

Silver Aluminium Loaded Silicone **EC-J**

P & P Technology material reference EC-J is a silicone elastomer with a silver / aluminium conductive filler.

Silicone offers excellent performance over a wide temperature range (-55°C to +160°C) with good resistance to hydrocarbons, chemicals & weathering.

Its resistance to mineral based fluids is limited, but it has good splash resistance to most oils and greases.

Physical Properties

	Test Methods	Typical Values
Hardness	ASTM D-2240	60±5 IRHD
Specific Gravity	ASTM D-792	2.00±0.1 g/cm ³
Tensile Strength	ASTM D-412	1.7 MPa
Elongation	ASTM D-412	110% minimum
Compression Set 72 hours @ 100°C	ASTM D-395	30% maximum

Electrical Properties

Volume Resistivity	Mil-G-83528	0.008Ω/cm maximum
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Shielding Effectiveness (Mil-G-83528) dB (Mil Std 285)

Frequency	Attenuation
200KHz	79
100MHz	105
500MHz	108
2GHz	102
10GHz	110

Hazard Identification

Chemical Name	CAS-No.	EC EINECS No.	%(W/W)	R-phrase(s)
Silver (Ag)	7440-22-4	231-131-3	7 - 26	
Aluminium (Al)	7429-90-5	--	40 - 60	
Amorphous Silica (SiO ₂)	7631-86-9	231-545-4	<5	R20



Chemical Characteristics

Polymethylsiloxane with vinyl groups and auxiliary precipitated silica filler

Note: This material is a homogenous polymer mixture and both the metal and silica constituents are fully encapsulated within the polymer. This greatly reduces the risks that might otherwise be associated with free powders e.g. there is virtually no inhalation risk unless the material is abraded or thermally decomposes.

First-aid measures

In case of accident or if you feel unwell seek medical advice (show label or MSDS where possible)

After Inhalation	This should not be possible unless surface is abraded and dust is produced.
After Contact With Skin	Prolonged or frequent contact may result in skin sensitization, irritation and dermatitis. Suitable gloves should be made available and good general skin care regimes should be put in place e.g wash areas of contact with soap and water.
After Contact With Eyes	Rinse immediately with plenty of water. Seek medical attention if irritation persists. Metal particles may scratch surface of eye (contact lenses may increase this risk)
After Swallowing	Low order of toxicity. Drink water. Do not induce vomiting. Seek medical advice.

Fire-fighting measures

Suitable Extinguishing Media	Water spray, powder, foam, carbon dioxide or sand
Unsuitable Extinguishing Media	Water Jet
Special Exposure Hazards Arising From Material And Its Combustion	Exposure to temperatures above 300°C may lead to formation of toxic fumes and organic vapours of indeterminate composition.
Special Fire Fighting Protection Equipment	Use respiratory protection independent of re-circulated air.

Accidental Release Measures

Personal Precautions	No special measures required.
Environmental Precautions	Prevent material from entering sewers and surface water.
Methods For Clean Up	Scoop up large quantities and place in appropriate waste container. Remaining materials should be washed off using detergent and slippery surface coated with sand or other inert granular material.

Handling

Precaution For Safe Handling	Follow good standard hygiene practices
Precautions Against Fire And Explosion	Avoid exposure to sources of ignition



Storage

Do not store with acids, bases and oxidizing materials.
Store in a cool dry place out of direct sunlight.

Exposure Controls and Personal Protective Equipment

Maximum airborne concentration in work place for silver coated aluminium	TWA (8 hour exposure limit) - 0.01 mg/m ³ STEL (15 minute exposure limit) - 0.01 mg/m ³
General	Observe standard industrial hygiene practices. Do not eat or drink.
Respiratory Protection	Not required unless material is being abraded.
Hand Protection	Recommend low gauge butyl gloves
Eye Protection	Recommend use of safety glasses, availability of eye wash stations
Skin Protection	Not required

Control and Limits of Exposure to the Environment

Prevent material from entering surface waters and soil

Physical and Chemical Properties

Physical State	Elastic Solid
Colour	Tan (may be pigmented blue)
Odour	Slight
Melting Point	not applicable
Boiling Point	not applicable
Flash Point	> 100°C
Ignition Point	> 300°C
Lower explosion Limit	not applicable
Upper explosion Limit	not applicable
Vapour Pressure	not applicable
Density	2.0 g/cm ³
Solubility/miscibility (Water)	insoluble
pH value	not applicable
Viscosity (dynamic)	not applicable
Magnetic Properties	none
Thermal Decomposition	> 250°C
Stability and Reactivity	If stored and handled in accordance with standard industrial good practice no hazardous reactions are known.
Conditions to avoid	None known
Materials to avoid	Acidic agents Basic agents Oxidizing agents Carbon monoxide Contact with water will initiate curing process



Hazardous decomposition products

Elevated temperatures will lead to the evolution of methanol, oxides of carbon, silicon and nitrogen. May release small amounts of formaldehyde by oxidative processes at temperatures above 150°C

Toxicological information

Ingestion	Chronic absorption/ingestion of Silver metal may cause a condition known as 'Agyria'. This is where the skin takes 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 and the silver particles become embedded
Skin Contact	Individuals may develop sensitivity to contact with the material. This sensitisation may be indefinite. If this occurs the individual should immediately cease direct handling of the material and avoid further contact. The risk of this is however low.

Ecological Information

Ecotoxicity	No data available at this time Individual components suggest none are expected
Mobility	Insoluble in water
Persistence and Degradability	Does not biologically degrade Separation by sedimentation
Bio-accumulation	Bio-accumulation is not expected to occur
Other Harmful Effects	None known
Additional Information	No problems expected if handled and treated in accordance with standard industrial practices and local regulations as applicable

Other Information

Disposal considerations	Dispose of in accordance with local regulations
Transport Information	Not Regulated
Regulatory Labels	None

The information above is believed to be accurate and represents the best information currently available to us. Users should make their own investigations to determine the suitability of the information for their particular purposes. This document is intended as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.

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