

PROPEL SSP®/PROPEL SSP® 350

PROPPANT TRANSPORT TECHNOLOGY

TECHNICAL FEATURES

- Compatible with water up to 350k PPM TDS water
- Suitable for anionic and cationic fluid systems
- Uniform proppant distribution in low viscosity fluid
- Maximize propped height
- Efficient proppant transport through fracture network
- Residue-free polymer break with conventional oxidizers
- Identical crush strength and conductivity of uncoated proppant
- Shear-stable polymer coating integrity during blending and transport
- Does not require the use of energized fluids

COMPARED WITH SLICKWATER

- Reduces chemical and water consumption
- Limits abrasion on pressure pumping equipment
- Improves retained permeability
- Limits fluid leakoff
- Able to use coarse mesh sizes

COMPARED WITH CONVENTIONAL GEL

- Simplifies fluid chemistry
- Remains in-zone
- Improves regain conductivity
- Non-damaging to the reservoir

PRODUCT PROPERTIES

| | Propel SSP | Propel SSP 350 |
|---------------------------------|---------------------------------|---|
| Water Compatibility | Fresh Water | Brine, Brackish, KCl, Seawater, Flowback Produced |
| Viscosity at 1 ppa ^a | 5-7 cP | 3-5 cP |
| Full Stack | 3-6 ppa | 4-6 ppa |
| Time to Full Hydration | < 30 seconds | < 2 minutes |
| Activation Time (FR, swell) | Instantaneous | |
| Mesh Size | 16/30, 20/40, 30/50, 40/70, 100 | |
| Substrate | Sand, Ceramic | |
| pH ^b | 9.6 | 4.4 |
| Effective Sg | 1.3-1.6 | 1.5-1.6 |

a) Supernatant viscosity measured with Fann 35, 511 sec⁻¹, 300 RPM, R1B1, 75°F.

b) pH measured in standardized test water (ph 5.14, 120 ppm hardness, 165 ppm TDS, and 300 micro-Siemens conductivity).
Propel SSP/SSP 350 was added at 1 ppa concentration.

FIELD OPERATING RANGE

| | Propel SSP | Propel SSP 350 |
|--|------------------|----------------|
| Recommended TDS Limit for Full Stack (ppm) | < 1,000 | < 350,000 |
| Applicable Temperature Range | -50 °F to 380 °F | |
| pH Tolerance | 5.3 - 12.3 | 4.5 – 12.0 |

FIELD VERIFIED OPERATING CONDITIONS

| | |
|-----------------------|--|
| Minimum Pump Rate | 3 BPM |
| Maximum Pump Rate | 100 BPM |
| Max PPA | 12 ppa |
| Completion Techniques | Plug and Perf Sliding Sleeve Coil Frac |

*Refer to substrate's technical data sheet

EFFECTIVE SPECIFIC GRAVITY AND SIZE OF PROPPANT IN SLURRY
 FOR PROPPANT SUBSTRATE WITH 2.65 g/cc ABSOLUTE DENSITY

| | Expansion % | Effective Specific Gravity | Effective Mean Particle Diameter (micron) | | |
|--------------|-------------|----------------------------|---|-------|-------|
| | | | 20/40 | 30/50 | 40/70 |
| Raw Baseline | 0 | 2.6 | 600 | 410 | 320 |
| | 50 | 2.1 | 685 | 468 | 365 |
| | 100 | 1.8 | 754 | 515 | 402 |
| | 150 | 1.6 | 812 | 555 | 433 |
| | 200 | 1.5 | 863 | 590 | 460 |
| | 250 | 1.5 | 908 | 621 | 485 |
| | 300 | 1.4 | 950 | 649 | 507 |
| | 400 | 1.3 | 1023 | 699 | 546 |



Propel SSP 350 in Fresh Water Propel SSP 350 in Brackish Water Propel SSP 350 in Produced Water Raw Sand in Slickwater

Proppant stacking achieved with Propel SSP/Propel SSP 350 in different water types as compared to proppant settling typical of a slickwater formulation

Fairmount Santrol is a leading provider of high-performance proppant and sand-based products used by oil and gas exploration and production companies to enhance the productivity of their wells. The company also provides high-quality products, strong technical leadership and applications knowledge to end users in the foundry, building products, water filtration, glass, and sports and recreation markets. Its global logistics capabilities include a wide-ranging network of distribution terminals and thousands of rail cars that allow the company to effectively serve customers wherever they operate. As one of the nation’s longest continuously operating mining organizations, Fairmount Santrol has developed a strong commitment to all three pillars of sustainable development, People, Planet and Prosperity. Correspondingly, the company’s motto and action orientation is: “Do Good. Do Well.” For more information, visit FairmountSantrol.com.

Data listed has been generated by Fairmount Santrol and independent laboratories. Every real-world sampling is different, so your results may vary. Data is for direction purposes. Additional testing is suggested for specific conditions of source water and fluid chemistry, prior to pumping.

The information contained in this data sheet is for general application and is believed to be accurate at the time of printing. Fairmount Santrol makes no warranty, expressed or implied, concerning these products except that these products shall conform to Fairmount Santrol specifications.

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