



ISO 9001 Registered Quality System.
Burlington, Ontario, Canada QMI File # 004008

Isopropyl Alcohol Electronics Cleaner

99.9% Pure Anhydrous

824 Technical Data Sheet

824-Liquid

Description

The 824 *Isopropyl Alcohol* (IPA) liquid is a high purity, multipurpose cleaner and solvent. The purity level meets *Grade A* standard for **MIL Spec TT-I-735A** and **ASTM D770**, ensuring that no contamination occurs from its use.

As a cleaner, it is fully miscible in water and most organic fluids, making it good at dissolving dirt, light organic contaminants, and ionic flux residues. Since the 824 is highly anhydrous (without water) and hygroscopic (absorbs humidity), it readily scavenges water off surfaces, trapping the water in the IPA solution as an azeotropic mixture. This helps to dehumidify surfaces.

As a solvent, it acts as a moderate evaporation, 'plastic safe' diluent (see compatibility chart on page 3) and is used to improve the properties of paint resins and other heterogeneous solid mixtures. Therefore, it serves as a useful carrier solvent to adjust the rheological properties and compatibilities of complex mixtures. Due to IPA's volatility, it resists entrapment in the coating. As it dries, it gives off a very light odor, which is not bothersome but serves as a cue to limit over-exposure due to poor ventilation.

Applications & Usages

Since the 824 is safe for most plastics, seals, ceramics, and printed circuit board components, it is used heavily in the electronics industry. It is great for cleaning screens, stencils, fiber optics, cables, keypads, printed circuit board components, or electrical contacts and connectors. It is also used to clean oxides and grime on audio or video tape heads. It effectively removes light greases, oils, and flux without adding additional residues to contacts, relays, and circuit boards connectors. It is quick drying relative to water. Further, it can be used to wash off more aggressive organic solvents like acetone or toluene.

Features and Benefits

- **Suitable for Use in Food Facilities as a Non-Food Chemical**—Canadian and NFS recognition letters available on request
- **Meets MIL Spec TT-I-735A and ASTM D770**
- **Meets reagent ACS and USP/NF Grades**
- **Anhydrous solvent**—Removes water and humidity from components leaving them dry
- **Less than 0.001 g/100 mL non-volatile residues**
- **Excellent "Green Solvent" scores**
- **Safe for aqueous environments**
- **Low toxicity**

ATTENTION! Consumer Product VOC Dilution Requirements

Residential or institutional users in California and other states (IL, IN, MI, OH, CT, DE, ME, MD, MA, NH, NJ, NY, PA, RI, VT, VA, DC, UT) with Electronic Cleaners 75% VOC limits must dilute the product 3:1 with water or acetone prior to use.



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Storage Properties

| <i>Properties</i> | <i>Value</i> |
|--|------------------------------------|
| Shelf Life @22 °C [72 °F] Storage Temperature ^{a)} | 5 y -20 to 40 °C [-4 to 104 °F] |

a) Store in cool, dry, and well ventilated area.

Mil Spec #TT-I-735A

| <i>Physical Property</i> | <i>Method</i> | <i>Grade A Specifications</i> |
|---------------------------------|--------------------|---|
| Purity | Gas chromatography | >99.8% |
| Water (w/w) | ASTM D 1364 | ≤0.10% |
| Color (Pt-Co scale) | ASTM D 1209 | ≤5 |
| Acidity (% of acetic acid) | ASTM D 1613 | ≤0.001 |
| Density @20 °C [68 °F] | ASTM D 4052 | 0.785—0.786 g/mL |
| Specific gravity @20 °C / 20 °C | ASTM D 4052 | 0.785—0.787 g/mL |
| Dilution range | ASTM D 1078 | |
| Initial boiling point | " | ≥81.8 °C |
| Dry point | " | ≥82.8 °C |
| Nonvolatile matter | ASTM D 1353 | ≤0.001 g/100 mL |
| Water miscibility | ASTM D 1772 | Clear and miscible |
| Appearance | ASTM D 4176 | Clear, free from sediment, and suspended matter |

Properties

| <i>Physical Property</i> | <i>Method</i> | <i>Value</i> |
|---------------------------------|---------------|--|
| Odor | — | Mild alcohol |
| Color | Visual | Colorless |
| Refractive Index @20 °C [68 °F] | ASTM D 1218 | 1.3766 |
| Evaporation Rate (ButAc =1) | Literature | 2.9 |
| Heat Capacity | " | 11 400 kJ/m [0.612 BTU·in/h·ft ² ·°F] |
| Viscosity | " | 3.4 cP |
| <i>Safety Properties</i> | <i>Method</i> | <i>Value</i> |
| Flammability | Literature | Highly flammable liquid and vapor |
| Flash Point | " | 12 °C [54 °F] |
| Boiling Point | " | 82 °C [180 °F] |
| Auto-ignition | " | 425 °C [797 °F] |
| Volatile Organic Content (VOC) | " | 100% |



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| <i>Environmental Properties</i> | <i>Method</i> | <i>Value</i> |
|--|-----------------|--|
| Toxicity for Aqueous Environment Biodegration | Literature " | Very low toxicity Readily biodegradable |

| <i>Solvation Parameters</i> | <i>Value</i> | |
|---|----------------------|---------------------------------------|
| Solubility in water (%wt) | ∞ Fully Miscible | |
| Solubility for water (%wt) | ∞ Fully Miscible | |
| Dielectric constant @20 °C [68 °F] | 17.5 | |
| Surface Tension @25 °C [75 °F] (dynes/cm) | 21.4 | |
| Hansen Solubility Parameters | (MPa) ^{1/2} | [cal/cm ³] ^{1/2} |
| Total | 23.5 | [11.5] |
| Non-Polar | 15.8 | [7.7] |
| Polar | 6.1 | [3.0] |
| Hydrogen Bonding | 16.4 | [8.0] |

Note: Typical literature values

Compatibility

It is compatible with many plastics, seals, PCB components, paints, rubbers, and plant fibers.

Substrate Compatibility: Consult the 824 compatibility chart for a tentative compatibility list. These compatibility ratings should be considered as tentative due to variations in plastic manufacturers' formulations and additives, as well as the processing conditions during cleaning.

ATTENTION! Always perform a compatibility test on a non-critical area or a representative test substrate prior to use. Test even if the compatibility chart predicts a high compatibility: modern parts may incorporate undeclared sensitive materials (such as custom plastic blends, custom additives, protective coatings, or decorative coatings).

824 Plastics Compatibility Chart

| <i>Plastic type</i> | <i>Resistance</i> |
|---------------------------------------|-------------------|
| Epoxy | Excellent |
| ABS (acrylonitrile butadiene styrene) | Fair to Poor |
| PMMA (acrylic and plexiglass) | Poor |
| PVC (polyvinyl chloride) | Excellent |
| HD-PE (high density polyethylene) | Excellent |
| LD-PE (low density polyethylene) | Excellent |
| PP (polypropylene) | Excellent |
| PS (polystyrene) | Excellent |
| PC (polycarbonate) | Excellent |
| Nylon | Poor to Severe |

Note: Rating is given for room temperature only. Heating the solution generally decreases the chemical resistance.

LEGEND

Excellent = Negligible chemical attack over long exposures

Good = Slight attack with minor absorption over long exposures

Fair = Moderate attack with swelling, softening, loss of strength (may tolerate short term exposures)

Poor = Not recommended due to possible crazing, cracking, discoloration, or loss of strength

Severe Effect = Decomposition or dissolution after short exposures

824 Elastomers Compatibility Chart

| <i>Plastic type</i> | <i>Resistance</i> |
|--------------------------|-------------------|
| Nitrile | Good |
| Neoprene | Good |
| Silicone | Excellent |
| Butyl Rubber | Excellent |
| Latex | Excellent |
| PVC (polyvinyl chloride) | Good |
| Polyvinyl Alcohol | Severe Effect |
| Viton | Excellent |

Note: Rating is given for room temperature only. Heating the solution generally decreases the chemical resistance.

ATTENTION! Do NOT use on computer monitors, tablet screens, or eyeglasses. This solvent is too powerful for the coatings used on these devices.

Health, Safety, and Environmental Awareness

Please see the 824 **Safety Data Sheet** (SDS) for more details on transportation, storage, handling and other security guidelines.

Environmental Impact: The 824 has a high volatile organic content (VOC) of 100%. Avoid runoff into storm and sewer drains. This product is biodegradable.

Health and Safety: Isopropyl alcohol solution is flammable and shouldn't be used in the presence of open flames or other ignition source. Keep container closed. Avoid prolonged breathing of vapors. Use with adequate ventilation.

NOTE: This product is not intended as a disinfectant for humans or animals. It was not treated to remove possible fungal spores or rare alcohol-resistant bacterial strains. Further, high purity anhydrous IPA is not an effective disinfectant.

HMIS® RATING

| | |
|-----------------------------|----------|
| HEALTH: | 1 |
| FLAMMABILITY: | 3 |
| PHYSICAL HAZARD: | 0 |
| PERSONAL PROTECTION: | |

NFPA® 704 CODES



Approximate HMIS and NFPA Risk Ratings Legend:

0 (Low or none); 1 (Slight); 2 (Moderate); 3 (Serious); 4 (Severe)



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Application Instructions

Follow the procedure below for best results.

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To clean residues

1. Imbibe clean cloth.
2. Wipe surface to be cleaned with cloth.
OR
3. Rinse area by pouring neat solution over it, with or without the use of a hog hair cleaning brush.
 - a. Ensure that wash runs off the circuit board along the shortest unencumbered path to prevent redeposit of solvated residues.
- OR
4. (Exceptionally) Immerse component in a container filled with a fresh 824 solution.

ATTENTION!

The 824 is hygroscopic, which means it can absorb moisture from air.

Recap the bottle immediately after use to avoid water absorption.

Do NOT use in squeezable wash bottles since these containers allow humidity-absorption contamination.

ATTENTION!

Immersion baths will immediately start to absorb moisture from the air, so the lifespan as a water-free solvent is very short.

Packaging and Supporting Products

| <i>Cat. No.</i> | <i>Packaging</i> | <i>Net Volume</i> | | <i>Net Weight</i> | | <i>Packing Weight</i> | |
|------------------|------------------|-------------------|------------|-------------------|---------|-----------------------|---------|
| 824-450G | Aerosol | 553 mL | 18.7 fl oz | 450 g | 14.5 oz | 5.94 kg ^{a)} | 13.1 lb |
| 824-WX25 | Wipes | 47 mL | 1.6 fl oz | 37 g | 1.3 oz | 3.0 kg ^{b)} | 6.6 lb |
| 824-WX50 | Wipes | 95 mL | 3.2 fl oz | 75 g | 2.7 oz | 3.0 kg ^{b)} | 6.6 lb |
| 824-WX500 | Wipes | 191 mL | 6.5 fl oz | 150 g | 5.3 oz | 3.0 kg ^{b)} | 6.6 lb |
| 824-100ML | Bottle | 125 mL | 4.2 fl oz | 98 g | 3.2 oz | 1.3 kg ^{a)} | 2.9 lb |
| 824-500ML | Bottle | 475 mL | 16 fl oz | 373 g | 13 oz | 4.5 kg ^{a)} | 10.0 lb |
| 824-1L | Bottle | 945 mL | 32 fl oz | 742 g | 1.64 lb | 5.3 kg ^{c)} | 11.7 lb |
| 824-4L | Jug | 4 L | 1.1 gal | 3.14 kg | 6.93 lb | 3.7 kg | 8.2 lb |
| 824-20L | Pail | 20 L | 5.3 gal | 15.7 kg | 34.6 lb | 19 kg | 41.9 lb |

a) Pack of 10

b) Box pack

c) Pack of 6



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Supporting Products

- *Acetone*: Cat. No. 434-1L, 434-4L
- *Hog Hair Cleaning Brush*: Cat. No. 852
- *Large Hog Hair Cleaning Brush*: Cat. No. 853

Technical Support

Contact us regarding any questions, improvement suggestions, or problems with this product. Application notes, instructions, and FAQs are located at www.mgchemicals.com.

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Warranty

M.G. Chemicals Ltd. warranties this product for 12 months from the date of purchase by the end user. *M.G. Chemicals Ltd.* makes no claims as to shelf life of this product for the warranty. The liability of *M.G. Chemicals Ltd.* whether based on its warranty, contracts, or otherwise shall in no case include incidental or consequential damage.

Disclaimer

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