SAFETY DATA SHEET
RAY4567
(US, CN, EU Version for International Trade)

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: S-1308 Stress Patch **RAY4567**
PRODUCT CODES: S-1308

MANUFACTURER: Tyco Electronics Corporation, a TE Connectivity Ltd. company
DIVISION: Tyco Electronics Energy Division
ADDRESS: 2901 Fulling Mill Road
Middletown, PA 17057-3163

SUPPLIERS

Tyco Electronics Canada Ltd.
20 Esna Park Drive
Markham, Ontario L3R 1E1

Tyco Electronics Corporation
8000 Purfoy Road
Fuquay-Varina, NC 27526

EMERGENCY TELEPHONE NUMBERS:
US: CHEMTREC 1-800-424-9300
CN: CHEMTREC 1-800-424-9300
Outside North America: 1-703-527-3887 (Collect calls accepted)

NON-EMERGENCY HEALTH/SAFETY INFORMATION: North America: 1-800-327-6996

CHEMICAL FAMILY: Zinc oxide and other ingredients in a polyisobutylene matrix

PRODUCT USE: Provides stress control in cold-applied TFT terminations at 25kV and higher. The product has an end-use application in high voltage electrical installations where stress protection is desired (see, Tyco Electronics Product Installation and Use Instructions that accompany the product).

This product is considered an Article thus it is not regulated under US-OSHA; CAN-WHMIS; IOSH; ISO; UK-CHIP; or EU Directives (1272/2008/EC–Classification, Labelling and Packaging of Substances and Mixtures, 98/24/EC-Chemical Agents at Work, 2001/58/EC-MSDS Content, and 1907/2006/EC-REACH),, and an MSDS is not required for this product considering that when used as recommended or intended, or under ordinary conditions, it should not present a health and safety exposure or other hazard. If overheated, charred, burned, or shredded the health and safety information presented below may apply.

Additional Information
This product is not intended for solvent-containing or extreme temperature or pressure environments. Please request information if considering use beyond current product labelling or not covered in the Product Installation Guide.

SECTION 2: HAZARDS IDENTIFICATION

GHS Classification: Not applicable to articles

Health Hazards		**Environmental Hazards**
Acute Toxicity – NL	Reproductive/Developmental – NL	Aquatic Toxicity – NL
Skin Corrosion/Irritation – NL	Target Organ Toxicity – NL	
Eye Corrosion/Irritation - NL	**Physical Hazards**	
Respiratory or Skin Sensitization – NL	Flammability – NL (Not flammable or combustible)	
Mutagenicity – NL		
Carcinogenicity – NL		

GHS Label: ***As required for Finished Goods according to End-Use Products Regulations***

Symbols *(Industrial/Commercial Goods Only)*: Not applicable

Hazard Statements	**Precautionary Statements**
Not applicable	Not applicable

EMERGENCY OVERVIEW:	As a cold-applied product, thermal degradation is very unlikely, but thermal degradation products may include, but are not limited to, carbon monoxide, carbon dioxide, various hydrocarbons, and water. Inhalation of this product is unlikely due to its low volatility, but at temperatures above 1472 degrees F (800 degrees C), toxic metal oxide fumes (such as zinc oxide) may be given off. These fumes may cause metal fume fever. The symptoms of metal fume fever include fever, chills, sweats, nausea, vomiting, cough, muscle aches and pains, and difficulty breathing. Symptoms usually appear a few hours after exposure and subside within a 24 to 48 hours. See Section 10.

POTENTIAL HEALTH EFFECTS:

EYES: Fumes evolved during hot processing may irritate eyes, nose and throat. Contact with molten material may cause thermal burns.

SKIN: This product may cause skin irritation. Contact with molten material may cause thermal burns. There is insufficient information available on this product to predict the effects from skin absorption.

INGESTION: Ingestion of this product is highly unlikely. Ingestion of excessive quantities may cause cough, salivation, metallic taste, diarrhoea, dizziness, irritability, muscle pain, nausea, vomiting, gastritis, and severe irritation of the mouth, nose, and stomach.

INHALATION: Inhalation of this product is unlikely due to its low volatility. At temperatures above 1472 degrees metal oxide fumes may be generated. These fumes may cause metal fume fever. The symptoms of metal fume fever include fever, chills, sweats, nausea, vomiting, cough, muscle aches and pains, and difficulty breathing. Symptoms usually appear a few hours after exposure and subside within a 24 to 48 hours.

ACUTE HEALTH HAZARDS:
Possible irritation, as described above.
CHRONIC HEALTH HAZARDS:
Results of tests in laboratory animals and cell culture systems have shown that zinc oxide can cause irreversible changes in the genetic material (DNA) of a cell. The human health consequence of these changes is not fully understood.
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:
None known.

Additional Information
None.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS (Chemical/Common Names):	CAS No.:	% by Wt:	EC No.:
Zinc oxide	1314-13-2	60-100	215-222-5
Antimony trioxide	1309-64-4	1-5	215-175-0
Petroleum hydrocarbon	68132-00-3	1-5	NA
Polyisobutylene and butene copolymer	Non-hazardous	15-40	NA

NA – Not applicable/ND – Not determined

Additional Information
These ingredients reflect components of the finished product related to performance of the product as distributed into commerce.

SECTION 4: FIRST AID MEASURES

EYE CONTACT: If eye irritation occurs, hold eyelids apart and flush affected area(s) with clean water. Seek medical attention.

SKIN CONTACT: Thoroughly wash affected area(s) with mild soap and water. If irritation or redness develops and persists, seek medical attention.

INGESTION: Ingestion of this product is highly unlikely. However, if swallowed and symptoms develop seek medical attention.

INHALATION: If respiratory symptoms or other symptoms of exposure develop, move victim to fresh air. If symptoms persist, seek medical attention. If breathing difficulties develop, qualified personnel should administer oxygen. Seek immediate medical attention. If victim is not breathing, immediately begin artificial respiration. Keep victim warm and quiet. Seek immediate medical attention.

Additional Information
Note to Physician: An individual exhibiting symptoms consistent with metal fume fever should be removed from any further exposure to overheated metal products pending specific medical evaluation by an occupational medicine and pulmonary specialist.

SECTION 5: FIRE-FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA:
Use dry chemical powder, carbon dioxide, water and foam.
SPECIAL FIRE FIGHTING PROCEDURES & PROTECTIVE EQUIPMENT:
Firefighters should wear self-contained breathing apparatus with a full-face piece operated in the positive pressure demand mode when fighting fires. Use water spray to keep fire-exposed containers cool.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
Toxic fumes may be given off in a fire. See also sections on Hazardous Combustion Products.
SPECIFIC HAZARDS IN CASE OF FIRE:
Avoid using water spray on live electrical circuits.

Additional Information
None.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:
Avoid Contact with Skin.
ENVIRONMENTAL PRECAUTIONS:
Prevent spilled material from entering sewers and waterways.
SPILL CONTAINMENT & CLEANUP METHODS/MATERIALS:
Sweep or shovel spilled material and absorbent and place in approved container.

Additional Information
None.

SECTION 7: HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING AND STORAGE:
HANDLING: Refer to Tyco Electronics product installation instructions. Do not eat, drink, or smoke in the work area. Wash hands after handling material. Avoid contact with residues from fire damaged products (see Section 10)
STORAGE: Store in closed containers in a cool, dry, well-ventilated area away from direct heat and light. Avoid contact with strong acids, bases, and oxidizers.
OTHER PRECAUTIONS (e.g.; Incompatibilities): Avoid contact with strong acids, bases, and oxidizers.

Additional Information
Classification according to all national and provincial hazardous waste regulations is required before disposal.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS/SYSTEM DESIGN INFORMATION:
Please refer to Tyco Product Installation Instructions.
VENTILATION:
Products are designed to be applied without heat. Additional mechanical ventilation is generally not needed, unless work is to occur in a confined space.

RESPIRATORY PROTECTION:
Not required for normal conditions of use. See also special firefighting procedures (Section 5).
EYE PROTECTION:
Wear protective glasses with side shields or goggles.
SKIN PROTECTION:
Wear chemical resistant gloves as a standard procedure to prevent skin contact.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT:
Additional personal protective equipment may be required in accordance with an effective arc-flash protection program.

EXPOSURE GUIDELINES & LIMITS: There are no exposure limits applicable to this product as supplied or used. However, there are exposure limits for zinc oxide and antimony trioxide.

OSHA (U.S.)	Permissible Exposure Limit (PEL/TWA)	Zinc oxide	15 mg/m^3
		Antimony trioxide	0.5 mg/m^3
ACGIH	Threshold Limit Value (TLV-TWA)	Zinc oxide	2 mg/m^3
	Short-term Exposure Limit (TLV-STEL)	Zinc oxide	10 mg/m^3
Ontario	Threshold Limit Value (TLV-TWA)	Antimony trioxide	0.5 mg/m^3
	Time-Weighted Average Exposure Value (TWAEV)	Zinc oxide (respirable)	2 mg/m^3
	Short-Term Exposure Value (STEV)	Zinc oxide (respirable)	10 mg/m^3
	Time-Weighted Average Exposure Value (TWAEV)	Antimony trioxide	0.5 mg/m^3
Quebec	Time-Weighted Average Exposure Value (TWAEV)	Zinc oxide (total)	10 mg/m^3
	Time-Weighted Average Exposure Value (TWAEV)	Antimony trioxide	0.5 mg/m^3
WorkSafe BC	Exposure Limit (TWA)	Zinc oxide (respirable)	2 mg/m^3
	Exposure Limit (STEL)	Zinc oxide (respirable)	10 mg/m^3
	Exposure Limit (TWA)	Antimony compounds (as Sb)	0.5 mg/m^3
United Kingdom	Occupational Exposure Standard (OES)	Dust (respirable)	4 mg/m^3
		Antimony trioxide	0.5 mg/m^3

TWA – 8-Hour Time Weighted Average/ STEL – Short Term Exposure Limit/ NE – Not Established

Additional Information
- Compounds listed above are encapsulated in a polymer matrix and are unlikely to become airborne.
- May be Required to meet Domestic Requirements for a Specific Destination(s).

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Dark green sheet
ODOR:	Slight hydrocarbon odour
ODOR THRESHOLD:	NA
PHYSICAL STATE:	Solid
pH:	NA
BOILING POINT:	NA
MELTING POINT:	NA
FREEZING POINT:	NA
VAPOR PRESSURE:	Nil
VAPOR DENSITY (AIR = 1):	> 1
SPECIFIC GRAVITY (H2O = 1):	2.6
EVAPORATION RATE:	NA
SOLUBILITY IN WATER:	Nil
FLASH POINT:	NA

AUTO-IGNITION TEMPERATURE: NA
LOWER EXPLOSIVE LIMIT (LEL): NA
UPPER EXPLOSIVE LIMIT (UEL): NA
PARTITION COEFFICIENT: NA
VISCOSITY (poise @ 25° C): Not Available
DECOMPOSITION TEMPERATURE: Not Available

FLAMMABILITY/HMIS HAZARD CLASSIFICATIONS (US/CN/EU):
HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0

Additional Information
None.

SECTION 10: STABILITY AND REACTIVITY

STABILITY: This product is stable under normal conditions at ambient temperature.
INCOMPATIBILITY (MATERIAL TO AVOID): Avoid contact with strong acids, bases, and oxidizers.
HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Thermal degradation products may include, but not be limited to, carbon monoxide, carbon dioxide, various hydrocarbons, and water. At temperatures above 1472 degrees F (800 degrees C), toxic metal oxide fumes (such as zinc oxide) may be given off.
HAZARDOUS POLYMERIZATION: Will not occur
CONDITIONS TO AVOID: No information available.

Additional Information
None.

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE TOXICITY (Test Results Basis and Comments):
Zinc oxide: LD_{50} Oral (mouse): 7,950 mg/kg; LC_{50} Inhalation (mouse): 2,500 mg/m^3.
Antimony trioxide: LD_{50} Oral (rat): >20,000 mg/kg.
SUBCHRONIC/CHRONIC TOXICITY (Test Results and Comments):
No chronic toxicity data available on product as a whole.

Additional Information
IARC lists antimony trioxide, one ingredient in this product present at equal to or greater than 0.1% of this product, as a suspect carcinogen (Group 2B). IARC does not list any other components of this product as a carcinogen. OSHA and NTP do not list any ingredients of this product, present at equal to or greater than 0.1% of this product as a carcinogen.

SECTION 12: ECOLOGICAL INFORMATION

PERSISTENCE & DEGRADABILITY:
No data available on biodegradation.
BIO-ACCUMULATIVE POTENTIAL (Including Mobility):
No data available on bioaccumulation.
AQUATIC TOXICITY (Test Results & Comments):
No data available on aquatic toxicity. Water Endangering Class (WGK): NA

Additional Information
- No known effects on stratospheric ozone depletion.
- Volatile organic compounds: 0% (by Volume)

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD:	Follow local, State/Provincial, and Federal/National regulations applicable to as-used, end-of-life characteristics to be determined by end-user.
HAZARDOUS WASTE CLASS/CODE:	US - Not applicable to finished product as manufactured for distribution into commerce. CN – Not applicable to finished product as manufactured for distribution into commerce. EWC – Not applicable to finished product as manufactured for distribution into commerce.

Additional Information

Not Included – Dispose/Recycle as allowed by local jurisdiction for the end-of-life characteristics as-disposed.

SECTION 14: TRANSPORT INFORMATION

GROUND – US-DOT/CAN-TDG/EU-ADR/APEC-ADR:

Proper Shipping Name	Stress Control Mastic		
Hazard Class	6.1	ID Number	UN1549
Packing Group	III	Labels	NA

AIRCRAFT – ICAO-IATA:

Proper Shipping Name	Stress Control Mastic		
Hazard Class	6.1	ID Number	UN1549
Packing Group	III	Labels	NA

VESSEL – IMO-IMDG:

Proper Shipping Name	Stress Control Mastic		
Hazard Class	6.1	ID Number	UN1549
Packing Group	III	Labels	NA

Additional Information

- Transport requires proper packaging and paperwork, including the Nature and Quantity of goods, per applicable origin/destination/customs points as-shipped.
- Not restricted for any mode of international transport as finished goods.
- Not a Marine Pollutant as-shipped per IMO/IMDG.

SECTION 15: REGULATORY INFORMATION

INVENTORY STATUS:

All components are listed on the TSCA; EINECS/ELINCS; and DSL, unless noted otherwise below.

U.S. FEDERAL REGULATIONS:

TSCA Section 8b – Inventory Status: All chemicals comprising this product are either exempt or listed on the TSCA Inventory.

TSCA Section 12b – Export Notification: The finished product contains chemicals subject to TSCA Section 12b export notification.

Chemical	CAS #
None	NA

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT)

Chemicals present in the product which could require reporting under the statute:

Chemical	CAS #
Antimony trioxide	1309-64-4

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

The finished product contains chemicals subject to the reporting requirements of Section 313 of SARA Title III.

Chemical	CAS #	% wt
Antimony trioxide	1309-64-4	1-5

CERCLA SECTION 311/312 HAZARD CATEGORIES: Note that the finished product is exempt from these regulations.

Fire Hazard	No
Pressure Hazard	No
Reactivity Hazard	No
Immediate Hazard	No
Delayed Hazard	No

STATE REGULATIONS (US):

California Proposition 65

The following chemicals identified to exist in the finished product as distributed into commerce are known to the State of California to cause cancer, birth defects, or other reproductive harm:

Chemical	CAS #	% Wt
Antimony trioxide	1309-64-4	1-5
Cadmium (Trace natural contaminant in zinc ore)	NA	Trace. No exposure likely over safe harbour inhaled dose of 0.05 µg/day
Lead (Trace natural contaminant in zinc ore)	NA	Trace. No exposure likely over safe harbour ingested dose of 15 µg/day

California Consumer Product Volatile Organic Compound Emissions

This Product is not regulated as a Consumer Product for purposes of CARB/OTC VOC Regulations, as-sold for the intended purpose and into the industrial/Commercial supply chain.

INTERNATIONAL REGULATIONS (Non-US):

Canadian Domestic Substance List (DSL)

All ingredients remaining in the finished product as distributed into commerce are included on the Domestic Substances List.

WHMIS Classifications

Not Regulated as an article. May fit class D, Division 2, Subdivision A under certain conditions, such as when overheated with inadequate ventilation.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Controlled Products Regulations.

NPRI and Ontario Regulation 127/01

This product contains the following chemicals subject to the reporting requirements of Canada NPRI +/or Ont. Reg. 127/01:

Chemical	CAS #	% Wt
Antimony trioxide	1309-64-4	1-5

European Inventory of Existing Commercial Chemical Substances (EINECS)

All ingredients remaining in the finished product as distributed into commerce are exempt from, or included on, the European Inventory of Existing Commercial Chemical Substances.

European Communities (EC) Hazard Classification according to directives 1272/2008/EC–Classification, Labelling and Packaging of Substances and Mixtures and 98/24/EC-Chemical Agents at Work.

Please refer to the GHS Classifications and hazard/precaution statements in Section 2.

Additional Information

Not Applicable. U.S., Canada and EEC/EU Directives related to chemical hazards provide exemption of manufactured articles composed of discrete solid structures, and for articles that do not pose a safety or health hazard. When properly used as intended, this product in not expected to present a safety or health hazard when distributed into commerce.

SECTION 16: OTHER INFORMATION

OTHER INFORMATION:

Distribution into Quebec to follow Canadian Controlled Product Regulations (CPR) 24(1) and 24(2).
Distribution into the EU to follow applicable Directives to the Use, Import/Export of the product as-sold.

REFERENCES

1. ACGIH (2011), Guide to Occupational Exposure Values, American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio.
2. ACGIH (2013), 2010 TLVs and BEIs Based on the Documentation of the Threshold Limit Values and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio.
3. Cal-EPA (2014), Safe Drinking Water and Toxic Enforcement Act of 1986, Chemicals Known to the State to Cause Cancer or Reproductive Toxicity, Proposition 65 list dated January 3, 2014.
4. CSST (2013) Laws and Corresponding Regulations of Québec, "Regulation respecting the quality of the work environment, An Act respecting occupational health and safety" (L.R.Q., c. S-2.1, r. 15), La Commission de la Santé et de la Sécurité du Travail du Québec.
5. Ontario Ministry of Labour (2012). Regulations - Health & Safety. Control of Exposure to Biological or Chemical Agents. R.R.O. 1990, Regulation 833, as amended by O. Reg. 149/12.
6. U.S. Department of Labor, Occupational Safety and Health Administration (2006), "Air Contaminants," 29 CFR 1910.1000. Accessed at http://www.osha.gov/law-regs.html on April 30, 2013
7. United Kingdom Health and Safety Executive (2013), "Table 1: List of approved workplace exposure limits (as consolidated with amendments, 2011)," Health & Safety Commission, EH40/2005.

MSDS/SDS PREPARATION INFORMATION:

DATE OF ISSUE: ***20 February 2014*** SUPERCEDES: ***12 January 2011***

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