Product Data Sheet

Catalog Numbers: 60785, 60785Q, 60785HG & 60785G

Distributed for Acheson Colloids By:
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Aquadag® E

Water-Based,
Colloidal Graphite Resistance Coating

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DESCRIPTION

Aquadag E, an electrical/electronic industry standard for more than thirty years, offers unsurpassed versatility as a conductive or resistive coating and impregnant. Currently in use in millions of cathode ray tubes and other electronic devices**, Aquadag E** satisfies the most demanding design requirements due to its consistently high purity and uniformity of manufacture. These benefits, coupled with ease of application, make **Aquadag E** the most desirable conductive coating for multipurpose use.

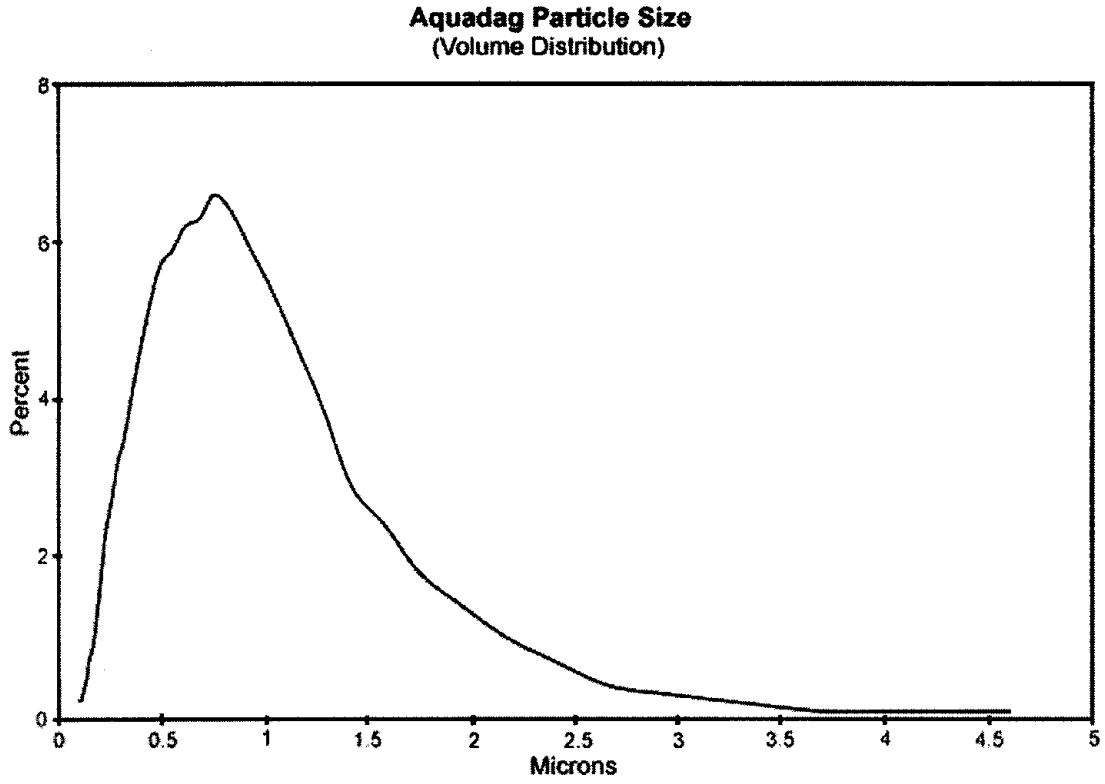
TYPICAL APPLICATIONS

- Electrostatic screening
- Electrode finishes on glass envelopes
- Coating of electron gun components
- Printed circuits -- manufacture and repair
- Contact material in capacitors, resistors and other electronic components
- Prevention of corona discharge at air gaps under high voltage
- Dry lubrication of moving parts in electronic assemblies
- Static bleed in computers, office equipment, etc.
- Black matrix for color television cathode ray tubes
- Impregnant for glass and other fibers

TYPICAL PROPERTIES (as supplied)

Pigment	: fine lamellar graphite particles
Fluid component	: water
Diluent	: deionized water
Color	: black
Consistency	: gel
Density	: 9.3 lb/gal (1.12 kg/l)
Solids content (weight)	: 22%
Solids content (volume)	: 13%
pH	: 10.0-11.0
Freezing point	: 32°F (0°C)
Flash point	: none

TYPICAL PROPERTIES
(as supplied, continued)



TYPICAL PROPERTIES (as cured)

Maximum service temperature in air* : 300°F (149°C)
Coverage : 208 sq ft/gal @ 1 mil dry film thickness

**Service temperature under vacuum conditions is significantly higher. Contact Acheson for specifics.*

Resistance

The electrical characteristics of the dry coating can be varied by adjusting the ratio of concentrate to diluent, the method of application, thickness, and the type and degree of heat treatment. Resistance coatings have a negative temperature coefficient of resistance.

Typical resistance values of the dry coating on a glass substrate are as follows:

Application Method*		Thickness (Dry)	Cure Cycle	Resistance
Dip	1:3	1.0 mil	5 minutes @ 302°F (150°C)	30 ohms/sq
Spray	1:5	0.5 mil	Preheat surface 212°F (100°C)	150 ohms/sq
Brush	1:1	0.3 mil	Air dry	1000 ohms/sq

**Ratio expressed as grams of Aquadag E to grams of diluting water.*

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APPLICATION DETAILS

(***See "Standard Method for Using Aquadag E" for detailed instructions.***)

Dilution

For best results, stir the concentrate to break up the gel structure before adding water. Next, slowly add deionized water to the concentrate. When a fluid consistency is achieved, water can be added at a more rapid rate. Failure to achieve correct dilution can result in small gel structures remaining in the fluid. The presence of these structures can adversely affect performance. A high-speed and high-shear mixer is recommended to properly disperse the product. To ensure the absence of these gel structures, it is recommended that the final blend be passed through a 10 to 50 micron in-line cartridge filter depending on the viscosity and solids of the mixture.

Mixing

When mixing larger amounts (one gallon and up), you should first cover the bottom of the container with several inches of water and mix with a Cowles-type[1] dissolver blade at 750 to 1200 rpm, or other high-shear blade. Add the **Aquadag E** and slowly add additional water to the **Aquadag E** while the mixer is stirring. After mixing is completed (approximately 30 minutes) the final mixture should be strained and run through the appropriate filters. For even more critical applications, commercial dispersing systems such as a Dispersator[2] or a Tekmar[3] SD-45 should be used following the initial 30-minute mix mentioned above. Vigorous or excessive agitation during application which might add air bubbles to the mixture should be avoided. For proper wetting and to prevent spoilage, the desired pH should be controlled by additions of ammonium hydroxide.

Application

Diluted **Aquadag E** may be applied by flow, spray, brush, dip, or sponge methods. The optimum viscosity for each method is best established by pretesting. Suggested starting formulations are listed below.

Method	Kilograms of Aquadag E : Kilograms of Water	
Brush	1	1
Flow, dip, sponge	1	3
Spray	1	5

Before coating, clean all grease and dirt from the surface to be coated. Preheating the substrate to 140°F (60°C) will speed drying and lessen flow marks. Coating adhesion can be increased and the resistance decreased by drying at 149°F (65°C) for 2 to 5 minutes. A longer cure at 392°F (200°C) for up to 60 minutes will further stabilize the resistance.

STORAGE/SHIPPING HANDLING

Aquadag E can be stored at temperatures between 41 and 104°F (5° and 40°C). Do not allow the material to freeze. Product containers should be cleaned and tightly sealed after use. Shelf life of this product is 18 months from date of shipment under original seal.

APPLICATION ASSISTANCE

Acheson's **Application Specialists** are available to assist you in production start-up with **Aquadag E**. For more information, contact Acheson Colloids Company, (800) 255-1908, or visit our website at www.achesonindustries.com for the Acheson global location nearest you.

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HEALTH & SAFETY Harmful if swallowed. May cause eye irritation. Wash thoroughly after handling. Avoid contact with skin, eyes, and clothing. Use with exhaust ventilation if product is sprayed. Avoid prolonged breathing of vapor which contains ammonia. (See Acheson Material Safety Data Sheet for proper first aid instructions.)

NOTE Aquadag is a registered trademark of Acheson Industries, Inc.

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[1] Cowles mixer from Morehouse-Cowles, Inc., 1600 W. Commonwealth Ave., Fullerton, California 92833, (714) 738-5000

[2] Dispersator from Premier Mill Corporation, 1 Birchmont Drive, Reading, Pennsylvania 19606-3298, (610) 779-9500

[3] Tekmar SD-45 from Tekmar Company, 4736 Socialville Foster Rd., Mason, Ohio 45040, (800)-543-4461, (513) 229-7000

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