1. SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product Name	M-Line 570-28R Solder

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified Use(s)	Welding and soldering products (with flux coatings or flux cores.), flux products.
Uses Advised Against	For professional users only.

1.3 Details of the supplier of the safety data sheet

Company Identification	VISHAY MEASUREMENTS GROUP UK LTD Stroudley Road Basingstoke Hampshire United Kingdom RG24 8FW
Telephone	+44 (0) 1256 462131
Fax	+44 (0) 1256 471441
E-Mail (competent person)	mm.uk@vishaypg.com

1.4 Emergency telephone number

Emergency Phone No.	(00-1) 703-527-3887	CHEMTREC (24 hours)
Languages spoken	All official European languages.	

2. SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 Regulation (EC) No. 1272/2008 (CLP)

Repr. 1A; H360DF
Lact.; H362
STOT RE 1; H372

2.2 Label elements

According to Regulation (EC) No. 1272/2008 (CLP)

Product Name: Solder (5/93 Tin/Lead) 570-28R MFG LOCTITE

Contains: Lead and Rosin

Hazard Pictogram(s)

Signal Word(s): Danger

Hazard Statement(s):
H360FD: May damage fertility. May damage the unborn child.
H362: May cause harm to breast-fed children.
H372: Causes damage to organs through prolonged or repeated exposure.

Precautionary Statement(s):
P201: Obtain special instructions before use.
P260: Do not breathe dust/fume/gas/mist/vapours/spray.
P264: Wash hands and exposed skin thoroughly after handling.
P263: Avoid contact during pregnancy and while nursing.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P308+P313: IF exposed or concerned: Get medical advice/attention.

Additional Information: None.

2.3 Other hazards

Smoke produced during soldering will contain rosin which is an allergen and can cause pulmonary irritation and damage.

3. SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances Not applicable.

3.2 Mixtures

EC Classification Regulation (EC) No. 1272/2008 (CLP)

Chemical identity of the substance	%W/W	CAS No.	EC No.	REACH Registration No.	Hazard classification
Lead	<100	7439-92-1	231-100-4	Not yet assigned in the supply chain	Lact.; H362 Repr. 1A; H360FD STOT RE 1; H372

For full text of H/P Statements see section 16.

4. SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Self-protection of the first aider

Use personal protective equipment as required. Wear appropriate personal protective equipment, avoid direct contact. Ensure adequate ventilation. Do not breathe fumes. Wear suitable protective clothing. Wear suitable respiratory protective equipment if exposure to high levels of material are likely. Avoid contact during pregnancy and while nursing.

Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Apply artificial respiration if breathing has ceased or shows signs of failing. IF exposed or concerned: Get medical advice/attention.

Skin Contact

IF ON SKIN: Remove contaminated clothing and wash all affected areas with plenty of water. Contaminated clothing should be thoroughly cleaned. If skin irritation or rash occurs: Get medical advice/attention. IF exposed or concerned: Get medical advice/attention.

Molten material can cause severe burns. Do NOT try to peel molten material from the skin. Cool rapidly with water.

Eye Contact

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if eye irritation develops or persists.

Ingestion

If swallowed, rinse mouth with water (only if the person is conscious). Do not induce vomiting. Get medical advice/attention if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed

May cause an allergic skin reaction. May damage fertility. May damage the unborn child. May cause harm to breastfed babies. Causes damage to organs through prolonged or repeated exposure. Flux fumes during soldering may cause irritation and damage of mucous membranes and respiratory system.

Inhalation (Fume)

Flux fumes during soldering may cause irritation and damage of mucous membranes and respiratory system. Smoke produced during soldering will contain rosin which is an allergen and can cause pulmonary irritation and damage.

Lead

High atmospheric concentrations may lead to adverse effects on the central nervous system and anaesthetic effects, including drowsiness, giddiness, headache, nausea and unconsciousness. Lead is a cumulative poison and continuous exposure to small amounts over time can raise the body's content to toxic levels. Symptoms of lead poisoning include abdominal pain, nausea, vomiting and headache. May cause gastrointestinal tract irritation if swallowed.

		Lead poisoning may cause lassitude, weight loss, anemia, nausea, vomiting, central nervous system damage.
	Hot/molten product	Molten material can cause severe burns.
4.3	**Indication of any immediate medical attention and special treatment needed**	Treat symptomatically.
	Notes to a physician:	IF ON SKIN: Hot/molten product: In the event of burns from the molten liquid, do not attempt to remove adhering material. In case of burns immediately cool affected skin as long as possible with cold water.
	prolonged exposure:	If thought to be overexposed, the person should have a blood-lead analysis done. Patient should be kept under medical observation for at least 48 hours.

5. SECTION 5: FIREFIGHTING MEASURES

5.1	**Extinguishing media**	
	Suitable Extinguishing media	As appropriate for surrounding fire.
	Unsuitable extinguishing media	Do not use water on fires when molten metal is present.
5.2	**Special hazards arising from the substance or mixture**	Flux in cored solder may ignite when the solder melts in a fire. When heated to soldering temperatures, the solvent in the flux will boil away and carry up droplets of rosin and thermal degradation products such as aliphatic aldehydes, acids and terpenes. No lead or antimony are detected in fumes from soldering below 537°C. Melted solder may liberate carbon monoxide, carbon dioxide, lead oxide fumes.
5.3	**Advice for fire-fighters**	Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Do not breathe fumes. Keep containers cool by spraying with water if exposed to fire. Avoid run off to waterways and sewers.

6. SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1	**Personal precautions, protective equipment and emergency procedures**	Ensure adequate ventilation. Use personal protective equipment as required. See Section: 8. Melted solder will solidify on cooling and can be scraped up. Avoid breathing smoke fumes during soldering. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces. Avoid contact during pregnancy and while nursing.
6.2	**Environmental precautions**	Avoid release to the environment. Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body.
6.3	**Methods and material for containment and cleaning up**	Ensure suitable personal protection during removal of spillages. Allow product to cool/solidify and pick up as a solid. Transfer to a container for disposal. Recover or recycle if possible. Dispose of this material and its container as hazardous waste
6.4	**Reference to other sections**	See Section: 8, 13

7. SECTION 7: HANDLING AND STORAGE

7.1	**Precautions for safe handling**	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Ensure adequate ventilation. Avoid all contact. Avoid contact during pregnancy and while nursing. Avoid breathing smoke fumes during soldering. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces. Use personal protective equipment as required. See Section: 8. Do not eat, drink or smoke when using this product. Wash hands before breaks and after work.
	When molten:	Keep from any possible contact with water.
7.2	**Conditions for safe storage, including any incompatibilities**	Store in a well-ventilated place.
	Storage temperature	Ambient.
	Storage life	Stable under normal conditions.
	Incompatible materials	Store away from sources of sulfur. Keep away from: Strong Acids, Alkalis, Chlorine and Strong oxidising agents. Use of strong acid fluxes may result in liberation of toxic lead chloride fumes.

7.3 Specific end use(s) See Section: 1.2

8. SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational Exposure Limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m³)	STEL (ppm)	STEL (mg/m³)	Note
Inorganic lead and its compounds	-	-	0.15	-	-	BOELV
Lead	7439-92-1	-	0.15	-	-	WEL
Tin	7440-31-5	-	2	-	4	WEL
		-	2	-	-	IOELV
Silver	7440-22-4	-	0.1	-	-	WEL, IOELV

Note: WEL: Workplace Exposure Limit (UK HSE EH40). BOELV: Binding Occupational Exposure Limit Values (EU) Directive 98/24/EC. IOELV: Indicative Occupational Exposure Limit Value.

8.1.2 Biological limit value

United Kingdom: The Control of Lead at Work Regulations SI 2002/2676

In accordance with SI 2002/2676: 2. (1) In these Regulations: “action level” means a blood-lead concentration of:
(a) in respect of a woman of reproductive capacity, 25 µg/dl;
(b) in respect of a young person, 40 µg/dl; or
(c) in respect of any other employee, 50 µg/dl

SUBSTANCE	CAS No.	Biological limit value	Biological Guidance Value	Note
Lead	7439-92-1	30 µg / 100 ml	-	SCOEL

Source: SCOEL - Scientific Committee on Occupational Exposure Limits (2014) EU Commission Decision 2014/113/EU.

8.1.3 PNECs and DNELs Not established.

8.2 Exposure controls

8.2.1 Appropriate engineering controls Ensure adequate ventilation or use appropriate containment. Atmospheric levels should be controlled in compliance with the occupational exposure limit. Local exhaust recommended.

8.2.2 Individual protection measures, such as personal protective equipment (PPE) General hygiene measures for the handling of chemicals are applicable. Avoid all contact. Avoid breathing smoke fumes during soldering. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces. Wash hands before breaks and after work. Keep work clothes separately. Contaminated clothing should be thoroughly cleaned. Do not eat, drink or smoke at the work place.
Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Eye/ face protection

Wear eye protection with side protection (EN166).
Hot/molten product: Goggles or Full face shield.

Skin protection

Hand protection: Wear impervious gloves (EN374). Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves’ producer.
Hot/molten product: Use gloves with insulation for thermal protection, when needed.

Body protection: Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

	Hot/molten product: Wear flameproof clothing.
Respiratory protection 	In case of inadequate ventilation wear respiratory protection. Open system(s): Wear suitable respiratory protective equipment. Recommended: Dust mask/ Half-face mask (DIN EN 140), Filter type: P2.
Thermal hazards	Hot/molten product: Wear appropriate personal protective equipment, avoid direct contact.

8.2.3 Environmental Exposure Controls Avoid release to the environment.

9. SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Silver - Grey metal in wire form / paste
Odour	Mild odour
Odour threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	>100 °C
Evaporation rate	Not applicable.
Flammability (solid, gas)	Non-flammable.
Upper/lower flammability or explosive limits	Not applicable.
Vapour pressure	Not available.
Vapour density	Not available.
Relative density	>1 (H2O = 1)
Solubility(ies)	Insoluble in water.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	Not available.
Decomposition Temperature	Not available.
Viscosity	Not available.
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.

9.2 Other information

Specific Gravity	11.1
VOC Content (California)	<5%

10. SECTION 10: STABILITY AND REACTIVITY

10.1 Stability and reactivity	Stable under normal conditions.
10.2 Chemical stability	Stable under normal conditions.
10.3 Possibility of hazardous reactions	Flux in cored solder may ignite when the solder melts in a fire. Reacts vigorously with chlorine and oxidising agents. Use of strong acid fluxes may result in liberation of toxic lead chloride fumes.
10.4 Conditions to avoid	When molten: Keep from any possible contact with water.
10.5 Incompatible materials	Keep away from: Strong Acids, Alkalis, Chlorine and Strong oxidising agents. Store away from sources of sulfur.
10.6 Hazardous decomposition product(s)	When heated to soldering temperatures, the solvent in the flux will boil away and carry up droplets of rosin and thermal degradation products such as aliphatic aldehydes, acids and terpenes. No lead or antimony are detected in fumes from soldering below 537°C. Melted solder may liberate carbon monoxide, carbon dioxide, lead oxide fumes.

11. SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects (Substances in preparations / mixtures)

Acute toxicity

Ingestion	Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.
Inhalation	Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 (Dusts) > 5 mg/l.
Skin Contact	Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.
Skin corrosion/irritation	Based upon the available data, the classification criteria are not met.
Serious eye damage/irritation	Based upon the available data, the classification criteria are not met.
Respiratory or skin sensitization	Based upon the available data, the classification criteria are not met.
Germ cell mutagenicity	Based upon the available data, the classification criteria are not met.
Carcinogenicity	Based upon the available data, the classification criteria are not met.
Reproductive toxicity	Repr. 1A: May damage fertility. May damage the unborn child. Lact.: May cause harm to breastfed babies.
Lead:	Repr. 1A; H360FD Harmonised Classification NOAEL: 250 ml/l Drinking water (Unnamed, 1984) Lact. Harmonised Classification
STOT - single exposure	Based upon the available data, the classification criteria are not met.
STOT - repeated exposure	STOT RE 1; Causes damage to organs through prolonged or repeated exposure.
Lead:	STOT RE 1; H372 Oral: LOAEL 200ppm (rat)
Aspiration hazard	Based upon the available data, the classification criteria are not met.

11.2 Other information None known.

12. SECTION 12: ECOLOGICAL INFORMATION

12.1	**Toxicity**	Based upon the available data, the classification criteria are not met. Estimated Mixture LC50 >100 mg/l (Fish)
12.2	**Persistence and degradability**	The organic part of the product is biodegradable.
	Lead:	Not applicable for inorganic substances
12.3	**Bioaccumulative potential**	The product has low potential for bioaccumulation. (metal in wire form)
	Lead:	The substance has high potential for bioaccumulation. BCF 40000 (dry wt)
12.4	**Mobility in soil**	The product is predicted to have low mobility in soil. (metal in wire form)
	Lead:	The substance is predicted to have moderate mobility in soil. Partially soluble
12.5	**Results of PBT and vPvB assessment**	Not classified as PBT or vPvB.
12.6	**Other adverse effects**	None known.

13. SECTION 13: DISPOSAL CONSIDERATIONS

13.1	**Waste treatment methods**	Solder can be reclaimed. Dispose of this material and its container as hazardous waste Dispose of wastes in an approved waste disposal facility. Disposal of electrical waste must be in accordance with the Waste Electrical and Electronic Equipment Directive (WEEE Directive, 2012/19/EU).
13.2	**Additional Information**	Dispose of contents in accordance with local, state or national legislation.

14. SECTION 14: TRANSPORT INFORMATION

Not classified according to the United Nations 'Recommendations on the Transport of Dangerous Goods'.

		ADR/RID / IMDG / IATA
14.1	**UN number**	Not classified as dangerous for transport.
14.2	**Proper Shipping Name**	Not classified
14.3	**Transport hazard class(es)**	Not classified
14.4	**Packing group**	Not classified

14.5	**Environmental hazards**	Not classified as a Marine Pollutant/Environmentally hazardous substance.
14.6	**Special precautions for user**	See Section: 2
14.7	**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**	Not applicable.
14.8	**Additional Information**	None.

15. SECTION 15: REGULATORY INFORMATION

15.1	**Safety, health and environmental regulations/legislation specific for the substance or mixture**	
15.1.1	**EU regulations**	Lead concentrations in electrical equipment are controlled by Directive 2002/95/EC (commonly referred to as the Restriction of Hazardous Substances Directive or RoHS) and recast Directive 2011/65/EU.
	Authorisations and/or Restrictions On Use	For professional users only. Lead: Entry 30: Restriction on supply of substances and mixtures to the general public, if classified as Repr. 1A or 1B Entry number: 63. REACH: ANNEX XVII restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles.
15.1.2	**National regulations**	
	United Kingdom	The Control of Lead at Work Regulations (2002)
	Wassergefährdungsklasse (Germany)	Water hazard class: 1
15.2	**Chemical Safety Assessment**	A chemical safety assessment is not required under REACH.

16. SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: Not applicable – V1.0

References: Existing Safety Data Sheet (SDS), Harmonised Classification and Existing ECHA registration(s) for Lead (CAS No. 7439-92-1)

EU Classification: This Safety Data Sheet was prepared in accordance with EC Regulation (EC) 1907/2006 (REACH), 1272/2008 (CLP) & 2015/830.

Classification of the substance or mixture According to Regulation (EC) No. 1272/2008 (CLP)	**Classification Procedure**
Repr. 1A; H360FD	Threshold Calculation
Lact.; H362	Threshold Calculation
STOT RE 1; H372	Threshold Calculation

LEGEND

LTEL: Long Term Exposure Limit
STEL: Short Term Exposure Limit
DNEL: Derived No Effect Level
SCL: Specific Concentration Limit
LOAEL: Lowest observed adverse effect level
PNEC: Predicted No Effect Concentration
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NOAEL: No Observed Adverse Effect Level

Hazard classification / Classification code:

Repr. 1A; Reproductive toxicity, Category 1A
Lact.; Effects on or via lactation
STOT RE 1; Specific target organ toxicity — repeated exposure, Category 1

Hazard Statement(s)

H360FD: May damage fertility. May damage the unborn child.
H362: May cause harm to breast-fed children.
H372: Causes damage to organs through prolonged or repeated exposure.

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

Disclaimers

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Vishay Precision Group gives no warranty as to the fitness of the

product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Vishay Precision Group accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.

Disclaimer

ALL PRODUCTS, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Vishay Precision Group, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “VPG”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

The product specifications do not expand or otherwise modify VPG’s terms and conditions of purchase, including but not limited to, the warranty expressed therein.

VPG makes no warranty, representation or guarantee other than as set forth in the terms and conditions of purchase. **To the maximum extent permitted by applicable law, VPG disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.**

Information provided in datasheets and/or specifications may vary from actual results in different applications and performance may vary over time. Statements regarding the suitability of products for certain types of applications are based on VPG’s knowledge of typical requirements that are often placed on VPG products. It is the customer’s responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. You should ensure you have the current version of the relevant information by contacting VPG prior to performing installation or use of the product, such as on our website at vpgsensors.com.

No license, express, implied, or otherwise, to any intellectual property rights is granted by this document, or by any conduct of VPG.

The products shown herein are not designed for use in life-saving or life-sustaining applications unless otherwise expressly indicated. Customers using or selling VPG products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify VPG for any damages arising or resulting from such use or sale. Please contact authorized VPG personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.