

BCEC - A5
Heat Shrink
Page 1 of 4

MATERIAL SAFETY DATA SHEET

Manufacturer's name: Grayline, Inc.
Emergency telephone number: (414)542-4300
Address: 2101 Airport Road
Waukesha Wisconsin 53188

Section 1 - Ingredient
Flame Retardant Polyolefin
C.A.S. No. Unknown
100 percent

NOTE: See Section 4 for Hazardous Decomposition Products.

Section 2 - Physical Data

Boiling point (Degrees F)	N/A
Vapor pressure (mm Hg.)	N/A
Vapor density (air=1)	N/A
Evaporation rate	N/A
Solubility in water	N/A
Specific gravity (H2O=1)	1.3
Percent, volatile by volume (%)	N/A
pH	N/A
Viscosity	N/A
Melting point	N/D
Appearance and odor	Tubing, various sizes, colors

Section 3 - Fire and Explosion Hazard Data

Flash point (Method used)	N/A		
Flammable Limits-LEL	N/A		
Flammable Limits-UEL	N/A		
Autoignition temp	N/D		
Extinguishing media:	Carbon Dioxide, dry chemical, foam		
Special fire fighting procedures:	Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.		
Unusual Fire and explosion hazards:	None known		
NFPA Hazard codes			
Health: 0	Fire: 0	Reactivity: 0	Unusual reaction hazard:
None			
OSHA fire hazard class:	Not applicable		

BCEC - A5
Heat Shrink
Page 2 of 4

Section 4 - Reactivity Data:

Stability: Stable

Incompatibility - Materials to avoid: None known

Hazardous polymerization: Will not occur

Hazardous decomposition products: Carbon monoxide and carbon dioxide, aldehydes, oxides of antimony, toxic vapors, gases or particulates.

Heating product beyond temperature recommended by instruction sheet may cause release of the following compounds: Benzene, toluene, formaldehyde, acetaldehyde, and hydrogen bromide.

Section 5 - Environmental Information:

Spill response: Not applicable

Recommended Disposal: Dispose of waste product in a sanitary landfill.

Environmental data: No data available

Regulatory information: Volatile organic compounds: N/A

VOC less H₂O and exempt solvents: N/A

Since regulations vary, consult applicable regulations or authorities before disposal.

EPCRA Hazard class:

Fire hazard:no Pressure:no Reactivity:no Acute:no Chronic:no

Section 6 - Suggested first aid:

Skin contact: Immediately flush affected area with plenty of cold water and cover with a clean dressing. DO NOT ATTEMPT TO REMOVE MOLTEN MATERIAL. Have burn treated by a physician.

Eye contact: If exposed to vapors or smoke, immediately flush eyes with large amounts of water. Get immediate medical attention.

Inhalation: If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

Ingestion: Drink two glasses of water. Call a physician.

Section 7 - Precautionary Information

Eye Protection: Avoid eye contact with vapors or smoke resulting from over-heating or when used in confined areas.

Skin Protection: Avoid skin contact with hot material. Wear appropriate gloves, such as Nomex, when handling this material to prevent thermal burns.

Ventilation Protection: Local exhaust is required for operations using large amounts of material. Conduct air monitoring to determine adequacy of ventilation. Use in a well-ventilated area. Provide sufficient

ventilation to maintain emissions below recommended exposure limits. If exhaust ventilation is not adequate, use appropriate respiratory protection.

WHEN USING THIS PRODUCT IN A CONFINED SPACE OR WHERE VENTILATION MAY BE INADEQUATE, THEN RESPIRATORY PROTECTION MAY BE WORN. INADEQUATE VENTILATION OR CONFINED SPACES WOULD CAUSE VAPORS FROM HEATING OF THIS PRODUCT TO BE PRESENT IN THE USER'S BREATHING ZONE AND MAY CAUSE RESPIRATORY IRRITATION. EXCESSIVE HEATING OF THE PRODUCT BEYOND THE RECOMMENDED APPLICATION TEMPERATURE OF 250 DEGREES FAHRENHEIT IS NOT RECOMMENDED AND MAY RESULT IN THERMAL DEGRADATION AND DECOMPOSITION PRODUCTS WHICH MAY RESULT IN ADVERSE HEALTH EFFECTS.

Respiratory Protection: Avoid breathing of fumes. Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: Half-mask organic vapor respirator with dust/mist prefilter.

Prevention of accidental ingestion: Wash hands after handling and before eating.

Recommended storage: Store at room temperature. Keep out of the reach of children.

Fire and explosion avoidance: Not applicable.

Exposure limits:

Ingredients	Value	Unit	Type	Auth
Flame retardant poly.	none	none	none	none

Skin- Skin notation: Listed substances indicated with "y" under skin refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

BCEC - A5
Heat Shrink
Page 4 of 4

Source of exposure limit data: AIHA: American Industrial Hygiene Association.
Workplace Environmental exposure level G. NONE: None Established

Section 8 - Health Hazard Data:

Eye Contact: Vapors from heated material may cause eye irritation.

Skin contact: Skin burns (thermal, from contact with hot material:
signs/symptoms can include burning pain, red and swollen skin, and
blisters.

Inhalation: Vapors of heated material may cause respiratory system
irritation. RESPIRATORY IRRITATION WOULD NOT BE EXPECTED IN APPLICATIONS
WHERE ADEQUATE VENTILATION AND PROPER APPLICATION (AT DESIGNATED
TEMPERATURES) IS UTILIZED. EXCESSIVE HEATING AND INADEQUATE
VENTILATION MAY RESULT IN EXPOSURE TO THERMAL DEGRADATION AND DECOMPOSITION
PRODUCTS AS INDICATED IN SECTION 4 OF THIS MSDS UNDER "REACTIVITY
DATA- HAZARDOUS DECOMPOSITION PRODUCTS."

If swallowed: Ingestion is not a likely route of exposure to this product.

S-1308 STRESS PATCH AND UNITERM STRESS CONTROL COATING

1. Identification of the substance/preparation and of the company/undertaking

1.1 Identification of the substance or preparation:

Synonyms: S1308, S1320, /242

CAS No.	: N.A.	Reference	: RAY/4567E Revision 3
EC index No.	: N.A.	NFPA code	: N.D.
EINECS No.	: N.A.	Molecular weight	: N.A.
RTECS No.	: N.A.	Formula	: N.A.

1.2 Use of the substance or the preparation:

Coating

1.3 Company/undertaking identification:

TYCO ELECTRONICS Raychem GmbH
 Finsinger Feld 1
 85521 Ottobrunn, Germany
 Tel. : +49 89 608 94 14
 Fax : +49 89 608 94 45

1.4 Telephone number for emergency:

+32 14 58 45 45
 Brandweerinformatiecentrum voor gevaarlijke stoffen (B.I.G.)
 Technische Schoolstraat 43A, B-2440 Geel

2. Composition/information on ingredients

Polymeric binder in conjunction with mixed metallic oxides

In normal conditions of use, the hazardous components cannot be released

Hazardous ingredients	CAS No. EINECS/ELINCS No.	Conc. in %	Hazard symbol	Risks (R-phrases)
6,6'-di-tert-butyl-4,4'-thiodi-m-cresol	96-69-5 202-525-2	< 1	Xi;N	36/37-50/53 (1)

(1) For R-phrases in full: see heading 16

3. Hazards identification

- No hazard classification in accordance with directives 67/548/EEC and 1999/45/EC
- Materials may emit hazardous thermal decomposition products if overheated or burnt (see 10.3)

4. First aid measures

4.1 Eye contact:

- Hold eyelids apart and flush eyes with clean water or neutral saline solution for 15 minutes
- Consult a doctor/medical service if irritation persists

4.2 Skin contact:

- Remove contaminated clothing and launder before reuse
- Wash skin immediately with mild soap and water
- Consult a doctor/medical service if irritation persists

4.3 After inhalation:

- Remove the victim into fresh air
- Keep warm and at rest
- Consult a doctor/medical service if breathing problems develop

Printing date	: 01-2007		
Compiled by	: Brandweerinformatiecentrum voor Gevaarlijke Stoffen vzw (BIG)		1/8
	: Technische Schoolstraat 43 A, B-2440 Geel		
	: ☎ +32 14 58 45 47	: http://www.big.be	: E-mail: info@big.be
MSDS established	: 17-08-2004	Revision date	: 16-08-2004
Reference number	: BIG\30484GB	Revision number	: 003
Reason for revision	: Directive 2001/58/EC		

S-1308 STRESS PATCH AND UNITERM STRESS CONTROL COATING

4.4 After ingestion:

- Not applicable
- Consult a doctor/medical service if you feel unwell

5. Fire-fighting measures

5.1 Suitable extinguishing media:

- Water spray
- Polyvalent foam
- ABC powder
- Carbon dioxide

5.2 Unsuitable extinguishing media:

- Solid water jet ineffective as extinguishing medium

5.3 Special exposure hazards:

- Toxic decomposition products may be evolved in a fire (see section 10.3)

5.4 Instructions:

- Dilute toxic gases with water spray
- Limit and contain the firefighting water

5.5 Special protective equipment for firefighters:

- Self-contained breathing apparatus with full face piece
- Protective clothing for exposure to chemicals

6. Accidental release measures

6.1 Personal protection/precautions:

See heading 8.2/8.3/13

6.2 Environmental precautions:

- Prevent soil and water pollution

6.3 Methods for cleaning up:

- Pick-up the material
- Place in a suitable container for disposal

7. Handling and storage

7.1 Handling:

- Avoid contact with skin, eyes and clothing
- Ensure adequate ventilation of the workplace
- Avoid temperatures above 200°C without adequate ventilation
- Do not eat, drink or smoke in the work area
- Wash hands after handling material
- Remove contaminated clothing immediately
- Practice good standards of personal and industrial hygiene

7.2 Storage:

- Keep container tightly closed
- Store in a dry area
- Store in a dark area
- Keep container in a well-ventilated place
- Keep away from: heat sources, oxidizing agents

Storage temperature	: < 50	°C
Quantity limits	: N.D.	kg
Storage life	: N.D.	days
Materials for packaging	:	
- suitable	: polyethylene	
- to avoid	: no data available	

7.3 Specific uses:

- See information supplied by the manufacturer

S-1308 STRESS PATCH AND UNITERM STRESS CONTROL COATING

8. Exposure controls/Personal protection

8.1 Exposure limit values:

In normal conditions of use, the hazardous components cannot be released

6,6'-di-tert-butyl-4,4'-thiodi-m-cresol

TLV-TWA	: 10	mg/m ³		ppm
TLV-STEL	: -	mg/m ³		ppm
TLV-Ceiling	:	mg/m ³		ppm
OES-LTEL	: 10	mg/m ³	-	ppm
OES-STEL	: 20	mg/m ³	-	ppm
MAK	:	mg/m ³		ppm
TRK	:	mg/m ³		ppm
MAC-TGG 8 h	: 10	mg/m ³		
MAC-TGG 15 min.	:	mg/m ³		
MAC-Ceiling	:	mg/m ³		
VME-8 h	: 10	mg/m ³	-	ppm
VLE-15 min.	: -	mg/m ³	-	ppm
GWBB-8 h	: 10	mg/m ³	-	ppm
GWK-15 min.	: -	mg/m ³	-	ppm
Momentary value	:	mg/m ³		ppm
EC	:	mg/m ³		ppm
EC-STEL	:	mg/m ³		ppm

Fumes of antimony trioxide may be released on heating above 800°C

Sampling methods:

- 4,4'-Thiobis (6-tert-Butyl-m-Cresol), (total and resp. dust) OSHA CSI

8.2 Exposure controls:

8.2.1 Occupational exposure controls:

- Work under local exhaust/ventilation

8.2.2 Environmental exposure controls: see heading 13

8.3 Personal protection:

8.3.1 respiratory protection:

- Respiratory protection not required in normal conditions

8.3.2 hand protection:

- Gloves
- Suitable materials: No data available
- Breakthrough time: N.D.

8.3.3 eye protection:

- Safety glasses with side shield or goggles

8.3.4 skin protection:

- Protective clothing
- Suitable materials: No data available

other:

- Practice good standards of personal and industrial hygiene
- Remove contaminated clothing and shoes as soon as possible

S-1308 STRESS PATCH AND UNITERM STRESS CONTROL COATING

9. Physical and chemical properties

9.1 General information:

Appearance (at 20°C) : Sheet or patch (S1308)
Coating inside heat shrinkable
parts (S1320, /242)
Odour : Slight hydrocarbon odour
Colour : Dark green

9.2 Important health, safety and environmental information:

pH value : N.D.
Boiling point/boiling range : N.D. °C
Flashpoint : N.D. °C
Explosion limits : N.D. vol% (°C)
Vapour pressure (at 20°C) : N.D. hPa
Vapour pressure (at 50°C) : N.D. hPa
Relative density (at 20°C) : N.D.
Water solubility : Insoluble
Soluble in : N.D.
Relative vapour density : N.D.
Viscosity : N.D. Pa.s
Partition coefficient n-octanol/water : N.D.
Evaporation rate
ratio to butyl acetate : N.D.
ratio to ether : N.D.

9.3 Other information:

Melting point/melting range : N.D. °C
Auto-ignition point : N.D. °C
Saturation concentration : N.D. g/m³

10. Stability and reactivity

10.1 Conditions to avoid/reactivity:

- Stable under normal conditions

10.2 Materials to avoid:

- Keep away from: heat sources, oxidizing agents, acids

10.3 Hazardous decomposition products:

- Thermal decomposition and combustion products may include, but are not limited to: carbon dioxide, carbon monoxide, hydrocarbons and oxides of antimony, bismuth, chromium, cobalt, manganese and zinc

11. Toxicological information

11.1 Acute toxicity:

LD50 oral rat	: N.D.	mg/kg
LD50 dermal rat	: N.D.	mg/kg
LD50 dermal rabbit	: N.D.	mg/kg
LC50 inhalation rat	: N.D.	mg/l/4 h
LC50 inhalation rat	: N.D.	ppm/4 h

11.2 Chronic toxicity:

In normal conditions of use, the hazardous components cannot be released

6,6'-di-tert-butyl-4,4'-thiodi-m-cresol

EC carc. cat. : not listed
EC muta. cat. : not listed
EC repr. cat. : not listed

Carcinogenicity (TLV) : A4
Carcinogenicity (MAC) : not listed
Carcinogenicity (VME) : not listed
Carcinogenicity (GWBB) : not listed

Carcinogenicity (MAK) : not listed
Mutagenicity (MAK) : not listed
Teratogenicity (MAK) : not listed

IARC classification : not listed

11.3 Routes of exposure: inhalation of thermal decomposition products

11.4 Acute effects/symptoms:

- **AFTER INGESTION**
 - Not a normal route of exposure
 - AFTER ABSORPTION OF HIGH QUANTITIES:
 - Nausea
 - Vomiting
 - Diarrhoea
 - digestive system irritation
 - Persons with pre-existing gastrointestinal disorders may be more susceptible to the effects of ingesting this product
- **AFTER EYE CONTACT:**
 - Not expected to cause irritation
- **AFTER SKIN CONTACT:**
 - Not expected to cause irritation
 - There is insufficient information available on this product to predict the effects from skin absorption
- **AFTER INHALATION:**
 - Not a normal route of exposure due to its low volatility

11.5 Chronic effects:

- Not listed in carcinogenicity class (IARC, EC, TLV, MAK)
- Not listed in mutagenicity class (EC, MAK)
- Not classified as toxic to reproduction (EC)

S-1308 STRESS PATCH AND UNITERM STRESS CONTROL COATING

12. Ecological information

12.1 Ecotoxicity:

- No data available

12.2 Mobility:

- Volatile organic compounds (VOC): N.D. %
- Insoluble in water
- Substance sinks in water

For other physicochemical properties see heading 9

12.3 Persistence and degradability:

- | | | | |
|-----------------------------------|---|-----------|--------|
| - biodegradation BOD ₅ | : | N.D. | % ThOD |
| - water | : | - N.D. | |
| - soil | : | T ½: N.D. | days |

12.4 Bioaccumulative potential:

- log P_{ow} : N.D.
- BCF : N.D.

12.5 Other adverse effects:

- WGK : N.D.
- Effect on the ozone layer : Not dangerous for the ozone layer (1999/45/EC)
- Greenhouse effect : no data available
- Effect on waste water purification : no data available

13. Disposal considerations

13.1 Provisions relating to waste:

- No data available

13.2 Disposal methods:

- Landfill or incinerate in accordance with national and local regulations
- Remove to an authorized waste treatment plant

13.3 Packaging/Container:

- No available data

S-1308 STRESS PATCH AND UNITERM STRESS CONTROL COATING

14. Transport information

- 14.1 Classification of the substance in compliance with UN Recommendations
- | | | |
|----------------------|---|---|
| UN number | : | |
| CLASS | : | - |
| SUB RISKS | : | |
| PACKING | : | |
| PROPER SHIPPING NAME | : | |
- 14.2 ADR (transport by road)
- | | | |
|-----------------------|---|-------------|
| CLASS | : | NOT SUBJECT |
| PACKING | : | |
| CLASSIFICATION CODE | : | |
| DANGER LABEL TANKS | : | |
| DANGER LABEL PACKAGES | : | |
- 14.3 RID (transport by rail)
- | | | |
|-----------------------|---|-------------|
| CLASS | : | NOT SUBJECT |
| PACKING | : | |
| CLASSIFICATION CODE | : | |
| DANGER LABEL TANKS | : | |
| DANGER LABEL PACKAGES | : | |
- 14.4 ADNR (transport by inland waterways)
- | | | |
|-----------------------|---|-------------|
| CLASS | : | NOT SUBJECT |
| PACKING | : | |
| CLASSIFICATION CODE | : | |
| DANGER LABEL TANKS | : | |
| DANGER LABEL PACKAGES | : | |
- 14.5 IMDG (maritime transport)
- | | | |
|------------------|---|-------------|
| CLASS | : | NOT SUBJECT |
| SUB RISKS | : | |
| PACKING | : | |
| MFAG | : | |
| EMS | : | |
| MARINE POLLUTANT | : | |
- 14.6 ICAO (air transport)
- | | | |
|---|---|-------------|
| CLASS | : | NOT SUBJECT |
| SUB RISKS | : | |
| PACKING | : | |
| PACKING INSTRUCTIONS PASSENGER AIRCRAFT | : | |
| PACKING INSTRUCTIONS CARGO AIRCRAFT | : | |
- 14.7 Special precautions in connection with transport : not restricted for any mode of international transport

S-1308 STRESS PATCH AND UNITERM STRESS CONTROL COATING

15. Regulatory information

This preparation, although classified dangerous in accordance with Directive 1999/45/EC, does not require a label because of the form in which it is placed on the market (1999/45/EC, Article 12, (2))

NOT APPLICABLE

16. Other information

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 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.

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

N.A. = NOT APPLICABLE
N.D. = NOT DETERMINED
(*) = INTERNAL CLASSIFICATION (NFPA)

Exposure limits:

TLV : Threshold Limit Value - ACGIH USA 2004
OES : Occupational Exposure Standards - United Kingdom 2003
MEL : Maximum Exposure Limits - United Kingdom 2003
MAK : Maximale Arbeitsplatzkonzentrationen - Germany 2002
TRK : Technische Richtkonzentrationen - Germany 2002
MAC : Maximale aanvaarde concentratie - The Netherlands 2004
VME : Valeurs limites de Moyenne d'Exposition - France 1999
VLE : Valeurs limites d'Exposition à court terme - France 1999
GWBB : Grenswaarde beroepsmatige blootstelling - Belgium 2002
GWK : Grenswaarde kortstondige blootstelling - Belgium 2002
EC : Indicative occupational exposure limit values - directive 2000/39/EC

I : Inhalable fraction = T: Total dust = E: Einatembare Aerosolanteil
R : Respirable fraction = A: Alveolengängiger Aerosolanteil/Alveolar dust
C : Ceiling limit

a:	aerosol	r:	rook/Rauch	(fume)
d:	damp (vapour)	st:	stof/Staub	(dust)
du:	dust	ve:	vezel	(fibre)
fa:	Faser (fibre)	va:	vapour	
fi:	fibre	om:	oil mist	
fu:	fume	on:	olienevel/Ölnebel	(oil mist)
p:	poussière (dust)	part:	particles	

Chronic toxicity:

K : List of the carcinogenic substances and processes - The Netherlands 2004

Full text of any R-phrases referred to under heading 2:

R36/37 : Irritating to eyes and respiratory system
R50/53 : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment



SAFETY DATA SHEET
HOT MELT ADHESIVES/MASTICS
(US, CN, EU Version for International Trade)

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

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

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. Tyco Electronics Corporation
20 Esna Park Drive 8000 Purfoy Road
Markham, Ontario L3R 1E1 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: 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 overheated, 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	Specific Target Organ Toxicity – NL	Aquatic Toxicity – NL
Skin Corrosion/Irritation – NL	NL	
Eye Corrosion/Irritation - NL		
Respiratory or Skin Sensitization – NL	Physical Hazards	
Mutagenicity – NL	Flammability – NL (Not flammable	
Carcinogenicity – NL	or combustible)	

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.



SAFETY DATA SHEET
HOT MELT ADHESIVES/MASTICS
(US, CN, EU Version for International Trade)

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

Signal Word: Not applicable	
Symbols: Not Applicable	
Hazard Statements Not applicable	Precautionary Statements Not applicable

EMERGENCY OVERVIEW:

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 if overheated 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.



SAFETY DATA SHEET
HOT MELT ADHESIVES/MASTICS
(US, CN, EU Version for International Trade)

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 soap and water. If irritation develops and persists, seek medical 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 all 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.



SAFETY DATA SHEET
HOT MELT ADHESIVES/MASTICS
(US, CN, EU Version for International Trade)

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



SAFETY DATA SHEET
HOT MELT ADHESIVES/MASTICS
(US, CN, EU Version for International Trade)

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

Additional Information

Thermal decomposition/combustion is unlikely unless product is overheated, burned or charred.

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



SAFETY DATA SHEET
HOT MELT ADHESIVES/MASTICS
(US, CN, EU Version for International Trade)

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



SAFETY DATA SHEET
HOT MELT ADHESIVES/MASTICS
(US, CN, EU Version for International Trade)

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 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 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 (2011), Guide to Occupational Exposure Values, American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio.



SAFETY DATA SHEET
HOT MELT ADHESIVES/MASTICS
(US, CN, EU Version for International Trade)

2. 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.
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, Office of Environmental Health Hazard Assessment, 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. U.S. Department of Labor, Occupational Safety and Health Administration (2006), "Air Contaminants," 29 CFR 1910.1000, Table Z-1. Accessed on-line at <http://www.osha.gov/>, December 2013.

MSDS/SDS PREPARATION INFORMATION:

DATE OF ISSUE: **10 January 2014**

SUPERCEDES: **7 June 2010**

DISCLAIMER:

TE Connectivity (TE) makes no warranties as to the accuracy or completeness of this information and disclaims any liability in connection with its use. TE's obligation shall be only as set forth in the TE standard terms and conditions of sale for this product. In no case will TE 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 by or for TE 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 TE 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 TE 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.

TRADEMARK STATEMENT:

TE Connectivity and TE connectivity (logo) are trademarks. Other logos, product and/or company names might be trademarks of their respective owners.

END