

Features

Our testing reveals that in most cases KIP Products crush hemispherically

KIP can custom manufacture ceramic proppant with specific density, size and crush strength for use in very specific well formations.

Production increases when using the "KIP" high strength ceramic proppant. High pressure and extreme heat require the strongest crush strength and proppant engineering technology.



KIPs UHSP PRODUCTS ARE PROVEN TO INCREASE OIL AND GAS PRODUCTION

API Crush / Fines	22,000 PSI	10.81%	20-40 KIP
API Crush / Fines	28,000 PSI	9.19%	30-50 KIP
API Crush / Fines	29,000 PSI	9.07%	40-70 KIP

Roundness	0.9
Sphericity	0.9
Bulk, gm/cm ³	1.98

All results based on averages

Testing Equipment:

Test Method(s) Used: ISO 13503-2, Sections 6, 7, 8, 9, 10 and 11. ISO 13503-5. API-RP-19C/ISO 13503-2

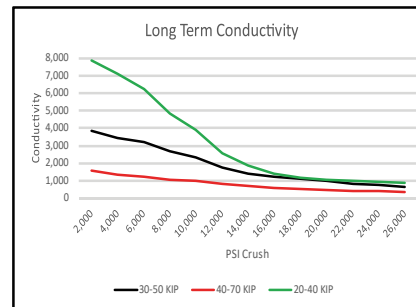
Conductivity Procedure Overview:

ISO13503-5 / API RP-19D is used as the basis for the Proppant pack conductivity testing method, with modifications as directed by the client (if any). Testing was conducted against steel plates at 250F with a cell loading of 2.0 lbf/ft² in each of API cells.

Apparatus:

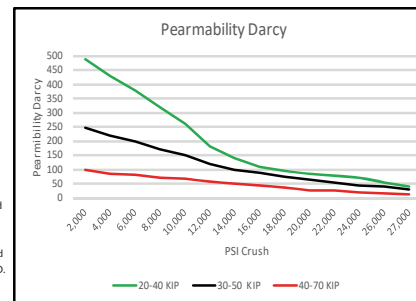
Sample Prep: Split Ro-Tap RX29, sieve set ATS-2; B&L Optical Microscope; Firefly Digital Microscope; Krumbein Chart, Burrell Shaker, Hach 2100 Turbidimeter, ANSI B74.4 Density Apparatus, Tinius-Olsen 150,000 lb tester, ISO 13503-2 Crush Cell, ISO 13503-2 Section 8 Solubility Apparatus; Humboldt Sample Reducer, Humboldt Sample Splitter Micromeritics AcuPync 1335 Pyncnometer

API RP19D is the guideline procedure used for testing the long-term conductivity of proppants. The procedure states: "The procedures presented in this publication are not intended to inhibit the development of new technology, material improvements, or improved operational procedures. Qualified engineering analysis and sound judgment is required for their application of it a specific solution." The following are modifications to the API RP19D which are used to improve testing with advances in equipment and data acquisition, acquired since the original published procedure in 2006 under ISO13503-3 and adopted as API RP19D.



Long Term Conductivity 2% KCl

Closure Stress (psi)	20-40 KIP	30-50 KIP	40-70 KIP
2,000	7,878	3,821	1,552
4,000	7,100	3,450	1,328
6,000	6,241	3,200	1,244
8,000	4,834	2,710	1,072
10,000	3,900	2,354	1,001
12,000	2,586	1,779	818
14,000	1,861	1,389	708
16,000	1,424	1,227	612
18,000	1,158	1,131	529
20,000	1,081	987	480
22,000	1,008	810	430
24,000	940	740	400
26,000	897	623	350



Permability Darcy

Permability Darcy 21k	20-40 KIP	30-50 KIP	40-70 KIP
2,000	488	248	99
4,000	430	221	86
6,000	380	200	82
8,000	320	170	72
10,000	260	150	68
12,000	181	120	56
14,000	139	99	50
16,000	110	89	44
18,000	95	75	38
20,000	85	65	26
22,000	78.00	55.00	25.00
24,000	70.00	45.00	20.00
26,000	55.00	40.00	15.00
27,000	40.00	30.00	13.00