



# MATERIAL SAFETY DATA SHEET



## SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT:** QA-600 Adhesive Part A

April 13, 2010

Vishay Measurements Group, Inc.  
Post Office Box 27777  
Raleigh, NC 27611

919-365-3800

CHEMTREC 1-800-424-9300 (U.S.)  
703-527-3887 (Outside U.S.)

NOTE: CHEMTREC numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

## SECTION 2: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

CAS NUMBER	CHEMICAL IDENTITY	%
109-99-9	Tetrahydrofuran	58.3
28906-96-9	Epon Resin SU-8	41.7
106-89-8	Epichlorohydrin	2-3 ppm

## SECTION 3: HEALTH HAZARD DATA

### Routes of Entry:

**Inhalation:** YES    **Skin:** YES    **Ingestion:** Accidental

**Health Hazards (Acute and Chronic):** Repeated or high exposure may cause kidney and/or liver damage; affect the lungs. Repeated skin exposure can cause dryness, cracking of skin and rash.

**Carcinogenicity:**    NTP:                    See Note  
                                 IARC Monographs:    See Note  
                                 OSHA Regulated:     See Note

**NOTE:** This product contains trace residual quantities of Epichlorohydrin (ECH). It is very unlikely that normal work practices with this product could result in measurable ECH concentrations in the workplace atmosphere. However, you should be aware that ECH has been reported to produce cancer in laboratory animals, and to produce mutagenic changes in bacteria and cultured human cells. It has been classified by the International Agency for Research on Cancer (IARC) as a probable human carcinogen (IARC Group 2A) based on the following conclusions: Human evidence – inadequate; animal evidence – sufficient. ECH has been classified as an anticipated human carcinogen by the National Toxicology Program (NTP). The National Toxicology Program has determined that there is clear evidence for the carcinogenicity of glycidol in experimental animals. In the two year studies, rats and mice were administered < or equal to 75 mg/kg and < or equal to 50 mg/kg, respectively by oral gavage. Glycidol is an impurity in this material.

**Signs and Symptoms of Exposure:**

**INHALATION:** Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. Tetrahydrofuran is an anesthetic agent in high concentrations. Overexposure may cause dizziness, headache, nausea and possible fluid in the lungs. May cause liver, kidney or lung injury.

**EYE CONTACT:** Causes irritation, redness, and pain. Contact may cause permanent eye damage.

**SKIN CONTACT:** Causes irritation to skin. Symptoms include redness, itching, and pain.

**INGESTION:** Causes irritation to gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea. May cause sore throat and abdominal pain. May cause liver or kidney injury.

**Medical Conditions Generally Aggravated by Exposure:** Persons with pre-existing skin disorders or eye problems or impaired liver or kidney function may be more susceptible to the effects of the substance.

<b>SECTION 4: EMERGENCY AND FIRST AID PROCEDURES</b>
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**INHALATION:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**EYE CONTACT:** In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Get medical attention.

**SKIN CONTACT:** Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing. Wash affected area with soap and water. Launder contaminated clothing before reuse. Get medical attention.

**INGESTION:** Call a physician. If swallowed, induce vomiting only as directed by a physician. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head below hips to prevent aspiration into lungs.

## SECTION 5: FIRE AND EXPLOSION HAZARD DATA

**Flash Point (Method Used):** 7°F (-14°C) CC (For Tetrahydrofuran)

**Autoignition Temperature:** 610°F (321°C) (For Tetrahydrofuran)

**Flammable limits:** LEL: 20. UEL: 11.8 (For Tetrahydrofuran)

**Extinguishing Media:** Dry chemical or carbon dioxide. Water spray may be used to keep fire-exposed containers cool.

**Special Firefighting Procedures:** Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode. Water may be used to flush spills away from exposures and to dilute spills to non-flammable mixtures.

**Unusual Fire and Explosion Hazards:** Vapors may flow along surfaces to distant ignition source and flash back. Closed containers exposed to heat may explode. May form explosive organic peroxides when exposed to air or light or with age.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

**Steps to be taken if material is released or spilled:** Keep unnecessary people away; isolate hazard area. Wear self-contained breathing apparatus and full protective clothing. Shut off ignition sources; no flares, smoking or flames in area. Stop leak if you can do so without risk. Keep out of storm drains, surface waters and soil. Use water spray to reduce vapors. Take up with sand or other non-combustible absorbent material and place into container for later disposal. Flush area with water.

## SECTION 7: EXPOSURE CONTROLS -- PERSONAL PROTECTION

**Respiratory Protection:** If the exposure limit is exceeded, a half-face organic vapor respirator may be worn for up to 10 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-facepiece organic vapor respirator may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Ventilation:** A system of local and/or general exhaust is recommended to keep employee exposure below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of contaminant into the general work area.

**Protective Gloves:** Rubber or neoprene gloves are recommended.

**Eye Protection:** Chemical splash goggles and/or a full faceshield where splashing is possible is recommended.

**Other Protective Clothing or Equipment:** Impervious over-clothing as needed to prevent skin contact. Safety shower and eye wash station in local area.

**Work / Hygienic Practices:** Wash thoroughly after using and before eating, drinking or smoking.

## SECTION 8: HANDLING AND STORAGE

**Precautions to be taken in handling and storing:** Keep containers tightly closed. Store in a cool, dry, well-ventilated, flammable liquid storage area. Take precautionary measures against static discharges. Keep away from open flames and spark producing equipment. Keep product out of light.

**Other Precautions:** Keep containers tightly sealed when not in use. Bond and ground containers when transferring liquid. Use caution when opening cap. Avoid prolonged exposure to vapors and skin contact. Avoid breathing vapors.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

<b>Boiling Point:</b>	1510°F (66°C) *
<b>Vapor Pressure (mmHg):</b>	129 @ 68°F (20°C) *
<b>Vapor Density (Air = 1):</b>	2.4 *
<b>Specific Gravity (H<sub>2</sub>O = 1):</b>	0.9
<b>Melting Point:</b>	N/A
<b>Evaporation Rate (BuAc = 1):</b>	8.0 *
<b>Volatile Organic Compounds:</b>	58.3 %
<b>Solubility in Water:</b>	Appreciable (more than 50%)

**Appearance and Odor:** Colorless to light amber liquid; ether-like odor.

\*Based on Tetrahydrofuran

## SECTION 10: STABILITY AND REACTIVITY DATA

**Stability:** Stable in closed containers with oxygen and light excluded. Distillation or evaporation can concentrate peroxides (if present) to create an explosion hazard.

**Conditions to Avoid:** Heat, flame, other sources of ignition, light, air.

**Incompatibility (Materials to Avoid):** Acids, strong oxidizing agents, strong bases, strong reducing agents.

**Hazardous Decomposition or By-products:** Carbon dioxide and carbon monoxide may form when heated to decomposition. May also release toxic and irritating vapors.

**Hazardous Polymerization:** May occur.

<b>SECTION 11: TOXICOLOGICAL INFORMATION</b>
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## Tetrahydrofuran

OSHA PEL: 200 ppm (TWA)  
 ACGIH TLV: 200 ppm (TWA)  
 OTHER: 250 PPM (STEL)  
 LD<sub>50</sub> IPR (RAT) 2900 mg/kg  
 LD<sub>50</sub> INHAL (RAT) 78 g/m<sup>3</sup>

## Epon Resin SU-8

OSHA PEL: 15 mg/m<sup>3</sup> (Total Dust)  
 ACGIH TLV: 10 mg/m<sup>3</sup> (Total Dust)  
 Other: Unknown

## Epichlorohydrin

OSHA PEL: 2 ppm (TWA) (SKIN)  
 ACGIH TLV: 0.5 ppm(TWA) (SKIN)  
 OTHER: Potential contribution to overall exposure is possible by skin absorption.

<b>SECTION 12: DISPOSAL CONSIDERATIONS</b>
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**Waste Disposal Method:** Do not dump into any sewers, on the ground, or into any body of water. All disposal methods must be in accordance with all local, state and federal environmental regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility of the waste generator.

<b>SECTION 13: TRANSPORTATION INFORMATION</b>
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SHIPPING NAME	CLASS	PACKING GROUP	UN NUMBER
Tetrahydrofuran, Flammable Liquid	3	II	2056

<b>SECTION 14: REGULATORY INFORMATION</b>
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**SECTION 313 SUPPLIER NOTIFICATION:**

This product contains a toxic chemical or chemicals (as listed below) subject to the reporting requirements of Section 313 Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372.

CAS NUMBER	CHEMICAL NAME	% BY WEIGHT
106-89-8	Epichlorohydrin	2-3 ppm

**TSCA NOTIFICATION:**

All components of this product are listed in the Toxic Substance Control Act Chemical Substance Inventory (TSCA).

<b>SECTION 15: OTHER INFORMATION</b>
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To the best of our knowledge, the information provided above meets the requirements of the United States Occupational Safety and Health Act and regulations established under 29 CFR 1910.1200 (g)(2)(c)(1)-(4) for a mixture of hazardous chemicals which has not been tested as a whole. The data provided on this Material Safety Data Sheet is from manufacturers of the original components. Micro-Measurements specifically disclaims any and all form of liability and/or responsibility for the application of this product.