

Silver Copper Caulking Compound

AS-SCS001 is an electrically conductive composite material comprising of silicone elastomer and silver plated copper particles. It is designed to be easily applied to panel joints & seams and/or the small clearances that result from non-continuous mechanical fixing in sheet metal enclosures. On application it cures at room temperature to form a highly conductive elastomeric section / joint that has good adhesion to most commonly used metals & substrates. When fully cured it will prevent water ingress and improve the EMI shielding performance of panel joints & overlaps.

AS-SCS001 has excellent high temperature resistance and long-term ageing characteristics. The silver plated filler used in this material provides a reliable low impedance connection between suitably prepared metallic surfaces.

Uncured Properties

Colour	Tan
Form	Thixotropic paste
Cure time (approx.. 4mm section)	12 hours

Cured Properties

Density	2.7gcm ⁻³
Hardness	60 Shore A
Volume resistivity	<0.01Ω.cm
Adhesion	>100 Ncm ⁻²
Attenuation – 100MHz to 10GHz (MIL-STD 285)	80 – 115dB (typically)
Elongation	100%
Service temperature range	-55°C to 125°C

Packaging

AS-SCS001 can be supplied in 30ml and 55ml dispense barrels, both of which incorporate luer lock fastenings at the nozzle that allow a wide range of dispense tips to be easily attached or detached. For larger scale applications it can be supplied in 70ml or 170ml Semco cartridges or standard 310ml sealant cartridges from which it can be directly applied using a suitable caulking gun.

Storage & Handling

It is recommended that when not in use that the material is stored in a cool dark, dry place. If the facility exists then some form of refrigerated or freezer storage is ideal. If kept properly sealed and in a suitable location then the material will remain usable for up to 6 weeks.

When using this material observe usual standards of industrial hygiene/practice. Avoid skin/eye contact and work in a well-ventilated area.



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Material Safety Data -**Trade name** AS-SCS001 CONDUCTIVE SILICONE CAULK**Description** Viscous single component silicone material filled with electrically conductive silver plated copper particles**Material Composition -**

Chemical Name	CAS-No.	EC EINECS No.	Symbol	%(W/W)	R-phrases
Copper (Cu)	7440-50-8	231-159-6	-	<50	-
Silver (Ag)	7440-22-4	231-131-3	-	<25	-
Xylene	1330-20-7	215-535-7	X _n	<5	R10 R20 R22 R36 R37 R38
Aluminium (Al)	7429-90-5	231-072-3	-	>50	-

Note: This material is a homogenous polymer mixture and both the silver and aluminium metal constituents are fully encapsulated within the polymer. This greatly reduces any harmful effect that might otherwise have as free powders e.g. there is virtually no inhalation risk unless the material is abraded or thermally decomposes.

Chip classification risk (R) phrases

R10	Flammable
R20	Harmful by inhalation
R22	Harmful if swallowed
R36	Irritating to eyes
R37	Irritating to respiratory system
R38	Irritating to the skin

Hazards Identification - Potential Health Effects

Ingestion	Low order of toxicity
Skin Contact	Prolonged or frequent contact may result in skin sensitisation, irritation and dermatitis
Eye Contact	Causes eye irritation – see note below in section 11 concerning contact lenses
Inhalation	No hazard if used as directed – if the cured material is ground or abraded it is recommended that appropriate respiratory protection is used



First-Aid Measures

Obtain medical attention in severe cases or if symptoms persist

Ingestion	Obtain medical attention
Skin Contact	Remove completely with dry cloth or paper towel before washing with detergent and water
Eye Contact	Immediately flush eyes with plenty of water for at least 15 minutes and obtain medical attention
Inhalation	Remove to fresh air. If not breathing, give artificial respiration and obtain immediate medical attention

Fire-Fighting Measures

Extinguishing Media	Carbon dioxide (CO ₂), dry chemical or foam
Special Fire-Fighting Procedures	Wear positive pressure, self-contained breathing apparatus and protective clothing. Combustion of this product will generate toxic fumes
Hazardous Combustion Products	Material is essentially non-flammable, however, exposure to fire or flame will result in the generation of a mixture of decomposition products (fumes/gases). The types and concentration of these products will vary depending on the temperature or degree of confinement but are generally likely to contain the following constituents. Carbon dioxide (CO ₂), carbon monoxide (CO), hydrocarbons and organic compounds of indeterminate composition, silica (SiO ₂), traces of incompletely burned or semi decomposed carbon compounds. Even if this material is not exposed directly to fire, temperatures of approximately 300°C or greater may cause toxic fumes to be generated.

Accidental Release Measures

Action to Be Taken If Material Is Released or Spilled:

- Wear suitable protective clothing, chemical resistant gloves and goggles
- Wear appropriate respiratory protection in enclosed areas or if there is insufficient ventilation
- Wipe, scrape or soak up in an inert material and put into a container for disposal in accordance with regulations
- The container should be sealed, labelled and stored in a cool, well-ventilated area to await disposal
- Warn other personnel of the spill and instruct them to leave the area.
- Wash walking surfaces with detergent and water, after material pickup is complete, to reduce slipping hazard

Handling & Storage

Precautions to Be Taken In Handling & Storage:

- Avoid breathing vapours; if exposed to high vapour concentration, leave area at once
- Avoid contact with skin and eyes
- Use only in a well-ventilated area
- Store in a cool, dark area



- Keep container closed when not in use
- Do not allow contact with acidic, basic or oxidizing materials

Exposure Controls / Personal Protection

Occupational exposure limits for methanol

TWA (8 hour exposure limit): 266 mg/m³ (OES)

STEL (15 minute exposure limit): 333 mg/m³ (OES)

Engineering Controls	Exhaust ventilation Eye wash stations
Respiratory Protection	Only required if the product is used in large quantities and/or in a confined location, otherwise, ensure that the material is used in an open and or well-ventilated area that prevents any build-up of fumes or vapours above the recommended time weighted average (TWA) or maximum short term exposure limits (STEL). If applied engineering controls are inadequate in this respect then appropriate respiratory protection must be worn.
Protective Gloves	Light weight latex or nitrile if necessary
Eye & Face Protection	Safety glasses
Other Protective Equipment	Laboratory coat, apron or good quality disposable protective overalls
Ventilation	Use only in well-ventilated area Use mechanical ventilation if required

Physical & Chemical Properties

- These are typical values and not a product specification

Appearance	Tan solid
Odour	Not applicable
pH	Not applicable
Boiling point	Not applicable
Melting point	Not applicable
Flash point	Not applicable
Flammability	Not determined
Auto flammability	Not applicable
Explosive qualities	Not explosive
Oxidising properties	Not oxidizing
Partition coefficient	Not applicable
Density	2.7 gcm ⁻³
Magnetic properties	Non-magnetic
Solubility in water	Insoluble – immiscible with water



Stability & Reactivity

Hazardous Thermal Decomposition / Combustion Products:

- Carbon dioxide (CO₂)
- Carbon monoxide (CO)
- Silicon dioxide (SiO₂)
- Nitrogen oxides
- Ammonia
- Methanol
- Hydrocarbons
- Methanal (CH₂O, Formaldehyde) may be evolved if the uncured material is exposed to temperatures above 150°C

Incompatibility (Materials to Avoid):

- Acidic agents
- Basic agents (Bases/alkalis)
- Oxidizing agents
- Amines
- Ammonia gas or ammonia containing products
- Contact with water will initiate curing process

Toxicological Information

Xylene

Acute toxicity: ORL MUS LD50 2119 mg/kg
 ORL RAT LD50 4300 mg/kg
 SCU RAT LD50 1700 mg/kg

Silver

Chronic absorption or ingestion of silver metal may cause a condition known as 'Agyria'. This is where the skin or other body tissues may take on a blue/grey discolouration due to the accumulation of fine silver particles. This may occur as a localised effect on the skin/hands where silver containing materials are frequently handled allowing silver particles to become embedded

Ingestion Reacts with moisture to form methanol – risk of serious effects at doses above 200mg/kg

Skin Contact Some individuals are sensitive to contact with nickel metal. Contact may cause allergic (contact) dermatitis (sometimes known as 'nickel itch'). This is characterised by a burning sensation, reddening of the skin, itching and superficial ulceration of the affected area. If this reaction or condition should develop, medical attention should be immediately sought.

Individuals may also develop sensitivity to contact with nickel over a period of time. Once sensitisation has occurred it can persist indefinitely. If this should occur immediately cease the direct handling nickel or nickel containing materials and avoid any further contact.

Eye Contact Temporary irritation/discomfort – metal particles could cause minor scratching of eye surface



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Inhalation	May cause dizziness, drowsiness, confusion, headaches, nausea – risk of unconsciousness at high exposure levels
Note For Persons Wearing Contact Lenses	If skin contact has occurred, traces of silicone resin may remain on the skin for several days, even after thorough washing. Contact lenses should be removed <i>before</i> working with this product. The lenses should not be handled again until all traces of silicone resin have been removed from the hands, as the silicone resin could transfer to the contact lenses and cause severe eye irritation

Ecological Information

- No data is available at this time

Disposal Considerations

- Waste material should be disposed of in accordance with local, national and community regulations
- Accumulated *cured* waste material may be sent to an appropriate refinery for metal recovery

Transport Information

This product is classified as a non-flammable solid for the purpose of transportation. This means that AS-SCS001 is not considered hazardous for transport and therefore there are no special packaging requirements and no restrictions apply to transportation by any method

Regulatory Information

In Great Britain reference should be made to the requirements of the *Control of Substances Hazardous to Health Regulations (COSHH)*, the *Management of Health and Safety at Work Regulations*, and the occupational exposure limits detailed in the current edition of *EH40*. Other legislation may also apply. Elsewhere, local, national and community regulations may apply

Other Information

This data sheet is a compilation of information obtained from the data sheets supplied by the manufacturers of the materials present in this product. This compilation of data is believed to be reliable, but it is supplied without warranty of any kind and P&P Technology Ltd assumes no obligation or liability for its completeness or accuracy. The information may not be valid if the product is mixed with other materials prior to use. The information contained in this data sheet does not constitute the user's own assessment of workplace risk as required by health and safety legislation.

