Clean, Protect, Lubricate

Electrolube's wide range of high performance chemicals are used extensively by international electronics and manufacturing industries.

Demand for production materials in convenient packaging has led to the development of a wide range of versatile delivery systems and pack types that are filled at our manufacturing sites in the UK and China. These include aerosols, pump sprays, syringes, tubes, pens, sachets and small tins. The majority of Electrolube products are also available in bulk packaging for manufacturing. The world-renowned Electrolube quality can be found throughout its environmentally friendly product portfolio.

Mission Statement

"To strive to exceed our customers' expectations with innovative new products and the highest possible levels of customer service"

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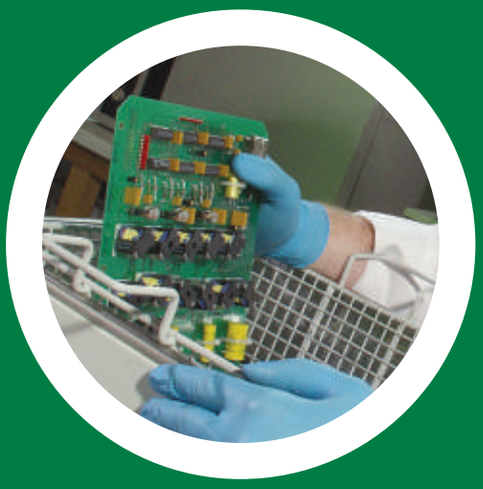
*Easy to use 'product selector charts' are available for each product group.

All the products in this catalogue have both technical and material safety data sheets available from your local Electrolube office or agent. Many also have NATO stock numbers.

Cleaning

- Flux Removal
- Metal Degreasing
- Flammable & Non-flammable
- Bulk & Aerosol
- Water & Solvent Based



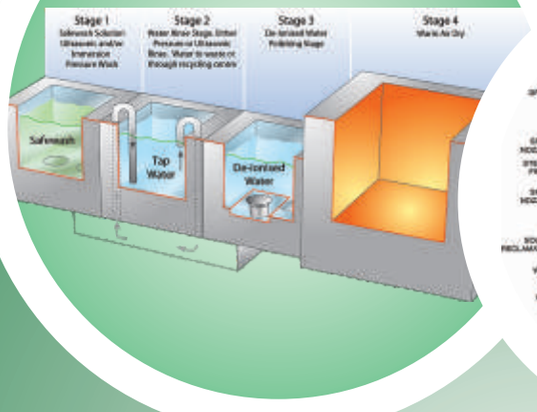
Cleaning is an essential process within electronics manufacture and has been used for many years to remove potentially harmful contaminants during PCB manufacture.

Such contaminants include flux, solder and adhesive residues, and other more general contaminants such as dust and debris present from other manufacturing processes. The purpose of cleaning, specifically within the rapidly expanding electronics industry, is to essentially improve product lifetime by ensuring good surface resistance and by preventing current leakage leading to PCB failure.

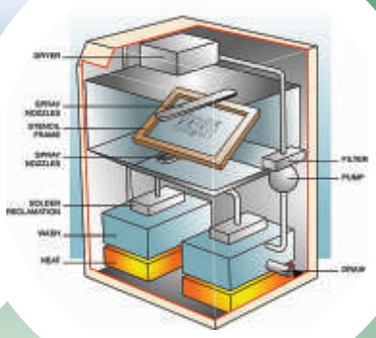
In industry today, many manufacturers are turning to 'no clean' processes, implying that cleaning is not required after soldering. In the 'no clean' process the solids content of the flux is lower than traditional types, however they still contain rosin and activator which are not removed prior to the next process, such as coating or encapsulating of the PCB. Such residues, along with any other unwanted elements collected due to the missing cleaning stage, could cause issues with adhesion and possibly affect the performance of the protecting media applied.

The purpose of cleaning, specifically within the rapidly expanding electronics industry, is to essentially improve product lifetime by ensuring good surface resistance and by preventing current leakage leading to PCB failure.

Ultrasonic Cleaning System



Stencil Cleaning System



Volatile Organic Compounds (VOCs)

Volatile Organic Compounds or VOCs are carbon based compounds which vaporise easily at room temperature. They are more clearly defined by the EU Solvents Emissions Directive, which states that a VOC is “any organic compound having at 20°C a vapour pressure of 0.01kPa or more, or having a corresponding volatility under the particular conditions of use.”

The emissions of VOCs have to be controlled due to their effect on the environment and human health. VOCs contribute towards the formation of ground-level ozone, a major component of smog. Such pollution can have many detrimental effects on the environment, in particular, damaging forests and vegetation. VOCs when not managed properly can also cause health problems.

As environmental concerns heighten the transition to solvent-free and low-VOC materials continues to increase. Continual investment in research and development facilities allows Electrolube to remain at the forefront of cleaning technology, continually exceeding customer’s expectations throughout this period of change. Electrolube, as a responsible manufacturer, can provide both water-based and solvent based cleaning solutions for a wide variety of applications in the automotive, aerospace, military, domestic and medical sectors.

Volatile Organic Compounds or **VOCs** are carbon based compounds which vaporise easily at room temperature.

The Safewash Range

The Electrolube Safewash range is the most effective family of water-based cleaners available on the market. Primarily developed to replace ozone depleting chemicals as well as offering a solution to reduce solvent emissions, the range provides superior cleaning performance to both military and commercial standards at minimal cost. Water-based cleaning has several advantages over solvent based cleaners including non-flammable properties, low odour, low/non-VOC and very low toxicity. There are many applications for cleaning, all of which depend on the type of equipment available. Whether it be ultrasonic, spray under immersion or dishwasher type application, identifying the correct water-based cleaner for the specific job is essential.

Electrolube’s **Safewash** range is the **most effective** family of water-based cleaners available on the market.

Solvents

Solvent cleaners are fast evaporating organic materials. Traditionally, chlorinated solvents dominated the market; however, due to their ozone depleting potential, they have been replaced by a more diverse range of solvent cleaners. This category is now typically divided into three sub-sections; flammable, non-flammable solvent cleaners and non-flammable fluorinated solvent cleaners. Electrolube flammable and non-flammable solvent-based materials are single stage cleaners characterised by relatively low levels of toxicity, good materials compatibility and a wide range of flash points and evaporation rates. Specialist equipment is generally required when using solvent based cleaners in high volume production; however they are essential for cleaning assemblies with unsealed components or water sensitive devices.

Electrolube offer a diverse range of **solvent based materials** including **flammable, non-flammable and fluorinated cleaners**.

The Safewash Range

SWA/SWAJ/SWAS | Safewash 2000 Range

- The original Safewash (SWA) is ideal for removing flux residues and many other cleaning applications which do not contain sensitive metals. Can be used prior to plating operations as a micro etching process.
- SWAJ is specifically formulated for safe cleaning of all metals including aluminium, copper and brass. SWAJ is also used extensively to clean flow solder jigs or pallets to remove the build up of flux deposited throughout the wave soldering process.
- SWAS is similar to SWAJ but with enhanced cleaning performance. Cleans flux residues and no-clean flux to military cleanliness standards.
- All are low odour, non-hazardous and for use in batch cleaning systems using ultrasonic's or spray-under-immersion.

SWAF/SWAP | Low Foam Safewash

- SWAF and SWAP have been designed as an extension to the Safewash range where low foam properties are required.
- Suitable for use via high pressure application, such as dishwashers and in-line machines (spray in air machines).
- SWAF is supplied as a concentrate, designed to be diluted with deionised water.
- SWAP is a ready to use version which includes a corrosion inhibitor for sensitive metals.

SWAC | Low Foam Concentrate

- Designed to be diluted with deionised water.
- For use with ultrasonic and pressure spray systems.
- For removal of reflowed solder pastes and fluxes.
- Excellent plastics and metals compatibility.

SWAX | Safewash Extra

- For removal of solder pastes and surface mount adhesive from screens, stencils, misprinted PCBs and accessories.
- Can be used in automated screen cleaning equipment, spray and in-line machines.
- Low foam, low odour.
- Excellent compatibility with plastics, metals and elastomers.

SWMN/SWMP | Safewash Mechanical

- Designed to clean and degrease mechanical parts.
- Can be sprayed, dipped or brushed or used in batch cleaning systems.
- Removes dirt and grease deposits.
- Non-hazardous with very low odour.
- Excellent materials compatibility.
- SWMP has enhanced performance properties for more stubborn deposits.

SWNP/SWNS | Safewash Neutral

- Neutral pH for cleaning even the most sensitive surfaces.
- Excellent degreasing properties.
- Fully biodegradable.
- Developed for the LCD and OLED manufacturing processes.
- SWNS has been designed to remove any excess resin residues.
- SWNP has been designed to remove any dust and grease from the LCD surface.

ARW

Aerowipes

- Large impregnated lint free wipes
- Remove uncured and semi-cured adhesive and polysulphide sealants
- Water-based, entirely non-hazardous
- Fast evaporating, leaving a residue free finish
- Non staining, low odour
- Concentrate only version is available in a trigger sprayer (ARW300)

ECW

Engineers Cleaning Wipes

- High quality cloth with exceptional wet and dry tear strength
- Economical and re-usable
- Extremely absorbent
- Packed in a re-sealable gripper bag which protects against contamination

CCC

Non-flammable Contact Cleaner

- Ozone-safe
- Non-conductive with high materials compatibility
- Instant drying with almost no aroma
- Leaves no residue
- Supplied with brush and extension tube

EWI

IPA Electrowipes

- Impregnated lint-free pads
- Conveniently packed in dual sachets
- Ideal for cleaning all types of connectors and cables, especially fibre optic cables

DGC

Non-flammable Degreaser

- Degreaser and electronics cleaner
- Fast evaporating
- No rinsing required
- Versatile, non-corrosive and safe for use on all types of electrical circuit
- Plastics-safe
- Supplied with brush and extension tube

FLU

Fluxclene

- Fast drying solvent cleaner for efficient removal of flux residues after soldering
- Leaves a perfectly clean, dry surface
- Harmless to most plastics, rubbers and elastomers
- Aerosol versions available with or without a brush applicator

ECSP

Electronic Cleaning Solvent Plus

- Very fast evaporating cleaning solvent
- Removes grease, dirt and most fluxes
- Completely residue-free
- Highly flammable – not to be used on live equipment

Cleaning

FRC

Non-flammable Flux Remover

- Effective on 'no-clean' fluxes and many water based fluxes and pastes
- Quick drying and residue free
- Plastics safe
- Supplied with brush and extension tube

GLC

Glass Cleaner

- Silicone-free allowing use on PCB production guards
- Excellent cleaning of grease, oil and light organic contaminants
- Non-smear and non-toxic
- Wipe clean with a lint-free cloth (such as ECW025)

PRS

Printasolve

- Removes ink (solvent or oil based) from most surfaces
- Highly effective and economic to use
- Re-textures rubber rollers
- Strong solvent which should be tested for plastics compatibility before use

IPA

Electronic Cleaning Solvent

- High quality, electronics grade IPA
- Suitable for all electronic and PCB cleaning
- Cleans thoroughly to a perfectly dry and residue free surface
- Effective and economical in use

SSS

Screen & Stencil Solvent

- Non-flammable solvent for cleaning of screens and stencils
- Excellent solder paste and adhesive removal
- Non-foaming and biodegradable
- Use with ECW025

LFFR

Lead Free Flux Remover

- Fast drying solvent cleaner
- For quick removal of lead free solder/paste residues, grease and oils
- Leaves a clean, dry surface
- Harmless to most plastics, rubbers and elastomers

SSW

Screen & Stencil Wipes

- Superb cleaning power that removes pastes and adhesives
- Leaves screens and stencils clean and dry with no staining
- Large size (20x28cm)
- Convenient 100 wipe tub dispenser
- Low odour

SWA/SRI

Safewash & Saferinse

- SWAJ in an aerosol formulation for bench cleaning PCBs
- Removes fluxes from PCBs. May also be used to clean grease and general dirt
- Fast, effective foaming action
- Use Saferinse (SRI) after cleaning to give final polish
- Biodegradable and 100% ozone friendly

VID

Magnetic Head Cleaner

- For use on all magnetic tape heads
- Quick drying, leaving no residue
- Good plastics compatibility

ULC

Ultraclens

- Highly penetrating cleaning solvent for removing heavy deposits
- Excellent cold cleaner for electronics and engineering
- Offers low flammability and low odour

ULS

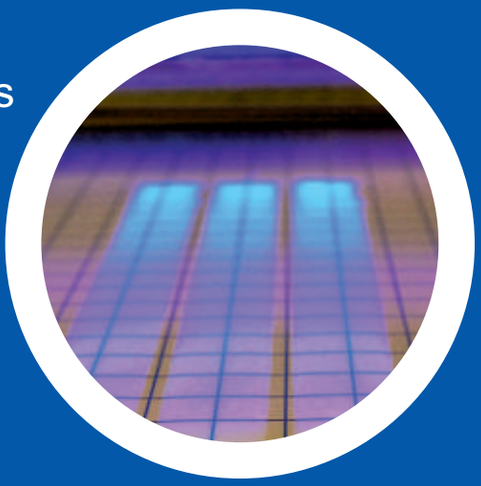
Ultrasolve

- Fast drying solvent for quick and efficient cleaning of electrical equipment
- Excellent removal of grease, oil, flux residues and acrylic conformal coatings
- Leaves clean, dry surface
- Compatible with most plastics

Various sizes are available for most products, including bulk.

Conformal Coatings

- UL, MIL and IPC-CC-830 approved
- Solvent removable and solvent resistant coatings
- Acrylic, Silicone, Polyurethane and Solvent Free
- Non VOC
- UV trace to aid inspection
- Thinners and masking products



Conformal coatings are designed to protect printed circuit boards and related equipment from their environment.

Typically applied at 25-50µm, these coatings 'conform' to the contours of the board allowing for excellent protection and coverage, ultimately extending the working life of the PCB. The use of conformal coatings is important in automotive under-bonnet applications, particularly in safety critical areas, such as military, aerospace and industrial applications.

Electrolube is among the world's foremost experts in the formulation and application of conformal coatings designed to meet international approvals (including European and American military specifications). The range of products currently available comprises acrylics, silicones, polyurethanes, water-based and non-VOC coatings.

Electrolube can offer both transparent and pigmented coatings to improve or camouflage the appearance of printed circuit boards. The range also includes a number of ancillary products to complement the use of our conformal coatings. These include thinners and removers, peelable coating masks and thixotropic materials for the effective coating of lead ends.

Conformal coatings can be used in a wide range of environments to protect circuitry from hazards such as moisture, salt spray, chemicals (e.g. fuels, coolants, etc.) and high temperature. This can prevent corrosion, mould growth and electrical failures such as current leakage. The protection provided by conformal coatings allows for higher power and closer track spacing, in turn enabling designers to meet the demands of miniaturisation and reliability.

Application of Conformal Coatings

In order to achieve the best performance, it is imperative that the most suitable coating and method of application is chosen.

The main questions which need to be addressed during this selection period are;

Application Method

Conformal coatings can be applied via spray, dip or brush methods either by manual or automated application. The correct method and conditions should be assessed for each application. Careful consideration of the advised humidity and temperature conditions for the selected coating should be taken for both application and curing stages.

Working Environment

The coating must be suitable for use under the required operating conditions. Tests must take place to ensure that the coating retains all required properties throughout the duration of the required use.

Electrical Requirements

Conformal coatings form a protective, insulating layer. The coating should exhibit high dielectric strength; the minimum required can be determined from the inter-track separation and the potential difference between adjacent tracks.

Board Layout

The design of the board should include consideration of the placement of components that should not be coated. Selective spray equipment or the application of a peelable coating mask can be used to help avoid the coating of such components.

Rework and Repair

If the assembly requires repair then consideration must be given to the ease of removal of the coating.

APL

Acrylic Protective Lacquer

- Offers excellent adhesion to all substrates
- Good temperature range and dielectric properties
- May be soldered through, allowing easy repair
- UV trace for inspection
- May be removed with solvents such as Ultrasolve (ULS)

FSC

Flexible Silicone Coating

- Solvent removable, silicone conformal coating
- Good adhesion and humid ageing properties
- May be soldered through safely
- Wide operating temperature range
- Excellent surface resistivity

CPL

Clear Protective Lacquer

- General purpose coating for PCBs giving high quality glossy finish
- Ideal for protecting ferrous metals from corrosion
- Good resistance to humidity
- Resolderability through the lacquer

HPA

High Performance Acrylic Conformal Coating

- High performance flexible acrylic coating
- Approved to US MIL-1-46058C
- UV trace for inspection
- Excellent dielectric properties
- Resistant to mould growth
- May be removed with solvents such as ultrasolve (ULS)

DCA/DCR

SCC3 Conformal Coating

- High specification flexible modified silicone resin conformal coating
- Transparent version (DCA) is UL approved
- Red version (DCR) available for camouflage
- Excellent chemical and solvent resistance
- May be soldered through for rework

LFCC

Lead Free Conformal Coating

- Compatible with lead free flux residues
- N-Methyl pyrrolidone, isocyanate and phenol free
- Wide operating temperature range
- UV trace to aid inspection
- Excellent dielectric properties

NVOC

Non VOC Conformal Coating

- Excellent adhesion to a wide variety of substrates
- Wide operating temperature range
- Resistant to mould growth
- Excellent solvent resistance
- Contains a UV trace for ease of inspection
- Eliminates many costs associated with handling hazardous products

Conformal Coatings

Various sizes are available for most products, including bulk.

NVMC

Non VOC Machine Cleaner

- Designed to be used before and after NVOC – Non VOC Conformal Coating
- Very low vapour pressure
- Low odour
- Prevents machine blockages

PCM

Peelable Coating Mask

- Flexible latex for masking components
- Manual removal, leaving no residue
- Solvent resistant and does not contaminate conformal coatings
- Dries at room temperature
- High film strength, does not break easily

RST

Resin Stop

- Provides a non-stick coating
- Silicone free
- Dry film – eliminates unwanted transfer
- Multiple release cycles
- Reduces the frequency to clean mould tools etc

PCS

Peelable Coating Mask Synthetic

- Thermal cure
- Ammonia free
- Manual removal, leaves no residues
- Does not dissolve in solvents or contaminate conformal coatings
- Suitable for use with dip, spray or brush applied coatings

TFCF

Fluorocoat Surface Modifier

- Thin film coating offering excellent moisture resistance
- Assemblies can be coated without masking
- Coating is removed by light mechanical wear, ideal for connectors
- Contains UV trace for easy inspection

PUC

Polyurethane Coating

- Good mechanical strength
- Excellent adhesion under all climatic conditions
- Fluoresces under UV light to aid inspection
- Wide temperature range -55°C to +130°C
- Excellent resistance to a wide range of chemicals
- Resistant to mould growth

WBP/WBPs

Aquacoat Plus

- Water based coating
- Excellent solvent resistance, dielectric properties and resistance to mould growth
- Very low VOC contents
- N-Methyl pyrrolidone, isocyanate and phenol free
- Wide operating temperatures
- UV trace to aid inspection

- UL approved
- Potting / encapsulating
- Cable jointing
- Sealing and protection
- Bespoke and ex-stock

Resin systems are designed to protect and insulate electrical and electronic components from the threats of harsh and challenging environments, including; moisture, vibration, thermal or physical shock and general contamination. Resins can form a complete barrier against such environments offering superior performance to conformal coatings under extreme conditions.

The extensive Electrolube product range consists of polyurethane and epoxy resin systems designed for general use and for specific customer applications. Polyurethanes are used for their flexibility, variable shore hardness and short pot life. Epoxy resins are much harder materials, offering superior chemical and water resistance to the polyurethane type.

The majority of Electrolube resins are two part systems that when mixed together in the correct ratio, react to form polymeric materials. By careful formulation the properties of the cured resin can be tailored to meet individual customer requirements. The Electrolube range therefore offers many resins of varying hardness, viscosity and gel time as well as differing electrical and thermal properties.

Resin Packs – small scale production/prototyping/field application

These contain resin and hardener, matched to the correct ratio. The resin and hardener are contained in a single pouch, separated by a removable clip. The clip is removed and the liquids must be thoroughly mixed within the sealed bag. When mixing is complete the corner of the pack is cut off and the mixed system dispensed. Resin packs are available in varying sizes.

Resin Kits – medium to high volume without automated equipment

The resin and hardener are supplied in two tins matched to the correct ratio. Sufficient space is left in the resin tin to allow the addition of the hardener and subsequent mixing. This avoids the user having to weigh materials to the correct ratio.

Bulk Resins – high volume with automated equipment.

Resin and hardener are supplied in separate containers. The two materials must be mixed together in the correct ratio, preferably utilising a proportional mix and dispense machine. If equipment is not available the quantities of each component must be weighed accurately.

Epoxy Resins

ER1450

White and ER1451 Clear

- High water resistance
- Excellent adhesive properties
- Good electrical properties
- Very low viscosity

ER2188

Black

- DDM free
- Flame retardant
- General purpose potting resin
- Certified to UL94V-0
- For potting and encapsulating applications where flame retardancy is required
- Very glossy finish

ER2001

Black

- Medium viscosity
- General purpose
- Flame retardant
- Excellent insulation properties
- Certified to UL94V-0
- For potting PCBs, coils, transformers and mould casting

ER2195

Black

- Tough, flame retardant potting resin
- DDM free
- Excellent thermal shock resistance
- Certified to UL94V-0
- For transformers, large castings, rotor arm sealing, pyrotechnical cables, diesel sensors and other automotive applications

ER2074

White

- Thermally conductive
- Flame retardant
- No abrasive fillers
- For potting PCBs, power supplies, DC-DC converters and temperature sensors

Electrolube also offers an extensive range of bespoke resin systems.

ER2183

Black

- Enhanced machine mixing and dispensing
- Low viscosity alternative to ER2074
- For use with ABS sensors, pressure barrier sensors, temperature sensors, and power supplies

UR5097

Black

- High degree of toughness
- Flame retardant, certified to UL94V-0
- Thermally conductive
- Low water absorption and excellent electrical properties
- Especially suited to potting of electrical and electronic devices operating in harsh conditions such as marine, automotive and tropical environments

UR5041

Black

- Ultra-high performance system based on polybutadiene technology
- High toughness and tear resistance
- Good adhesion to most substrates
- Excellent resistance to sea water
- Properties retained at temperatures down to -60°C

UR5528

Black

- Durable with a high degree of toughness
- Excellent adhesion qualities to substrates such as PVC, ceramics etc
- Low viscosity allowing ease of application
- Excellent resistance to acids, alkalis and other aqueous materials

UR5044

Blue Opaque

- Flame retardant, certified to UL94V-0
- Soft, re-enterable, polybutadiene based resin
- Flexible in temperature extremes, -70°C and +120°C
- Ideal for prototype circuitry, silicone replacement, and control units

UR5547

Black or White **UR5581**

- Semi rigid, flame retardant casting resin
- Water and impact resistance
- Excellent adhesion to a wide variety of substrates
- Ideal for use in potting or cable jointing applications

UR5048

Clear Straw

- Low viscosity and very low hardness
- Transparent – clear to allow fast fault finding
- Hydrophobic, thermal and mechanical shock resistant
- Low embedment stress
- Ideal for protecting delicate components from mechanical and thermal shock

UR5562

Water White

- Water white transparency, ideal for potting LEDs
- Excellent resistance to yellowing when exposed to UV light
- Excellent scratch and mark resistance
- High resistance to weather, acids and alkalis, water and mould growth

Resins

UR5604

Black

- High performance potting resin with excellent adhesion properties
- Medium hardness and log pot life
- Low mixed system viscosity
- Flame retardant, certified to UL94V-0

UR5608

Black or White **UR5623**

- Semi-rigid polyurethane resin with exceptional toughness
- Excellent adhesion and chemical resistance
- Flame retardant, certified to UL94V-0
- Fast cure version available, UR5618
- Ideal for cable jointing, casting, coil impregnation, PCB encapsulation, transformers, alarms and battery terminations

Electrolube also offers an extensive range of bespoke resin systems.

Resins Cleaners

OP9003

Resin Remover

- Non-flammable
- Designed to swell and soften cured epoxy, polyurethane and other resins and enable their removal from most substrates

OP9020

Machine and Resin Remover

- A solvent designed to remove epoxy and polyurethane resin in the uncured state
- A non-halogenated solvent offering lower toxicity than other halogenated solvents

OP9004

Machine Cleaner

- Non-flammable
- Slow evaporation rate allowing surfaces to be polished clean
- Designed to swell and soften cured epoxy, polyurethane and other resins and enable their removal from most substrates
- Cleans machines, tools and jigs
- Doesn't corrode metal components

RST

Resin Stop

- Provides a non-stick coating
- Silicone free
- Dry film – eliminates unwanted transfer
- Multiple release cycles
- Reduces the frequency to clean mould tools etc

Various sizes are available for most products, including bulk.

ELECTROLUBE

- Non-silicone Pastes
- Silicone Pastes
- RTV's
- Epoxy Resins
- 0.9 to 2.8W/m.K

Most components have a maximum, effective operating temperature. Failure to maintain the temperature below this level can lead to a variation in electrical properties and overall increased failure rates.

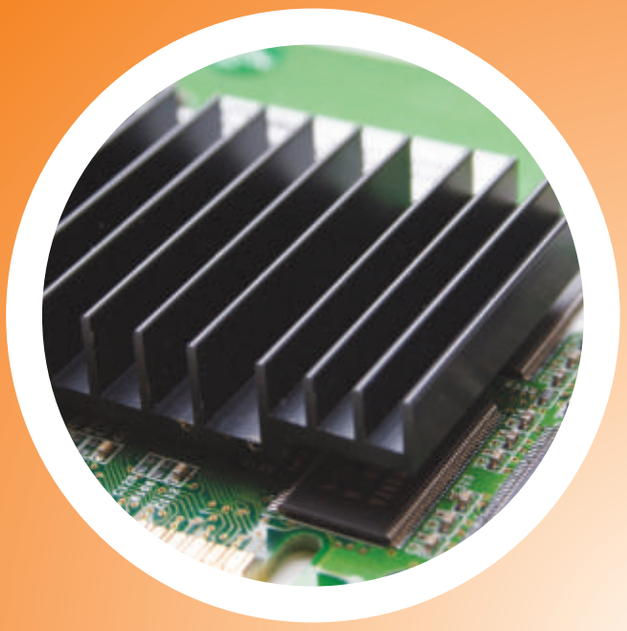
Metal heat sinks are typically connected to components which generate a large amount of thermal energy when in use. These are used to dissipate such energy away from the device to avoid failure due to over-heating.

Heat sinks have proven to be very effective over the years however in order to ensure full contact and therefore maximum efficiency, thermal management products are used alongside.

Metal surfaces, even when polished to a fine degree, have a certain amount of roughness. It can therefore be deduced that when two metal surfaces are placed together contact is not 100% and there will always be an air gap between the two surfaces.

The use of a thermal paste or adhesive allows such gaps to be filled ensuring complete contact between the two surfaces and in turn more efficient heat conductance.

The range of applications where the use of a thermally conductive material is necessary has greatly increased as electronic circuits have become more complex and powerful. These advances have resulted in greater heat generation. Solar panel systems (photovoltaics), is just one example where such heat must be drawn away from the components quickly and efficiently, ensuring long term reliability and operating efficiency.



The range of applications where the use of a thermally conductive material is necessary has greatly increased as electronic circuits have become more complex and powerful.

Thermal Management

HTC

Non-silicone Heat Transfer Compound

- Excellent non-creep characteristics
- High thermal conductivity 0.9 W/m.K
- Wide operating temperature range: -50°C to +130°C
- Low evaporation weight loss
- Easy to use and available in aerosol form, HTCA
- Low toxicity

HTCA

Non-silicone Heat Transfer Compound Aerosol

- Excellent non-creep characteristics
- Excellent thermal conductivity even at high temperatures: 0.9 W/m.K
- Wide operating temperature range: -50°C to +130°C
- Low evaporation weight loss
- Easy to use and economic, particularly for larger applications

HTCX

Non-silicone Heat Transfer Compound Xtra

- Very low oil bleed
- Very low evaporation weight loss
- Excellent non-creep characteristics
- Wide operating temperature range
- Excellent thermal conductivity
- Low in toxicity

HTCP

Non-silicone Heat Transfer Compound Plus

- Excellent non-creep characteristics
- Excellent thermal conductivity, 2.5W/m.K
- Wide operating temperature range: -50°C to +130°C
- Low evaporation weight loss
- White colour enables treated parts to be easily identified

HTS

Silicone Heat Transfer Compound

- Excellent non-creep characteristics
- Wide operating temperature range -50°C to +200°C
- Low evaporation weight loss
- Excellent thermal conductivity even at high temperatures 0.9 W/m.K

HTSP

Silicone Heat Transfer Compound Plus

- Superior thermal conductivity even at high temperatures 3.0 W/m.K
- Excellent non-creep characteristics
- Wide operating temperature range -50°C to +200°C
- Low evaporation weight loss

TBS

Thermal Bonding System

- Two part epoxy bonding system with thermal conductivity of 1.1 W/m.K
- Eliminates need for mechanical fixing by providing a permanent bond
- Cures at room temperature

TCOR

Thermally Conductive Oxime RTV

- Solvent free low odour RTV
- High degree of thermal conductivity
- Wide range of operating temperatures
- Moisture cure - releasing oxime upon cure
- Remains flexible and elastic at high temperatures.
- Good chemical resistance

TCER

Thermally Conductive Ethoxy RTV

- Single part, low odour RTV
- High thermal conductivity
- Moisture cure – releasing ethanol upon cure
- Good chemical resistance
- Remains flexible and elastic at high temperatures
- Good electrical insulation characteristics

TCRGUN

Application Gun

- Makes application of TCER and TCOR easy
- Fits the 75ml cartridges

Contact Lubrication

- Extends switch life
- Improves signal quality
- Reduces operating temperature
- Controls switch ‘feel’
- Prevents contamination
- Silicone free

Electrolube have been the leading supplier of contact lubricants since their invention by the founder in the 1950’s. They increase the reliability and lifetime of all current carrying metal interfaces, including switches, connectors and busbars.

Electrolube has earned an unsurpassed reputation for the manufacture and supply of specialist lubricants to the automotive, military, aerospace, industrial and domestic switch manufacturing sectors. The range has been developed over the years to accommodate many advances in such rapidly advancing industries; combining excellent electrical properties and lubricity, to improve movement and ‘feel’ characteristics, with plastics compatibility.

Contact lubricants are specially formulated greases and oils that reduce friction and enhance the electrical performance of current carrying metal interfaces in switches and connectors. Electrolube products are electrically insulative in thick films, preventing tracking. In ultra thin films, i.e. between closed metal contacts, they allow the current flow, owing to the ‘Quantum Tunnelling Effect’. They also exhibit a neutral pH thereby avoiding surface corrosion.

The effectiveness of even perfectly designed switches can be improved by contact lubricants and, when considered at design stage, significant production cost savings can be achieved by the use of less expensive plastics and contact metals.

Tests have shown that contact lubrication can extend the lifetime of switches by more than 300%, producing excellent performance under all circumstances and preventing the need for expensive maintenance

How Contact Lubricants Work

Contact technology is constantly developing with new alloys, plastics and customer demands. However, it is still impossible to solve the main cause of switch malfunction i.e. the inability to produce a perfectly smooth metal contact surface.

This leads to the following problems:

The way a switch 'feels' when operated has become an indicator of quality, particularly within the automotive industry. Contact lubricants, in addition to their technical benefits, can also determine the 'feel' of a switch, whether it be strong and decisive for the dashboard of a commercial vehicle, or smooth and quiet for a luxury car.

Heat Generation

If there is insufficient surface contact, the current is only carried by a fraction of the 'designed surface area' and the heat generated will be concentrated at the contact points. This, in turn, causes the formation of high resistance oxide layers and 'hot spots' are observed. The overall efficiency of the switch will be reduced and can eventually lead to complete failure as the two surfaces weld together.

Arcing (mini-lightening strikes)

This can also occur with un-lubricated contacts. Ionisation of the air and the associated rise in temperature causes metal transfer between the contacts, resulting in new 'peaks and troughs' on the surfaces.

Mechanical Wear

Metal interfaces, whether static or moving, suffer from mechanical wear. In the case of static contacts, this is called 'frettage'; the small movements of contacts caused by vibration, temperature changes, etc. As the surfaces fret, friction causes metal particles to be removed from the peaks breaking through plated surfaces. This exposes surface and underlying metal to effects of oxidation and wear. Additionally the detached metal particles can cause intermittent signal transmission and ultimately switch failure.

Silicone Contamination

As silicones can "creep" great distances, these products should not be used in switch assembly areas. When silicone is present between moving or vibrating contacts, they react under arcing conditions to form silicon carbide. These crystals abrade the contact surface and cause electrical breakdown.

The use of a contact lubricant dramatically increases the effective surface area of the contacts and fills any air gaps, in turn, eliminating hot spots, reducing contact resistance and preventing arcing, friction and wear. Electrolube contact lubricants also eliminate the problems associated with silicone contamination, providing they are applied prior to the introduction of silicone.

Finally, it is important to discuss options with Electrolube at the design stage to ensure that the correct product is selected and properly applied. Among the areas to be considered are; voltage, current, operating temperature range, contact metals, number of cycles and associated plastics.

Contact Lubrication

CCS

Contact Cleaning Strips

- Easy to use
- Impregnated, mildly abrasive card
- Cleans, refurbishes and lubricates metal contacts
- High quality contact lubricant

CG71

Contact Grease

- A blend of synthetic oils
- For the protection and cleaning of static and moving electrical arc interfaces
- Specially developed to give a consistently low mV drop
- Exceptional oxidation stability and high temperature silver and copper corrosion protection
- Low wear characteristics and excellent low temperature performance

CG52B

Contact Grease

- Reduces contact resistance
- Suitable for both moving and static contacts of all metal types
- For use at a range of temperatures
- Developed initially for the automotive industry
- Successful connector lubricant

EGF

Eltinert F Grease

- Excellent electrical characteristics
- Excellent oxidation and chemical resistance
- Provides protection to electrical contacts from environmental attack
- Does not creep, thus minimising the need for re-lubrication
- Prevents and cures high contact resistance caused by silicone contamination
- Outstanding compatibility with all plastics and rubbers

CG53A

Contact Grease

- Excellent electrical properties
- Ideal for automotive switches
- Very good plastics compatibility
- Luer lock syringe dispenser
- Good high and low temperature performance -35°C to + 130°C

EML

Contact Cleaner Lubricant

- Cleans and lubricates switches, connectors and sliprings
- Removes dirt and protects from further contamination
- Reduces contact resistance
- Improves conductivity
- Commonly known as switch cleaner

CG60

Contact Grease

- Extends switch lifetime
- Optimal mechanical resistance
- Reduces electrical background noise
- Excellent plastics compatibility (even with ABS/PC) although testing is always advised.
- Wide temperature range
- Contains a UV trace to allow easy inspection

EPC

Electro-Plating Compound

- Especially developed for use on electro-plating and anodising plant
- Inhibits against corrosion
- Improves electrical contact on anode and cathode bars, pick-up shoes, rack contacts, busbar joints etc.
- Formulated to assist in the removal of tarnish and corrosion

SGA

Special Contact Grease

- Effective treatment for all types of contacts
- Reduces contact resistance and arcing of contacts from small relays to high capacity contactors
- Will not migrate from vertical contacts or surfaces
- Provides excellent protection against atmospheric conditions

SWC

Non-Flammable Switch Cleaner Lubricant

- Provides protection against arcing and corrosion
- Can be used on live equipment
- Safe to use on most plastics
- Contains high quality contact treatment oil
- Supplied with brush and extension tube

SGB

2GX Contact Treatment Grease

- High quality, non-melting contact grease
- Lubricates switches and electrical contacts
- Reduces contact wear and arcing
- Good plastics compatibility
- Applicable for high and low voltage

ULL

Ultralube

- Tenacious long lasting and non staining lubricant
- Suitable for use on printer mechanisms, etc.
- Can be used as an edge connector lubricant, particularly for gold contacts
- Can be used as a silicone inhibit for relays, etc.

SOB

2X Contact Treatment Oil

- Contact oil for switch and contact applications
- Non-flammable and silicone free
- Good mechanical properties
- Reduces arcing and hence contact wear

SPG

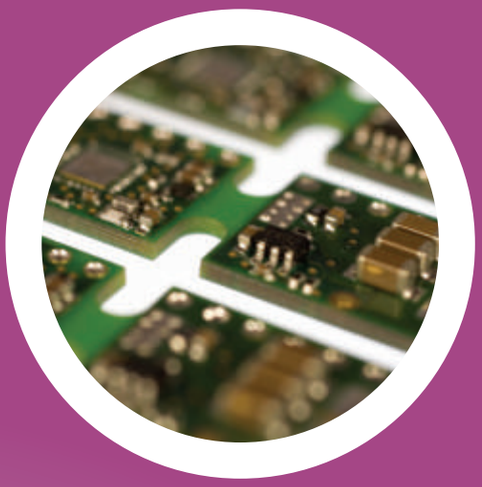
Special Plastic Grease

- Synthetic grease offering outstanding low temperature performance
- Excellent compatibility with thermoplastics, including ABS and Polycarbonate, even at elevated temperatures
- SPG is an efficient mechanical lubricant for plastic-to-plastic and plastic-to-metal contact

Maintenance & Service Aids

- Syringes, pump sprays, tubes, aerosols, wipes, pens
- Airduster and freezer
- Cleaners and coatings
- Greases and oils
- Thermal grease and resins
- Maintenance, test, repair and small scale production
- Paints and galvanising sprays

Electrolube manufactures a wide range of maintenance products to complement the major product groups. Whether used by OEMs or subcontractors, these products are supplied in convenient packaging, covering a wide range of applications and requirements.



Specific products in this range include

Airdusters For the removal of dust and dirt from hard to reach places, photographic and electrical equipment. They can also be used to blast off water or solvents for rapid drying.

Freezer Sprays For the identification of faulty components by rapidly cooling components to well below -50°C. Freezers are available in standard or minimal charging forms, enabling safe use on static sensitive components.

General Maintenance Including, hard surface cleaners, cyanoacrylate adhesives, tamper evident seals and contact cleaner lubricants.

Industrial Maintenance Including, high quality paints, galvanising sprays, polyurethane foam, lubricants and graffiti removers.

Electrolube can provide a total solution for mobile mechanics and service engineers through the wide range available. Products are supplied in a range of packaging dependent upon their application and end use. These include **aerosols, pump sprays, syringes, tubes, pens, sachets and small tins.**

AFC

Anti-static Foam Cleaner

- Protects against static build-up
- Biodegradeable
- Safe on all plastics
- Non-flammable
- Apply and wipe with Engineers Cleaning Wipes (ECW025)

EADP/EADPI

Airduster Plus

- Ultra high power airduster
- High pressure blast for removing stubborn particulates
- Inert, pure compressed gas
- Non-flammable
- Use in short, sharp bursts to avoid can frosting
- EADPI is the invertible version

CTC

Carterclene

- Heavy duty anti-static foaming cleaner that removes ingrained dirt and grime
- Gives long lasting anti-static properties on glass, plastic and other synthetic materials
- Shake well before use, apply and wipe with ECW025

GDP

High Powered Airduster

- High powered airduster with powerful initial blast and minimal drop off
- Non-flammable, pure compressed gas
- Use to remove dust and dirt from delicate and inaccessible areas
- Use in short, sharp bursts to avoid can frosting

EAD/EADI

Airduster

- Inert, pure compressed gas for dust removal
- Available in standard and invertible versions
- Ideal for removing particulates from inaccessible areas on delicate equipment
- Non-flammable

FRE

Freezer

- Standard freezer for non-sensitive, electronic fault finding
- Can aid mechanical shrink fitting
- Non-flammable, cools down to -55°C
- Prevents damage to components during soldering

MCF

Minimal Charging Freezer

- Unique additive minimises static build up whist still allowing frost formation
- Fast fault finding in electronics
- Suitable for static sensitive devices
- Protection from overheating
- Cools to -55°C

ACL

Adhesive Chain Lubricant

- Highly tenacious
- Excellent resistance to water and high temperatures
- Good mechanical stability
- Good penetration at low temperatures

AGC

Copper Anti-seize Fluid

- Provides anti-seize and anti-corrosion protection
- Ideal for use on threaded components
- High copper content provides effective lubrication
- Highly water resistant
- Effective at high temperatures

CMO

Clear Mechanical Oil

- Clear lubricant with excellent mechanical properties
- Outstanding penetration characteristics
- Water resistant
- Contains Molybdenum Disulphide

DDF

Leak Detector

- Allows immediate detection of air and gas leaks from all types of pipework and vessels
- Non-flammable and safe to use
- Water-based
- Contains anti-corrosion agents to ensure that substrates are not affected

DAS

Silicone Mould Release

- Colourless silicone lubricant
- Water repellent surface treatment
- Ideal for all mould release applications
- Very good thermal stability
- Reduces surface friction

DGT

Penetrating Fluid

- Penetrates and lubricates mechanical parts
- Produces a highly water resistant film, providing long term corrosion protection
- Loosens seized assemblies and prevents friction noise
- Ideal for breakdown and maintenance services

DFL

Dry Film Lubricant

- High purity PTFE based lubricant
- Operating temperature range of -200°C to +280°C
- Water repellent with a low co-efficient of friction
- May be used where silicones or mineral oils are unsuitable
- Can be used as a cold mould release

MPG

Multi-purpose Grease

- General purpose grease in a tube for use in mechanical and electrical applications
- Wide temperature range of -20°C to +200°C
- Safe on most thermoplastics
- Good lubricating and thermal properties

EPE

Permagard

- De-watering and penetrating fluid
- Excellent lubricating properties
- Loosens seized metal parts
- Protects against rust and corrosion

OSL

Silicone Oil

- High quality, multi purpose mechanical lubricant
- Silicone spray with excellent water repellency
- Long term lubrication for line printers, keyboards, platens, bearings, etc.
- May also be used as a mould release agent

HTG

High Temperature Grease

- High quality mechanical grease for lubrication and protection
- Wide temperature range of -20°C to +200°C (does not harden at high temperature)
- Fortified with anti-wear and anti-oxidant additives
- Water resistant

SCO

Silicone Grease Compound

- High quality, multi-purpose electrical insulating compound
- Excellent water and moisture repellency
- Chemically inert, odourless and non-toxic
- Excellent resistance to tracking and corona discharge

SPG

Special Plastics Grease

- Excellent plastics compatibility
- Offers outstanding low temperature performance
- Efficient mechanical lubricant for plastic/plastic or plastic/metal friction
- Ideal to reduce wear in timers, plastic cogs and gears etc.

ASA

Anti-static Spray

- Powerful non-foaming cleaner which also prevents static build-up
- Non-flammable
- Suitable for a wide variety of surfaces

DTP

Paint Stripper

- Extremely powerful paint and varnish remover
- Can be used for removing graffiti
- Suitable for removing varnishes on wood
- May be removed simply by brushing
- Not to be used on plastics

PGB/PGM

Galvanising Spray

- Cold galvanisation paint for metal surfaces
- Protects against oxidation and corrosion
- Very fast drying with excellent adhesion properties
- May be used as a primer for fixing lacquers
- Available in gloss and matt finishes

GRG

Graffiti Remover Gel

- High viscosity gelled product – clings to vertical surfaces
- Low odour, low volatility – longer contact time
- Removes graffiti from porous and non-porous surfaces e.g. wood, brick, vinyl
- Harmless to most plastics and metals
- Effective and economical in use

PNM/PAM

High Temperature Paints

- Heat resistant paints suitable for objects exposed to temperatures of up to 650°C
- Excellent coverage and flow characteristics
- Rapid drying to a very tough finish
- Good adhesion and anti-corrosion properties
- Available in aluminium grey and matt black

GRS

Graffiti Remover for Sensitive Surfaces

- Removes graffiti from porous and semi-porous surfaces, e.g. vinyl and laminates
- Pleasant light odour
- Contains non-chlorinated solvents
- Compatible with most plastics and metals

PWB/PVB/PBB/PJB/PRB/PNB

High Gloss Paints

- Quick drying, high quality, universal spray paints with excellent coverage and hardness
- Suitable for use in manufacturing, repair, workshop and home

Colours: White, Blue, Yellow, Black, Red, Green

BLV/R

Bloc'lube

- Tamper evident seal for potentiometers etc
- Green or red colours available
- Supplied with integral brush for easy application
- BLR available in a syringe

HDC

Cutting Fluid

- Industrial grade metal cutting oil
- Powerful lubricant suitable for ferrous metals, stainless and heat resistant steels
- Allows high speed punching
- Extends tool life

CYL

Cyanolube

- Fast curing cyanoacrylate adhesive which dries in 1-5 seconds
- Tear strength 25-30N/mm
- Bonds most common substrates
- Adheres well to most plastics

LRM

Label Remover

- Paper label remover
- Aerosol with brush enables mechanical scrubbing action to aid removal
- Handy pen version available
- Harmless to most plastics

DB1003/DB2003

Desolder Braid

- Fast, effective wicking when removing components
- Utilises no-clean flux
- Economic 3m length
- Available in two widths – 1.25mm and 2.00mm

NSCP

Nickel Screening Compound PLUS

- 100% Ozone Friendly
- Excellent surface resistivity (0.3-0.7 ohm per sq. at 50 microns).
- Enhanced adhesion to wide variety of substrates
- Fast drying at room temperature
- Coats complex shapes
- Prevents static build-up
- Also available in bulk

MPU

Polyurethane Foam

- One-part ready to use self-expanding PU foam
- Cures quickly to form a tough, waterproof layer
- Excellent for filling and sealing spaces around cables, window frames, pipe ducts, etc.
- Provides good thermal and acoustic insulation

SMA

Surface Mount Adhesive

- One part UV resistant system with high green strength and dot profile
- Excellent mechanical strength
- Resistant to cleaning solvents
- Long term stability after cure cycle
- Syringe can be used by hand or dispensing equipment

PBS

Antispatter Spray

- Prevents adhesion of weld spatter
- Suitable for protecting nozzles, weld units and tools
- Non-flammable and silicone free
- Very fast drying

SMF

Surface Mount Rework Flux

- Quick drying, mildly activated (RMA type) no-clean flux
- For use with hot air, hot gas or conventional soldering techniques
- Excellent solder ability
- Zero halide content so no cleaning is required
- Very high reliability

RRR

Rubber Roller Restorer

- Restores textures to rubber rollers in office equipment
- Prolongs the lifetime of rubber rollers, preventing costly replacement
- Supplied in pump spray
- Leaves no residue
- Dissolves ink, oil, grease and will remove general office dirt

SMFL

Surface Mount Rework Flux

- Quick drying, no clean
- Can be used with hot air, hot gas or conventional soldering techniques
- Non tacky and no corrosive residue
- Very high reliability

SCP

Silver Conductive Paint

- Highly conductive silver loaded paint
- Ideal for track repair and pinpoint shielding
- Fast drying
- Excellent adhesion to most substrates
- Available in alternative sizes

APB

Air Powered Bottle

- Achieves 'aerosol' results without the use of propellant
- 300ml HDPE bottle holds a maximum 200ml of fluid
- Compatible for use with IPA and aqueous solutions

PDN

Photoresist Developer

- Safe aqueous alkaline developer to be used in conjunction with PRP and other positive photo resists

CPL

Clear Protective Lacquer

- General purpose coating for PCBs giving high quality glossy finish
- Ideal for protecting ferrous metals from corrosion
- Good resistance to humidity
- Resolderability through the lacquer
- Available in pen form for easy and direct application

PRP

Positive Photoresist

- Fast drying positive photoresist in an aerosol
- Used for reproduction of circuits, images, PCBs, signs and diagrams
- Fine resolution down to 0.1mm, develops using UV or sunlight
- Ideal for prototyping

DEI

Demineralised Water

- Provides a final polish to circuit boards and assemblies that have been cleaned and rinsed in tap water
- Ideal for use with Safewash
- Suitable for use in trigger spray bottle (TSB000) or air powered bottle (APB000)

SGL

Silica Gel

- Non-indicating silica gel sachets used to protect assemblies from moisture ingress
- Inert to most non-aqueous chemicals
- Available in 10g, 50g and 100g sachets

FCC

Ferric Chloride

- 250g pack makes 500ml of Ferric Chloride hexahydrate
- Used for etching copper clad boards to produce PCBs, signs, pictures etc

TSB

Trigger Spray Bottle

- Re-usable bottle for spraying various solutions
- Volumetric graduation marks on the side of bottle
- Holds up to 600ml
- Controlled usage with adjustable spray

Product Index

Notes

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