

INFORMATION

OIL AID-A-10 to A-32

HYDROCHLORIC ACID

DESCRIPTION

OIL AID-A-10, A-11, A-12, A-13, A-28, and A-32 are various strength solutions of hydrochloric acid for stimulating oil and gas wells. The product reacts with carbonate formations and can be inhibited for use at temperatures above 350 °F. The strength or concentration of the HCl depends on how much hydrogen chloride gas is dissolved in a given quantity of water. The resultant percentage is based on weight.

The strength range varies from 3% to 31.5%. The typical properties are:

Description	Hydrochloric Acid
Form	Clear liquid
Specific Gravity	1.013 to 1.016 (@ 20/20 °C)
Iron (Fe) Content	Approx. 2 ppm
Assay (Strength)	
A-10	15.0 % minimum
A-11	31.5 % minimum
A-12	
A-13	3 % minimum
A-28	28 % minimum
A-32	32 % minimum

APPLICATION

Acid treatments are useful in well stimulation because of their ability to dissolve a variety of materials ranging from formation rock to drilling mud or any other foreign material introduced during the well completion process. The productivity increase after a particular well treatment depends on a number of factors, including the method or technique of acid treatment chosen, formation characteristics, and acid type and concentration.

Acidizing techniques may be divided into three basic categories: acid washing, matrix acidizing, and acid fracturing. This type of product is highly recommended product for treating carbonaceous formations using any of these techniques.

Acid washing consists of either spotting acid over a certain wellbore zone or circulating acid back and forth over the desired zone, and allowing the acid to react. Matrix acidizing is accomplished by injecting the acid into the formation at a rate and pressure below that required to fracture the formation. The desired effect is radial penetration of the acid system into the formation. Acid fractures exactly describes the technique. The fluid is injected at a pressure and rate great enough to fracture the formation or open existing fractures. The acid reacting with the acid-soluble fracture walls produces a highly conductive channel to the wellbore.

In addition, acid systems may be employed for a variety of other applications. Some emulsions are stabilized by acid soluble fines. Other emulsions may be sensitive to a drop in pH. In either case, an HCl treatment may be required. OIL AID-A-10 to 13 systems also function well to break pH-sensitive viscous gel fluid systems often employed in fracturing operations. They may also be used as a preflush before squeeze cementing, or as a fracturing spearhead or prepad to clean up acid-soluble fines from the perforations in front of the fracture fluid pad.

RECOMMENDED TREATMENT

As stated previously, the recommended treatment for OIL AID-A depends on a variety of parameters. Matrix acidizing may be employed where fracturing cannot be risked because of a shale break or other natural boundaries must be maintained to minimize water or gas production. If a well has near-wellbore damage, it is referred to as a damaged well. Matrix acidizing is especially effective to stimulate production in this case. Exact loadings may vary with the particular application. However, typically 1000 gallons of OIL AID-A-10 (15% HCl) will dissolve approximately 10.8 cubic feet of limestone or dolomite (Calcium Magnesium Carbonate).

Acid fracturing with OIL AID-A-10 to 13 is a widely used technique when stimulating limestone or dolomite formations. Once the fracture has been initiated, continued fluid injection increases the length and width of the fracture. One method is to inject a viscous gelled pad fluid as described here. Then the acid is pumped into the fracture to react with the fracture walls. Another method is to gel the acid itself. The gelled acid reacts much slower with the formation face, allowing deeper penetration.

A successful stimulation job has been achieved if either a flow channel through a damaged zone around the wellbore has been created, or if the flow pattern in the reservoir has been improved.

Exact loadings of acidizing products can only be determined on a job to job basis, and will depend on the numerous parameters characteristic to the particular well.

HANDLING

These products should be considered extremely corrosive. Chemical/acid resistant goggles or face shield, as well as rubber gloves must be worn at all times when handling any OIL AID-A products. The product must be considered a dangerous chemical. Eye contact may cause permanent damage. Skin contact can cause burns which are slow to heal. If contact should occur, wash affected area continuously with copious amounts of fresh water for 15 minutes and obtain medical attention. Store this material in a cool, dry, well ventilated area. Fumes are very irritating, and can irritate the mucous membrane. Therefore, use of a NIOSH approved respirator with an organic vapor cartridge or canister is highly recommended when working around this product.

PACKAGING

OIL AID-A-10 to 13 is packaged in 55-gal lined drums, and should always be placarded (labelled) as UN 1789, and treated as a corrosive liquid.

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