tested sample should fall between the designated sieve sizes. These specifications meet the recommended practices as detailed in API RP 19C.

Typical additional properties

Roundness	0.9	Apparent specific gravity	2.70
Sphericity	0.9	Absolute volume [gal/lb]	0.044
Bulk density [lb/ft³] [g/cm³]	96 1.56	Solubility in 12/3 HCl/HF acid [% weight loss]	1.7

All data represents typical values.

Talk to CARBO to find out how we can help you enhance your production.

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