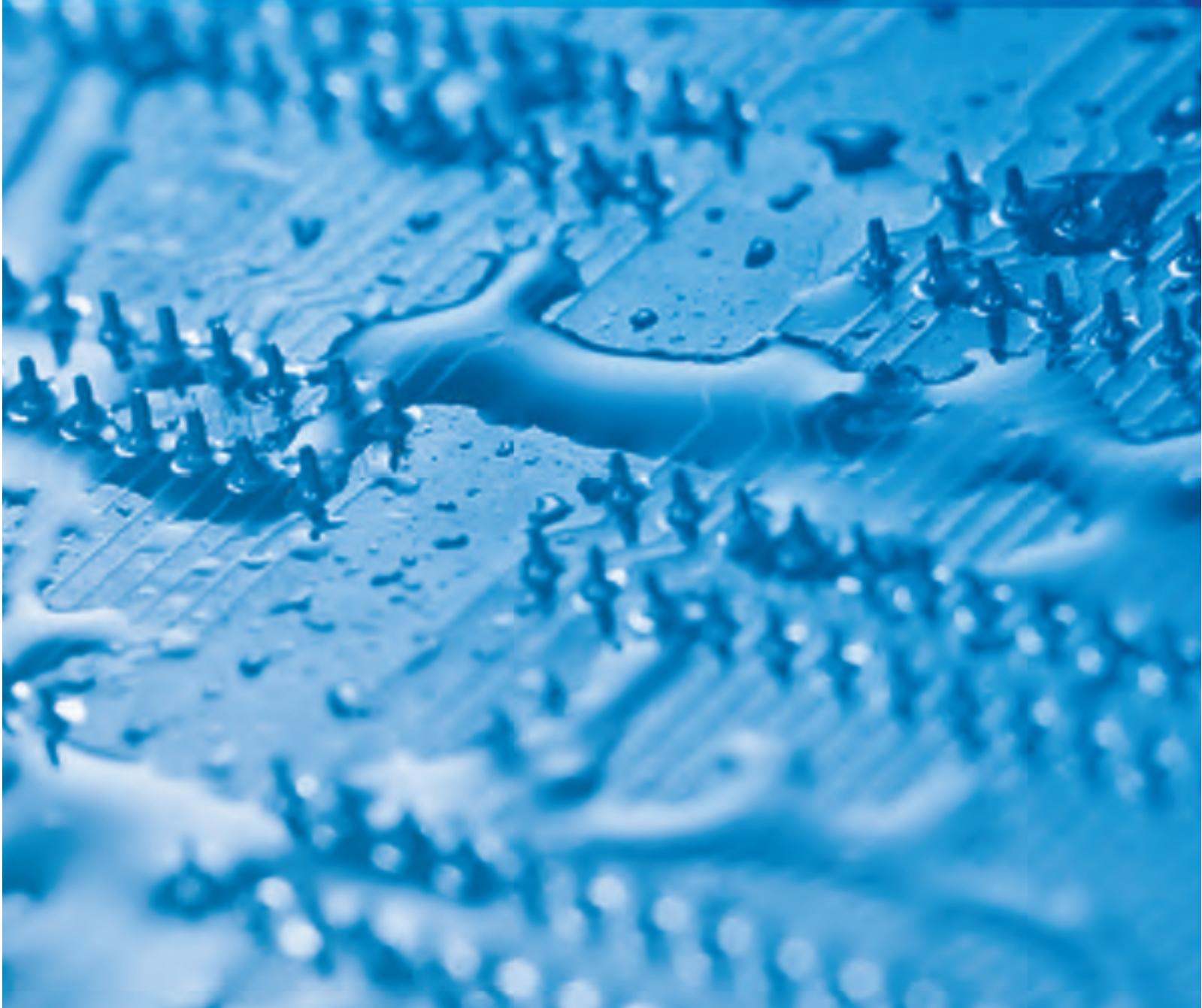




## PRODUCT CATALOG





# Why MG Chemicals?

At MG Chemicals, we realize that our number one asset is you, our customer.

## ISO Quality Standards.

Since 1955, M.G. Chemicals has provided the North American electronics industry with a full line of high performance chemicals and accessories. The M.G. Chemicals manufacturing facility operates under the ISO 9001 Quality System Standard. All products undergo M.G. Chemicals' design process including the testing and analysis of each product to maximize performance, user safety, environmental safeguards and market desirability.

## MSDS Access.

M.G. Chemicals lists complete handling, environmental, safety and shipping information for each product on Material Safety Data Sheets. MSDSs are available at [www.mgchemicals.com/msds](http://www.mgchemicals.com/msds) or by fax.

## Technical Support.

We will endeavor to provide our customers with the requested information they need with prompt and courteous attention. We offer help on our website [www.mgchemicals.com](http://www.mgchemicals.com) and with our 1-800 Tech Support hotline.

## Product Shipping.

M.G. Chemicals products are offered in IATA tested and United Nations approved high performance shipping cartons, to easily transport all of our products anywhere in the world.

## Product Availability.

M.G. Chemicals products are readily available through electronic distribution in North America and internationally. Please contact M.G. Chemicals for the closest stocking distributor in your area.

## You.

Customer care is what separates M.G. Chemicals from the pack. Our commitment to all of these principles focus on getting you the quality product and support you deserve.

# The MG Chemicals Line-up

2

Dusters  
and Circuit  
Coolers

4

Cleaner  
Degreasers

8

Contact  
Cleaners

10

Flux  
and Flux  
Removers

12

Specialized  
Cleaners

CLEANERS FOR ELECTRONICS

14

Specialty  
Products

15

Desoldering  
Braid

16

Epoxy

20

Protective  
Coatings

25

EMI / RFI  
Shielding

EPOXIES & PROTECTIVE COATINGS

26

Adhesives

28

RTV  
Silicones

32

Lubricants

34

Thermal  
Management

36

The  
Prototyping  
Process

37

Copper  
Clad  
Boards

38

Exposure  
and Photo-  
fabrication

39

Accessories

40

Etching

PROTOTYPING

43

Swabs

44

Wipes

45

Brushes

46

Cross  
Reference  
Guide

49

Product  
Index

ACCESSORIES

APPENDICES

# Dusters / Circuit Coolers

## Super Duster 134A

- ▶ 100% HFC 134A gas
- ▶ Ozone safe
- ▶ Non-flammable
- ▶ Non-conductive
- ▶ Zero residue
- ▶ Variable trigger valve



402A

- ▶ NON-FLAMMABLE
- ▶ NON-CONDUCTIVE
- ▶ MOISTURE FREE GAS

- ▶ ZERO RESIDUE
- ▶ NON-VOC

Removes microscopic dust, lint and foreign particles. Cleans computers and keyboards, photographic and audio-video equipment, coin counters, printers, timing devices, cash machines, optical equipment, fax machines and other electro mechanical instruments. High rate of flow delivery system for increased performance.

### Available Sizes

Catalog No.	Size	Format
402A-140G	140g (5 oz)	Aerosol
402A-285G	285g (10 oz)	Aerosol
402A-450G	450g (16 oz)	Aerosol

## Trigger Valve

Allows user precision control and greater comfort.



402-T

For use with Super Duster 134 Refill canisters (402AR). Allows user precision control and greater comfort. This high quality threaded chrome valve is for use with Cat# 402AR Super Duster Refill aerosol cans, and can be used over and over. It simply screws onto the top of the can, and can be easily removed at any time later without damage to the valve or the can, even if the can's contents have not been depleted.

### Available Sizes

Catalog No.	Size	Format
402T*	Fits 402AR	Chrome Trigger Valve
402AR	285g (10 oz)	Aerosol

\*Not available for USA distributors

## Super Cold 134A

Chills to -51°C (-60°F)

Used to locate thermal intermittent electronic components, PCB cracks, cold solder joints, and oxidized junctions. Freezes gum and adhesives for easy removal. Protects heat-sensitive components during soldering. Chills to -51°C (-60°F).



403A

- ▶ NON-FLAMMABLE
- ▶ NON-CONDUCTIVE
- ▶ MOISTURE FREE GAS

- ▶ ZERO RESIDUE
- ▶ NON-VOC

- ▶ 100% HFC 134A gas
- ▶ Ozone safe
- ▶ Non-flammable
- ▶ Non-conductive
- ▶ Zero residue
- ▶ Variable valve allows greater user control



### Available Sizes

Catalog No.	Size	Format
403A-400G	400g (14 oz)	aerosol
403A-285G	285g(10 oz)	aerosol



CLEANER DEGREASERS

4



CONTACT CLEANERS

8



FLUX + FLUX REMOVERS

10



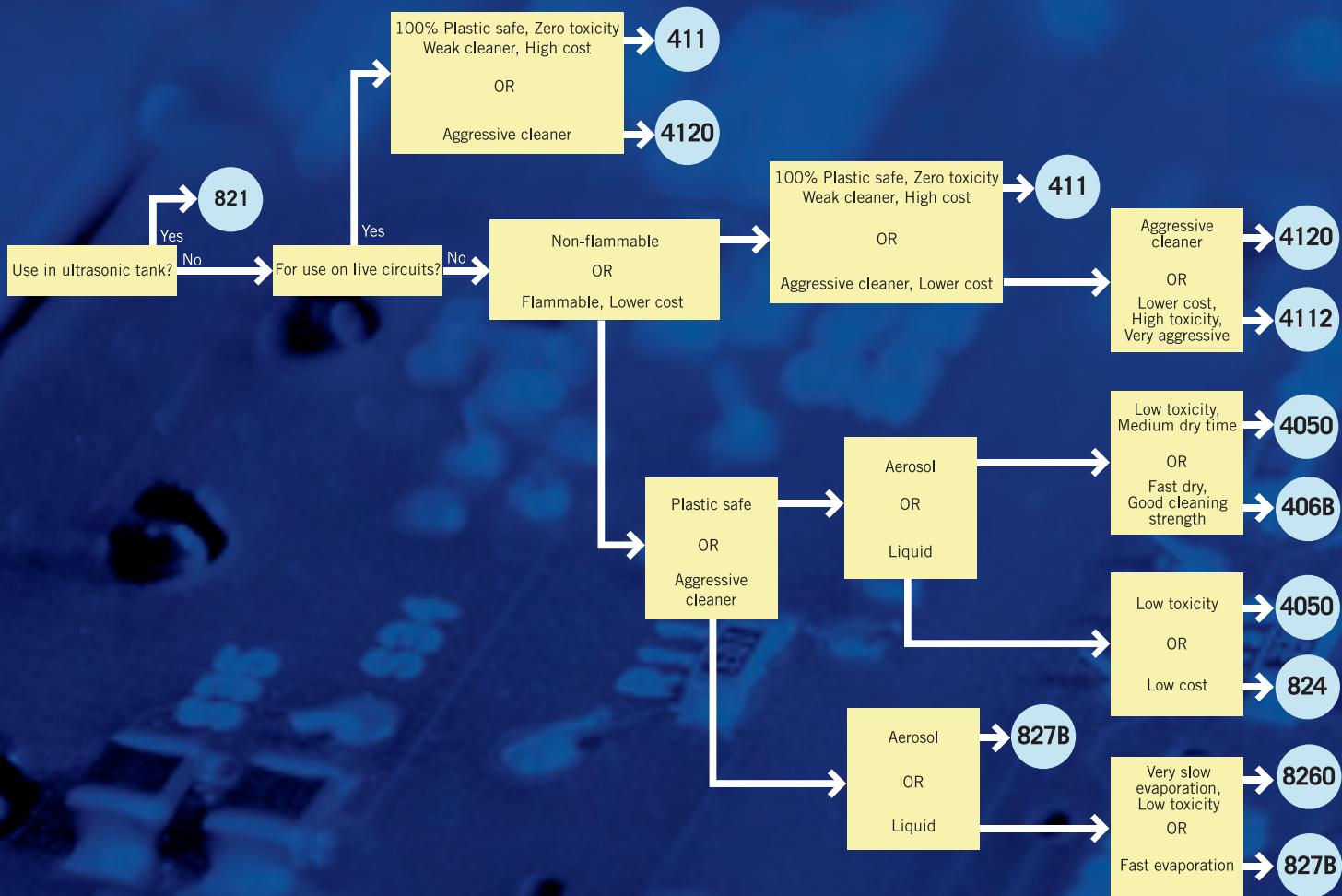
SPECIALTY CLEANERS / CHEMICALS

12



# Cleaner Degreaser Selection Chart

► Use this flowchart to determine the cleaner degreaser best suited to your application.



# Cleaner Degreasers : Plastic Safe

## Isopropyl Alcohol

824

Use when a cost effective general purpose cleaner is required.

- ▶ SAFE ON PLASTICS
- ▶ LOW TOXICITY
- ▶ COST EFFECTIVE

99.953% Pure anhydrous alcohol (824, 824W). A great general-purpose cleaner degreaser. Also effective as a flux remover. Perfect for use on fiber optics. Flammable.

### Available Sizes

824

Catalog No.	Size	Format
824-100ML	125ml (4.2 oz)	Liquid
824-500ML	500ml (17 oz)	Pump
824-1L	1L (34 oz)	Liquid
824-4L	4L (1 gal)	Liquid
824-1G	4L (1 gal) x 4	Liquid
824-20L	18.9L (5 gal)	Liquid
824-205L	205L (55 gal)	Liquid
824-W	20.3 cm x 12.7 cm (8" x 5")	Single
824-WX50	20.3 cm x 12.7 cm (8" x 5")	50 pack
824-WX500	20.3 cm x 12.7 cm (8" x 5")	500 pack
8241-T	-	90 wipes in pop-up tub

824W

8241



## Safety Wash

4050

Use when a low toxicity cleaner degreaser is required.

- ▶ SAFE ON PLASTICS
- ▶ LOW TOXICITY

Effective at removing oils, greases, inorganic and organic soils, smoke, flux, and ionic residues from PC boards, office and medical equipment, connectors, electronic or mechanical parts, workbenches, relays and semiconductors. Flammable.



### Available Sizes

4050

Catalog No.	Size	Format
4050-400G	400g (14 oz)	Aerosol
4050-525G	525g (18.5 oz)	Aerosol
4050-1L	1L (34 oz)	Liquid
4050-4L	4L (1 gal)	Liquid
4050-20L	18.9L (5 gal)	Liquid

## Super Wash

406B

Use when a rapidly drying cleaner degreaser is required.

- ▶ SAFE ON PLASTICS
- ▶ RAPID DRY TIME

Perfect for quickly cleaning PC boards. Rapid dry time makes this an excellent product for rinsing away slower drying solvents. Great for rinsing dissolved flux. Extremely flammable.



### Available Sizes

406

Catalog No.	Size	Format
406B-450G	450g (16 oz)	Aerosol

# Cleaner Degreasers : Plastic Safe

## HFE Solvent

411



Use only when requiring a 100% non-flammable, non-toxic, and safe on plastic cleaner degreaser.

Suitable for use on live circuits. Suitable for use in cleaning oxygen lines. For a more cost effective and aggressive non-flammable / non-conductive cleaner use cat# 4120. Extra effective with MG Chemicals' hog-hair brushes.

- ▶ 100% NON-FLAMMABLE
- ▶ 100% NON-CONDUCTIVE
- ▶ 100% NON-TOXIC
- ▶ SAFE ON PLASTICS

### Available Sizes

411

Catalog No.	Size	Format
411-300G	300g (10.5 oz)	Aerosol

Liquid formats also available

# Cleaner Degreasers : Strong

## HFE Super Cleaner Degreaser

4120



Use when a cost effective non-flammable and non-conductive cleaner degreaser is required.

The most high tech cleaner degreaser available in the electronics market. Provides an economical and effective alternative to 141B solvent. Suitable for use on live circuits. Excellent cleaning strength. Also suitable for use as a contact cleaner or flux remover.

- ▶ NON-CONDUCTIVE
- ▶ NON-FLAMMABLE

### DIRECT 141B REPLACEMENT

### Available Sizes

4120

Catalog No.	Size	Format
4120-450G	450g (16 oz)	Aerosol

## Super Cleaner Degreaser

412



- Suitable for use on live circuits
- Excellent cleaning strength

Use when requiring an azeotropic, non-flammable and non-conductive cleaner degreaser is required.

- ▶ NON-CONDUCTIVE
- ▶ NON-FLAMMABLE

### DIRECT 141B REPLACEMENT

### Available Sizes

412

Catalog No.	Size	Format
412-450G	450g (16oz)	Aerosol
412-1L	1 L (34 oz)	Liquid

# Cleaner Degreasers : Strong / Aggressive

## Immersion Super Solvent

8260



### Use when immersion cleaning or wipe cleaning

Slow evaporation rate makes this product perfect for open air immersion cleaning. Human safe, biodegradable makes and environmentally friendly. Strong enough to easily strip most conformal coatings, uncured epoxies and adhesives, oils and greases, yet is safe on most plastics. Great for cleaning parts or tools.

- LOW FLAMMABILITY
- EXTREMELY SLOW EVAPORATION
- EFFECTIVE CLEANING STRENGTH
- SAFE ON MOST PLASTICS
- LOW TOXICITY
- BIO-DEGRADABLE

### Available Sizes

8260

Catalog No.	Size	Format
8260-1L	1L (34 oz)	Liquid

## Aggressive Cleaners

## Heavy Duty Cleaner Degreaser

827B



### Use when an aggressive cleaner degreaser is required and plastic compatibility or flammability is not a concern.

Great for removing heavy oils and greases, burnt on flux, ionic residues, and difficult to remove soils. Very effective at cleaning and degreasing the solder side (non-component side) of PC boards. Ideal for use in cleaning steel, piping, and metal parts or tools.

- AGGRESSIVE CLEANER
- COST EFFECTIVE

### Available Sizes

827B

Catalog No.	Size	Format
827B-425G	425g (15 oz)	Aerosol
827B-1L	1L (34 oz)	Liquid
827B-4L	4L (1 gal)	Liquid
827B-20L	18.9L (5 gal)	Liquid

## NPB Heavy Duty

4112



### Use when a non-flammable extremely aggressive cleaner degreaser is required, and toxicity is not a concern.

A cost effective 141B replacement. For use in exactly the same applications as 827B, but where non-flammability is a requirement. Avoid inhalation. Respirator recommended. Suitable for use in vapor degreasers. Suitable for use as a cleaner degreaser, contact cleaner, or flux remover.

- NON-FLAMMABLE
- EXTREMELY AGGRESSIVE

### Available Sizes

4112

Catalog No.	Size	Format
4112-340G	340g (12 oz)	Aerosol
4112-1L	1L (34 oz)	Liquid
4112-4L	4L (1 gal)	Liquid
4112-20L	18.9L (5 gal)	Liquid
4112-200L	200L (55 gal)	Liquid

# Contact Cleaners

Contact Cleaners

## Electrosolve™ 409B

Use when a zero residue contact cleaner is required.

- ▶ FAST DRY
- ▶ SAFE ON PLASTICS
- ▶ ZERO RESIDUE

### Available Sizes

409B	Catalog No.	Size	Format
	409B-140G	140g (5 oz)	Aerosol
	409B-340G	340g (12 oz)	Aerosol

Quickly penetrates and dissolves most soil types and non-ionic residues. A great general purpose contact cleaner. Extremely flammable.

Suitable for use in cleaning contacts, connectors, LED's, PCB's, components, circuit breakers, tuners, and microprocessors.



## Super Contact Cleaner with Poly Phenyl Ether 801B

- ▶ SAFE ON PLASTICS
- ▶ MINERAL OIL LUBRICATION
- ▶ PROTECTS AGAINST OXIDATION

### Available Sizes

801B	Catalog No.	Size	Format
	801B-125G	125g (4.4 oz)	Aerosol
	801B-100ML	125ml (3.5 oz)	Liquid
	801B-P	10 ml (0.34 oz)	Felt Pen



Use when requiring a contact cleaner with lubrication that offers long term protection from oxidation.

Cleans, lubricates, and protects. Removes oxidation. Contains electronic grade mineral oil for lubrication. Contains poly phenyl ether to provide contacts with long term protection from corrosion. Protects gold contacts for life. Improves conductivity. Perfect for use on potentiometers. Also suitable for use on contacts, tuners, sliders, plugs, jacks, and switches.

- Eliminates oxidation for years
- Protects gold for life
- Reduces contact scrubbing
- Reduces connection, wear, and abrasion failures
- Meets Bellcore spec. TR-NWT-00078
- Variable valve allows user to control rate of flow
- Do not use on live circuits

# Contact Cleaners

## Oxide Scrubber

Excellent for removing oxides and corrosion from all metals, including gold. After cleaning, apply MG Chemical's Super Contact Cleaner with poly phenyl ether (page 8) for lifetime protection of gold.



802H

Contact Cleaners

- NON-CHEMICAL
- EASY TO USE

### Available Sizes

Catalog No.	Size	Format
802H	802H	5 1/4" L Pen with refill



## Contact Cleaner with Silicones 404B

Use when requiring a contact cleaner with a dry lubrication.

- FAST DRY
- SAFE ON PLASTICS
- SILICONE LUBRICATION

Leaves behind a thin coating of dry silicone lubricant. Great for cleaning and lubricating delicate moving parts in electronic circuits.

Suitable for use on contacts, tuners, sliders, plugs, jacks, switches, and telescoping antennas. Extremely flammable.

### Available Sizes

Catalog No.	Size	Format
404B-140G	140g (5 oz)	Aerosol
404B-340G	340g (12 oz)	Aerosol

# Flux and Flux Removers



**Heavy Duty Flux Remover  
413B**

Use when an aggressive flux remover is required

► AGGRESSIVE CLEANING STRENGTH

Suitable for use with rosin, non-rosin, and no clean fluxes. Will harm delicate plastic components. Excellent for dissolving flux on the solder side of PC boards. Excellent for use in spot removing hard burnt on flux from the component side of PC boards.

**Available Sizes**

**413B**

Catalog No.	Size	Format
413B-425G	425g (15 oz)	Aerosol
413B-1L	1L (34 oz)	Liquid
413B-4L	4L (1 gal)	Liquid
413B-20L	18.9L (5 gal)	Liquid
4140-400G	400g (14 oz)	Aerosol
4140-500ML	500ml (17 oz)	Liquid
4140-1L	1L (34 oz)	Liquid
4140-4L	4L (1 gal)	Liquid
4140-20L	18.9L (5 gal)	Liquid

**4140**



**Flux Remover For PC Boards  
4140**

Use when a general-purpose flux remover is required

► SAFE ON PLASTICS

Suitable for use with rosin, non-rosin, and no clean fluxes. Safe on plastic components. Available in liquid form for immersion processes.



# Flux and Flux Removers

## How do you remove flux?

Removing flux is a two-step process. The first step is dissolving the flux. The second step is rinsing the dissolved flux off of the PC board.

The rinsing step is very important because after dissolving the flux it may appear that the solids in the flux have disappeared, but once the flux remover has evaporated away, the solids will re-deposit on the board as white residue.

### Step 1: Dissolving the flux

If you are using flux remover in aerosol form, spray a little flux remover onto the flux, then agitate with a hog hair cleaning brush. If you are using our 4140 Flux Remover, you may spray it liberally, as it is safe on your components. If you are using 413B Heavy Duty Flux remover, you may spray it liberally on the solder side of the board, but be careful to only apply it directly to the flux contaminated area if you are using it on the component side of the board, as it will harm some components.

The 4140 is plastic safe so it may be applied liberally. Have a can of 413B handy in case you run into a patch of burnt-on difficult to remove flux.

If you are using flux remover in liquid form, pour the flux remover into a tray. If you are using 4140 Flux Remover, you may then submerge the PC board into the tray, agitating the flux with a hog-hair brush. If you are using 413B Heavy Duty Flux Remover, you should not submerge the board into the tray, as the components will be damaged. Instead, wet the hog-hair brush you are using by dipping it into the tray, then use it to agitate the flux on the board. Periodically rinse and re-wet the brush by swishing it in the flux remover.

### Step 2: Rinsing the board

You must ensure that you push the dissolved flux solids off of the board before the flux remover evaporates and the solids re-deposit. If you are using flux remover in aerosol form, the easiest way to do this is to hold the board vertically and liberally apply more flux remover until you see the flux remover running off of the board.

If you have dissolved the flux by submerging the board in liquid flux remover, just dip the board into the tray and swish the flux remover and you should be ok. If you have been using the particular tray to dissolve flux on a number of boards, dissolved flux may accumulate in the tray and dipping the board may actually deposit flux solids onto the board. In this case you will want to either set up a separate tray for rinsing, or have an aerosol can handy for rinsing.

A particularly good option for rinsing dissolved flux off of a board is to use our 406B Super Wash. Super Wash comes in a large aerosol can, allowing for liberal use, and it dries very rapidly. Super Wash will rinse off un-evaporated flux remover as well as flux solids, and the board will be dry and ready for service almost immediately after rinsing.

## Rosin Flux

835



- Superior fluxing ability
- Instant wetting
- After soldering, the rosin residue is non-corrosive, non-conducting, moisture resistant, and fungus resistant
- Meets Mil. Spec. #RA 14256
- ANSI Spec. 004
- ROMI Class, J Standard

## Rosin Flux Pen

835-P

For precision application of rosin flux, in a convenient microtip pen format. RA type flux.

### Available Sizes

835

Catalog No.	Size	Format
835-100ML	125ml (4.2 oz)	Liquid
835-1L	1L (34 oz)	Liquid
835-4L	4L (1 gal)	Liquid
835-P	10ml (0.34 oz)	Pen
835-P-20	10ml x 20 (Bulk)	Pens

## HFE Super Flux Remover

4141

Use when a non-flammable flux remover is required by safety regulations.

- GOOD CLEANING STRENGTH
- NON-FLAMMABLE

### DIRECT 141B REPLACEMENT

Suitable for use with rosin, non-rosin, and no clean fluxes. May harm delicate plastic components.



### Available Sizes

4141

Catalog No.	Size	Format
4141-340G	340g (12 oz)	Aerosol

# Specialized Cleaners



## Antistatic Screen Cleaner

Eliminates static charges and provides long term static protection.  
Excellent for use on monitor screens.

### FOR USE ON:

- ▶ CRT'S
- ▶ OFFICE EQUIPMENT
- ▶ TERMINALS
- ▶ CERAMICS
- ▶ GLASS
- ▶ MONITORS
- ▶ BAR CODE READERS

4200



Neutralizes and eliminates build up of static electricity. Eliminates static charge from sensitive areas and provides long-term static protection. Spray on and wipe off fingerprints, grease, oils, inks, smoke, nicotine, carbon, organic and inorganic soils.

### Available Sizes

4200

Catalog No.	Size	Format
4200-500ml	500ml (17 oz)	Trigger Pump

## Glass Cleaner

An all purpose glass, plastic, and chrome cleaner

High foaming action provides excellent cleaning capabilities on glass, plastic, chrome, stainless steel, countertops and tile. No harmful solvents or abrasives. For use on glass monitor screens, bar code readers and glass.

### Available Sizes

825

Catalog No.	Size	Format
825-500G	500G (18.5 oz)	Aerosol

825



## Ultrasonic Cleaner

For use in all ultrasonic tanks and equipment for removing flux, oils, and most types of soils.

- ▶ SAFE ON PLASTICS
- ▶ NON FLAMMABLE
- ▶ SAFE FOR WORKERS

821



## Super-Concentrated Formula 100:1 Mix Ratio

Effectively cleans metals such as aluminum, copper, brass, silver and gold. Features: Super concentrated mix ratio: 1 to 100 with water. Very economical and environmentally safe.

### Available Sizes

821

Catalog No.	Size	Format
821-250ML	250ml (8.4 oz)	Liquid
821-1L	1L (34 oz)	Liquid

# Specialized Cleaners

## Audio Video Head Cleaner 407C



- ZERO RESIDUE
- SAFE ON PLASTICS

Cleans and restores sensitive magnetic and optical read/write heads. Removes nicotine, tape residues, metallic oxides, carbon deposits, oils, dirt.

### Available Sizes

#### 407C

Catalog No.	Size	Format
407C-340G	340g (12 oz)	Aerosol
407C-250ML	250ml (8.4 oz)	Liquid
407C-1L	1L (34 oz)	Liquid

## Label & Adhesive Remover 836



- SAFE ON PLASTICS

Effectively removes adhesives and sticker residues. Distinctive citrus odor is non offensive to the user.

### Available Sizes

#### 836

Catalog No.	Size	Format
836-140G	140g (5 oz)	Aerosol

Perfect for use with  
MG Chemicals  
Chamois Swabs



810D  
810

See page 46 for Chamois Swabs

## Rubber Renue

## 408A

- ZERO RESIDUE
- FAST EVAPORATING

Rejuvenates and conditions rubber. Rubs off oxidation film. Apply with cloth, brush, or swab. Excellent for use on belts, platens, rollers, rubber parts. Use with adequate ventilation.



### Available Sizes

#### 408A

Catalog No.	Size	Format
408A-100ML	125ml (4.2 oz)	Liquid
408A-250ML	250ml (8.4 oz)	Liquid
408A-1L	1L (34 oz)	Liquid

# Specialty Products

## Touch Pump Solvent Dispensers

Both dispensers come with a high-density polyethylene 8 oz. bottle suitable for many solvents. These square shaped bottles provide stability and save storage space. Wide openings allow for easy refill. Translucent bottles allow for easy viewing of contents.

### Touch Pump Solvent Dispenser

8230-8

- Patented one handed operation
- Perfect for cleaning with cotton balls, pads, and brushes
- Precision machined valves, smooth consistent operation
- Cam-lock hinge, keeps lid open and closed, reduces odors
- No silicone or latex, perfect for ultra clean environments
- 100% stainless steel, will not corrode or contaminate liquid



### Anti-Spill Lock Anti-Backflow Touch Pump Solvent Dispenser

8231-8

- Patented one handed operation
- Perfect for cleaning with cotton balls, pads, and brushes
- Precision machined valves, smooth consistent operation
- Cam-lock hinge, keeps lid open and closed, reduces odors
- No silicone or latex, perfect for ultra clean environments
- 100% stainless steel, will not corrode or contaminate liquid

#### PLUS:

- Back flow protector stops fluids from re-entering the bottle
- Locking pump, will not leak when engaged - suitable for travel

#### Available Sizes

<b>8230</b>	Catalog No. 8230-8	Size 8 oz.	Format Pump bottle
<b>8231</b>	Catalog No. 8231-8	Size 8 oz.	Format Pump bottle

## Projection Tube Coolant 803

Use as a heat transfer fluid in projection tubes. Compatible with all major brands. High purity, non-contamination. Easy to use container.



#### Available Sizes

<b>803</b>	Catalog No. 803-250ML	Size 250ml (8.4 oz)	Format Liquid
	803-500ML	500ml (17 oz)	Liquid

# Desoldering Braid

## Super Wick™ 400 SERIES

Cleaned and manufactured using environmentally friendly technology



Any place you can put solder in, you can take it out with SUPER WICK. Remove the most expensive circuitry with confidence. Just lay the SUPER WICK on the soldered joint, apply tip of soldering iron to top-side for one second, and lift iron and SUPER WICK together to leave a clean connection ready for component removal or replacing. SUPER WICK is pure copper, specially woven wound on a pocket size spool with pressurized periphery.

### Fine Braid Super Wick™

- RMA type flux
- Faster than most brands
- Environmentally safe residue
- More strands of copper per sq. inch
- Static dissipative spools on all sizes
- Chosen by many users as best brand
- Satisfaction guaranteed

### No Clean Super Wick™

- Available in many sizes
- RMA type flux
- Leaves 15-25% less residue than our regular wick
- Residue does not require cleaning
- Static dissipative spools on all sizes
- Chosen by many users as best brand
- Satisfaction guaranteed

Format	Cat. No.	Width	Color code
Fine Braid Super Wick 5 ft lengths (1.52 m)	423 424 425 426 427	.025" .050" .075" .100" .125"	#1 white (SMT) #2 yellow #3 green #4 blue #5 brown
Fine Braid Super Wick 25 ft lengths (7.62 m)	442 443 444	.050" .075" .100"	#2 yellow #3 green #4 blue
Fine Braid Super Wick 50 ft lengths (15.24 m)	451 452 453 454	.025" .050" .075" .100"	#1 white (SMT) #2 yellow #3 green #4 blue
Fine Braid Super Wick 100 ft lengths (30.48 m)	462 463 464	.050" .075" .100"	#2 yellow #3 green #4 blue
Fine Braid Super Wick 500 ft lengths (152.4 m)	471 472 473 474	.025" .050" .075" .100"	#1 white (SMT) #2 yellow #3 green #4 blue

### No Clean Format

No Clean Super Wick 5 ft lengths (1.52 m)	424-NS 425-NS 426-NS	.050" .075" .100"	#2 yellow #3 green #4 blue
No Clean Super Wick 50 ft lengths (15.24 m)	453-NS 454-NS	.075" .100"	#3 green #4 blue

## Peelable Solder Mask 862

- Contains no ammonia
- Non corrosive to copper, gold, silver or pre-soldered surfaces
- Opaque pink color turns red when cured
- Can be used in water or solvent systems
- Anti-static, thixotropic
- Tested at temperatures 200°C and 400°C



Synthetic acrylic latex. Excellent for masking contacts, gold fingers, card edges and desired areas during circuit board repair. Meets MIL-STD-2000 paragraph 5.3.18 parts a, b, and d.

#### Available Sizes

Catalog No.	Size	Format
862-150ML	150ml (5 oz)	Tube
862-1G	4L (1 gal)	Pail

# EPOXIES AND COATINGS



# Epoxies

## Potting & Encapsulating Epoxy Compound

### 832B Black / 832C Clear

Provides excellent protection from impact, shock, moisture, abuse, chemicals, and analysis. Provides technology security. Excellent for explosion proof components. Available in black and clear.

- Non-conductive, an electrical insulator
- Non-porous
- Water and chemical resistant
- Contains a form of nylon for excellent impact resistance
- Provides excellent technology security, extremely difficult to remove once cured
- Excellent machining properties
- Suitable for explosion proof components, spark arresting
- Less than 0.5% shrinkage during cure
- Low toxicity
- Easy and simple to mix
- Long pot life
- Can be cured in one hour at 65°C (150°F)
- Excellent adhesion to most surfaces



Epoxies

#### Available Sizes

	Catalog No.	Size	Color	Format
832B	832B-375ML	375 ml (12 oz)	Black	liquid
	832B-3L	3 L (0.8 gal)	Black	liquid
832C	832C-60L	60 L (15.6 gal)	Black	liquid
	832C-375ML	375 ml (12 oz)	Clear	liquid
	832C-3L	3 L (0.8 gal)	Clear	liquid
	832C-60L	60 L (15.6 gal)	Clear	liquid

## 832B Specifications

#### Uncured Properties - Resin [Part A]

Viscosity 2,500 cps  
Specific Gravity 1.1273

#### Uncured Properties - Hardener [Part B]

Viscosity 11,000 cps  
Specific Gravity 0.9564  
Color Clear, amber tint

#### Cured Properties - Physical

Mixed Viscosity 3,300 cps  
Mixed Specific Gravity 1.0577  
Volume Mix Ratio (resin:hardener) 2.0:1  
Mass Mix Ratio (resin:hardener) 2.3:1  
Working time (100g) 60 min.  
Cure Time (100g, room temp.) 24 hours  
Heat Cure Time (100g, 65°C) 60 min.  
Shore Hardness 82 Shore D

#### Cured Properties - Temperature

Constant Service Temperature 140°C (284°F)  
Intermediate Service Temperature 145°C (293°F)

#### Cured Properties - Electrical

Insulative Yes  
Conductive No

#### Chemical and Solvent Resistance Change after Change after

Hydrochloric Acid	< 0 %	< 1 %
Isopropyl Alcohol	< 0.3 %	< 1 %
Ethyl Lactate	< 3 %	< 7 %
Acetone	< 7 %	destroyed
Xylene	< 2 %	< 9 %
Iso hexanes	< 5 %	< 8 %
Mineral spirits	< 0.3 %	< 0.3 %

For more specifications visit [www.mgchemicals.com](http://www.mgchemicals.com)



# Epoxies : Special Application

## Flame Retardant Epoxy 832FRB



- Flame retardant epoxy will self-extinguish in less than 1 second
- Meets UL 94V-0
- Non-electrically conductive

Meets UL 94V-0 vertical burn test. A two component self extinguishing epoxy compound. Provides insulation and protects sensitive components and circuits from: static discharge, impact, heat, shock, conductivity, abuse, vibration, moisture, fresh and salt water, chemicals and analysis.

Uncured Properties - Resin [Part A]	
Viscosity	6700 cps
Specific Gravity	1.32
Color	Blue
Uncured Properties - Hardener [Part B]	
Viscosity	4700 cps
Specific Gravity	0.986
Color	Blue
Cured Properties	
Volume Mix Ratio (resin:hardener)	1.2 : 1
Mass Mix Ratio (resin:hardener)	1.8 : 1
Working time (100g)	120 min.
Cure Time (100g, room temp.)	24 hours
Heat Cure Time (100g, 65°C)	60 min.
Shore Hardness	80 shore D
Constant Service Temp.	80°C (176°F)
Intermediate Service Temp.	90°C (194°F)
Insulative	Yes
Conductive	No

### Available Sizes

Catalog No.	Size	Format
832FRB-375ML	375 ml (12 oz)	Blue Flame Retardant
832FRB-3L	3 liters (0.8 gal)	
832FRB-60L	60 liters (16 gal)	

## Thermally Conductive Epoxy 832TC



- Two part epoxy, with a 1 to 1 mixing ratio by volume
- Two hour working time
- Suitable for large production runs
- Cures in 2 days at room temperature or one hour at 65°C.
- Non-electrically conductive

100% solids. Formulated with undiluted Bis F resin for superior physical properties, and pigmented with high purity pigment to provide excellent thermal conductivity at reasonable cost. Pigmented black for excellent thermal absorption and emission. Provides superior protection from impact, shock, conductivity, moisture, abuse, chemicals, and analysis.

Uncured Properties - Resin [Part A]	
Viscosity	41,100 cps
Specific Gravity	1.8019
Color	Black
Uncured Properties - Hardener [Part B]	
Viscosity	68,900 cps
Specific Gravity	1.5036
Color	Black
Cured Properties - PHYSICAL	
Mixed Viscosity	76,300 cps
Mixed Specific Gravity	1.6156
Volume Mix Ratio (resin:hardener)	1.1 : 1
Mass Mix Ratio (resin:hardener)	1.35 : 1
Working time (100g)	120 min.
Cure Time (100g, room temp.)	24 hours
Heat Cure Time (100g, 65°C)	60 min.
Shore Hardness	82 Shore D
Cured Properties - TEMPERATURE	
Constant Service Temperature	90°C (194°F)
Intermediate Service Temperature	110°C (230°F)
Thermal Conductivity	0.682 W / m * K
Thermal Diffusivity	0.38 mm²/s
Volumetric Specific Heat	1.9MJ / m³ * K

### Available Sizes

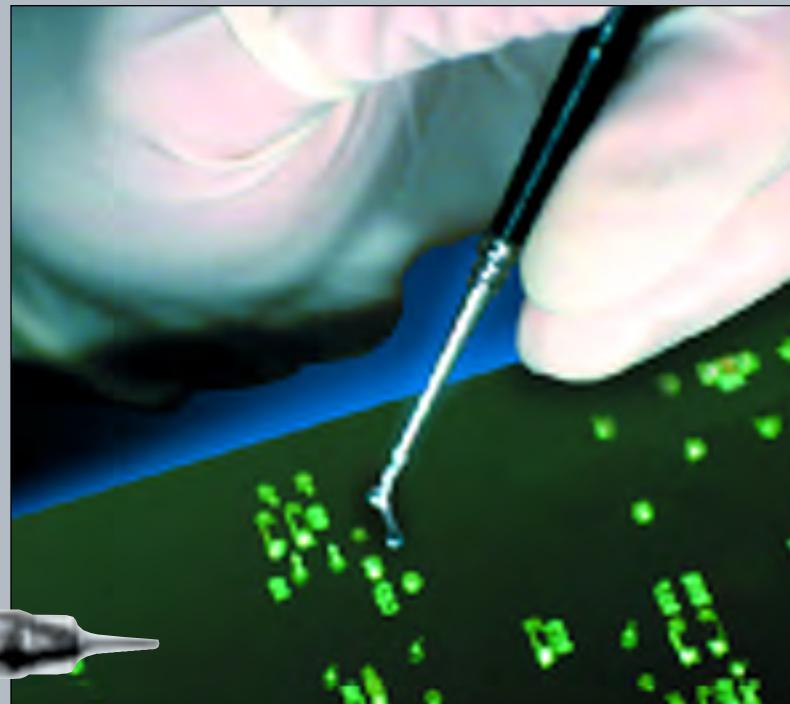
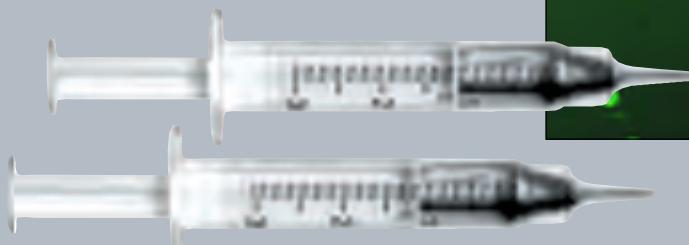
Catalog No.	Size	Format
832TC-450ML	450ml (15 oz)	Black Thermally Cond.
832TC-2L	2 liters (0.5 gal)	
832TC-40L	40 liters (10 gal)	

# Epoxyes : Special Application

## Silver Conductive Epoxy 8331

- Forms high strength conductive bonds
- Resistivity of 0.02 ohm • cm

This two part silver epoxy offers high electrical conductivity and strong conductive bonding. Use in place of traditional soldering on heat sensitive components. Good for repairing defective traces and creating jumpers on boards. Can be used as an effective heat sink adhesive. This Conductive Silver Epoxy comes in two 7g syringes.



### Available Sizes

8331	Catalog No.	Size	Format
	8331-14G	14g (0.35 oz)	Dual Syringe
	8331-454G	454g (1 lb.)	Liquid

## Epoxy & Adhesive Cleaner 8328

Very effective for cleaning up work area and mixing equipment of uncured epoxies.

- Human and environment safe
- Low odor
- Slow evaporator
- Safe on most plastics
- Zero residue



### Available Sizes

8328	Catalog No.	Size	Format
	8328-500ML	500ml (17 oz)	Trigger Pump

## Epoxy Mold Release 8329

### Non Silicone Formula

For use with all types of epoxies and phenolic resins.



### Available Sizes

8329	Catalog No.	Size	Format
	8329-350G	350 g (12.3 oz)	Aerosol



# PROTECTIVE COATINGS



# Protective Coatings : Conformal

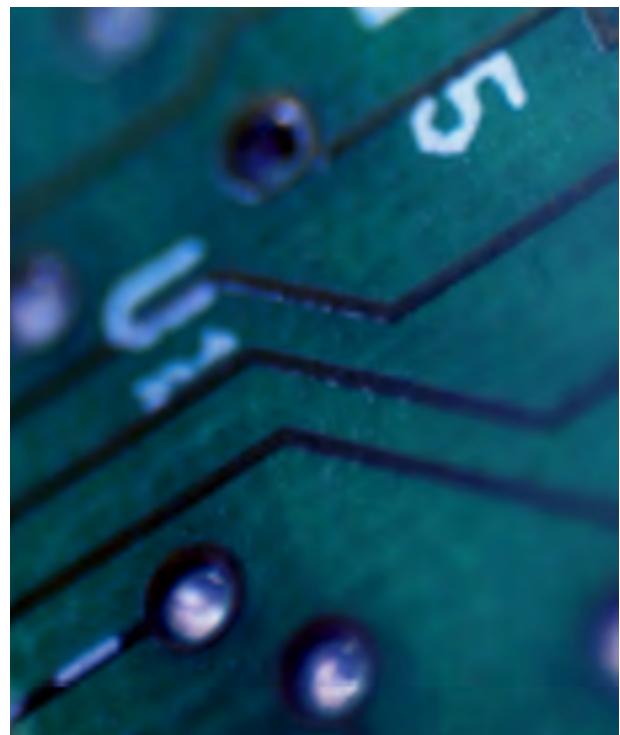
## Why are protective coatings required?

Protective coatings are necessary to ensure a long and effective working life of electrical and electronic components. MG Chemicals offers a wide range of coatings suitable for protecting:

- Circuit boards
- Windings and coils
- Transformers
- Field coils
- Stator windings
- and more

The coatings protect components from:

- Electrical arcing
- Environmental factors
- Physical force
- Mold
- Fungus



## What do coatings do?

### ► Suppress arcing

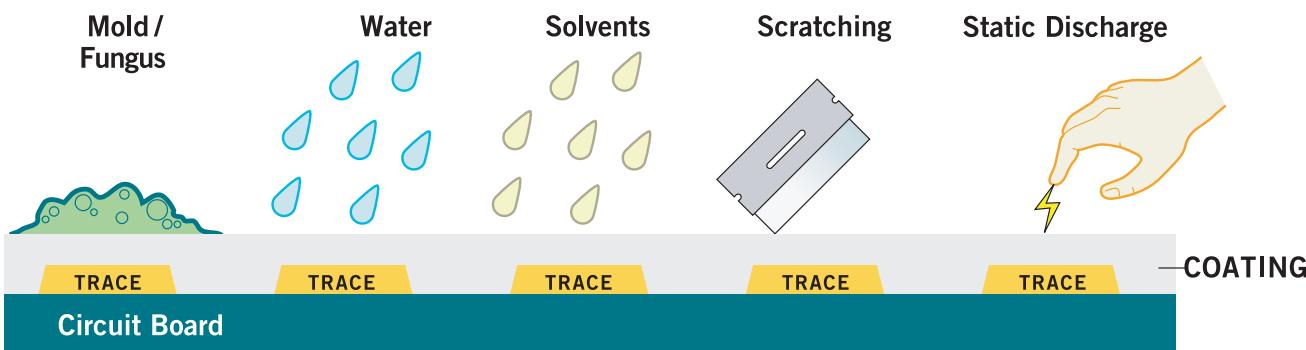


### WHAT IS ARCING?



Arcing occurs when voltage jumps from one surface to another due to the close proximity of parallel currents. The result is a board malfunction or damaged components. It may occur on any circuitboard without a coating.

### ► Resist environmental and physical forces



# Protective Coatings : Conformal

## Urethane Conformal Coating 4223

Our Urethane Conformal Coating conforms to Military Specification MIL-V-173C-2. It is a unique, high temperature electrical insulator that dries very quickly to a tough, clear, chemically resistant film. It is an excellent conformal coating for all types of electrical and electronic parts. Provides extraordinary abrasion resistance, excellent chemical and moisture protection.

### OUTSTANDING PROPERTIES

- Fungicidal
- Fast drying-units can be handled in 30 minutes
- Apply by dip, brush or spray
- Class F temperature rating (160°C / 320°F)
- Excellent chemical resistance
- Oil and moisture resistant
- Excellent for coating circuit boards
- Superior abrasion resistance
- Excellent adhesion
- Good flexibility
- Can be thinned to desired viscosity using M.G. Chemicals Cat No. 435
- UV indicator



### Specifications

Color / Appearance	Clear / Amber
Density @25°C (75°F), Lbs/gal	7.5 - 8.5
Viscosity 30°C (86°F), Zahn #2	74 - 82 seconds
Viscosity @25°C (75°F) Brookfield Viscometer cps	130 - 270
Flash point	27°C (81°F)
Film Build, mils/side, ASTM D-115	1 - 1.5
Thinner	M.G. Chemicals Cat No. 435
Cure Time @25°C (75°F) on Strip, min.	Set to Touch 10
	Tack Free 60
Federal Specification, TT-P-1436-Free of After Tack	1 hour
Class F temperature rating	160°C (320°F)
Corrosive Effect on Copper	None
<b>CHEMICAL RESISTANCE</b>	
Water	Excellent
Acid (10% Sulfuric Acid)	Excellent
Alkali (1% Sodium Hydroxide)	Excellent
Salt Water	Excellent
Oil, ASTM D-115	Passed
<b>FUNGUS RESISTANCE, MIL-V-173-2</b>	
Aspergillus Niger	Passed
Aspergillus Flavus	Passed
Penicillium Funiculosum	Passed
Trichoderma SP	Passed
<b>ELECTRICAL PROPERTIES</b>	
Dielectric Strength, Volts/mil (dry)	1800
Dielectric Strength, Volts/mil (wet)	1200

### Available Sizes

Catalog No.	Size	Format
4223-55ML	55ml (2 oz)	Liquid
4223-1L	950ml (1 quart)	Liquid
4223-4L	3.78L (1 gal)	Liquid
4223-20L	18.9L (5 gal)	Liquid

Aerosol form also available

# Protective Coatings : Conformal

## Coating Options

Type	Acrylic	Silicone	Urethane	Red Insulating Varnish	Super Corona Dope
Cat. No.	419B	422A	4223	4228	4226
Moisture Resistance	Extreme	Extreme	Extreme	Extreme	Extreme
Acid Resistance	Moderate	Low	Extreme	Moderate	Moderate
Temperature Resistance	Moderate	High	Moderate	Moderate	Moderate
Flexible or Hard Finish	Hard	Flexible	Hard	Flexible	Flexible
Dielectric Strength (V/mil)	2200	2000	2000	3100	4100 (Baked cure)
Color	Clear	Clear	Clear	Red	Clear
Formats Available	Aerosol/Liquid/Pen	Aerosol/Liquid/Pen	Aerosol/Liquid	Liquid	Liquid
Recommended Uses: Coatings and Varnishes	Field coils Control coils Windings Motor frames Switch bases	Molded bakelite Electrical connectors Collector rings Fuse tubes Solenoid coils	Circuit boards Controller shafts Commutator ends Porcelain Soldered joints	Stators Transformers Bus bars Junction boxes Cables	

### Acrylic Conformal Coating 419B

- ▶ ALL ROUND PRINTED CIRCUIT BOARD PROTECTOR
- ▶ CLEAR, DURABLE, MOLD RESISTANT COATING
- ▶ EFFECTIVE IN PREVENTING STATIC DISCHARGE
- ▶ CONTAINS UV INDICATOR FOR Q.C. INSPECTION

419B Acrylic Conformal Coating is a durable finish product that provides an all round protective coating for printed circuit boards against moisture, corrosion, and thermal shock. It protects and insulates electrical and electronic components and assemblies, including generators, motors, transformers, relays, and solenoid coils. For clean up, use MG Chemicals 435 Thinner Cleaner.



#### Available Sizes

419B	Catalog No.	Size	Format
	419B-340G	340g (12 oz)	Aerosol
	419B-55ML	55ml (2 oz)	Liquid
	419B-1L	950ml (1 quart)	Liquid
	419B-4L	3.78L (1 gal)	Liquid
	419B-20L	18.9L (5 gal)	Liquid
	4190-GP	5ml (0.16 oz)	Microtip pen

### Silicone Conformal Coating 422

- ▶ UL RECOGNIZED (FILE #E203094)
- ▶ UL 94 FLAME CLASS, 94V-0
- ▶ CSA TESTED (FILE #LO 4000-4068)
- ▶ REMAINS FLEXIBLE FROM -65°C TO 200°C (-85°F TO 392°F)
- ▶ CONTAINS UV INDICATOR FOR Q.C. INSPECTION

Protect PCBs and related equipment against moisture, thermal shock, and vibration. This Silicone Conformal Coating is a flexible finish product that provides a protective coating for printed circuit boards against moisture, corrosion, and thermal shock. It protects and insulates electrical and electronic components and assemblies, including generators, motors, transformers, relays, and solenoid coils. For clean up, use MG Chemicals 435 Thinner Cleaner.



#### Available Sizes

422	Catalog No.	Size	Format
	422A-340G	340 gram (12 oz)	Aerosol, with UV
	422-55ML	55ml (2 oz)	Liquid
	422-1L	950ml (1 quart)	Liquid
	422-4L	3.78L (1 gal)	Liquid
	422-20L	18.9L (5 gal)	Liquid
	422A-P	5ml (0.16 oz)	Microtip pen

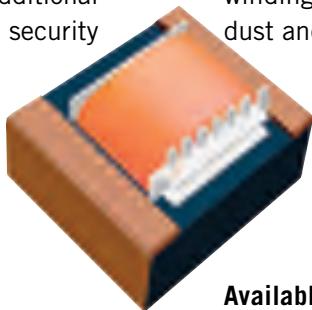
# Protective Coatings : Conformal

## Red Insulating Varnish 4228

- CLASS F THERMAL PROTECTION (20,000 HOURS @ 150°C)
- DIELECTRIC STRENGTH 3100 V/MIL



Protect motor windings, small dry type transformers, and coils from arcing, discharge and oxidation. Only one coat required. Apply additional coats if extra protection or security is desired.



### Available Sizes

**4228**

Catalog No.	Size	Format
4228-55ML	55ml (2 oz)	Liquid
4228-1L	950ml (1 quart)	Liquid
4228-4L	3.78 L (1 gal)	Liquid

## Super Corona Dope 4226

- EXCELLENT FOR HIGH VOLTAGE APPLICATIONS
- HIGH DIELECTRIC STRENGTH 4100 V/MIL



Protecting electrical and electronic components from arcing and discharge. Thoroughly penetrates into windings and coils and seals out air, dust and moisture.

### Available Sizes

**4226**

Catalog No.	Size	Format
4226-55ML	55ml (2 oz)	Liquid
4226-1L	950ml (1 quart)	Liquid
4226-4L	3.78 L (1 gal)	Liquid

## Thinner Cleaner 435

- FAST EVAPORATING
- HIGHLY FLAMMABLE



Used for thinning coatings as well as for cleaning workplace and equipment after the use of conformal coatings.

### Available Sizes

**435**

Catalog No.	Size	Format
435-55ML	55 ml (2 oz)	Liquid
435-1L	1L (34 oz)	Liquid
435-4L	4 L (1 gal)	Liquid

## Conformal Coating Stripper 8310

- EXTRA STRENGTH
- NON-FLAMMABLE
- NON-DRIP (GEL TYPE)
- SAFE ON METALS



Removes protective coatings, including epoxy, urethane, silicones, and acrylics. Also removes carbon, tar, adhesives, rubber, and some plastics. Avoid contact with skin.

### Available Sizes

**8310**

Catalog No.	Size	Format
8310-100ML	100ml (3.4 oz)	Liquid, with brush cap

# Protective Coatings : EMI / RFI Shielding

## Super Shield Conductive Coating

### Reduce or Eliminate EMI / RFI Interference

A general purpose EMI / RFI shielding spray for use on plastic electronics enclosures. Consists of a tough, durable acrylic base pigmented with a high purity nickel, silver coated copper or silver flakes.

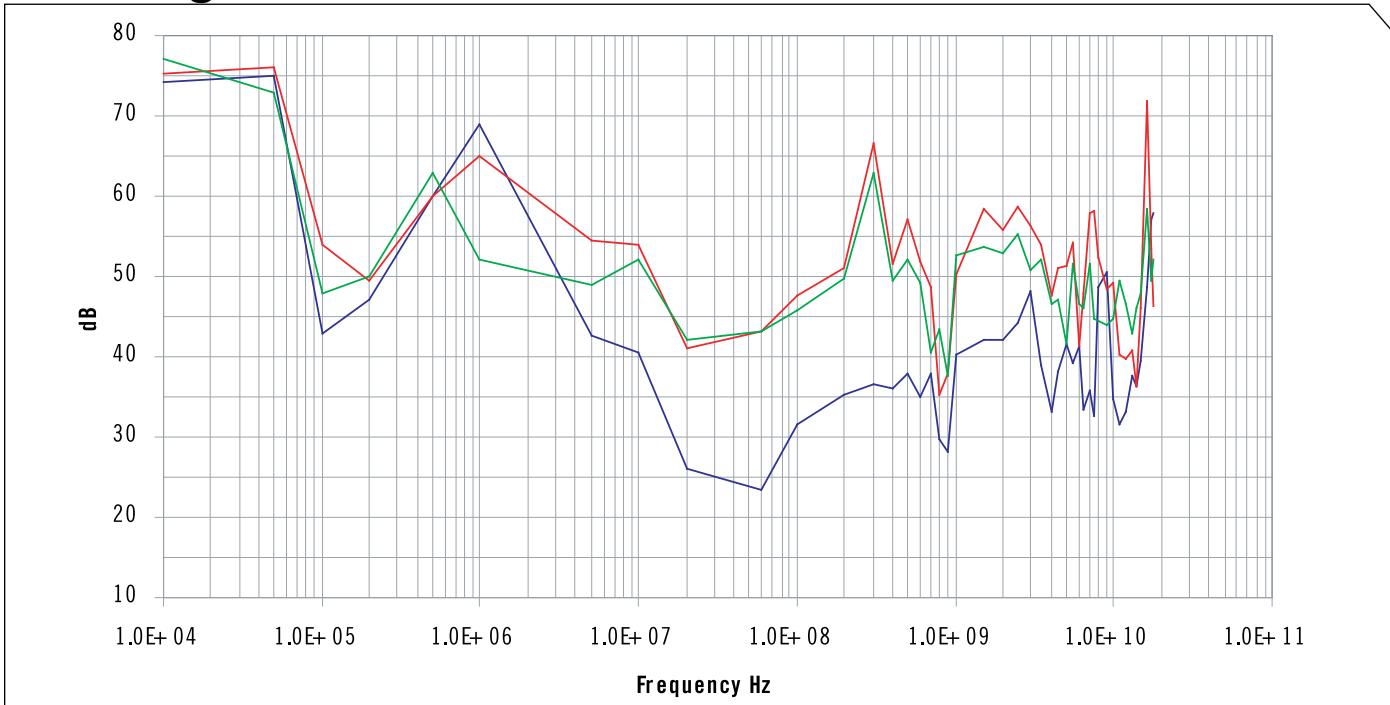
- Dry time: 10 min. at room temperature
- Recoat time: 5 min.
- Excellent adhesion to most plastics
- Tested as per IEEE Std. 299-1997
- Underwriters Laboratories Recognized File No.: E202609
- Liquid version available for dipping, brushing or spray gun applications
- Thin or clean with part #435-1L Thinner/Cleaner

### Available Sizes

	Catalog No.	Size	Coverage	Format
841	Nickel Conductive Coating (0.25 ohms • cm)			
	841-340G	340g (12 oz)	1600 in <sup>2</sup>	Aerosol
	841-900ML	900ml (0.23 gal, 4 lbs)	8300 in <sup>2</sup>	Liquid
843	841-1G	3.8 L (1 gal)	33200 in <sup>2</sup>	Liquid
	Silver Coated Copper Conductive Coating (0.15 ohms • cm)			
8420	843-900ml	900ml (0.23 gal, 4 lbs)	8300 in <sup>2</sup>	Liquid
	Silver Conductive Coating (0.01 ohms • cm)			
	8420-900ML	900ml (0.23 gal, 4 lbs)	8300 in <sup>2</sup>	Liquid



## Shielding Effectiveness



Nickel = Blue, Silver Coated Copper = Green, Silver = Red



## Super Glue Display Pack

8335

The Super Glue Display Pack offers a point of sale solution for MG Chemicals Super Glue products. Contains 12 units of Cat. No. 8333 Super Glue Liquid and 12 units of Cat. No. 8334 Super Glue Gel.

### Super Glue Liquid 8333

This cyanoacrylate adhesive has been formulated to quickly bond rubber, plastics, metal, and ceramics. It offers excellent strength characteristics.

### Super Glue Gel 8334

This hybrid cyanoacrylate adhesive has been formulated to quickly bond rubber, plastics, metal, and ceramics. It offers excellent strength characteristics. Choose gel when bonding uneven or vertical surfaces.

#### Available Sizes

Catalog No.	Size (H x W x D)	Format
8335 8335	7" x 8.5" x 5.825"	Holds 12 Liquid and 12 Gel units

### Fast Set Epoxy 8332

Provides 1500 PSI bonding strength to paper, wood, metal, and ceramics. Conveniently packed in a 25ml dual syringe, with a snap open cap, snap out paddle and mixing cup. Provides 1500 PSI bonding strength to paper, wood, metal, and ceramics.

**Working time: 5 minutes**

**Full Cure: 1 hour**

#### Available Sizes

Catalog No.	Size	Format
8332 8332-25ML	25ml (1 oz)	Dual Syringe



### Super Contact Cement 8336

Quick drying, water proof, clear, and vibration-resistant bond with minimal shrinkage. For shop, industry, home and hobby use. Ideal for speaker repair.



#### Available Sizes

Catalog No.	Size	Format
8336 8336-55ML	55 ml (2 oz)	Liquid



## Threadlockers Display Pack 8700

Contains 5 each of  
**8701-10ML**  
**8702-10ML**  
**8703-10ML**  
**8704-10ML**

## Threadlockers

Threadlockers completely fill in thread paths to eliminate the movement that causes parts to shake and vibrate loose.



**8701**



**8702**



**8703**



**8704**

<b>Description</b>	<ul style="list-style-type: none"> <li>▶ Low strength threadlocking</li> <li>▶ Ideal for small screws 1/4" in diameter and smaller</li> <li>▶ Controlled lubricity for accurate clamp loading</li> <li>▶ May be disassembled with hand tools</li> <li>▶ Meets MIL-S-46163A, Type II, Grade M</li> </ul>	<ul style="list-style-type: none"> <li>▶ General purpose, medium strength threadlocking</li> <li>▶ Ideal for fasteners 3/4" in diameter or smaller</li> <li>▶ Controlled lubricity for accurate clamp loading</li> <li>▶ May be disassembled with hand tools</li> <li>▶ Meets MIL-S-46163A, Type II, Grade N</li> </ul>	<ul style="list-style-type: none"> <li>▶ High strength permanent threadlocking</li> <li>▶ Ideal for fasteners up to 1" in diameter</li> <li>▶ Meets MIL-S-46163A, Type I, Grade K</li> </ul>	<ul style="list-style-type: none"> <li>▶ High strength wicking grade</li> <li>▶ Penetrates threads by capillary action</li> <li>▶ Ideal for sealing/ locking pre-assembled fasteners</li> <li>▶ Secures screws, bolts, seals welds and porous metal parts</li> <li>▶ Meets MIL-S-46163A, Type III, Grade R</li> </ul>
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- ▶ Prevent loosening and ensures a secure hold with one drop
- ▶ Stop corrosion, seal threads, improve torque control, reduce galling, and minimize inventories
- ▶ Only cures in the absence of air (anaerobic) making cleanup of excess threadlocker easy
- ▶ Can drive reliability up and costs down
- ▶ Provide lubrication to achieve controlled torque during assembly and operation
- ▶ Hold critical clamp load pressures under the most severe environments
- ▶ Available in four strengths and two sizes

### Available Sizes

	Catalog No.	Size	Format
<b>8701</b>	8701-10ML	10 ml (0.2 oz)	Liquid
	8701-50ML	50 ml (2 oz)	Liquid
<b>8702</b>	8702-10ML	10 ml (0.2 oz)	Liquid
	8702-50ML	50 ml (2 oz)	Liquid
<b>8703</b>	8703-10ML	10 ml (0.2 oz)	Liquid
	8703-50ML	50 ml (2 oz)	Liquid
<b>8704</b>	8704-10ML	10 ml (0.2 oz)	Liquid
	8704-50ML	50 ml (2 oz)	Liquid
<b>8700</b>	HxD: 17.8 cm x 21.6 cm x 14.8 cm		Display Pack

# RTV SILICONES



## Selecting the Right RTV Silicone

### 1. How thick does your silicone need to be?

If you are planning to use the product as an adhesive, or you are potting less than 1/4" thick, one part silicones will do the job. For thicker potting, use a two part silicone.

### 2. Will there be extensive metal contact in your application?

Some silicones can be corrosive to metals. Select a non-corrosive silicone for any metal contact application.

### 3. Do you require a flowable or a paste?

Silicones are divided into flowable and paste consistencies. For encapsulation and hard to reach areas, select a flowable silicone. Pastes are appropriate for adhering to vertical surfaces and applications where a high viscosity is desired.

For additional assistance in selecting the right silicone, visit [www.mgchemicals.com/products/silicones](http://www.mgchemicals.com/products/silicones) or contact Technical Support at 1-604-888-3084 ext. 125.

# RTV Silicones

## General Use (1 Part RTV)

Economical, general-purpose silicones for all industries.

Temperature range of -60°C to 205°C (-76°F to 401°F)

No.	Stock Number	Form	Size	Application	Color	Tack free time (min)	Dielectric str. (V/mil)	Dielectric constant	Elongation	Tensile str. (MPa)	Hardness (Shore A)	Viscosity
102	RTV102-85ML	Paste	3 oz tube, 10.5 oz cartridge	High performance assembly. Meets FDA, MIL-A-46106, UL Recognized, UL File No. E-36952, UL 94 HB.	white	20	500	2.8 @ 60 Hz	450%	2.75	30	400 g/min
	RTV102-300ML				black							
	RTV103-85ML	Paste	3 oz tube, 10.5 oz cartridge		trans-lucent							
112	RTV112-85ML,	Flowable	3 oz tube, 10.5 oz cartridge	High performance assembly. Meets FDA, MIL-A-46106, group 1, type 2, UL File No. E-36952.	white	20	400	2.8 @ 60 Hz	325%	2.20	25	20,000 cps
	RTV112-300ML				trans-lucent							
118	RTV118-85ML,	Flowable	3 oz tube, 10.5 oz cartridge	Economical. Use for general purposes. UL HB recognition.	trans-lucent	25	410	2.9 @ 100 Hz	450%	1.57	18	175 g/min
	RTV118-300ML				trans-lucent							

## Non-Corrosive (1 Part)

Electronics. Temperature range of -60°C to 205°C (-76°F to 401°F)

No.	Stock Number	Form	Size	Application	Color	Tack free time (min)	Dielectric str. (V/mil)	Dielectric constant	Elongation	Tensile str. (MPa)	Hardness (Shore A)	Viscosity
160	RTV160-300ML	Pourable	10.5 oz cartridge	For thin section PCB coating. UL, HB Recognition.	white	240	500	2.8 @ 60 Hz	230%	1.86	25	38,000 cps
162	RTV162-85ML	Paste	3 oz tube, 10.5 oz cartridge	Bonding capacitors, resistors and integrated circuits to PCBs, sealing exposed wires, faying surfaces, and connectors. Meets MIL-A-46146, group 1, type 1, UL File no. E-36952.	white	240	450	2.8 @ 60 Hz	400%	3.73	35	350 g/min
167	RTV167-85ML,	Paste	3 oz tube, 10.5 oz cartridge	Mechanical or electrical bonding and insulating applications. Meets MIL-A-46146, group 1, type 1, UL File no. E-36952.	light gray	240	500	2.8 @ 60 Hz	600%	5.49	37	180 g/min
397	TSE397C-100G,	Semi-flowable	3.5 oz tube, 12 oz cartridge	Electronic sealing and coating, applications requiring fast tack free time and aggressive adhesion. Meets MIL-A-46146B corrosion test only.	trans-lucent	10	560	2.9 @ 60 Hz	300%	1.1	20	50,000 cps
399	TSE399C-100G,	Flowable	3.5 oz tube, 12 oz cartridge	Sealing firewalls. Use as a flame retardant coating. Sealing switching devices, motors and high voltage transformers. UL V-1 and V-0 recognition.	trans-lucent	10	500	2.9 @ 60 Hz	140%	1.3	30	2,500 cps
5818	RTV5818-300ML	Paste	10.5 oz cartridge	Fast cure. For assembly applications requiring high productivity. UL Recognized. Primerless adhesion.	trans-lucent	15	426	2.8 @ 100 Hz	500%	1.86	21	360 g/min
1035	1035-85ML	Paste	3 oz tube	Weather proofing where power cords enter motors; as a gasket for leak resistant sealing; bonding of electronic components onto circuit boards; insulating. Non-corrosive, low odor, primerless. Meets MIL-A-46146, group 1, type 1.	trans-lucent	15	426	2.8 @ 100 Hz	500%	1.86	21	360 g/min

## Special Application (1 Part)

Automotive, Marine, Electrical, Electronics, Construction

No.	Stock Number	Form	Size	Application	Color	Tack free time (min)	Dielectric str. (V/mil)	Dielectric constant	Elongation	Tensile str. (MPa)	Hardness (Shore A)	Viscosity
106	RTV106-85ML,	Paste	3 oz tube, 10.5 oz cartridge	High temperature (260°C) encapsulating and sealing. Meets FDA 21CFR 177.2600, MIL-A-46106. UL Recognized, UL File No. E-36952, UL 95 HB.	red	20	500	2.8 @ 60 Hz	400%	2.55	30	400 g/min
116	RTV116-300ML	Flowable	10.5 oz cart.	For applications up to 260°C. Meets MIL-A-47040.	red	30	500	2.8 @ 60 Hz	350%	2.45	46	25,000 cps
133	RTV133-300ML	Paste	10.5 oz cartridge	Sealing firewalls. Use as a flame retardant coating. Sealing switching devices, motors and high voltage transformers. UL V-1 and V-0 recognition.	black	60	500	2.8 @ 100 Hz	250%	4.51	46	650 g/min
157	RTV157-85ML	Paste	3 oz tube	High strength adhesive gasketing, maintenance and electrical insulation.	gray	45	525	2.9 @ 60 Hz	825%	6.21	28	155 g/min
159	RTV159-85ML	Paste	3 oz tube	Sealing applications requiring extremely high bond strength and high temp. (260°C) resistance.	red	45	400	2.8 @ 60 Hz	350%	7.07	20	175 g/min
1000 NS	1000N/S	Paste	10.5 oz cartridge	<b>3M Fire Barrier.</b> Seals firewalls, conduits, pipes. ASTM E814 Through-Penetration Fire Test; ASTM E1966 Construction Joint Fire Test; ASTM C920, Type S, Grade NS, Class 25, Use NT, M, G, A, O; CAN/CGSB 9.13-M87, Class MCG-2-25-A-L; UL Classified.	gray	10	479	-	600%	-	25	Thixotropic



# RTV Silicones : 2 Part / Special Application

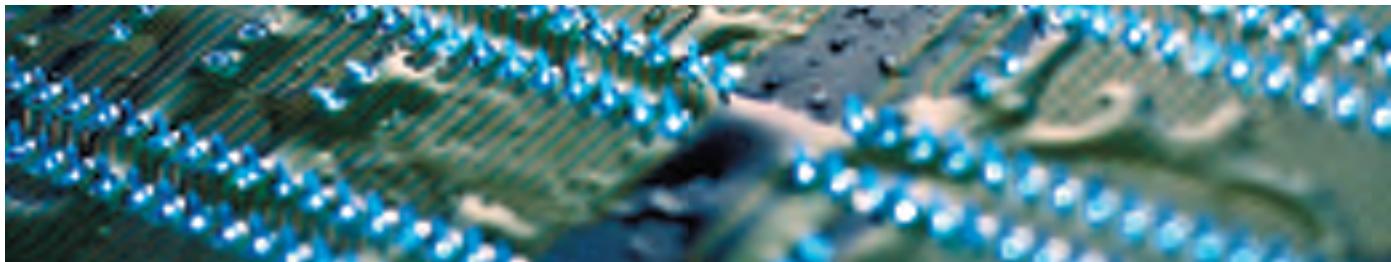
## Potting and Encapsulating Compounds

### General Use (2-Part)

Aerospace, Automotive, Electrical, Electronics, Marine.

Temperature range of -60°C to 205°C (-76°F to 401°F).

No.	Stock Number	Form	Size	Application	Color	Mix Ratio (By weight)	Viscosity (cps)	Hardness (Shore A)	Tensile str. (MPa)	Elongation	Dielectric str. (V/mil)	Dielectric constant	Work life (hours) @ 25°C (77°F)	Cure Time @ 25°C (77°F)
11	RTV11-1P, RTV11-1G	Flowable	1 pint, 1 gallon	Medical molds/instruments, high voltage power supply potting, general electrical potting; primer SS4155 required. Meets FDA requirements.	white	100:0.5	11,000	41	2.06	160%	515	3.3 @ 1 kHz	1.5	24 hours
12	RTV12A-1G	Flowable	1 gallon	Room temp. cure, primerless adhesion. Requires curing agent RTV12C-1P.	trans-lucent	20:1	1,500	18	-	200%	400	3.0 @ 1 kHz	1.6	24 hours
21	RTV21-1G	Flowable	1 gallon	Aerospace thermal insulation, thick-section potting, pour-in-place gasketing; primer SS4004P required	pink	100:0.5	26,000	45	2.16	180%	420	3.8 @ 1 kHz	1	24 hours
615	RTV615-1P, RTV615-1G	Flowable	1 pint, 1 gallon	Solar cell potting, optical instruments, applications require visual identification of potted assemblies; primer SS4155 required	optically clear	10:1	4,000	44	6.37	160%	500	2.89 @ 1 kHz	4	7 days (4 h @ 65°C / 149°F)
630	RTV630-1P	Self-leveling	1 pint	Encapsulation applications requiring high tensile strength; primer SS4155 required.	blue	10:1	150,000	60	5.69	250%	450	3.2 @ 1 kHz	4	7 days (4 h @ 65°C / 149°F)



## Potting and Encapsulating Compounds

### Extreme High temp (2-Part)

Main Industries: Aerospace, Automotive; Electrical, Electronics, Marine, Communication/Broadcasting.

Temperature range of -54°C to 260°C (-60°F to 500°F)

No.	Stock Number	Form	Size	Application	Color	Mix Ratio	Viscosity (cps)	Hardness (Shore A)	Tensile str. (MPa)	Elongation	Dielectric str. (V/mil)	Dielectric constant	Work life (hours) @ 25°C (77°F)	Cure Time @ 25°C (77°F)
31	RTV31-1P	Flowable	1 pint	Potting surge protectors on telephone poles, potting industrial filters, high temp. electrical potting applications, mechanical protection; primer SS4004P required	red	100:0.5	25,000	54	5.98	170%	430	4.4 @ 1 kHz	2	24 hours
60	RTV60-1P, RTV60-1G	Flowable	1 pint, 1 gallon	Aerospace applications such as potting, encapsulating, coating and cushioning; primer SS4155 required	red	100:0.5	47,000	57	6.86	120%	450	4.0 @ 1 kHz	2	24 hours
88	RTV88-1P, RTV88-1G	Paste	1 pint, 1 gallon	Potting surge protectors, aerospace applications such as sealing, bonding and gasketing on vertical or overhead surfaces; primer SS4179 required	red	100:0.5	880,000	58	5.79	120%	440	4.3 @ 1 kHz	3/4	24 hours
560	RTV560-1G	Flowable	1 gallon	Aerospace applications such as potting, sealing and bonding, where extreme high/low temp. service is required	red	100:0.5	30,000	55	4.71	120%	540	3.9 @ 1 kHz	21/4	7 days (4 h @ 65°C / 149°F)

# RTV Silicones : 2 Part / Special Application

## RTV Silicone Adhesive Sealant-Thermally Conductive

No.	Stock Number	Form	Size	Application	Color	Mix Ratio	Thermal Cond. W/m°K	Mixed Viscosity (cps)	Hardness (Type A)	Tensile str. (MPa)	Elongation	Dielectric str. (V/mm)	Dielectric constant	Cure Time @ 25°C (77°F)
3331	TSE3331-2QT	Flowable, 2 Part	2 quart	Potting/encapsulation of power supply/transformer assemblies requiring good thermal dissipation. UL94 V-0 recognition. Heat cure only, primerless adhesion.	gray	1:1	0.63	3,500	60	3.24	50%	500	3.3 @ 1 kHz	10 min @ 100°C (212°F) 5 min @ 125°C (256°F)
3941	TSE3941-333ML	Paste, 1 Part	12 oz tube	White, thermally conductive paste adhesive sealant. UL94 V-1 recognition (File E56745). Neutral cure. UL recognized, flame retardant, non-corrosive sealant. Meets MIL-A-46146B corrosion only. Offers fast cure, fast tack free time, and aggressive adhesion.	white	n/a, 1 part	0.83	paste	60	3	100%	560	4.0 @ 60 Hz	24 hours 5 min. tack free
1032	1032-85ML	Paste, 1 Part	3 oz tube	White, thermally conductive paste adhesive sealant. UL94 V-1 recognition (File E56745). Neutral cure. UL recognized, flame retardant, non-corrosive sealant. Meets MIL-A-46146B corrosion only. Offers fast cure, fast tack free time, and aggressive adhesion.	trans- lucent	n/a, 1 part	0.83	paste	60	3	100%	560	4.0 @ 60 Hz	24 hours 5 min. tack free

## Primer Guide

### 1-Part RTV Silicones

One-part RTV silicone products have adhesion promoters in their formulation and consequently have good adhesion to a variety of substrates. For 1-part products, it is generally suggested that testing be done without a primer first and if adhesion is acceptable then no primer is required.

### 2-Part RTV Silicones

Generally, two-part RTV silicone products do not have adhesion promoters in their formulation and consequently have minimal adhesion to substrates. Two-part products have adhesion that is usually acceptable for potting or encapsulating applications but is not sufficient for many sealing or adhering applications. If better adhesion is required, a primer can be used.

### Product Availability

		Specific Gravity	Solids Content	Solvents	Dry Time (min.)	Use with
SS4004P	General purpose, pink in color to help identify areas where primer has been applied. Meets MIL-A-46106B, MIL-A-46146B, MIL-S-23586E.	0.85	15%	Acetone Isopropanol Xylene N-butanol	30	1 & 2 Part Condensation cure
SS4044P	General purpose, clear, can be used in food contact applications where FDA regulations apply. Meets MIL-A-46106B, MIL-A-46146A, MIL-A-46146B, MIL-S-23586E.	0.85	15%	Acetone Isopropanol Xylene N-butanol	30	1 & 2 Part Condensation cure
SS4120	Clear, most suitable when optical clarity is required, can be used in food contact applications where FDA regulations apply. Meets MIL-A-46106B, MIL-A-46146B.	0.82	3%	Ethanol Methanol	30	1 & 2 Part Addition
SS4155	General purpose, blue, forms chalky white haze when dry	0.85	10%	Mineral Spirits	30	All
SS4179	Most suitable for plastic substrates, can be used in food contact applications where FDA regulations apply	0.98	6%	Ethyl acetate Toluene Methanol	15	1 Part Condensation

## Translucent Silicone Grease

8462



A water repellent, non-melting, dielectric grease lubricant that provides superior protection against corrosion and oxidation.

- Excellent dielectric properties
- Prevents high voltage arcing
- Will not harden
- Electronic Grade
- Non-corrosive
- Meets MIL S-8660
- Excellent oxidation resistance and thermal stability
- Superior hydrolytic stability

M.G. Chemicals Silicone Grease is an amorphous fumed, silica thickened, polysiloxane based compound. Provides superior corrosion protection. Lubricates and protects against moisture on electrical systems and automotive assemblies. Compatible with most plastics and elastomers. Great as a lubricant and moisture barrier on plastic pipe and o-ring assemblies, gaskets, and connectors. Use M.G. Translucent Silicone Grease for lubrication of plastic and rubber parts to provide a moisture barrier or seal. Offers excellent dielectric properties.

### Specifications

Property	
Color	Translucent
Penetration worked	320
Temperature range	-50 to 250 °C (-58 to 482 °F)
Water resistance	Excellent
Evaporation 24 hours 200°C (392°F) % Max.	2
Bleed 24 hours	1
Drop point	None
Dielectric Strength, @ .01 Inch Gap	500 V / mil
Arc Resistance	120 sec
Resistivity @ 23°C (73°F)	$1 \times 10^{13}$ Ohm • cm
Specific gravity	0.989
Thermal conductivity	0.09 BTU / Ft <sup>2</sup> / hr / F / Ft

### Available Sizes

Catalog No.	Size	Format
8462-85ML	85 ml (3 oz)	Tube
8462-1P	1 pint	

## White Lithium Grease

8461



Aerosol has extension tube  
for hard to reach areas.

- Electronic Grade
- Premium Quality
- Will not harden
- Excellent on metal to metal applications: hardened steel, bronze, aluminum

Excellent general purpose lubricant. Provides superior protection against corrosion and oxidation. Reduces friction and wear on all moving parts. Great for the lubrication and maintenance of VCRs, gear teeth, cams, and roller guide tracks.

### Available Sizes

Catalog No.	Size	Format
8461-140G	140g (5 oz)	Aerosol
8461-85ML	85ml (3 oz)	Tube
8461-1P	1 pint	Tub

## Carbon Conductive Grease 846

Lubricates and improves electrical connections between sliding surfaces, while providing protection from moisture and corrosion. Excellent for use on switches and EMI shielding applications.



- Prevents normally closed switches from corroding in place
- Reduces make-break arcing and pitting of switch contact surfaces
- Improves the connection between irregular or pitted contact surfaces
- Reduces EMI noise by maintaining a continuous path between conductive surfaces
- Thermally stable up to 200°C (392°F)

### Available Sizes

846	Catalog No.	Size	Format
	846-80G	80g (2.8 oz)	Tube
	846-1P	0.47 L (1 pint)	Liquid

## Nutrol Control Cleaner 401B

Use when cleaning and lubricating controls.



- FAST DRY
- SAFE ON PLASTICS
- MINERAL OIL LUBRICATION

Contains a light, electronic grade, mineral oil lubricant. Not for use directly on electronic circuits.

Cleans and lubricates controls, locks, hinges, selector switches, office equipment, power tools, clock mechanisms, and delicate mechanical equipment.

### Available Sizes

401B	Catalog No.	Size	Format
	401B-140G	140g (5 oz)	Aerosol
	401B-340G	340g (12 oz)	Aerosol



## Pen Oiler with Teflon 8471

Lubricates with micro-tip accuracy

Convenient needle tip applicator allows drop-at-a time dispensing for precision work. Contains a long lasting super lubricant with teflon that penetrates and prevents rust and corrosion. Hundreds of uses. Lubricates everything from appliances to vending machines. Can be used in temperatures from -51°C to 260°C (-60°F to 500°F).



### Available Sizes

8471	Catalog No.	Size	Format
	8471-7ML	7ml (0.2 oz)	Pen

# Thermal Management

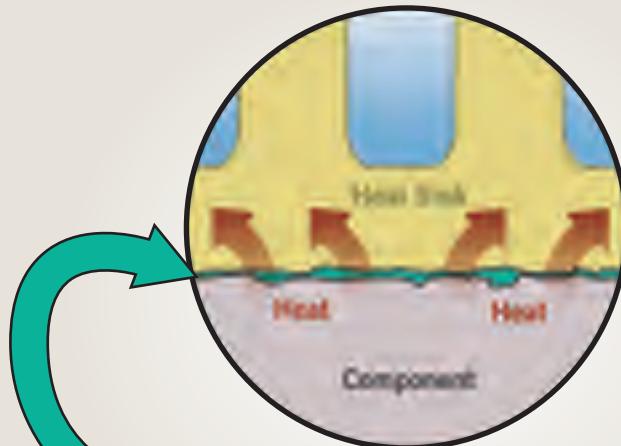
## Why do you need a Heat Transfer Compound?

Improves thermal connections between heat sinks and components.

Use Heat Transfer Compound on all electric and electronic devices where efficient heat transfer cooling through thermal coupling is required:

- ▶ Semiconductor mounting devices
- ▶ Thermal joints
- ▶ Ballast heat transfer mediums
- ▶ Power resistor mountings
- ▶ Thermocouple wells
- ▶ Transistor diodes
- ▶ Silicone rectifier base and mounting studs

## How does a Heat Sink Compound work?



By filling in surface imperfections of the heat sink and component, the compound effectively transfers heat into the heat sink.

## Non-Silicone Heat Transfer Compound 8610

This Non Silicone Heat Transfer Compound is designed to eliminate the potential problems of silicone-based compounds caused by migration and component contamination. Designed for use in transferring heat away from electrical and electronic devices such as transistors, power diodes, semi-conductors, ballasts and thermocouple wells.

- ▶ High thermal conductivity
- ▶ High dielectric constant
- ▶ High dissipation factor
- ▶ Use with heat sinks or metal chassis
- ▶ Will not dry or harden
- ▶ Meets MIL-DTL-47113D

## Silicone Heat Transfer Compound 860

Designed for use in transferring heat away from electrical and electronic devices such as transistors, power diodes, semi-conductors, ballasts and thermocouple wells.

### Specifications

Physical Properties	Test Method	Non Silicone	Silicone
Appearance	Visual	Off White/Smooth Paste	White Paste
Consistency	ASTM D-217	300-320	300-320
Specific Gravity@ 25°C (77°F)	-	2.5 min.	2.3 min
Bleed % 24 hrs @200°C	FTM-321	1.0% max	2.0% max
Evaporation %24hrs @200°C	FTM-321	2.0% max	2.0% max
Dropping Point	ASTM D-566	> 500°F (260°C)	
Max. Operating Temp.	-	200°C (392°F)	200°C (consistent) 300°C (intermittent)
Electrical Properties			
Thermal conductivity	Hot Wire Method Heat Flow #36°C	$18.48 \times 10^{-4}$ (K Factor, Cal/Sec.cm°K)	0.657 W/m °K
Dielectric Strength (0.05 GAP)	ASTM D-149	350 V/mil	400 V/mil
Dielectric Constant (@ 1000 Hz)	ASTM D-150	4.4	3.81
Dissipation Factor (@ 1000Hz)	ASTM D-150	0.0021	0.0032
Resistivity (Room Temp.)	ASTM D-150	$6.38 \times 10^{13}$ ohm •cm	$1.5 \times 10^{15}$ ohm •cm

### Available Sizes

Catalog No.	Size	Format
860-4G	4g x 100 (0.14 oz x 100)	Singles
860-60G	60g (2oz)	Tub
860-150G	150g (5.2 oz)	Tube
860-1P	473 ml (1 pint)	Tub
860-1GAL	1 gal (20 lbs.)	Pail
8610-60G	60g (2 oz)	Tub
8610-1P	473 ml (1 pint)	Tub

# PROTOTYPING

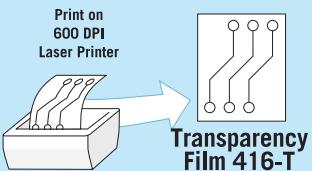


# Prototyping : The Process

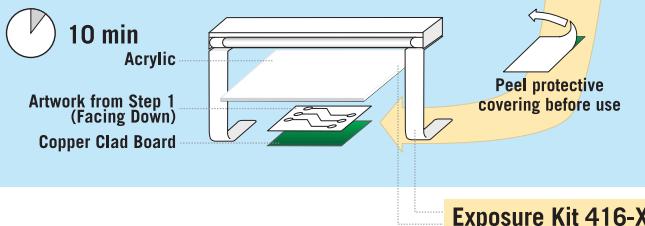
Use the M.G. Chemicals system to make your own circuit boards quickly and easily. Perfect for prototyping, hobbyists, and educational applications.

Technicians will be impressed with the high resolution, while amateurs will be impressed with the simplicity of our system.

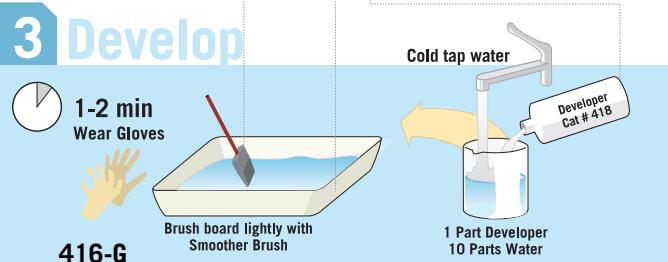
## 1 Create Artwork



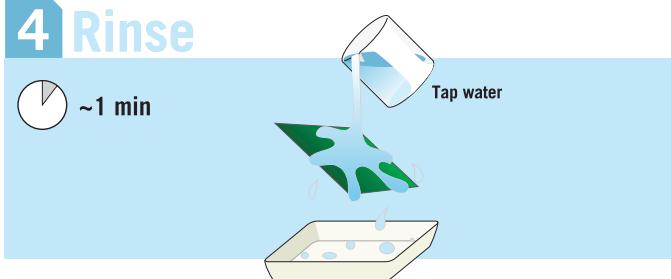
## 2 Expose



## 3 Develop



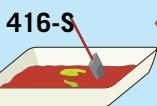
## 4 Rinse



Select Step 5 based on which kit you are using:

### 5a Etch (Using Photofabrication Kit 416-K)

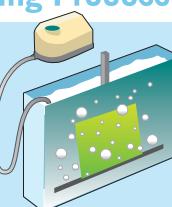
- Warm Ferric Chloride to 50°C
- Etch board in tray for 10 - 30 min.
- Mix etchant over board with brush
- Move on to step 6



Warm to 50°C  
Ferric Chloride  
Cat # 415  
Opaque

### 5b Etch (Using Process Kit 416-ES)

10 - 30 min  
Wear Gloves



Ferric Chloride  
Cat # 415  
Opaque

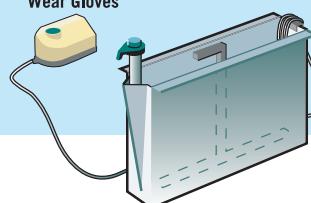
Ammonium Persulphate  
Cat # 410  
Transparent

Sodium Persulphate  
Cat # 4101  
Transparent

Select an Etchant

### 5c Etch (Using Process Kit 416-E)

- 10 - 30 min  
Wear Gloves



Warm to 50°C  
Ferric Chloride  
Cat # 415

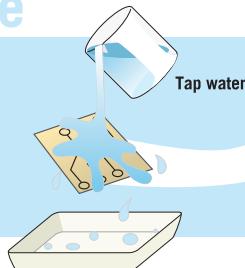
Warm to 40°C  
Ammonium Persulphate  
Cat # 410  
Transparent

Warm to 40°C  
Sodium Persulphate  
Cat # 4101  
Transparent

Select an Etchant

## 6 Rinse

~1 min



# Prototyping : Copper Clad Boards

## Copper Clad Board

### Standard 500 SERIES



A 1/16", 1/32", 1/64" laminate with 1 once copper. This flame retardant laminate is made of continuous woven glass cloth impregnated with epoxy resin. Developed specifically for the circuit processing industries' requirements. Provides ultraviolet blocking and fluorescence when using automated optical inspection (AOI).

Format	Cat. No.	Approximate Size
Single sided 1/16" (1.60mm)	503	3"x 5" (76mm x 127mm)
	506	4"x 6" (101mm x 152mm)
	509	6"x 6" (152mm x 152mm)
	512	6"x 9" (152mm x 228mm)
	515	8"x 10" (203mm x 254mm)
	521	12"x 12" (304mm x 304mm)
	575	24"x 36" (609mm x 914mm)
	580	36"x 48" (914mm x 1219mm)
Double sided 1/16" (1.60mm)	550	6"x 6" (152mm x 152mm)
	555	12"x 12" (304mm x 304mm)
	576	24"x 36" (609mm x 914mm)
	585	36"x 48" (914mm x 1219mm)
Single sided 1/32" (0.80mm)	586	4"x 6" (101mm x 152mm)
	588	6"x 9" (152mm x 228mm)
	590	12"x 12" (304mm x 304mm)
Double sided 1/32" (0.80mm)	587	4"x 6" (101mm x 152mm)
	589	6"x 9" (152mm x 228mm)
	591	12"x 12" (304mm x 304mm)
	596	36"x 48" (914mm x 1219mm)
Double sided 1/64" (0.40mm)	598	6"x 9" (152mm x 228mm)

### Positive Presensitized 600 SERIES



Available in 1/16" (62 mil) and 1/32" (30 mil) laminate with 1 ounce copper. Provides high resolution and excellent fine line control. Ideal for prototypes, small production runs, student training.

Format	Cat. No.	Approximate Size
Single sided 1/16" (1.60mm)	603	3"x 5" (75mm x 125mm)
	606	4"x 6" (100mm x 150mm)
	609	6"x 6" (150mm x 150mm)
	612	6"x 9" (150mm x 230mm)
	630	8"x 12" (200mm x 300mm)
	650	6"x 6" (150mm x 150mm)
	660	6"x 9" (150mm x 230mm)
	687	4"x 6" (100mm x 150mm)
Single sided 1/32" (0.80mm)	689	6"x 9" (150mm x 230mm)
	690	6"x 9" (150mm x 230mm)
Double sided 1/32" (0.80mm)	698	6"x 9" (152mm x 228mm)

## Paper Phenolic Positive Presensitized CCB

### 1/32" laminate with one ounce copper

Easily cut this material into custom sizes.

Score on both sides with a utility knife and snap in half.

Format	Cat. No.	Size
Single sided 1/32" (0.80mm)	675	12"x 18" (300mm x 450mm)
Double sided 1/32" (0.80mm)	676	8"x 12" (200mm x 300mm)

# Prototyping : Exposure / Photofabrication

## Exposure Kit 416-X

Convenient kit includes major components required to expose presensitized copper-clad boards.

Includes:

- Fluorescent light fixture with stand (brackets)
- Daylight fluorescent tube
- Clear acrylic weight for artwork
- Complete instructions



### Available Sizes

**416X**

Catalog No.  
416-X

Size  
Fits 17" tube

Format  
Kit

## Photofabrication Kit 416-K

Produce printed circuit boards using the positive photofabrication process.

Contains:

- One 3"x5" presensitized single sided PCB Cat# 603
- One 4"x6" presensitized single sided PCB Cat# 606
- One 6"x6" presensitized single sided PCB Cat# 609
- One 500ml bottle Developer Cat# 418
- One 500ml bottle Ferric Chloride Cat# 415
- Two Foam Brushes Cat# 416-S
- Plastic development tray
- Rubber gloves
- Instruction sheet



### Additional items Required

- Exposure Kit Cat# 416-K
- Etchant tank, or glass tray, or plastic tray (for etching purposes)
- Artwork laser printed on a transparency, Cat# 416-T
- Eye protection

### Available Sizes

**416K**

Catalog No.  
416-K

Size  
Tank size L x W x H: 11"x 7"x 5"

Format  
Kit

## Etch Resist Pen 416-RP



For drawing or touching up etch resist circuits on PC boards and on positive films. Draws lines 1/32" wide. Dries instantly.

### Available Sizes

**416RP**

Catalog No.  
416-RP

Size  
5.5" long

Format  
Pen

## Transparency Film 416-T



Letter size (8 1/2" x 11") heat stabilized film sheets for use in most laser printers. For use in producing the artwork required for the photofabrication process.

### Available Sizes

**416T**

Catalog No.  
416-T

Size  
8.5" x 11"

Format  
Envelope of 5 sheets

# Prototyping : Accessories

## Developer 418

For use with MG Chemicals' 600 series positive presensitized boards. Concentrated formulation. Dilute one part developer to ten parts of tap water. The image appears quickly as the exposed photo resist is dissolved. After developing is complete, rinse with water and the board is ready for etching. Use 416-S foam brush for best results.

Also available in the 416-K Photofabrication Kit



### Available Sizes

**418**Catalog No.  
418-500MLSize  
500ml (17 oz)Format  
Liquid

## Conductive Print

- Quick drying
- Durable acrylic base pigmented with high purity flakes
- Excellent for repairing and modifying printed circuits and EMI / RFI shielding applications



## Silver Print

**842****Resistivity:** 0.2 Ohm · mil

Also available in a micro-tip dispensing pen format.

Silver pigment provides excellent corrosion resistance

## Silver Coated Copper Print

**843****Resistivity:** 0.4 Ohm · mil

## Nickel Print

**840****Resistivity:** 0.7 Ohm · mil

## Liquid Tin

**421**

Quickly tinplates copper circuits on PC boards in 5 minutes or less at room temperature.



### Directions

Clean PC Board thoroughly. Pour Liquid Tin into an appropriate size tray constructed of polypropylene, polyethylene, or similar material. Do not use stainless steel. Immerse PC Board in the solution for 3 to 5 minutes. Rinse with warm water and dry.

### Available Sizes

**421**Catalog No.  
421-500MLSize  
500ml (17 oz)Format  
Liquid

## Silver Print Pen 8420-P



### Available Sizes

**842**Catalog No.  
842-20G  
842-250G  
8420-PSize  
20g (0.75 oz)  
250g (8.8 oz)  
8.5g (0.3 oz)Format  
Liquid  
Liquid - Bulk  
Micropen**843**Catalog No.  
843-250G  
843-900MLSize  
250g (8.8 oz)  
900ml (30 oz)Format  
Liquid  
Liquid - Bulk**840**Catalog No.  
840-20G  
840-250GSize  
20g (0.75 oz)  
250g (8.8 oz)Format  
Liquid  
Liquid - Bulk

# Prototyping : Etching Kits

## Premium Etching Kit 416-E

- Etch copper clad circuits professionally
- Accommodates two 8" x 12" double-sided copper clad boards



### Contains:

- 7 litre capacity heavy-duty polyethylene etching tank
- Sturdy mounting bracket
- Clear acrylic lid
- Heavy duty air pump
- Sparging unit with 3 way adjustable air manifold
- Requires a minimum of 7 liters of etching solution: 415-4L, 410-1KG, or 4101-1KG.

### Available Sizes

416E	Catalog No. 416-E	Format Kit
------	----------------------	---------------

### Replacement Parts

Replacement Parts	Catalog Number	Quantity	Description
	416-AP	1	Air pump <i>Replacement Air Pump for the 416-E Professional Etching Kit</i>
	416-AT	1	Tubing <i>Replacement Air Tubing for the 416-E Professional Etching Kit</i>
	416-B	1	Bulb <i>The 416B is a direct replacement bulb for the 416-X Exposure Kit.</i>
	416-D	1	Hose <i>Replacement part for the 416-E Professional Etching Kit</i>
	416-G	10 pack	Gloves <i>Vinyl Gloves - Excellent for use with all corrosive chemicals.</i>
	416-H	1	Heater <i>200 watt side mounting immersion heater with quartz element and adjustable temperature control. Replacement part for the 416-E Professional Etching Kit.</i>

## Etching Process Kit - Student 416-ES

- Etch copper clad circuits professionally
- Accommodates two 8"x 9" double sided copper clad boards



Ideal for students and hobbyists. An inexpensive etching system with professional quality output.

### Contains:

- 5 liter heavy duty polyethylene etching tank
- Air pump and tubing
- Sparging unit
- Bag of vinyl gloves
- Complete instructions

Also requires a minimum of 4 liters of Ferric Chloride (Cat# 415-4L). There must be enough Ferric Chloride to completely cover your board.  
**Do not dilute ferric chloride with water.**



### Available Sizes

416ES	Catalog No. 416-ES	Format Kit
-------	-----------------------	---------------

# Prototyping : Etchants

## Ferric Chloride 415

### Liquid

- Copper Etchant
- More aggressive than persulphate alternative
- Ready to use
- Can be stored and reused

Ready to use solution designed for etching printed circuit boards and other metals. Recommended for use with M.G. Chemicals Professional Etching Process Kit (416-E) and M.G. Economy Etching Process Kit (416-ES).

### Directions of Use

Immerse copper board in solution and agitate until etching action is completed. Ferric Chloride can etch up to a maximum of 100g of copper per liter of solution (1.3 square meters or 14 square meters of 1 oz copper clad board). The etching process can be sped up by heating the solution to a temperature no higher than 55°C (135°F). Ferric Chloride is compatible with the 416-E and 416-ES kits. **Do not dilute with water.**



### Powder

- Easy to mix.
- No heating required. Solution self heats to ideal operating temperature during mixing process (60°C / 140°F)
- Mixed solution can be stored and reused.
- Just as effective as Liquid Ferric Chloride.
- Easy to transport due to light-weight of powder.



A dry concentrate version that mixes with water to produce 1 liter of etchant solution, enough to etch 400 sq. inches of 1 oz boards.

### Available Sizes

Catalog No.	Size	Format
415	415-500ML	500ml (17 oz) Liquid
	415-1L	1L (34 oz) Liquid
	415-4L	4L (1 gal) Liquid
	415-20L	18.9L (5 gal) Liquid
	415-115G	155 g (4 oz) Powder

## Sodium Persulphate

4101

- Transparent solution allows visual inspection
- Will not stain carpet or clothing
- Compatible with etch resist pens
- Alternative to ferric chloride
- 1 kg of solid crystals makes 4 liters of solution



### Available Sizes

Catalog No.	Size	Format
4101-1KG	1kg (2.2 lbs.)	Crystals
4101-25KG	25kg (55 lbs.)	Crystals

## Ammonium Persulphate 410

- Transparent solution allows visual inspection
- Will not stain carpet or clothing
- Not compatible with etch resist pens
- Alternative to ferric chloride
- 1 kg of solid crystals makes 4 liters of solution



### Available Sizes

Catalog No.	Size	Format
410-1KG	1kg (2.2 lbs.)	Crystals
410-25KG	25kg (55 lbs.)	Crystals

# INTRODUCING MG CHEMICALS APPGUIDES

Expand your knowledge of product applications.



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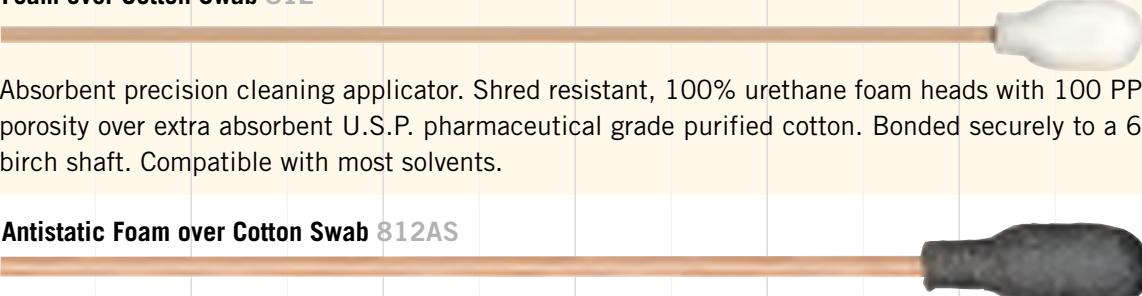
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# Swabs

## Scale: Actual Sizes

	0"	1"	2"	3"	4"	5"	6"	Available Sizes
<b>Chamois Swab 810</b>								Catalog No. Qty. per Bag Chamois Swabs 810-15 15 810-50 50 810-500 500
<b>Double Ended Chamois Swab 810-D</b>								Double Headed Chamois Swabs 810D-15 15 810D-50 50 810D-500 500
For cleaning sensitive tape heads. Lint free synthetic suede bonded to a bendable handle allowing access to hard to reach areas. Use with M.G. Chemicals Cat. #407C Audio Video Head Cleaner.								
<b>Cotton Swabs (Double Ended) 811</b>								Cotton Swab (Double Ended) 811-100 100
								
<b>Tapered 8112</b>								Tapered (Double Ended) 8112-100 100
								
Pharmaceutical grade. Extra absorbent on a 6" birch shaft. Compatible with most solvents. Available in standard or tapered head.								
<b>Foam over Cotton Swab 812</b>								Foam over Cotton Swab 812-10 10 812-50 50 812-250 250 812-1000 1000
								
Absorbent precision cleaning applicator. Shred resistant, 100% urethane foam heads with 100 PPI porosity over extra absorbent U.S.P. pharmaceutical grade purified cotton. Bonded securely to a 6" birch shaft. Compatible with most solvents.								
<b>Antistatic Foam over Cotton Swab 812AS</b>								Antistatic Foam over Cotton Swab 812AS-10 10 812AS-50 50 812AS-250 250 812AS-1000 1000
								
Absorbent precision cleaning applicator. Anti-static, shred resistant, 100% urethane foam heads with 100 PPI porosity over extra absorbent U.S.P. pharmaceutical grade purified cotton. Bonded securely to a 6" birch shaft. Compatible with most solvents.								
<b>Foam Swab 813</b>								Foam Swab 813-10 10 813-50 50 813-250 250 813-1000 1000
								
Durable precision cleaning applicator. Shred resistant, 100% urethane foam heads with 100 PPI porosity. Bonded securely to a 6" birch shaft.								
<b>Rectangular Foam Swab 814</b>								Rectangular Foam Swab 814-10 10 814-50 50 814-250 250 814-1000 1000
								
Large foam head bonded to sturdy handle for aggressive cleaning applications. Shred resistant, 100% urethane foam heads with 100 PPI porosity. Bonded securely to a 5" polypropylene shaft.								
0" 1" 2" 3" 4" 5" 6"								

Swabs

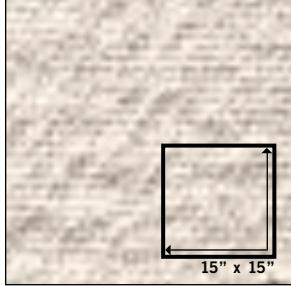
# Wipes

## Presaturated IPA Wipe 824W



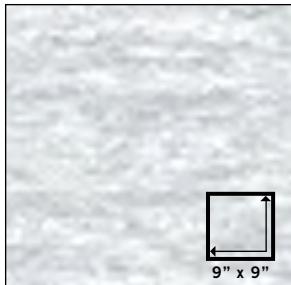
Zero residue, water free all purpose cleaning wipe. 99.953% pure anhydrous. Safe on plastics and elastomers. Dimensions: 8" x 5".

## General Purpose Cotton Wipe 830



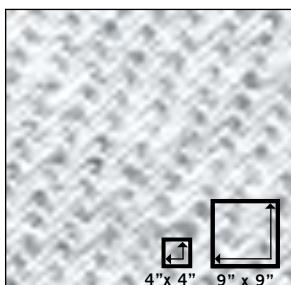
100% natural cotton, re-usable, pre-washed, super absorbent. Absorbs water in 3.5 sec., and light oil instantaneously. Dimensions: 15" x 15".

## Hydro Wipe



Made from an extra strength, super absorbent blend of hydro-entangled polyester / cellulose. Resistant to solvent, lint and particle free, class 1000 cleanroom compliant. Dimensions 9" x 9".

## Twillwipe



Low linting 100% cotton fabric. 4" x 4" and 9"x9" dimensions available.

## Tub Wipes 8241-T

### 70 / 30 Alcohol Blend

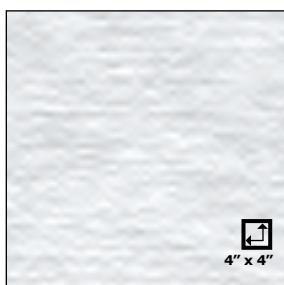
General all-purpose cleaner. Safe on plastics. Convenient tub dispenses presaturated wipes.



### For use on:

- SMT Stencils
- Office and medical equipment
- CD / DVD discs

## Optiwipe



4" x 4"

## 828-4X4

Zero lint. Super soft fabric comprised of hydroentangled polyester fibers. Dimensions 4" x 4"

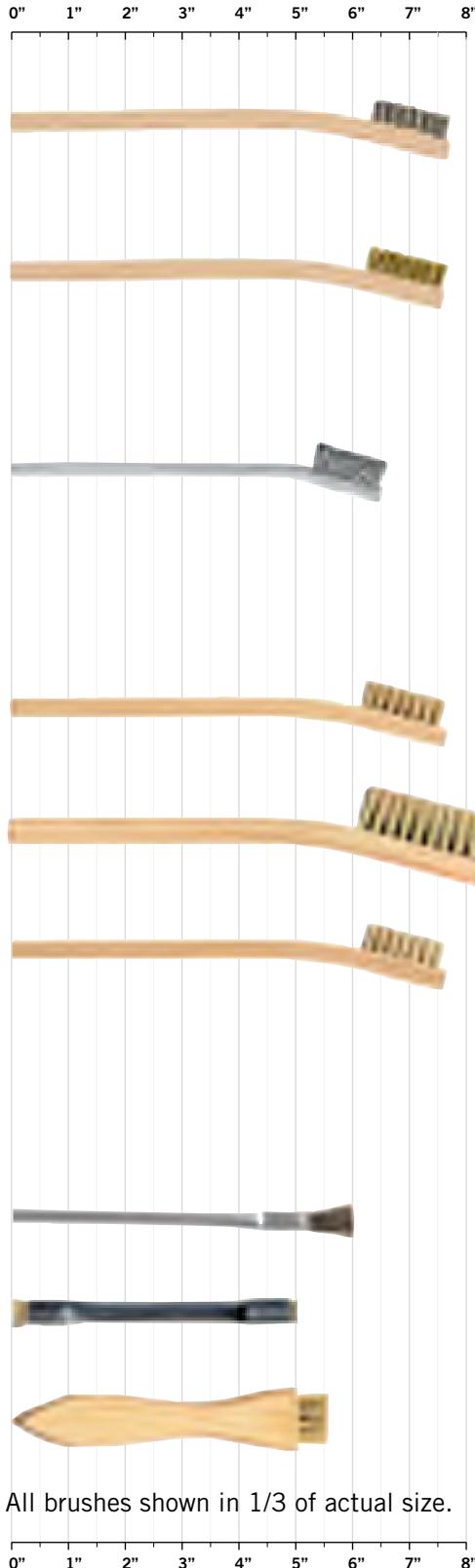
### Available Sizes

	Catalog No.	Size	Format
824W	824-W	20.3 cm x 12.7 cm (8" x 5")	Single
	824-WX50	20.3 cm x 12.7 cm (8" x 5")	50 pack
	824-WX500	20.3 cm x 12.7 cm (8" x 5")	500 pack
8241T	8241-T	90 Wipes	Tub dispenser
8282	8282-100	22.8 cm x 22.8 cm (9" x 9")	100 pack
828	828-4x4	10 cm x 10 cm (4" x 4")	100 pack
829	829-4x4	10 cm x 10 cm (4" x 4")	100 pack
830	829-50	22.8 cm x 22.8 cm (9" x 9")	50 pack
	830-25*	38 cm x 38 cm (15" x 15")	25 pack

\*Not available for USA distributors

# Brushes

Brushes



## Abrasive

Cat No.	Bristle Material (Trim length)	Handle Material (Length)	Brush Face (LxW)	Application
850	Stainless Steel ( 5/16")	wood ( 7 3/4" )	1 3/8" x 7/16"	Excellent utility brush. Great for cutting corrosion. Use for solder surface preparation. Also great for cleaning soldering iron tips.
851	Brass ( 5/16" )	wood ( 7 3/4" )	1 3/8" x 7/16"	Excellent utility brush. Great for removing oxides and corrosion from connector ends. Burnishes without removing base metal. Also great for cleaning soldering iron tips.
858	Stainless Steel ( 7/16" )	Stainless steel (6.5")	1 1/8" x 1/4"	"No ESD" brush. Burnish contacts without removing base metals. An excellent gold contact cleaner. Great for removing oxides and deposits.

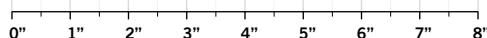
## Non-abrasive

Cat No.	Bristle Material (Trim length)	Handle Material (Length)	Brush Face (LxW)	Application
852	Hog Hair ( 5/16" )	7 3/4" wood	1 3/8"x7/16"	Excellent for removing flux and general clean up. Can be used dry or wet. Works well with sticky or crusty materials.
853	Hog Hair (3/4" )	8 3/8" wood	2 1/4"x1" (large)	
859	Hog Hair ( 5/16" )	7 3/4" wood	1 3/8"x7/16"	

## Technical

Cat No.	Bristle Material (Trim length)	Handle Material (Length)	Brush Face (LxW)	Application
855-5 855-BULK	Horse Hair ( 3/4" )	6" Tin	1/4" x 3/8"	Works well for dusting, cleaning with fluids, and general cleanup.
856	Horse Hair ( 1/4", 3/16" chiseled end)	4.5" cad plated steel	Double Ended (chisel trim) 1/4" x 5/16"	Excellent general cleaning brush with short bristles for heavy duty scrubbing. One end is chiseled to clean tight corners.
857	Hog Hair ( 1/2" )	5" wood, chiseled style	3/4" x 5/16"	Excellent for removing flux and general clean up. Use dry or with fluids.

All brushes shown in 1/3 of actual size.



# CROSS REFERENCE GUIDE

<b>Chemtronics</b>	46
<b>Easy Braid</b>	46
<b>GC Chemicals</b>	47
<b>Micro Care</b>	47
<b>Techspray</b>	48

# Chemtronics

<b>Code</b>	<b>Product Description</b>
80-1-5	Super Wick Fine Braid
80-2-5	Super Wick Fine Braid
80-3-5	Super Wick Fine Braid
80-4-5	Super Wick Fine Braid
80-5-5	Super Wick Fine Braid
50-2-25	Super Wick Fine Braid
50-3-25	Super Wick Fine Braid
50-4-25	Super Wick Fine Braid
50-1-25	Super Wick Fine Braid
50-2-25	Super Wick Fine Braid
50-3-25	Super Wick Fine Braid
50-4-25	Super Wick Fine Braid
50-2-100	Super Wick Fine Braid
50-3-100	Super Wick Fine Braid
50-4-100	Super Wick Fine Braid
50-2-500	Super Wick Fine Braid
50-3-500	Super Wick Fine Braid
50-4-500	Super Wick Fine Braid
CP400	IPA Presaturated Wipe
C600-C900	Twillwipes
ES805	Label & Adhesive Remover
E1661	Nutrol Control Cleaner
ES517	Super Duster 134a
ES1017	Super Duster 134a
ES1617	Super Duster 134a
ES1020R	Super Duster Refill
ES710V	Chrome Trigger Valve
ES1050	Super Cold 134a
ES1551	Super Cold 134a
ES1628	Contact Cleaner
ES130 (non flammable)	Safety Wash Cleaner Degreaser
ES1530	Safety Wash Cleaner Degreaser
ES1220	Superwash Cleaner/Degreas
ES820L	Audio/Video Head Cleaner
ES1601	NPB Cleaner Degreaser or H
ES1607	NPB Cleaner Degreaser
ES1605	Electrosolve Contact Clean
ES7100	HFE Solvent
ES1631	Flux Remover-Super HFE
ES130	Heavy Duty Flux Remover
ES1530	Heavy Duty Flux Remover
ES135	Flux Remover-Plastic Safe
ES535	Flux Remover-Plastic Safe
ES1035	Flux Remover-Plastic Safe
CW3300G	Green Overcoat Pen
CTAR-12	Acrylic Conformal Coating
ES1668	Screen/Keyboard Cleaner
CTSR-1	Silicone Conformal Coating

<b>MG Part Number</b>	<b>Code</b>	<b>Product Description</b>	<b>MG Part Number</b>
46	CTSR-12	Silicone Conformal Coating	422A-340G
46	5-5L	Super Wick	424-NS
47	5-25L	Super Wick	442
47	7-5L	Super Wick	424-NS
48	10-5L	Super Wick	426-NS
	7-25L	Super Wick	443
	7-50L	Super Wick	453-NS
	10-50L	Super Wick	454-NS
	10-100L	Super Wick	464
423	10-500L	Super Wick	474
424	CC15	Chamois Swab	810-15
425	CC50	Chamois Swab	810-50
426	CP420E	Super Contact Cleaner w/ PPE	801B-125ML
427	CW7400	Super Contact Cleaner Pen w/PPE	801B-P
442	CT200/CT2000	Cotton Swab	811-100
443	CT5000	Tapered Cotton Swab	8112-100
444	CF50	Form Over Cotton Swab	812-10
451	CF3050	Foam Swab	813-10
452	CF2050	Rectangular Foam Swab	814-10
453	ES132	Ultrasonic Cleaner	821-1L
454	ES125A	Immersion Super Solvent	8260-1L
462	ES1607	NPB Cleaner Degreaser	4112-1L
463	CW8200	Rosin Flux Pen	835-P
464	CW2200 STP/MTP	Silver Conductive Pen	8420-P
472	CW2200BLK	Silver Paint	842-20G
472	CW7100	Carbon Conductive Grease	846-80G
474	CT40-5	Heat Transfer Compound	860-150G
824W	CDA8	Peelable Solder Mask	862-150ML
829	C910	Optiwipes	828-4x4
836	6704/6709	Hydro-Wipes	8282

## Easy Braid

<b>Code</b>	<b>Product Description</b>	<b>MG Part Number</b>
K21Y09	Electrosolve Contact Cleaner	409B-140G
K60C12	Acrylic Conformal Coating	419B-340G
K61C128	Acrylic Conformal Coating (liquid)	419B-1L
K30Y14	General Purpose Flux Remover	4040-400G
K40Y14	Anti-Static Screen/Keyboard Cleaner	4200-500ML
K44Y16	Multi Purpose Alcohol Wipe	8241-T
K70R10	Super Duster 134a	402A-285G
K41B10	Super Cold 134a	403A-400G
K42Y01	Heat Transfer Compound	860-150G
K43Y02	Label & Adhesive Remover	836-140G
K51G13	Immersion Super Solvent	8260-1L
K52G16	Immersion Super Solvent	8260-1L
SW2PF-100	Foam Over Cotton Swab	812-250
SW2PF-50	Foam Over Cotton Swab	812-50
SW3PF-10	Foam Over Cotton Swab	812-10
SW3PF-50	Foam Over Cotton Swab	812-50
SW3PF-100	Foam Over Cotton Swab	812-250
SW3WF-10	Foam Over Cotton Swab	812-10
SW3WF-50	Foam Over Cotton Swab	812-50
SW3WF-100	Foam Over Cotton Swab	812-250
SW5PF-10	Foam Over Cotton Swab	812-10
SW5PF-50	Foam Over Cotton Swab	812-50
SW5PF-100	Foam Over Cotton Swab	812-250

# CROSS REFERENCE GUIDE

## Easy Braid cont.

Code	Product Description	MG Part Number
SW5PFR-10	Foam Swab	813-10
SW5PFR-50	Foam Swab	813-50
SW5PFR-100	Foam Swab	813-250
SW6PFR-10	Foam Swab	813-10
SW6PFR-50	Foam Swab	813-50
SW6PFR-100	Foam Swab	813-250
SW6PF-10	Foam Over Cotton Swab	812-10
SW6PF-50	Foam Over Cotton Swab	812-50
SW6PF-100	Foam Over Cotton Swab	812-250
SW6PFG-10	Foam Over Cotton Swab	812-10
SW6PFG-50	Foam Over Cotton Swab	812-50
SW6PFG-100	Foam Over Cotton Swab	812-250
SW6WC-10	Double Headed Cotton Swab	811-100
SW6WC-50	Double Headed Cotton Swab	811-100
SW6WC-100	Double Headed Cotton Swab	811-100
SW6WF-10	Foam Over Cotton Swab	812-10
SW6WF-50	Foam Over Cotton Swab	812-50
SW6WF-100	Foam Over Cotton Swab	812-250
EB41M1855	General Purpose Alcohol Wipes	8241-T
EB41M1809	Multi Purpose Alcohol Wipes	8241-T
EB41D2120	Multi Purpose Alcohol Wipes	8241-T
EB41D2121	Multi Purpose Alcohol Wipes	8241-T
EB41D2116	Multi Purpose Alcohol Wipes	8241-T
EB41W44	Hydrowipes	8282
EB41W99	Hydrowipes	8282
EB41W1212	Hydrowipes	8282
OS-B-5	No Clean Super Wick	424-NS
OS-B-10	No Clean Super Wick	424-NS
OS-C-5	No Clean Super Wick	424-NS
OS-C-10	No Clean Super Wick	424-NS
OS-C-50	No Clean Super Wick	453-NS
OS-D-5	No Clean Super Wick	426-NS
OS-D-10	No Clean Super Wick	424-NS
OS-D-50	No Clean Super Wick	454-NS
Q-A-5	Super Wick	423
Q-A-25	Super Wick	451
Q-B-5	Super Wick	424
Q-B-100	Super Wick	462
Q-B-500	Super Wick	472
Q-C-5	Super Wick	425
Q-C-25	Super Wick	453
Q-C-100	Super Wick	463
Q-C-500	Super Wick	472
Q-D-5	Super Wick	426
Q-D-25	Super Wick	454
Q-D-100	Super Wick	464
Q-D-500	Super Wick	474
Q-E-5	Super Wick	427
Q-E-50	Super Wick	464
Q-E-100	Super Wick	464
Q-E-500	Super Wick	474
Q-A-AS	Super Wick	423
Q-B-5AS	Super Wick	424
Q-C-5AS	Super Wick	425
Q-D-5AS	Super wick	426
Q-E-5AS	Super Wick	427

## GC Chemicals

Code	Product Description	MG Part Number
GC-10-128	Super Glue Liquid/Gel	8333-3G / 8334-3ML
GC-10-1507	Isopropyl Alcohol	824
GC-10-1507-G	Isopropyl Alcohol	824
GC-10-3702	Acrylic Conformal Coating	419B-55ML
GC-10-3704	Acrylic conformal Coating	419B-1L
GC-10-4702	Super Corona Dope	4226-55ML
GC-10-5002	Red Insulating Varnish	4228-55ML
GC-10-8101	Silicone Heat Transfer Compound	860-60G
GC-10-8108	Silicone Heat Transfer Compound	860-60G
GC-10-8109	Silicone Heat Transfer Compound	860-60G
GC-10-9002	Red Insulating Varnish	4228-55ML
GC-10-9008	Red Insulating Varnish	4228-55ML
GC-19-115	Super Glue Liquid/Gel	8333-3G / 8334-3ML
GC-19-117	Super Glue Gel	8334-3ML
GC-22-201	Silver Print	842-20G
GC-22-209	Silver Print	842-20G
GC-22-209	Conformal Coating Stripper	8310-100ML
PH-LT-21306	Super Glue Liquid/Gel	8333-3G / 8333-3ML
PH-LT-30379	Super Glue Liquid/Gel	8333-3G / 8333-3ML
PH-LT-81742	Super Glue Liquid/Gel	8333-3G / 8333-3ML
PH-LT-81954	Super Glue Gel	8333-3ML

## Micro Care

Code	Product Description	MG Part Number
MCC-101TC	Multi Purpose Alcohol Wipes	8241-T
MCC-101TEA	Multi Purpose Alcohol Wipes	8241-T
MCC101TX	Multi Purpose Alcohol Wipes	8241-T
MCC-102E	Multi Purpose Alcohol Wipes	8241-T
MCC-105C	Multi Purpose Alcohol Wipes	8241-T
MCC-105EA	Multi Purpose Alcohol Wipes	8241-T
MCC-105X	Multi Purpose Alcohol Wipes	8241-T
MCC106FE	Immersion Super Solvent	8260-1L
MCC-119EC	Immersion Super Solvent	8260-1L
MCC-119ME	Immersion Super Solvent	8260-1L
MCC-2004	Flux Remover-Super HFE	4141-340G
MCC4772	Flux Remover-Plastic Safe	4140-400G
MCC-4761	Screen/Keyboard Cleaner	4200-500ML
MCC-AIR	Super Duster 134a	402A-450G
MCC-AXL	Immersion Super Solvent	8260-1L
MCC-AXLW	Multi Purpose Alcohol Wipes	8241-T
MCC-BGA	Ultrasonic Cleaner	821-1L
MCC-CCC	HFE Solvent	411-300G / 4120-450G
MCC-CDI	Immersion Super Solvent	8260-1L
MCC-CDIW	IPA Wipes/Multi Purpose IPA Wipes	824-W/8241-T
MCC-DC1	Flux Remover-Plastic Safe	4140-400G
MCC-DST	Super Duster 134a	402A-285G
MCC-EC7M	Immersion Super Solvent	8260-1L
MCC-EPXD	Immersion Super Solvent	8260-1L
MCC-FRZ	Super Cold 134a	403A-285G
MCC-HD3	Flux Remover-Super HFE	4141-340G
MCC-HDC	Flux Remover-Super HFE	4141-340G
MCC-J110	Multi Purpose Alcohol Wipe	8241-T
MCC-KBCD	Immersion Super Solvent	8260-1L
MCC-MLC	Safety Wash Cleaner Degreaser	4050-400G
MCC-MLCW	Multi Purpose Alcohol Wipe	8241-T

# CROSS REFERENCE GUIDE

## Micro Care cont.

Code	Product Description	MG Part Number	1693	Multi Purpose Alcohol Wipes	8241-T
MCC-PEC	HFE Super Cleaner Degreaser	4120-450G	1742	Glass & Enclosure Cleaner	825
MCC-PMGW	Anti Static Screen Cleaner	4200-500ML	1743	Antistatic Screen And Keyboard Cleaner, Liquid	4200
MCC-PRO	Flux Remover-Super HFE	4141-340G	1801-500F	Desoldering Braid	471
MCC-PROW	Multi Purpose Alcohol Wipes	8241-T	1801-50F	Desoldering Braid	451
MCC-QRS	Flux Remover-Super HFE	4141-340G	1801-5F	Desoldering Braid	423
MCC-ROC	Flux Remover-Super HFE	4141-340G	1802-100F	Desoldering Braid	462
MCC-SPC3	HFE Super Cleaner Degreaser	4120-450G	1802-25F	Desoldering Braid	442
MCC-SPR	Flux Remover-Super HFE	4141-340G	1802-500F	Desoldering Braid	472
MCC-W66	Hydro-Wipes	8282	1802-50F	Desoldering Braid	452
MCC-W66CP	Optiwipes	828-4x4	1802-5F	Desoldering Braid	424
MCCW99	Optiwipes	828-4x4	1803-100F	Desoldering Braid	463
MCC-W9950	Optiwipes	828-4x4	1803-25F	Desoldering Braid	443
MCC-W99CP	Optiwipes	828-4x4	1803-500F	Desoldering Braid	473
MCC-W99TJ	General Purpose Cotton Wipes	830	1803-50F	Desoldering Braid	453
WS101	Antistatic Foam Over Cotton Swab	812AS	1803-5F	Desoldering Braid	425
WS102	Antistatic Foam Over Cotton Swab	812AS	1804-100F	Desoldering Braid	464
WS103	Antistatic Foam Over Cotton Swab	812AS	1804-25F	Desoldering Braid	444
WS104	Antistatic Foam Over Cotton Swab	812AS	1804-500F	Desoldering Braid	474
WS201	Foam Swab	813-250	1804-50F	Desoldering Braid	454
WS202	Foam Swab	813-50	1804-5F	Desoldering Braid	426
WS203	Foam Swab	813-10	1808-50F	Desoldering Braid	451
WS501	Double Headed Cotton Swab	811-100	1808-5F	Desoldering Braid	423
			1809-100F	Desoldering Braid	462
			1809-25F	Desoldering Braid	442
			1809-50F	Desoldering Braid	452
			1809-5F	Desoldering Braid	424
			1810-100F	Desoldering Braid	463
			2106	Silicone Conformal Coating	422A-340G

## Techspray

Code	Product Description	MG Part Number			
1610	Isopropyl Alcohol, Pure Anhydrous, Liquid	824			
1610	Isopropyl Alcohol, Pure Anhydrous, Wipes	824W			
1612	Rubber Rejuvenator	408A			
1613	Label And Adhesive Remover, Aerosol	836			
1620	Cleaner Degreaser, Safe On Plastics, Aerosol	4050			
1620	Cleaner Degreaser, Safe On Most Plastics, Liquid	4050			
1621	Flux Remover, Safe On Most Plastics, Aerosol	4140			
1621	Flux Remover, Safe On Most Plastics, Liquid	4140			
1622	Contact Cleaner, Safe On Most Plastics, Aerosol	409B			
1624	Magnetic Tape Head Cleaner, Aerosol	407C			
1624	Magnetic Tape Head Cleaner, Liquid	407C			
1625	Glass Cleaner, Aerosol	825			
1640	HD Cleaner Degreaser, Nonflammable, Aerosol	4112			
1640	HD Cleaner Degreaser, Nonflammable, Liquid	4112			
1664	NPB Cleaner Degreaser or HFE Cleaner	4112 or 4120			
1665	Flux Remover, Non Flammable, Aerosol	4141			
1667	Blue Shower II, Degreaser, Aerosol	4112			
1668	Blue Shower II, Degreaser, Aerosol	4112			
1671	Aerosol Dusting Gas	402A			
1671	Dusting Gas Refill For Trigger Valve	402AR			
1672	Aerosol Freeze Spray	403A			
1675	Cleaner Degrease, Non Flammable, Aerosol	4120			
1676	Flux Remover Non Flammable, Aerosol	4141			
1679	Flux Remover, Safe On Most Plastics, Aerosol	4140			
1679	Flux Remover, Safe On Most Plastics, Liquid	4140			
1685	HFE Cleaner Degreaser, Non Flammable, Aerosol	4120			
1686	HFE Flux Remover, Non Flammable, Aerosol	4140			
1687	HFE Contact Cleaner, Zero Residue, Aerosol	4120			
1690	Magnetic Head Cleaner, Aerosol	407C			
1690	Magnetic Head Cleaner, Liquid	407C			

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 does not guarantee the accuracy of the data and assumes no liability in connection with damages incurred while using it.

# PRODUCT INDEX

BRUSHES .....	.45	8704	THREADLOCKER, HIGH STRENGTH, WICKING .....	.27
PROTOTYPING BOARDS-PLAIN AND PRESENSITIZED .....	.37	401B	NU-TROL CONTROL CLEANER .....	.33
PRIMERS FOR RTV SILICONES .....	.31	402A	SUPER DUSTER 134 .....	.2
PROTOTYPING ACCESSORIES .....	.40	402T	SUPER DUSTER TRIGGER VALVE .....	.2
RTV SILICONES .....	.29-31	403A	SUPER COLD 134 .....	.2
SUPERWICKS .....	.15	404B	CONTACT CLEANER WITH SILICONES .....	.9
SWABS .....	.43	406B	SUPER WASH CLEANER / DEGREASER .....	.5
WIPES .....	.44	407C	AUDIO / VIDEO HEAD CLEANER .....	.13
<hr/>				
410 AMMONIUM PERSULPHATE .....	.41	408A	RUBBER RENUE .....	.13
411 HFE 7100 SOLVENT .....	.6	409B	ELECTROOLVE CONTACT CLEANER .....	.8
412 SUPER CLEANER DEGREASER, NON FLAMMABLE .....	.6	413B	HEAVY DUTY FLUX REMOVER .....	.10
415 FERRIC CHLORIDE .....	.41	416-E	PREMIUM ETCHING KIT - (COMPLETE - TANK, HEATER, PUMP) .....	.40
418 POSITIVE PHOTO RESIST DEVELOPER .....	.39	416-ES	ETCHING PROCESS KIT - STUDENT .....	.40
421 LIQUID TIN .....	.39	416-K	PHOTOFABRICATION KIT .....	.38
422 CONFORMAL COATING - SILICONE, WITH UV INDICATOR .....	.23	416-RP	ETCH RESIST PEN .....	.38
803 PROJECTION TUBE COOLANT .....	.14	416-X	EXPOSURE KIT .....	.38
821 ULTRASONIC CONCENTRATED CLEANER (AQUEOUS) .....	.12	4190-GP	GREEN OVERCOAT PEN .....	.23
824 ISOPROPYL ALCOHOL .....	.5	419B	CONFORMAL COATING - ACRYLIC, WITH UV INDICATOR .....	.23
825 GLASS CLEANER .....	.12	422A-P	CONFORMAL COATING PEN - SILICONE .....	.23
835 LIQUID ROSIN FLUX .....	.11	801B	SUPER CONTACT CLEANER WITH POLYPHENYLETHER .....	.8
836 LABEL & ADHESIVE REMOVER .....	.13	801B-P	SUPER CONTACT CLEANER PEN WITH POLYPHENYLETHER .....	.8
840 NICKEL PRINT .....	.39	802H	OXIDE SCRUBBER HOLDER WITH REFILLS .....	.9
841 SUPER SHIELD - LIQUID .....	.25	8230-8	PLASTIC BOTTLE WITH TOUCH DISPENSING PUMP .....	.14
842 SILVER PRINT .....	.39	8231-8	PLASTIC BOTTLE WITH TOUCH DISPENSING PUMP, ANTI SPILL LOCK AND BACK ..	
843 SUPER SHIELD SILVER COATED COPPER CONDUCTIVE COATING - LIQUID .....	.39	FLOW PROTECTOR .....	.14	
846 CARBON CONDUCTIVE GREASE .....	.33	8241-T	MULTI PURPOSE ALCOHOL WIPES IN POP UP TUB .....	.5, 44
860 HEAT TRANSFER COMPOUND, TYPE 1 - SILICONE .....	.34	824-W	ISOPROPYL ALCOHOL WIPES .....	.5, 44
862 SOLDER MASK - LATEX PEELABLE .....	.15	827B	HEAVY DUTY CLEANER / DEGREASER .....	.7
4050 SAFETY WASH CLEANER / DEGREASER .....	.5	832B	EPOXY - BLACK ENCAPSULATING & POTTING COMPOUND (RATIO 2:1) .....	.17
4101 SODIUM PERSULPHATE .....	.41	832C	EPOXY - CLEAR ENCAPSULATING & POTTING COMPOUND (RATIO 2:1) .....	.17
4112 CLEANER DEGREASER NPB HEAVY DUTY, NON-FLAMMABLE .....	.7	832FRB	EPOXY - FLAME RETARDANT ENCAPSULATING & POTTING COMPOUND .....	.18
4120 HFE SUPER CLEANER DEGREASER, NON FLAMMABLE .....	.6	832TC	EPOXY - BLACK, THERMALLY CONDUCTIVE ENCAPSULATING & POTTING	
4140 FLUX REMOVER - PLASTIC SAFE .....	.10	COMPOUND .....	.18	
4141 FLUX REMOVER - SUPER HFE, NON FLAMMABLE .....	.11	8335	SUPER GLUE DUAL DISPLAY PACK (CONTAINS 12 VIALS OF 8333-3G AND	
4200 ANTISTATIC SCREEN CLEANER .....	.12	12 VIALS OF 8334-3ML) .....	.26	
4223 CONFORMAL COATING, URETHANE .....	.22	835-P	ROSIN FLUX PEN .....	.11
4226 SUPER CORONA DOPE - HIGH VOLTAGE INSULATING VARNISH .....	.24	835-P-20	ROSIN FLUX PEN - BULK .....	.11
4228 RED INSULATING VARNISH .....	.24	8420-P	SILVER PRINT - CONDUCTIVE PEN .....	.39
8260 IMMERSION SUPER SOLVENT .....	.7	8700	THREADLOCKER DISPLAY PACK (CONTAINS 5 EACH OF 8701-10ML,	
8310 CONFORMAL COATING STRIPPER, WITH BRUSH CAP .....	.24	8702-10ML, 8703-10ML, 8704-10ML) .....	.27	
8328 EPOXY & ADHESIVE CLEANER .....	.19			
8329 MOULD RELEASE (NON-SILICONE) .....	.19			
8331 EPOXY - ELECTRICALLY CONDUCTIVE, SILVER (RATIO 1:1), SYRINGES .....	.19			
8332 EPOXY - FAST SETTING ADHESIVE - DUAL SYRINGE .....	.26			
8333 SUPER GLUE LIQUID, COMMERCIAL SIZE IN PLASTIC BOTTLE .....	.26			
8334 SUPER GLUE GEL, CHILD RESISTANT VIAL (DISPLAY PACK REFILL, 10 VIALS) .....	.26			
8336 SUPER CONTACT CEMENT .....	.26			
8420 SUPER SHIELD SILVER CONDUCTIVE COATING - LIQUID .....	.39			
8461 WHITE LITHIUM GREASE .....	.32			
8462 SILICONE GREASE .....	.32			
8471 PEN OILER WITH TEFLON .....	.33			
8610 HEAT TRANSFER COMPOUND, TYPE 2 - NON-SILICONE .....	.34			
8701 THREADLOCKER, LOW STRENGTH, REMOVABLE .....	.27			
8702 THREADLOCKER, MEDIUM STRENGTH, REMOVABLE .....	.27			
8703 THREADLOCKER, HIGH STRENGTH, PERMANENT .....	.27			

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