

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Ethylene Vinyl Acetate Terpolymer - based Hot Melt Adhesives

PART NUMBERS S-1030, S-1081, /180 and /184.

MANUFACTURER: TE Connectivity

DIVISION: Aerospace, Defense & Marine

ADDRESS: 300 Constitution Drive
Menlo Park, CA 94025-1164 USA

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: (US) 1-800-522-6752
(CAN) 1-905-475-6222

CHEMICAL FAMILY: Hot melt adhesives and mastics

PRODUCT USE: These sealants are designed to be applied over a substrate to provide the sealing interface when using uncoated heat shrinkable parts.

SECTION 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Form: Forms: Tapes and Coatings
Color: Black
Thermal degradation is not significant at temperatures achieved during proper installation, as directed by product installation guides. At temperatures higher than those recommended for proper installation, most significantly if the product burns, the thermal degradation and combustion byproducts may be toxic and should not be inhaled.

OSHA HAZARDS: Irritant

GHS CLASSIFICATION: Skin irritant (Category 3)
Carcinogen (Category 2)

GHS LABEL ELEMENTS, INCLUDING PRECAUTIONARY STATEMENTS

PICTOGRAM:



SIGNAL WORD: Warning

HAZARD STATEMENT(S)

H315+H320 Causes skin and eye irritation
H335 May cause respiratory irritation
H351 Suspected of causing cancer

PRECAUTIONARY STATEMENT(S):

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P261 Avoid breathing vapors during installation.
P271 Use only in well ventilated areas
P280 Wear protective gloves and avoid overheating product.
P284 In case of inadequate ventilation wear respiratory protection
P370 + P378 In case of fire: Use carbon dioxide, dry chemical, or foam to extinguish.



MATERIAL SAFETY DATA SHEET

RAY3144

NFPA HAZARD CLASSIFICATIONS:

HEALTH: 1 FLAMMABILITY: 2 REACTIVITY: 0

HMIS HAZARD CLASSIFICATIONS (US/CN/EU):

HEALTH: 1 FLAMMABILITY: 2 REACTIVITY: 0

POTENTIAL HEALTH EFFECTS:

ACUTE HEALTH HAZARDS:

EYES: Contact with molten material may cause thermal burns. Fumes evolved during hot processing may irritate eyes, nose and throat. Overheating the product to charring or burning will produce fumes that may cause eye irritation.

SKIN: This product is not expected to be a skin irritant. No harmful effects are expected from skin absorption of this product. Contact with the molten material may cause thermal burns.

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

INHALATION: Overheating the product to charring or burning may produce vapors that may cause eye, skin, and nose and throat irritation. In common with most organic materials, degradation and combustion byproducts may be toxic and should not be inhaled. (See Section 5: FIRE FIGHTING MEASURES, Hazardous Combustion Products) for more information.

CHRONIC HEALTH HAZARDS:

When heated these products may emit small amounts of formaldehyde, which is a skin and respiratory sensitizer, lung irritant, mutagen, may affect the liver and kidneys and is a carcinogen. The product also contains a small amount of vinyl acetate, which is a carcinogen.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Persons with pre-existing eye, skin, or respiratory disorders (e.g., asthma conditions) may be more susceptible to the effects of fumes generated during burning or charring of material.

Additional Information

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 vapors to disperse and ventilate before continuing work in the area.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

| INGREDIENTS (Chemical/Common Names): | CAS No.: | % by Wt: | EC No.: |
|---|-----------------|-----------------|----------------|
| Ethylene-Vinyl Acetate-Methacrylic terpolymer 1 | Proprietary | 57 - 60 | NA |
| Ethylene-Vinyl Acetate-Methacrylic terpolymer 2 | Proprietary | 37 - 40 | NA |
| Carbon Black* | 1333-86-4 | < 0.5 | 1333-86-4 |
| Stabilizer | 26780-96-1 | < 1.0 | 500-051-3 |
| Organosilane | 171869-89-9 | < 3.0 | 605-620-0 |

* Carbon Black is physically bound within the resin matrix and is, therefore, not available for exposure.

NA – Not applicable/NE – Not Established/ND – Not determined

SECTION 4: FIRST AID MEASURES

EYE CONTACT: If eye irritation occurs, flush eyes with plenty of clean water for at least 15 minutes while holding eyelids apart. Seek medical attention if irritation persists.

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: Not a normal route of exposure. However if swallowed and symptoms develop, seek medical attention.

INHALATION: No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. If exposed to fumes from overheating or combustion and 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.



MATERIAL SAFETY DATA SHEET

RAY3144

If victim is not breathing, immediately begin artificial respiration. Keep victim warm and quiet; seek immediate medical attention.

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASHPOINT: Not applicable
METHOD USED: Not applicable

FLAMMABLE LIMITS

UPPER FLAMMABILITY LIMIT (% BY VOLUME): Not applicable
LOWER FLAMMABILITY LIMIT (% BY VOLUME): Not applicable

AUTOIGNITION TEMPERATURE: Not available.

SUITABLE EXTINGUISHING MEDIA:

Carbon dioxide, water, dry chemical, 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 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:

Toxic fumes may be given off in a fire. See "Hazardous Combustion Products".

SPECIFIC HAZARDS IN CASE OF FIRE:

SENSITIVITY TO MECHANICAL IMPACT: None known.

SENSITIVITY TO STATIC DISCHARGE: None known.

HAZARDOUS COMBUSTION PRODUCTS:

In common with most organic materials, thermal degradation and combustion byproducts may be toxic and should not be inhaled. Thermal degradation is not significant during normal processing. At temperatures above those recommended for proper installation, or most significantly if the material is burned, the thermal degradation and combustion byproducts may include, but are not limited to oxides of carbon, nitrogen and silicon; organic acids (including acetic acid); aldehydes (including formaldehyde); alcohols; acrolein; vinyl acetate and aromatic and aliphatic hydrocarbons.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Wear appropriate personal protection when responding, as specified under Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

ENVIRONMENTAL PRECATIONS:

Prevent spilled material from entering sewers and waterways.

SPILL CONTAINMENT & CLEANUP METHODS/MATERIALS:

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

SECTION 7: HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING AND STORAGE:

Handling: Avoid overheating of product and open flame. Avoid any vapors 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.

Installation: Follow appropriate TE installation instructions and application guides to ensure that installation is performed properly. 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 vapors to disperse and ventilate before continuing work in the area.

Storage: Store in a cool, dry, well-ventilated area.



MATERIAL SAFETY DATA SHEET

RAY3144

OTHER PRECAUTIONS (e.g.; Incompatibilities):
Not Known

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS/SYSTEM DESIGN INFORMATION:

Ensure adequate ventilation during installation.

VENTILATION:

Provide general or local exhaust ventilation systems

RESPIRATORY PROTECTION:

If installation occurs in a confined, unventilated area, or if product is overheated to degradation, NIOSH/MSHA-approved air-supplied respirators are recommended.

EYE PROTECTION:

Use safety glasses or appropriate eyewear to prevent contact with eyes. Based on the operation performed, follow the appropriate occupational safety and health guidelines. If there is a danger of molten material contacting the eyes, use face shield and goggles.

SKIN PROTECTION:

Use heat insulating gloves if there is a danger of molten material contacting the skin or if it is necessary to handle grossly overheated or fire-damaged products

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

See installation instructions for proper installation procedures. If product chars or burns, immediately stop heating. Avoid inhaling any vapors/fumes which may be given off under such circumstances. Allow any vapors/fumes to disperse and ventilate before continuing work in the area

EXPOSURE GUIDELINES & LIMITS:

| | | Chemical Name | Limit |
|----------------|---|---------------|-------------------|
| OSHA | Permissible Exposure Limit (PEL/TWA) Short Term Exposure Limit | Formaldehyde | 3 ppm 10 ppm |
| | | Vinyl Acetate | 35 mg/m3 (10ppm) |
| ACGIH | Threshold Limit Value (TLV) Short-Term Exposure Limit | Formaldehyde | 0.3 ppm (ceiling) |
| | | Vinyl Acetate | 53 mg/m3 (15ppm) |
| Quebec | Permissible Exposure Value (PEV) Short Term Exposure Limit | Formaldehyde | none established |
| | | Vinyl Acetate | Not established |
| Ontario | Occupational Exposure Level (OEL) Short Term Exposure Value | Formaldehyde | Not established |
| | | Vinyl Acetate | Not established |
| Germany | Maximale Arbeitsplatzkonzentrationen (MAK) Short-Term Limit (30-minutes) | Formaldehyde | Not established |
| | | Vinyl Acetate | Not established |
| United Kingdom | Occupational Exposure Standard (OES) Short-term Exposure Standard | Formaldehyde | Not established |
| | | Vinyl Acetate | Not established |

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

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Black tapes or coatings
ODOR: Little or no odor
ODOR THRESHOLD: Not Available
PHYSICAL STATE: Solid
pH: Not applicable.
BOILING POINT: Not applicable.
MELTING POINT: Ca 75°C (167°F)
FREEZING POINT: Not applicable.
VAPOR PRESSURE (mmHg @ 20°C): Not applicable



MATERIAL SAFETY DATA SHEET

RAY3144

| | |
|--|---|
| VAPOR DENSITY (AIR = 1): | Not applicable |
| SPECIFIC GRAVITY (H2O = 1): | 1.09 |
| EVAPORATION RATE (Butyl acetate=1): | Not applicable |
| SOLUBILITY IN WATER: | Not applicable |
| FLASH POINT: | Not applicable |
| AUTO-IGNITION TEMPERATURE: | Not applicable |
| LOWER EXPLOSIVE LIMIT (LEL): | Not applicable |
| UPPER EXPLOSIVE LIMIT (UEL): | Not applicable |
| PARTITION COEFFICIENT: | Not applicable |
| VISCOSITY (centipoise @ 25° C): | Not applicable |
| DECOMPOSITION TEMPERATURE: | Temperature >230 °C (>446 °F) short residence times Temperature >204 °C (>399 °F) long residence times |

SECTION 10: STABILITY AND REACTIVITY

| | |
|--|---|
| STABILITY: | This product is stable under normal conditions, at ambient temperature. |
| INCOMPATIBILITY (MATERIAL TO AVOID): | This product should not come into contact with strong acids or oxidizing agents |
| HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: | See Section 5: FIRE FIGHTING MEASURES (Hazardous Combustion Products). |
| HAZARDOUS POLYMERIZATION: | Will not occur. No known polymerization conditions to avoid. |
| CONDITIONS TO AVOID: | Avoid overheating of product and open flame. |

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE TOXICITY (Test Results Basis and Comments):

Vinyl acetate

| | |
|---------------------|------------------------------------|
| Dermal LD50 | 7,440 mg/kg , rabbit |
| Oral LD50 | 3,500 mg/kg , rat |
| Inhalation 4 h LC50 | 15.8 mg/l, rat |
| Target Organs: | Respiratory |
| | Tract Respiratory tract irritation |

IRRITANCY OF PRODUCT: Vapors from the heated product may cause irritation of the eyes, skin, nose, and throat.

SENSITIZATION TO MATERIAL: Not known.

CARCINOGENICITY: Vinyl acetate, which is produced when the product is overheated, is classified by IARC as a Group 2B carcinogen (possibly carcinogenic to humans) based on data from animal exposure studies). Formaldehyde, which is produced when the product is burned, is listed a listed carcinogen. None of the other ingredients, to which users may be exposed and which are present at equal to or greater than 0.1% of the products, are listed by OSHA, NTP, or IARC as carcinogens.

REPRODUCTIVE TOXICITY: None known.

TERATOGENICITY: None known.

MUTAGENICITY: None known.

TOXICOLOGICALLY SYNERGISTIC PRODUCTS: None known

SECTION 12: ECOLOGICAL INFORMATION

PERSISTENCE & DEGRADABILITY:

No data available on biodegradation.

BIO-ACCUMULATIVE POTENTIAL (Including Mobility):

No data available on bioaccumulation.



MATERIAL SAFETY DATA SHEET

RAY3144

AQUATIC TOXICITY (Test Results & Comments):

No data available on aquatic toxicity.

Additional Information

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

SECTION 13: DISPOSAL CONSIDERATIONS

| | |
|------------------------------------|---|
| WASTE DISPOSAL METHOD: | Treatment, storage, and disposal must be in accordance with applicable, federal, state, provincial, and local regulations. |
| HAZARDOUS WASTE CLASS/CODE: | This product, as sold, is not regulated as a hazardous waste. US - Not applicable to material as manufactured for distribution into commerce. CN - Not applicable to material as manufactured for distribution into commerce. EWC - Not applicable to material 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 | Not regulated | | |
| Hazard Class | NA | ID Number | NA |
| Packing Group | NA | Labels | NA |

AIRCRAFT - ICAO-IATA:

| | | | |
|----------------------|---------------|-----------|----|
| Proper Shipping Name | Not regulated | | |
| Hazard Class | NA | ID Number | NA |
| Packing Group | NA | Labels | NA |

VESSEL - IMO-IMDG:

| | | | |
|----------------------|---------------|-----------|----|
| Proper Shipping Name | Not regulated | | |
| 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. Statement of Jurisdictional/Modal Special Provision(s) required
- 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: If the product contains chemicals subject to TSCA Section 12b export notification they are listed below:

| <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> | <u>% wt</u> |
|--|--------------|-------------|
| Vinyl Acetate (combustion byproduct of E-VA-MAA terpolymers) | 108-05-4 | 0.1 - 1 |



MATERIAL SAFETY DATA SHEET

RAY3144

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

If the product contains chemicals subject to the reporting requirements of Section 313 of SARA Title III, they are listed below.

| <u>Chemical</u> | <u>CAS #</u> | <u>% wt</u> |
|--|--------------|-------------|
| Vinyl Acetate (combustion byproduct of E-VA-MAA terpolymers) | 108-05-4 | 0.1 - 1 |

CERCLA SECTION 311/312 HAZARD CATEGORIES: Note that this 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 product as distributed into commerce are known to the State of California to cause cancer, birth defects, or other reproductive harm:

| <u>State</u> | <u>Chemical</u> | <u>CAS #</u> | <u>% Wt</u> |
|--------------|---|--------------|-------------|
| NJ | Vinyl Acetate (combustion byproduct of E-VA-MAA terpolymers) | 14807-96-6 | 0.1 - 1 |
| NJ, PA | Stabalizer | 26780-96-1 | < 1.0 |
| NJ, PA | Organosilane | 171869-89-9 | < 3.0 |

INTERNATIONAL REGULATIONS (Non-US):

Canadian Domestic Substance List (DSL)

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

WHMIS Classifications

Carbon Black (Bound in Matrix)

D2A Very Toxic Material Causing Other Toxic Effects: 1 carcinogenicity: IARC group 2B

D2B - Poisonous and infectious material - Other effects - Toxic

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* and the MSDS contains all of 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:

| <u>Chemical</u> | <u>CAS #</u> | <u>% Wt</u> |
|--------------------------------|--------------|-------------|
| Carbon Black (Bound in Matrix) | 1333-86-4 | < 0.5 |

European Inventory of Existing Commercial Chemical Substances (EINECS)

All ingredients remaining in the 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.

R-Phrases

R36/37

S-Phrases

S36/37/39, S38, S41, S51

Additional 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, or for distribution into specific domestic destinations.

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.



MATERIAL SAFETY DATA SHEET

RAY3144

MSDS/SDS PREPARATION INFORMATION:

Department Issuing SDS: TE Connectivity, Menlo Park

Contact: Stefanie Gravano, Ph.D. Materials Manager

Tel: 001 650 361 2066

Email: stefanie.gravano@te.com

DATE OF ISSUE: September 8, 2015

SUPERCEDES: March 1, 2008

DISCLAIMER:

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