



AQUA-CLEAR[®] AE

Acid Enhancer/Antifoulant

Description AQUA-CLEAR AE is a liquid blend of acids and acid enhancers formulated to control bacterial slime contamination due to the presence of iron-related and sulphate-reducing bacteria.

Applications/Functions

- Remove the bio-mass matrix caused by bacterial fouling
- Reduce sulphur taste and odor in water
- Clean up well screens, pumps and distribution system
- Restore well productivity and reduce power and maintenance costs
- AQUA-CLEAR AE can be used in combination with AQUA-CLEAR[®] MGA and other acids such as, hydrochloric (muriatic), phosphoric and sulfamic to enhance their effectiveness and to remove more difficult scale and incrustation

Advantages

- NSF/ANSI Standard 60 certified
- Safe to use on all plastics, rubber and metals
- Cost effective, efficient extended life treatment
- Improves water quality and renews well production rate
- Mitigates corrosion and equipment failure
- Reduces pumping costs

Typical Properties

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|--------------------|----------------------------|
| • Appearance | Light amber colored liquid |
| • Specific gravity | 1.08 |
| • pH of solution | 1.1 |

Recommended Treatment

To treat bacteria fouling

- Record initial well water pH
- The preferred application method is to apply a solution of AQUA-CLEAR AE into the screened interval through a tremie pipe.

**Recommended
Treatment
(continued)**

- Mix AQUA-CLEAR® AE with water at 6 - 12 ounces per gallon of water or 47 - 94 ml per liter of water and apply directly into screened interval with a tremie pipe. When utilizing this method, calculate the volume of water in the screened area and double the calculated volume to account for the water in the gravel pack and formation interface.

Note: The above concentration of AQUA-CLEAR AE is recommended for a complete reconditioning of an existing well.

- Calculation for volume in well:
- Gallons per foot = (diameter, inches)² x 0.042
- Liter per meter = (diameter, millimeters)² x 0.0008
- Displace solution into the well screen and formation, then surge, swab, agitate or jet well through screen and gravel pack for 20-30 minutes.
- Allow to stand in well for up to two hours and then repeat activity approximately every two hours for a period of 24 hours.
- Pump well to waste until at least 23 well volumes have been removed and well water pH is within 0.5 of original well pH.

Note: Wastewater can be neutralized by adding soda ash or lime.

- Chlorinate well and reconnect to water distribution system.

Caution: Never mix chlorine and AQUA-CLEAR AE in well.

- If necessary, AQUA-CLEAR AE may be poured directly into well as per treatment table, but results will not be as good as if applied via a tremie pipe.

Notes:

- ***In heavily encrusted wells, it is desirable to brush or scrape the casing and screen, then pump or airlift the debris to waste prior to treating with acid.***
- ***The following charts recommend a concentration of AQUA-CLEAR AE that is suitable for a typical maintenance treatment of an existing well.***

AQUA-CLEAR AE Application Amounts per 10 Feet of Standing Water					
Well Diameter (Inches)	Gallons of Product	Well Diameter (Inches)	Gallons of Product	Well Diameter (Inches)	Gallons of Product
2	0.04	12	1.27	24	5.10
4	0.14	14	1.73	26	6.00
5	0.22	16	2.26	28	6.93
6	0.32	18	2.87	30	7.96
8	0.57	20	3.54	36	11.46
10	0.88	22	4.28	48	20.40

AQUA-CLEAR® AE Application Amounts per 10 Meters of Standing Water					
Well Diameter (millimeters)	Liters of Product	Well Diameter (millimeters)	Liters of Product	Well Diameter (millimeters)	Liters of Product
51	0.49	305	17.60	610	70.35
102	1.95	356	23.94	660	82.57
127	3.05	406	31.27	711	95.76
152	4.40	457	39.57	762	109.93
203	7.82	508	48.86	914	158.29
254	12.21	559	59.12	1219	281.41

Recommended Treatment (continued)

Note: The concentrations of AQUA-CLEAR AE shown in the previous tables do not take into account the 100% excess volume required to compensate for the water present in the formation interface and gravel pack. The previous tables only account for the product concentration required for the volume of water occupying a 10 foot or 10 meter section of a given size of screen.

For other diameters:

- Gallons per foot = (diameter, inches)² x 0.042
- Liter per meter = (diameter, millimeters)² x 0.0008
- Gallons of AQUA-CLEAR AE = (gallons per foot x 8.34) x 0.0026
- Liters of AQUA-CLEAR AE = (liters per meter) x 0.0241
- Double the calculated volume in order to take into account the water present in the gravel pack and formation interface.

Treating Severe bio-fouling and scaling

- AQUA-CLEAR AE is used as an enhancer when mixed in the well with AQUA-CLEAR® MGA
 - One gallon of AQUA-CLEAR AE to every 10 pounds of AQUA-CLEAR MGA
 - 3.8 liters of AQUA-CLEAR AE to every 4.5 kilograms of AQUA-CLEAR MGA
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- Safety**
- Use recognized standard practices for handling corrosive and acidic materials (refer to Material Safety Data Sheet)
 - Avoid skin and eye contact – flush with water
 - Do not ingest and avoid prolonged inhalation
 - When disposing of waste fluid make sure to comply with all federal, state and local regulations as applicable.

Packaging AQUA-CLEAR® AE is packaged in a 5-gallon (19-liter) plastic container.

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- Shipping**
- The following are required for commercial transport:
 - Insurance policy must include an endorsement for transporting hazardous cargo.
 - Vehicle driver must have a Hazmat endorsement on his/her Commercial Drivers License.
 - Hazardous Materials Certificate of Registration issued by the U.S. Department of Transportation (renewable annually) is required.
 - Consult the state in which operating for any additional requirements that may exist.
 - No hazardous materials placard is required for shipments less than 1000 pounds.

Availability AQUA-CLEAR AE can be purchased through any Baroid Industrial Drilling Products Retailer. To locate the Baroid IDP retailer nearest you, contact the Customer Service Department in Houston or your area IDP Sales Representative.

Baroid Industrial Drilling Products

Product Service Line, Halliburton

3000 N. Sam Houston Pkwy E.

Houston, TX 77032

Customer Service (800) 735-6075 Toll Free (281) 871-4612

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