



# ARC Drill-In™

## Product Data Sheet

Delivering Tomorrow's Fluid Technologies Today

### Description

Micro-solution Additive for Drilling, Completion and Workover fluids.

**ARC Drill-In™** is a patent pending, biodegradable, thermodynamically stable micro-solution (clear mixture of solvent, co-solvent and surfactant) designed specifically for use as a drilling fluid additive. **ARC Drill-In™** enhances drilling fluids by improving system performance, optimizing filtercake lift off and filtrate flow back from the reservoir. **ARC Drill-In™** is compatible with oil or waterbase base drilling fluids.

### Properties

Form:	Liquid	Chemical Family:	Proprietary
Color:	Clear to Opaque	Solubility:	Water and Brines
Odor:	Citrus	Wt. per Gal.:	7.837 lbs.
Charge:	Nonionic	Flash Point:	77° F

### Application

**ARC Drill-In™ is a drilling fluid system enhancer.**

By controlling the interfacial tensions between the liquids and solids within a drilling fluid better product performance is received. When additives that are designed to build a seal can flow through the liquid phase more efficiently they provide better utility. When these additives are relieved of the hindrance of interfacial tension two key benefits are received. One is they compact better and secondly their resistance to lift off when the well is produced is significantly reduced. Couple these features to the added benefit of the micro-solution traveling with the filtrate that enters into your reservoir when the seal is created. In so doing, all multiple phase interfacial tensions between fluids and solids encountered are reduced by more than 50 % thus optimizing flow back.

### Case History

**ARC Drill-In™ lowers filtercake liftoff pressures and improves flow back.**

The following is a recent return perm study performed with reservoir core and field mud. Please note that the permeability is "permeability to air" so the actual reservoir permeability is very low (< 1 mD). The ability to achieve 100 % regained permeability with a simple gel-chem system and drop the drawdown pressure for cake lift off from 10,000 kPa to 37 kPa truly defines the importance of controlling multiple phase interfacial tension to optimize fluid and reservoir performances.

**Drilling fluid make –up and fluid properties:**

Gel-Chem Mud				
Product	Density	1120 kg/m <sup>3</sup>	pH Strip / Meter	8 scale
Concentrations	Funnel Viscosity	75 sec/L	Alkalinity pF	0.05 ml
	Fann 600	59	Alkalinity mF	0.2 ml
Caustic Soda	Fann 300	40	Chloride	80 mg/L
Bentonite	Fann 6	5	Calcium	40 mg/L
PHPA	Fann 3	3	Carbonates	135.96 mg/L
Regular PAC	10 Sec. Gel Strength	2 Pa	Bicarbonates	122 mg/L
Soda Ash	10 Min. Gel Strength	6 Pa	Methylene Blue	35.6 kg/m <sup>3</sup>
Lignite	30 Min. Gel Strength	11 Pa	Sand Content	0.01 %
	Apparent Viscosity	29.5 mPa-sec	Oil Content	0 vol frac
	Plastic Viscosity	19 mPa-sec	Water Content	0.925 vol frac
	Yield Point	10.5 Pa	Solids Content	0.075 vol frac
	Fluid Loss	6.8 ml/30 min	Lo-Grav Solids	195 kg/m <sup>3</sup>
	Filter Cake	1 mm	Drill Solids	159.4 kg/m <sup>3</sup>

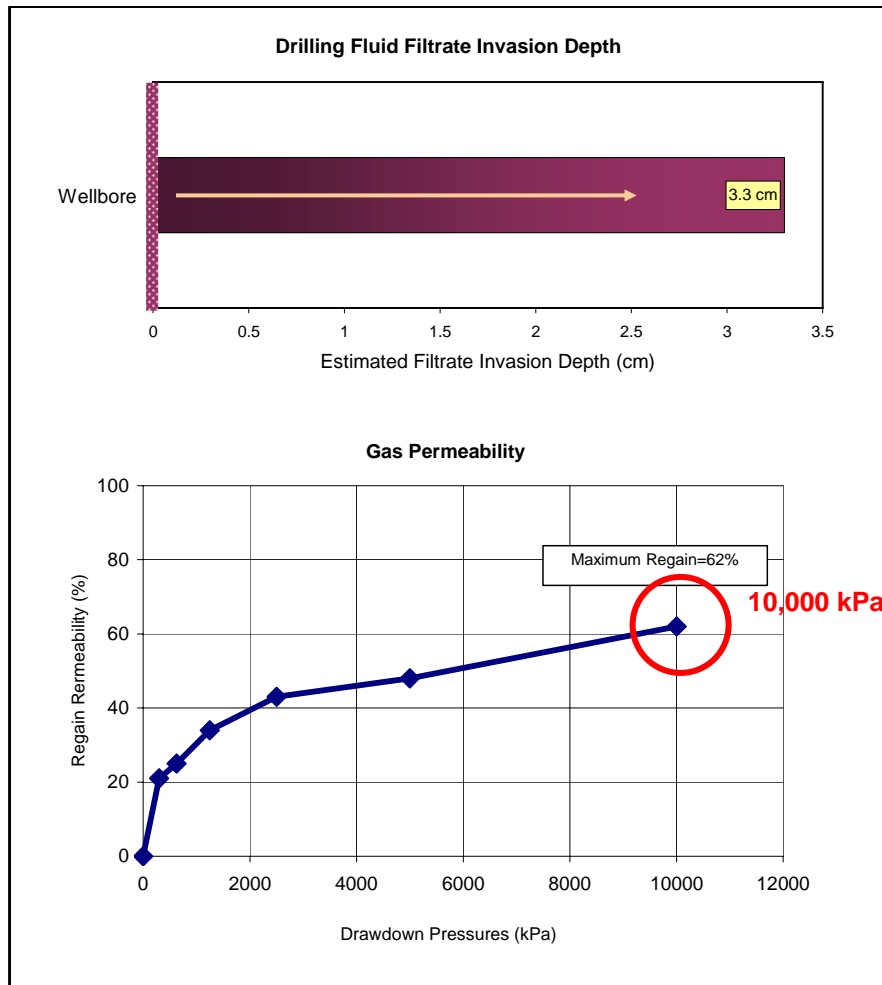
**Regain perm without ARC Drill-In™ in field mud (62 %) @ 10,000 kPa:**

**DRILLING FLUID EVALUATION with GEL CHEM**

**Well Location:**

**Core Number:** SP25A  
**Depth (m):** 1626.89

**Porosity (fraction):** 0.134  
**Air Permeability (mD):** 13.72



**Regain perm with 0.5% by vol. ARC Drill-In™ in field mud (100%) @ 37 kPa:**

**DRILLING FLUID EVALUATION with ARC Drill-In™ GEL CHEM**

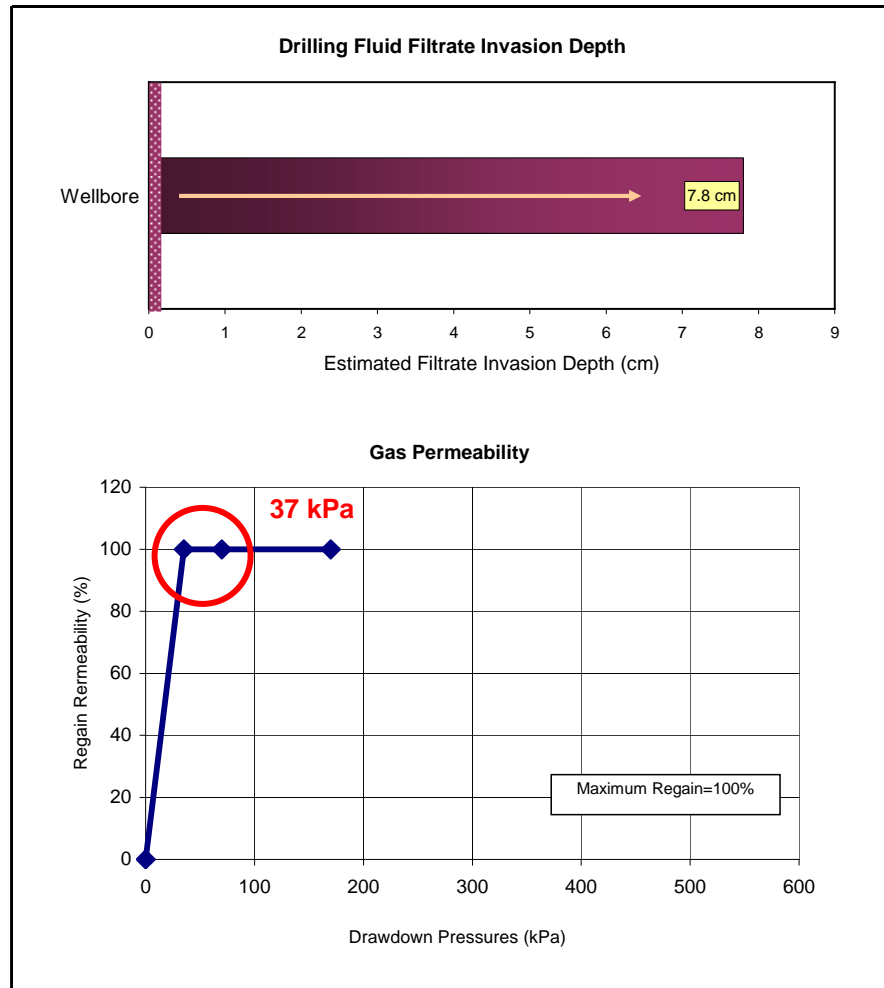
**Well Location:**

**Core Number:** SP25B

**Porosity (fraction):** 0.133

**Depth (m):** 1625.84

**Air Permeability (mD):** 16.2



**ARC Drill-In™** is typically used at 0.5 % by volume in the drilling fluid. High solids loaded fluids and fluids with multiple fluid phases may require as much as 1.0 % by volume **ARC Drill-In™** to achieve optimum performance benefits.

**Compatibility**

**ARC Drill-In™ is generally compatible . . .**

**ARC Drill-In™** is generally compatible with cationic, anionic and amphoteric additives. A compatibility test is advised before use with other surfactants.

## Handling and Storage

\* Refer to Material Safety Data Sheet . . .

Keep drum tightly sealed to avoid contamination. **ARC Drill-In™** may cause eye, skin and respiratory tract irritation by contact with the liquid or vapors. Do not breathe vapors, especially in confined areas. Use with adequate ventilation. Recommend use of splash goggles and rubber gloves. Refer to the Material Safety Data Sheet for more detailed information.

## Packaging

Specialty packaging is available . . .

**ARC Drill-In™** is available in 5 gal. pails, 55 gal. poly drums, 320 gal. bulk tanks, or bulk transport loads.

## Questions & Answers

ARC Fluid Technologies, LLC “Offering You Tomorrow’s Solutions Today”

If you would like to know more about the ARC Micro-solution Technologies and how they can improve your well performance please contact us at:

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***No claim of personal safety is intended nor implied by the use of the name Safe in this product. Personnel handling this material should read and follow all safety and handling procedures set forth on the Material Safety Data Sheet.***