



ALTACHEM LTD.

5507-76th Ave, Edmonton, Alberta, Canada T6B 0A7
 PH: (780) 414-1445 Canada Toll Free (866) 414-1445
 Fax: (780) 414-1446 Website: www.altachem.ca
 email: altachem@shaw.ca altachem@telusplanet.net

ALTACHEM LTD.

Acid Cap Stick

PRODUCT TECHNICAL DATA SHEET

ALTACHEM PART # ACL-021 or AC-21

ACID CAP STICKS

(100% ACTIVE Acid Jobs-Scale-Sand-Salt Plugs)(Plungers)

Altachem Part # ACL-021 Acid Cap Stick

Water Soluble Tube		Color-Tan/White	TDG-Regulated	Ocean Freight
ACID CAP STICK SIZES			STICKS RATIO/ INITIAL SLUG TREATMENT	Weight ea. Stick
1 ¼ X 15	1.25 X 15	31.75 X 381 mm	2 to 6 Sticks per foot of interval	.96 lb
HS Code	2811-1940		Regulations	TDG Regulated
Form	Solid		Melting Point	N/A
Color	Tan (WST)		Solubility in Water	100%
pH	1.18		Solubility in Brine	100%
Specific Gravity	1.23		Solubility in Crude	Insoluble

ACID CAP STICKS are 100% active water-soluble tube sticks that release acid down-hole in producing and water injection wells to remove carbonate scale and rust deposits. **ACID CAP STICKS** are water soluble tubes filled with 100% active solid acid material.

PRODUCT USES & ADVANTAGES

ACID CAP STICKS & ACID JOBS a REACTIVE EQUIVALENCY of **ACID CAP STICKS** vs. HCL ACID RATIO was determined by field tests. These tests indicated that about 10 **ACID CAP STICKS** (1 ¼" X 15") dropped in an injection well, resulted in an equivalent pressure drop, as did using 120 gallons of 15% HCl acid. Liquid HCl acid loses strength by reacting on the steel, scale and rust inside the pipe all the way down the well while the sticks release most of their acid down-hole.

ACID CAP STICKS & SAND BRIDGING using an **ACID CAP** on a regular bases helps to mitigate sand bridging in vertical wells as well as helping to alleviate any buildup at the shoe (area the well turns skyward) therefore preventing restrictions from forming which then require less pressure for fluids and gas to move up the column. This is commonly used as a preventative maintenance Water must be present to activate the stick.

ACID CAP STICKS & SALT OR SCALE ISSUES this 100% active stick can solve tough sand, rust, salt and scale buildup as well as salt or scale plugs in short order, in the case of sand it helps break it down as if sand is allowed to form it becomes like cement. **ACID CAP STICKS** attack the sand, scale, salt rust and many other problems plus keep the perforations at optimum opening so that the formation requires less pressure for production.

ACID CAP STICKS & MECHANICAL LIFT are used to prevent sand, scale, salt or many other foreign materials that make these fail. Whether it be stuck on the bottom, plugged so a wireline tool cannot access the Bumper spring, sand, scale or rust preventing it from returning to the cage by this maintenance on these wells it can be a very cost effective solution.

ACID CAP STICKS are used in water injection wells to remove carbonate scale and rust deposits and lower injection pressures. Injection pressure drops of several hundred PSI have been observed following **ACID CAP STICKS** treatments. Some wells have gone on vacuum and taken water by gravity. Success has also been experienced in some producing oil wells, gas wells and water supply wells.

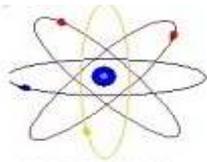
ACID CAP STICKS, after removing the plastic wrapper, are dropped directly into the well or introduced to the system through the water supply tank. Dropping the stick directly into a well is best because not as much dilution will occur. In a well with tubing obstructions or small valve openings, **ACID CAP STICKS** may be successfully used by first dissolving the sticks in fresh water and then pumping or pouring the solution into the well.

SAFETY & HANDLING

Please review SDS prior to using this product. As with all industrial chemicals, contact with eyes or skin should be avoided. Wash thoroughly with water if contact with skin is made. Sticks should be stored in a cool dry place. Always remove stick from plastic bag or cardboard tube before using. Bag or tube can be used as a glove to avoid contact with hands. Acid Cap Sticks may have a limited shelf life of 120 days and should be ordered for immediate use only.

DISCLAIMER OF LIABILITY

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ACID CAP STICKS are very economical as compared to conventional scale removal operations) and can eliminate or delay the need for HCl acid treatments. Continuous treatment with **ACID CAP STICKS** (especially after a conventional acid or clean-out job) can extend the time period between future scale removal operations or **ACID CAP STICKS** can help alleviate problems associated with sand bridging and even the amount of time a wireline unit spends on the well that has scale or rust problems where pumps, bumper springs or even plungers get stuck on the bottom.

ACID CAP STICKS are less corrosive to steel pipe than conventional liquid HCl acid jobs, because most of the acid generated by the stick is released down-hole if the well is plugged you can add water by chasing 5-10 gallons of water (20-40 litres) down the tubing, this will make sure the stick is properly activated. Conventional liquid HCl acid reacts with the steel, rust and scale inside the pipe all the way down the well.

ACID CAP STICKS are safe to handle and easy to use by less experienced field personnel; however, like all acids, contact with eyes or skin should be avoided. The plastic protective wrapper when removed before dropping stick can be used as a protective glove while handling the stick. **ACID CAP STICKS** are safe to use in cement lined tubing and plastic line pipe. Continued treatments over long periods of time through a by-pass feeder into cement lined pipe should be avoided.

TREATMENT DETERMINATION & PROCEDURE FOR WATER REMOVAL

The number of **ACID CAP STICKS** to be used is based on the number of feet of perforated interval or open hole and severity of scale build-up. Field tests indicate the best results were achieved by using large initial slug treatment (.6 to 1.8 lbs of stick per foot of interval) followed by smaller periodic treatments (about half of the initial slug amount).

THE MOST COMMON PROCEDURE

Is to shut-in the well, first remove the plastic wrapper and then drop sticks through a lubricator and return the well to injection. This procedure is best for open-hole, no rat-hole, low rate wells, or wells deeper than 3,300 feet. FOR SHALLOW PERFORATED WELLS WITH RAT-HOLE drop sticks and leave well shut-in about 15 minutes or until sticks fall to the perforations (whichever occurs first) then return well to injection. The time in minutes for the sticks to fall to the perforations in a shut-in well is equal to the depth of perforations divided by 110. (Time, min = Depth, ft/ 110)

PRODUCT SPECIFICATIONS

The stick will normally dissolve in 20 to 80 minutes (in moving water or when falling through water) depending on temperature, salt content and relative water motion. ACID CAPS are 100% soluble in water. The melting point of the stick is 145°F. The stick will dissolve in water in wells with BHT below 145° (just at a slower rate). Lab tests indicate the dissolving rate in 50,000 PPM moving brine water to be 105 minutes @ 100°, 38 minutes @ 120°, 7 minutes @ 140°, and 2 minutes @ 180°. If slowing the dissolving rate is desired, coat ACID CAPS with oil or grease. The specific gravity is 1.23. The falling rate through fresh water is approximately 110 feet per minute.

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