

Fracturing Fluid Additives			
Additive Type	Main Compound(s)	Purpose	Common Use of Main Compound
<b>Diluted Acid (15%)</b>	Hydrochloric acid or muriatic acid	Help dissolve minerals and initiate cracks in the rock	Swimming pool chemical and cleaner
<b>Biocide</b>	Glutaraldehyde	Eliminates bacteria in the water that produce corrosive by-products	Disinfectant; sterilize medical and dental equipment
<b>Breaker</b>	Ammonium persulfate	Allows a delayed break down of the gel polymer chains	Bleaching agent in detergent and hair cosmetics, manufacture of household plastics
<b>Corrosion Inhibitor</b>	N,n-dimethyl formamide	Prevents the corrosion of the pipe	Used in pharmaceuticals, acrylic fibres, plastics
<b>Crosslinker</b>	Borate salts	Maintains fluid viscosity as temperature increases	Laundry detergents, hand soaps, and cosmetics
<b>Friction Reducer</b>	Polyacrylamide	Minimizes friction between the fluid and the pipe	Water treatment, soil conditioner
	Mineral oil		Make-up remover, laxatives, and candy
<b>Gel</b>	Guar gum or hydroxyethyl cellulose	Thickens the water in order to suspend the sand	Cosmetics, toothpaste, sauces, baked goods, ice cream
<b>Iron Control</b>	Citric acid	Prevents precipitation of metal oxides	Food additive, flavoring in food and beverages; Lemon Juice ~7% Citric Acid
<b>KCl</b>	Potassium chloride	Creates a brine carrier fluid	Low sodium table salt substitute
<b>Oxygen Scavenger</b>	Ammonium bisulfite	Removes oxygen from the water to protect the pipe from corrosion	Cosmetics, food and beverage processing, water treatment

<b>pH Adjusting Agent</b>	Sodium or potassium carbonate	Maintains the effectiveness of other components, such as crosslinkers	Washing soda, detergents, soap, water softener, glass and ceramics
<b>Proppant</b>	Silica, quartz sand	Allows the fractures to remain open so the gas can escape	Drinking water filtration, play sand, concrete, brick mortar
<b>Scale Inhibitor</b>	Ethylene glycol	Prevents scale deposits in the pipe	Automotive antifreeze, household cleansers, and de-icing agent
<b>Surfactant</b>	Isopropanol	Used to increase the viscosity of the fracture fluid	Glass cleaner, antiperspirant, and hair colour