

Qualitative Fluid Selection.

Materials - Fluids, Fluid "Types"

1 - Really Bad to 5 - Excellent

Qualitative Fluid Selection¹

Fluid System	Viscosity			Compatibility							Totals	
	Proppant KfW	Low pump pressure	Prop-transport	Stable	High/Low	Breaking	Formation/fluid	Reservoir pres	Natural frags(**)	Fluid loss		Cheap
Water (**)	5	3	1	5	Very Low	5	3	3	5	1	5	36
Linear gel HPG/Guar (<130-150 °F)	4	5	3	3	Low	5	3	3	3	3	5	37
Linear HEC gel (<180 °F)	5	5	3	3	Low- Med	4	3	3	4	1	4	35
Borate X-Link (<180 °F)	4	3	4	3	High	5	3	3	2	4	4	35
Delay Borate X-link (160-280 °F)	4	4	4	4	High	5	3	3	2	4	4	37
Delay Metallic X-link (180-220 °F)	2	4	5	4	High	2	3	3	2	4	4	33
Delay Metallic X-link (220-280 °F)	3	4	5	3	High-Med	3	3	3	2	4	4	34
Delay Metallic X-link (280-350 °F)	3	4	4	2	High-Med	4	3	3	2	4	4	33
Nitrogen foam (<5000 ft)	5	1	4	4	Med	5	5	5	5	5(!)	2	41
CO ₂ foam (5000-10000 ft)	5	1	4	4	Med	5	5	5	5	5(!)	2	41
Poly emulsion (up to 280 °F)	4	2	4	4	Med	4	4	4	5	5(!)	3	39
Lease crude	4	3	2	3	Low-Med	5	5	4	5	2	3	36
Gelled oil	2	4	4	4	Med	3	5	4	2	4	3	35

(*) Good loss control for permeability <1md (+/-)

(**) NSI's opinion only

Most common

Energized solutions

¹Source: Michael B. Smith NSI Technologies Inc., SPE Hydraulic Fracturing Technical Conference, 2/5/12, Hydraulic Fracturing - A Concise Overview, Fracturing Fundamentals (Edition 1.9, Jan-12)

Messer Americas

200 Somerset Corporate Blvd
Suite 7000
Bridgewater, NJ 08807
Phone: 1-800-755-9277
sales@messer-us.com
www.messer-us.com