

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Hot Melt Adhesives/Mastics **RAY2010**
PRODUCT CODES: Various product codes

MANUFACTURER: Tyco Electronics Corporation
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

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: Polymer-based adhesive materials with melting points as indicated in the Tyco Electronics Product Installation Guide.

PRODUCT USE: Hot melt adhesives and mastics used as sealants, for strain relief, and for filling voids on heat-shrinkable polymeric and olefin materials.

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, burned, or shredded the health and safety information presented below may apply.

Additional Information

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

SECTION 2: HAZARDS IDENTIFICATION
GHS Classifications: Not applicable to articles

Health Hazards	Reproductive/Developmental – NL	Environmental Hazards
Acute Toxicity – NL	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	
Mutagenicity – NL	flammable or combustible)	
Carcinogenicity – NL		

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

Note: The Globally Harmonised System (GHS) for Classification had not been fully implemented in Canada at the time that this safety data sheet was developed.

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

Symbols (<i>Industrial/Commercial Goods Only</i>): Not Applicable	
<u>Hazard Statements</u> Not applicable	<u>Precautionary Statements</u> Not applicable

EMERGENCY OVERVIEW:

Contact with the molten material may cause thermal burns. If molten material contacts skin, cool area immediately in water. DO NOT attempt to remove material from the skin. Seek medical attention. May emit hazardous vapours/fumes when heated during installation. Vapours may cause eye or lung irritation. These products also may emit hazardous thermal decomposition and combustion by-products if they are charred or burned. Avoid breathing thermal degradation and combustion by-products.

Note: For more information on thermal decomposition and combustion by-products, refer to Section 10.

POTENTIAL HEALTH EFFECTS:

- EYES:** Contact with molten material may cause thermal burns. Overheating the product to charring or burning will produce fumes that may cause tearing (lachrymation) or eye irritation.
- SKIN:** Contact with the molten material may cause thermal burns. If molten material contacts skin, cool area immediately in water. DO NOT attempt to remove material from the skin.
- INGESTION:** Not a likely route of exposure. There is insufficient information available to predict the effects of swallowing this material.
- INHALATION:** Possible discomfort/itching of the mucous membranes in the mouth, nose or throat if product is shredded without adequate ventilation. Thermal decomposition products (such as in a fire situation) may cause severe irritation of the respiratory tract, coughing, headache, dizziness and nausea. Inhaling thermal decomposition products of some polymers may cause flu-like symptoms. For more information on thermal decomposition products, refer to Section 10.

ACUTE HEALTH HAZARDS:

Possible discomfort/itching.

CHRONIC HEALTH HAZARDS:

None known

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Persons with skin, eye, or respiratory conditions (such as asthma) may experience more severe or long-lasting symptoms.

Additional Information

None.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS
INGREDIENTS (Chemical/Common Names):

These hot melt adhesive products contain base polymer materials, which include olefin copolymers or polyamides. These hot melt adhesives and mastics are not hazardous during proper installation, but may emit hazardous thermal decomposition and combustion products if overheated to degradation (see Section 10)

CAS No.:

NA

% by Wt:

ND

EC No.:

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. These hot melt products dry/cure/harden by thermal means without the use of chemical agents.

SECTION 4: FIRST AID MEASURES

- EYE** If eye irritation occurs, hold eyelids apart and flush affected area(s) with clean water. Seek medical attention.
- CONTACT:**
- SKIN** Thoroughly wash affected area(s) with soap and water. If irritation develops and persists, seek medical attention.

CONTACT: attention.
INGESTION: Not a normal route of exposure. However, if swallowed, drink plenty of water and 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/UNSUITABLE EXTINGUISHING MEDIA:**

Use media suitable for the surrounding fire: Water spray, Polyvalent foam, Dry chemical powder, or Carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES & PROTECTIVE EQUIPMENT:

For fires in enclosed areas fire fighters should wear self-contained breathing apparatus (SCBA) in positive pressure demand mode to avoid inhalation of combustion gases. Use water spray to cool nearby containers and structures exposed to fire or extreme heat from a fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Do not use water spray on live electrical parts.

SPECIFIC HAZARDS IN CASE OF FIRE:

See Section 10 for thermal decomposition products.

Additional Information

Not sensitive to mechanical shock.

SECTION 6: ACCIDENTAL RELEASE MEASURES**PERSONAL PRECAUTIONS:**

Wear heat-resistant gloves or allow material to cool before responding.

ENVIRONMENTAL PRECAUTIONS:

NA

SPILL CONTAINMENT & CLEANUP METHODS/MATERIALS:

This material may be swept up and collected in a suitable container for disposal or reuse.

Additional Information

None.

SECTION 7: HANDLING AND STORAGE**PRECAUTIONS FOR SAFE HANDLING AND STORAGE:**

HANDLING: Avoid overheating of product and open flame. Avoid inhaling any vapours given off if the product is heated to decomposition, as shown by a darkening and browning. 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)

INSTALLATION: Follow appropriate Tyco Electronics installation instructions and application guides to ensure that installation is performed properly. Ensure that any local requirements/legislation concerning the use of hand-held electrical equipment are observed. Do not touch hot surfaces on installation equipment. Avoid heating products beyond temperatures required for normal installation. 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.

OTHER PRECAUTIONS (e.g.; Incompatibilities):

No data available on packaging/materials to avoid.

Additional Information

None.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS/SYSTEM DESIGN INFORMATION:

Use adequate enclosures, machine guarding if products are shredded for recycling

VENTILATION:

Use adequate mechanical ventilations (preferable local exhaust ventilation) if products are likely to be overheated during installation.

RESPIRATORY PROTECTION:

Not required for normal conditions of use. See also special firefighting procedures (Section 5). If installation is to occur in a confined space with inadequate ventilation, use a NIOSH-approved supplied air respirator.

EYE PROTECTION:

Not required during normal conditions of use. Safety glasses are generally recommended during installation and may be required for related activities in accordance with the employer's occupational health and safety program.

SKIN PROTECTION:

Not required during normal conditions of use. Consider wearing heat-resistant work gloves and long sleeves to prevent contact with molten material.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

None required

EXPOSURE GUIDELINES & LIMITS:

OSHA	Permissible Exposure Limit (PEL)	NE
ACGIH	Threshold Limit Value (TLV)	NE
Quebec	Permissible Exposure Value (PEV)	NE
Ontario	Occupational Exposure Level (OEL)	NE
Netherlands	Maximaal Aanvaarde Concentratie (MAC)	NE
Germany	Maximale Arbeitsplatzkonzentrationen (MAK)	NE
United Kingdom	Occupational Exposure Standard (OES)	NE

TWA – 8-Hour Time Weighted Average/ NE – Not Established

Additional Information

- Not Included as International Trade.
- May be Required to meet Domestic Requirements for a Specific Destination(s).

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Off-white, amber, gray, black, green or red solids.
ODOR:	Little or no odour.
ODOR THRESHOLD:	NA
PHYSICAL STATE:	Solid
pH:	NA
BOILING POINT:	NA
MELTING POINT:	Melting points vary. See installation guide.
FREEZING POINT:	NA
VAPOR PRESSURE:	NA
VAPOR DENSITY (AIR = 1):	NA
SPECIFIC GRAVITY (H₂O = 1):	Varies
EVAPORATION RATE:	Negligible
SOLUBILITY IN WATER:	Insoluble
FLASH POINT:	NA
AUTO-IGNITION TEMPERATURE:	NA
LOWER EXPLOSIVE LIMIT (LEL):	NA
UPPER EXPLOSIVE LIMIT (UEL):	NA
PARTITION COEFFICIENT:	NA
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: Stable under normal working conditions, at ambient temperature.
INCOMPATIBILITY (MATERIAL TO AVOID): Strong oxidizers, peroxides, acids and reducing agents.
HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Thermal decomposition/combustion by-products may include, but are not limited to: Carbon monoxide, carbon dioxide, organic acids (such as acetic acid), aldehydes and alcohols, oxides of nitrogen and silicon, tetrahydrofuran, acrolein, vinyl acetate, and aromatic and aliphatic hydrocarbons.

HAZARDOUS POLYMERIZATION: CONDITIONS TO AVOID: Will not occur
Avoid exposing product to extreme heat, sparks or open flames

Additional Information
None.

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE TOXICITY (Test Results Basis and Comments):
No data available.
SUBCHRONIC/CHRONIC TOXICITY (Test Results and Comments):
None of the ingredients to which users may be exposed, and which are present at equal to or greater than 0.1% of the product, are listed by OSHA, NTP, or IARC as carcinogens.

Additional Information

- No chronic toxicity data available.
- Not listed 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.

Additional Information

- No known effects on stratospheric ozone depletion.
- Volatile organic compounds: NA
- Water Endangering Class (WGK): NA

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Follow local, Provincial, and Federal regulations applicable to as-used, end-of-life characteristics to be determined by end-user. Contact local environmental agency for specific rules and regulations.

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	Finished Product Not Regulated as Dangerous Goods		
Hazard Class	NA	ID Number	NA
Packing Group	NA	Labels	NA

AIRCRAFT – ICAO-IATA:

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

VESSEL – IMO-IMDG:

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

Additional Information

- 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; AICS; 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 does not contain chemicals subject to TSCA Section 12b export notification.

<u>Chemical</u>	<u>CAS #</u>
None	NA

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT)

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

<u>Chemical</u>	<u>CAS #</u>
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; however, the finished product is exempt.

<u>Chemical</u>	<u>CAS #</u>	<u>% wt</u>
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:

<u>Chemical</u>	<u>CAS #</u>	<u>% Wt</u>
None	NA	NA

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 AND EUROPEAN REGULATIONS:**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 Applicable.

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 and/or Ont. Reg. 127/01, however, the finished product is exempt.

<u>Chemical</u>	<u>CAS #</u>	<u>% Wt</u>
None known	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 67/548/EEC and 1999/45/EC.

Not Applicable to the Product as-sold.

R-Phrases

NA – Incorporated Above

S-Phrases

NA – Incorporated Above

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 is not expected to present a safety or health hazard when distributed into commerce. On this basis, EEC/EU R-Phrases/S-Phrases are not specifically included for the ingredients in the finished product.

SECTION 16: OTHER INFORMATION**OTHER INFORMATION:**

This product may be regulated under additional regulations and laws not identified above, such as for uses other than described or as-designed/as-intended by the manufacturer.

REFERENCES

1. ACGIH (2010), 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.
2. CSST (2010) 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 Sante et de la Sécurité du Travail du Québec.
3. WorkSafeBC (2010), "Occupational Health and Safety Regulation, Section R5.48," WorkSafeBC (British Columbia Ministry of Labour), Vancouver, British Columbia.
4. European Commission Joint Research Centre, "European Inventory of Existing Commercial chemical Substances (EINECS) International Uniform Chemical Information Database (IUCLID)," European Commission. Accessed at <http://ecb.jrc.ec.europa.eu/esis/index.php?PGM=ein>, accessed 7 June 2010.
5. U.S. Department of Labor, Occupational Safety and Health Administration (2010), "Air Contaminants," 29 CFR 1910.1000.

MSDS/SDS PREPARATION INFORMATION:

DATE OF ISSUE: **2 August 2010**

SUPERCEDES: **6 August 2007**

DISCLAIMER:

Tyco Electronics Corporation makes no warranties as to the accuracy or completeness of this information and disclaims any liability in connection with its use. Tyco Electronics Corporation's obligation shall be only as set forth in Tyco Electronics Corporation's standard terms and conditions of sale for this product. In no case will Tyco Electronics Corporation be liable for any incidental, indirect or consequential damages arising out of the sale, resale, use or misuse of the product.

The information presented herein was prepared at Tyco Electronics by qualified technical personnel, and to our knowledge it is true and accurate. The information and recommendations are furnished for this product with the understanding that the purchaser/user will independently determine the suitability of the product for this purpose. The data do not constitute a warranty, expressed or implied, statutory or otherwise, nor are they a representation for which Tyco Electronics Corporation assumes legal responsibility. The data are submitted for the user's information and consideration only. Any use of this product must be determined by the user to be in accordance with the applicable federal, State/Provincial, and local laws and regulations.

Users are advised that they may have additional disclosure obligations under other national and local laws. Users are advised to ensure that this information is brought to the attention of all employees, agents, and contractors handling this product. Users of Tyco Electronics Corporation products should make their own evaluation to determine the suitability of each such product for the specific application and to establish safe handling and installation procedures. Distributors of this product are advised to forward this document, or the information contained herein, to every purchaser of this product.

END