



# Isopropyl Alcohol Electronics Cleaner 99.9% Pure Anhydrous 824 Technical Data Sheet

ISO 9001:2015 Registered Quality System. Burlington, Ontario, CANADA SAI Global File: 004008

824-L

## Description

The 824 *Isopropyl Alcohol* (IPA) liquid is a high purity cleaner for electronics. 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 for electronics, 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 printed circuit board components and electronic 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**
- **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 Limits <sup>a)</sup>	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 Properties</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 Properties</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 <sup>2</sup> ·°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) <sup>1/2</sup>	[cal/cm <sup>3</sup> ] <sup>1/2</sup>
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.

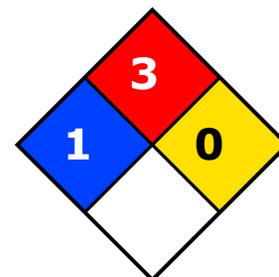
**Health and Safety:** Isopropyl alcohol solution is flammable and shouldn't be used in the presence of open flames or other ignition source. Keep container closed. Avoid prolonged breathing of vapors. Use with adequate ventilation.

**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

<b>HEALTH:</b>	<b>1</b>
<b>FLAMMABILITY:</b>	<b>3</b>
<b>PHYSICAL HAZARD:</b>	<b>0</b>
<b>PERSONAL PROTECTION:</b>	

#### 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>	
<b>824-450G</b>	Aerosol	553 mL	18.7 fl oz	450 g	14.5 oz	5.94 kg <sup>a)</sup>	13.1 lb
<b>824-WX25</b>	Wipes	47 mL	1.6 fl oz	37 g	1.3 oz	3.0 kg <sup>b)</sup>	6.6 lb
<b>824-WX50</b>	Wipes	95 mL	3.2 fl oz	75 g	2.7 oz	3.0 kg <sup>b)</sup>	6.6 lb
<b>824-WX500</b>	Wipes	191 mL	6.5 fl oz	150 g	5.3 oz	3.0 kg <sup>b)</sup>	6.6 lb
<b>824-100ML</b>	Bottle	125 mL	4.2 fl oz	98 g	3.2 oz	1.3 kg <sup>a)</sup>	2.9 lb
<b>824-100MLCA</b>	Bottle	125 mL	4.2 fl oz	98 g	3.2 oz	1.3 kg <sup>a)</sup>	2.9 lb
<b>824-500ML</b>	Bottle	475 mL	16 fl oz	373 g	13 oz	4.5 kg <sup>a)</sup>	10.0 lb
<b>824-500MLCA</b>	Bottle	475 mL	16 fl oz	373 g	13 oz	4.5 kg <sup>a)</sup>	10.0 lb
<b>824-1L</b>	Bottle	945 mL	32 fl oz	742 g	1.64 lb	5.3 kg <sup>c)</sup>	11.7 lb
<b>824-1LCA</b>	Bottle	945 mL	32 fl oz	742 g	1.64 lb	5.3 kg <sup>c)</sup>	11.7 lb
<b>824-4L</b>	Jug	3.78 L	1.0 gal	3.0 kg	6.6 lb	3.4 kg	7.5 lb
<b>824-20L</b>	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](http://www.mgchemicals.com).

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## Warranty

*M.G. Chemicals Ltd.* warrants 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

This information is believed to be accurate. It is intended for professional end users having the skills to evaluate and use the data properly. *M.G. Chemicals Ltd.* does not guarantee the accuracy of the data and assumes no liability in connection with damages incurred while using it.