# SAFETY DATA SHEET
## *RAY4565*
**(US, CN, EU Version for International Trade)**

## SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** S1189 Stress Relief Material (EPPA 117), S1340 Mastic, S1336 Mastic, and EPPA-225 Dual Layer Tape (S1189/S1336). **RAY4565**

**PRODUCT CODES:** EPPA-117 and EPPA-225

**MANUFACTURER:** TE Connectivity Ltd.
**DIVISION:** TE Connectivity Energy Division
**ADDRESS:** 2901 Fulling Mill Road
Middletown, PA 17057-3163

**SUPPLIERS** TE Connectivity Canada Ltd.
20 Esna Park Drive
Markham, Ontario L3R 1E1

**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:** Modified epichlorohydrin copolymer and nitrile rubber mastics in tape form and stand-alone products

**PRODUCT USE:** Includes non-consumer mastics and stress relief material designed for high voltage splices and terminations.

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 does not emit a hazardous substance upon drying/curing, and should not present a health and safety exposure or other hazard. If heated, charred, or burned 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** | Reproductive/Developmental – NL | **Environmental Hazards** |
|---|---|---|
| Acute Toxicity – N | Target Organ Toxicity – NL | Aquatic Toxicity – NL |
| Skin Corrosion/Irritation – NL | | |
| Eye Corrosion/Irritation - NL | **Physical Hazards** | |
| Respiratory or Skin Sensitization – NL | Flammability – NL (Not flammable or combustible) | |
| Mutagenicity – NL | | |
| Carcinogenicity – NL | | |

NL – Not listed. No GHS category corresponds to the low level of hazard anticipated.

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

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

| **Hazard Statements** | **Precautionary Statements** |
|---|---|
| Contact with residues from fires may cause skin or eye irritation. | Do Not Overheat Or Burn. Do Not Get In Eyes, On Skin, Or On Clothing. Avoid Breathing Vapours/Fumes or Particulates. |

**EMERGENCY OVERVIEW:**

These products may emit hazardous thermal decomposition and combustion by-products if overheated to degradation. Thermal degradation and combustion by-products may be toxic and should not be inhaled. At temperatures higher than those recommended for proper installation, most significantly if the product burns, thermal degradation and combustion by-products may be produced. See Section 10. Mastics used in Cold Applied Joint Kits do not emit any irritants during installation.

**POTENTIAL HEALTH EFFECTS:**

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

**SKIN:** Brief contact may produce dermatitis, possibly delayed in rubber sensitive individuals. Contact with the molten material may cause thermal burns. No harmful effects are expected from skin absorption of this product.

**INGESTION:** Ingestion of this product is highly unlikely. There is insufficient information available on this material to predict the effects from ingestion.

**INHALATION:** Exposure to process fumes from heated material may cause irritation.

**ACUTE HEALTH HAZARDS:**
Possible irritation if products are overheated.
**CHRONIC HEALTH HAZARDS:**
None known.
**MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:**
Overheating the product to charring or burning may produce vapours that may cause eye, skin, nose and throat irritation. Persons with pre-existing eye, skin, or respiratory disorders (e.g., asthma conditions) may be more susceptible to the effects of these vapours.

Additional Information
None.

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

| INGREDIENTS (Chemical/Common Names): | CAS No.: | % by Wt: | EC No.: |
|---|---|---|---|
| **S1189 Stress Relief Material** | | | |
| Epichlorohydrin copolymer | 24969-10-6 | 30-60 | NA |
| 2-Butanone-formaldehyde resin | 9008-59-7 | 15-40 | NA |
| Acrylonitrile/Butadiene/Methacrylic acid polymer | 9010-81-5 | 5-10 | NA |
| Aluminum trihydroxide | 21645-51-2 | 5-10 | 244-492-7 |
| Silicon dioxide (Amorphous fumed silica) | 112945-52-5 | 3-7 | NE |
| Octadecanol-terminated poly (1,4-cyclohexylenedimethylene-3,3-thiodipropionate) | 63123-11-5 | 1-5 | NE |
| Pentaerythritol tetrakis (3–(3,5-di-tert-butyl-4-hydroxyphenyl) propionate) | 6683-19-8 | 1-5 | 229-722-6 |
| **S1336 and S1340 Mastics** | | | |
| Acrylonitrile/butadiene polymer | 9003-18-3 | 68-98 | NA |
| Phenol, 4-(1,1-dimethylethyl) ethyne co-polymer | 28514-92-3 | 0-10 | NA |
| Silane, dichlorodimethyl-, reaction products with silica | 68611-44-9 | 0-10 | 271-893-4 |
| Polymerized 1,2-dihydro-2,2,4-trimethylquinoline | 26780-96-1 | 0-0.1 | NA |

NA – Not applicable/NE – Not established

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:** Eye contact with molten material may cause thermal burns. If eye irritation occurs, hold eyelids apart and flush affected area(s) with clean water. Seek medical attention.

**SKIN CONTACT:** First aid is normally not required. After handling product, it is good work practice to wash your hands. If molten material contacts skin, cool area immediately in water. DO NOT attempt to remove material from the skin. Treat as a burn, and seek medical attention.

**INGESTION:** 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
None.

## SECTION 5: FIRE-FIGHTING MEASURES

**SUITABLE EXTINGUISHING MEDIA:**
Dry chemical, carbon dioxide, water, foam. Selection of extinguishing media should be based upon the size of the fire, the firefighting training/experience of the individual attempting to extinguish or control the fire, and the packaging materials exposed to the fire.
**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 cool nearby containers and structures exposed to fire.
**UNUSUAL FIRE AND EXPLOSION HAZARDS:**
Do not use water or foam on live electrical parts.
**SPECIFIC HAZARDS IN CASE OF FIRE:**
None Known.

Additional Information
None.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

**PERSONAL PRECAUTIONS:**
Avoid Contact with Skin. Wear appropriate personal protective equipment when responding, and collect in a suitable container for disposal or reuse.
**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:** Avoid breathing any vapours/fumes given off when the product is heated to decomposition, as shown by darkening or browning. Allow any vapours/fumes to disperse and ventilate before continuing work in the area. Avoid contact with molten material. Heat-resistant gloves are required if hot products are handled after installation. Do not consume food, beverages or tobacco in the immediate work area. Wash hands before eating, drinking or smoking. Avoid contact with residues from fire damaged products (see Section 10).
**STORAGE:** Keep away from sources of heat or ignition. Store in a cool, dry place.
**OTHER PRECAUTIONS (e.g.; Incompatibilities):** Avoid heating products beyond temperatures required for normal installation. See installation instructions for proper installation procedures. If product chars or burns, immediately stop heating. Avoid inhaling any fumes which may be given off under such circumstances. Allow any vapours to disperse and ventilate before continuing work in the area.

Additional Information
None.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**ENGINEERING CONTROLS/SYSTEM DESIGN INFORMATION:**
Design installation systems to guard against burns and ensure adequate ventilation.
**VENTILATION:**
In accordance with good industrial hygiene practice, ensure adequate ventilation during application, particularly in enclosed areas.
**RESPIRATORY PROTECTION:**
If installation involves heating the material and occurs in a confined, unventilated area, NIOSH-approved air-supplied respirators are recommended. See also special firefighting procedures (Section 5).
**EYE PROTECTION:**
If there is the potential of molten material contacting the face or eyes, use eye and face protection.
**SKIN PROTECTION:**
If there is a danger of molten material contacting the skin use heat resistant gloves. If it is necessary to handle grossly overheated or fire-damaged products, wear natural rubber gloves to prevent possible contact with potentially corrosive inorganic acid residues.
**OTHER PROTECTIVE CLOTHING OR EQUIPMENT:**
None required under normal use conditions.

**EXPOSURE LIMITS AND GUIDELINES:**

| | | | |
|---|---|---|---|
| OSHA | Permissible Exposure Limit (PEL/TWA) | Total particulate | 15 mg/m$^3$ |
| ACGIH | Threshold Limit Value (TLV) | Particulate, inhalable | 10 mg/m$^3$ |
| | | Particulate, respirable | 3 mg/m$^3$ |
| | | Aluminum oxide, Respirable | 1 mg/m$^3$ |
| Quebec | Permissible Exposure Value (PEV) | Aluminum oxide, total | 10 mg/m$^3$ |
| Ontario | Occupational Exposure Level (OEL) | Particulate, inhalable | 10 mg/m$^3$ |
| | | Particulate, respirable | 3 mg/m$^3$ |
| Germany | Maximale Arbeitsplatzkonzentrationen (MAK) | Total particulate | 10 mg/m$^3$ |
| | | Aluminum hydroxide, respirable | 1.5 mg/m$^3$ |
| | | Particulate, inhalable | 4 mg/m$^3$ |
| United Kingdom | Occupational Exposure Standard (OES) | Total particulate, inhalable fraction | 10 mg/m$^3$ |
| | | Aluminum oxides, respirable | 4 mg/m$^3$ |

Additional Information
- The particulate ingredients are encapsulated in resin, so the individual occupational exposure limits do not apply.
- If product is overheated or burned, some of the decomposition products may have occupational exposure limits.
- Not Included as International Trade.
- May be required to meet Domestic Requirements for a Specific Destination(s).

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---|---|
| **APPEARANCE:** | Yellow tape |
| **ODOUR:** | Slight odour |
| **ODOUR THRESHOLD:** | NA |
| **PHYSICAL STATE:** | Solid |
| **pH:** | NA |
| **BOILING POINT:** | NA |
| **MELTING POINT:** | NA |
| **FREEZING POINT:** | NA |
| **VAPOUR PRESSURE:** | Nil |
| **VAPOUR DENSITY (AIR = 1):** | NA |
| **SPECIFIC GRAVITY (H2O = 1):** | 0.9 – 1.5 |
| **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):** | Can react with strong acids and oxidizing agents. |
| **HAZARDOUS DECOMPOSITION OR BY-PRODUCTS:** | At temperatures higher than those recommended for proper installation, most significantly if the product burns, the thermal degradation and combustion by-products may include, but are not limited to: carbon monoxide, carbon dioxide, hydrogen chloride, carboxylic acids, aldehydes, ketones, hydrogen cyanide, and chlorinated, aromatic and aliphatic hydrocarbons. |
| **HAZARDOUS POLYMERIZATION:** | Will not occur |
| **CONDITIONS TO AVOID:** | Can react with strong acids and oxidizing agents. |

Additional Information
None.

## SECTION 11: TOXICOLOGICAL INFORMATION

**ACUTE TOXICITY (Test Results Basis and Comments):**
- Aluminum trihydroxide: $LD_{50}$ – Oral (Rat), >5000 mg/kg; Amorphous silicon dioxide: $LD_{50}$ – Oral (Rat), 3,160 mg/kg
- Octadecanol-terminated poly (1,4-cyclohexylenedimethylene-3,3-thiodipropionate): $LD_{50}$ – Oral (Rat): >6,400 mg/kg
- Pentaerythrityl tetrakis (3–(3,5-di-tert-butyl-4-hydroxyphenyl) propionate): $LD_{50}$ – Oral (Rat) >2,000 mg/kg; $LC_{50}$ – Rat: >46,000 mg/$m^3$.

**SUBCHRONIC/CHRONIC TOXICITY (Test Results and Comments):**
No toxicology data available on product as a whole.

Additional Information
- No chronic toxicity data available.
- Hypersensitive persons may suffer respiratory problems (shortness of breath, wheezing, or cough) even at low concentrations of vapours produced from overheating or burning product.
- The ingredients in this product, present at equal to or greater than 0.1% of the product, are not listed by OSHA, NTP, or IARC as suspect carcinogens.

## SECTION 12: ECOLOGICAL INFORMATION

**PERSISTENCE & DEGRADABILITY:**
No data available on product. Toxicity is expected to be low based on insolubility in water. No data available on biodegradation.
**BIO-ACCUMULATIVE POTENTIAL (Including Mobility):**
No data available on bioaccumulation. Toxicity is expected to be low based on insolubility in water.
**AQUATIC TOXICITY (Test Results & Comments):**
No data available on aquatic toxicity. Toxicity is expected to be low based on insolubility in water.

Additional Information
- No known effects on stratospheric ozone depletion.

- Volatile organic compounds: 0% (by Volume)
- Water Endangering Class (WGK): NA

## 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: 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 | Not Regulated as Dangerous Goods | | |
| Hazard Class | NA | ID Number | NA |
| Packing Group | NA | Labels | NA |

**AIRCRAFT – ICAO-IATA:**

| | | | |
|---|---|---|---|
| Proper Shipping Name | Not Regulated as Dangerous Goods | | |
| Hazard Class | NA | ID Number | NA |
| Packing Group | NA | Labels | NA |

**VESSEL – IMO-IMDG:**

| | | | |
|---|---|---|---|
| Proper Shipping Name | Not Regulated as Dangerous Goods | | |
| Hazard Class | NA | ID Number | NA |
| Packing Group | NA | 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 DSL, TSCA (U.S.); and EINECS/ELINCS (E.U.), 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 # |
|---|---|
| None | NA |

**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 |
|---|---|---|
| None | NA | NA |

**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 |
|---|---|---|
| 4-Vinyl cyclohexene | 100-40-3 | 0-0.098% |
| Epichlorohydrin | 106-89-8 | <0.0001 % (Unlikely to exceed safe harbour dose level of 9 µg/day) |
| Acrylonitrile | 107-13-1 | <0.001% (Unlikely to exceed safe harbour dose level of 0.7 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.

**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. If overheated, decomposition products may have a WHMIS classification of D 2 B.
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 |
|---|---|---|
| None | NA | NA |

**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. US, 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, or otherwise emit hazardous substances under normal use. When properly used as intended, this product in not expected to present a safety or health hazard when distributed into commerce. On this basis, EEC/EU H-Phrases/P-Phrases are not specifically included for the ingredients in the finished product.

## 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 (2013), 2013 TLVs and BEIs Based on the Documentation of the Threshold Limit Values and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio.
2. ACGIH (2011), Guide to Occupational Exposure Values, American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio. Note: German MAK values were obtained using this document.
3. 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. Updated 1 April 201.
4. Ontario Ministry of Labour (2013). Control of Exposure to Biological or Chemical Agents. R.R.O. 1990, Regulation 833, as amended by O. Reg. 149/12. 12 June 2012.
5. U.S. Department of Labor, Occupational Safety and Health Administration (2013), "Air Contaminants," 29 CFR 1910.1000. Accessed at http://www.osha.gov/law-regs.html on April 30, 2013.
6. Cal-EPA (2013), Safe Drinking Water and Toxic Enforcement Act of 1986, Chemicals Known to the State to Cause Cancer or Reproductive Toxicity, Proposition 65 list dated April 11, 2013.
7. IARC (2013) "IARC Monographs on the Evaluation of Carcinogenic Risks to Humans," International Agency for Research on Cancer, World Health Organization, Lyon, France.
8. 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: ***1 May 2013*** SUPERCEDES: ***15 January 2010***

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**END**