

RAY9000

tyco
ElectronicsMaterial Safety
Data Sheet**125-6217**22Sep04 Rev L
All Para Revised EC 0990-1296-04**AMPACT*/EXCLTAP* Shells, Part Number 69338****1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

Manufacturer Tyco Electronics 2901 Fulling Mill Road Middletown, PA 17105-3608
 Supplier Tyco Electronics 20 Esna Park Drive Markham, Ontario L3R 1E1
 Canada

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE or ACCIDENT
 Call CHEMTREC – Day or Night – 1-800-424-9300 Toll free in the continental U.S., Hawaii, Puerto Rico, Canada, Alaska or Virgin Islands. For calls originating elsewhere: (703) 527-3887 (collect calls accepted).

For non-emergency health and safety information, call Customer Service: 1-800-327-6996

Product Name: AMPACT*/EXCLTAP* Shells
 Part No. 69338-1 "Blue"
 Part No. 69338-2 "Red"
 Part No. 69338-4 "Yellow"
 Part No. 69338-5 "White"
 Part No. 1-69338-6 "Green"
 Part No. 1-69338-7 "Orange"

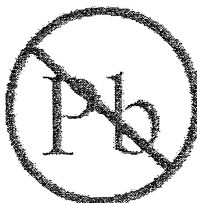
Synonyms:

Product Use:

MSDS Prepared By:

Cartridges for Powder Actuated Connector Installation Tools
 Bill Dvorak, EHS Manager (919) 557-8685

The heavy metal-free product addressed by this MSDS is identified with the following symbol on product cartons and molded into the shell casing. Versions of this product WITHOUT this symbol must be disposed of as hazardous waste per local regulations – classed as EPA reactive hazardous waste D003 & P081 for undetonated shells and as EPA toxic waste D008 (contains small amounts of lead) for detonated shells. Please refer to MSDS 125-6217 Rev J or K for shells without the following symbol:

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Chemical Ingredients (% by Weight):

Chemical Name	CAS Number	%	Exposure Limit
Polyethylene polymer	9002-88-4	60 – 100%	OSHA: not established ACGIH: not established ONTARIO: not established

Chemical Name	CAS Number	%	Exposure Limit
Iron	7439-89-6	3 – 7%	OSHA: 10 mg/m ³ (as iron oxide fume) ACGIH: 1.0 mg/m ³ (as Fe) ONTARIO: 1.0 mg/m ³ (as Fe)
Copper	7440-50-8	1 – 5%	OSHA: 0.1 mg/m ³ ACGIH: 0.2 mg/m ³ (fume) ONTARIO: 0.2 mg/m ³
Nitroglycerin	55-63-0	0.5 – 2%	OSHA: 0.2 ppm C, Skin ACGIH: 0.05 ppm, Skin ONTARIO: 0.05 ppm, Skin
Nitrocellulose	9004-70-0	0.5 – 2%	OSHA: not established ACGIH: not established ONTARIO: not established
Zinc	7440-66-6	0.2-5%	OSHA: 5 mg/m ³ (zinc oxide fume) ACGIH: 2 mg/m ³ (zinc oxide fume) ONTARIO: 5 mg/m ³ (zinc oxide fume)
Tetrazene	109-27-3	<0.1%	OSHA: not established ACGIH: not established ONTARIO: not established
Diazodinitrophenol	87-31-0	<0.2%	OSHA: not established ACGIH: not established ONTARIO: not established
Bismuth Trioxide	304-76-3	<0.3%	OSHA: 5 mg/m ³ (resp.) ACGIH: 3 mg/m ³ (resp.) ONTARIO: 3 mg/m ³ (resp.)
Aluminum	7429-90-5	<0.1%	OSHA: 5 mg/m ³ (resp.) ACGIH: 5 mg/m ³ (pyro powdr.) ONTARIO: 5 mg/m ³ (Al powdr.)

Transport Canada Product Identification Number: UN 0323 (Cartridges, Power Device), Hazard Class 1.4S

See Section 8: Exposure Control/Personal Protection for Exposure Guidelines

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

This product is a granular solid and primer activation system encapsulated in polyethylene. Avoid acids, crushing, short circuits, open flame, excessive heat and prolonged temperatures above 125°F. Wear safety glasses when activating this product.

POTENTIAL HEALTH EFFECTS:

This information presented below corresponds to the individual components of this product. Toxicity studies have not been performed on the mixture as a whole.

Acute (Short-Term Exposure) :

EYE CONTACT: Dust and/or fumes may cause eye irritation.

SKIN CONTACT: No adverse effects expected under normal use with proper ventilation. May cause skin irritation or allergic reaction if exposed to powder.

INGESTION: Not expected under normal use conditions. If ingested, gastrointestinal symptoms may include nausea and vomiting.

INHALATION: No adverse effects expected under normal use with proper ventilation. Inhalation resulting from poor ventilation may cause irritation to the upper respiratory tract.

Chronic (Long-Term Exposure): Chronic inhalation of select components of this product may result in anemia, liver, kidney and/or lung damage, palpitation, rapid heart beat, abdominal pain, retrosternal discomfort, muscle twitches, Heinz bodies, methemoglobinemia, depression, confusion, skin irritation and allergic reaction. Alcohol may intensify the effects.

Prolonged, concentrated inhalation of select components of this product may result in anemia, liver, kidney and/or lung damage.

4. FIRST AID MEASURES

EYE: Flush with large amounts of water until irritation subsides after contact with powder or primer. If irritation persists, get medical attention.

SKIN: Flush skin with large amounts of water, use soap if available, if skin comes in contact with powder or primer. Remove severely contaminated clothing (including shoes) and wash before reuse. If irritation persists, get medical attention. For thermal burns, immerse in ice water and immediately seek medical attention.

INGESTION: If powder or primer is swallowed, seek medical attention immediately. Never give anything by mouth to an unconscious person.

INHALATION: Remove victim to fresh air. Keep the victim at rest. Get medical attention immediately. If breathing is difficult, give oxygen.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASHPOINT: Not applicable

METHOD USED: Not applicable

EXPLOSIVE LIMITS in Air (volume%):

UPPER EXPLOSIVE LIMIT (% BY VOLUME): Not applicable

LOWER EXPLOSIVE LIMIT (% BY VOLUME): Not applicable

CONDITIONS OF FLAMMABILITY: Will readily ignite; highly combustible. Protect from fire, sparks and extreme heat (temperatures above 392°F/200°C).

AUTOIGNITION TEMPERATURE: Passes MIL-286B, Para. 404.1 – no explosion at 120°C for 5 hours

EXTINGUISHING MEDIA: Ingredients are self-oxidizing, deluge with water.

HAZARDOUS COMBUSTION PRODUCTS: Smoke, fumes and oxides of carbon, nitrogen and various metals and hydrogen cyanide.

FIRE FIGHTING EQUIPMENT: Firefighters should wear self-contained breathing apparatus with a full-face piece operated in the positive pressure demand mode when fighting fires. Use water spray to keep fire-exposed containers/product cool.

SENSITIVITY TO STATIC DISCHARGE: Use caution as powder is sensitive to friction, impact and electrostatic discharge.

SENSITIVITY TO MECHANICAL IMPACT: This product is sensitive to mechanical impact

6. ACCIDENTAL RELEASE MEASURES

Shut off ignition source, eliminate smoking or open flames, and/or remove from extreme heat. Clean up spills of intact cartridges so as not to release powder. Clean up spills of loose powder immediately using soft bristle brush and a non-conductive plastic shovel wearing nylon or polyethylene gloves. See Section 13 for disposal information.

7. HANDLING AND STORAGE

HANDLING: Handle packages/containers with care. For industrial or professional use only. Keep out of reach of children.

STORAGE: Store at temperatures below 125°F, at normal atmospheric pressure and below 90% relative humidity, away from incompatible materials (see STABILITY and REACTIVITY - Section 10).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION: None required during normal, intended use. If ventilation is inadequate to keep airborne concentrations below the established exposure limits (see Exposure Guidelines below), the use of respiratory protection is strongly recommended and may be required by law. Depending on the airborne concentration of material, a NIOSH approved air-purifying respirator with a HEPA (P-100) cartridge is recommended.

SKIN PROTECTION: None required for normal, intended use. If exposure to powder charges is possible, nylon or polyethylene gloves with sweat absorbent liners should be used.

HEARING PROTECTION: None required for normal intended use.

EYE PROTECTION: Safety glasses with safety shields should always be worn.

EXPOSURE GUIDELINES: There is no single exposure limit applicable to this product as supplied or used. However, there are various exposure limits for select ingredients of this product.

Nitroglycerin:

OSHA	Ceiling Limit	0.2 ppm
ACGIH	Threshold Limit Value (TLV-TWA)	0.05 ppm
ONTARIO	Time-weighted Average Exposure Values (TWA-EV)	0.05 ppm

Copper (fume):

OSHA	Permissible Exposure Limit (PEL-TWA)	0.1 mg/m ³
ACGIH	Threshold Limit Value (TLV-TWA)	0.2 mg/m ³
ONTARIO	Time-weighted Average Exposure Values (TWA-EV)	0.2 mg/m ³

Iron:

OSHA	Permissible Exposure Limit (PEL-TWA)	10 mg/m ³ (as iron oxide fume)
ACGIH	Threshold Limit Value (TLV-TWA)	1.0 mg/m ³ (as Fe)
ONTARIO	Time-weighted Average Exposure Values (TWA-EV)	1.0 mg/m ³ (as Fe)

Zinc:

OSHA	Permissible Exposure Limit (PEL-TWA)	5.0 mg/m ³ (zinc oxide fume)
ACGIH	Threshold Limit Value (TLV-TWA)	2.0 mg/m ³ (zinc oxide fume)
ONTARIO	Time-weighted Average Exposure Values (TWA-EV)	5.0 mg/m ³ (zinc oxide fume)

Bismuth Trioxide:

OSHA	Permissible Exposure Limit (PEL-TWA)	5.0 mg/m ³
ACGIH	Threshold Limit Value (TLV-TWA)	3.0 mg/m ³
ONTARIO	Time-weighted Average Exposure Values (TWA-EV)	3.0 mg/m ³

Aluminum:

OSHA	Permissible Exposure Limit (PEL-TWA)	5.0 mg/m ³
ACGIH	Threshold Limit Value (TLV-TWA)	5.0 mg/m ³
ONTARIO	Time-weighted Average Exposure Values (TWA-EV)	5.0 mg/m ³

ENGINEERING CONTROLS: Use ventilation, as necessary, to reduce levels of airborne contaminants below that which may cause personal injury or illness and/or required by law. Local exhaust ventilation is preferred. General, mechanical or dilution ventilation may be suitable.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Granular solid and primer activation system encapsulated in polyethylene.

ODOUR: Not determined

ODOUR THRESHOLD: Not applicable

SOLUBILITY IN WATER(%): Insoluble

BOILING POINT: Not applicable

MELTING POINT: Not applicable

VAPOUR PRESSURE (mm Hg @ 25°C): Not determined

VAPOUR DENSITY (air=1): Not determined

FREEZING POINT: Not applicable

SPECIFIC GRAVITY: 1.67

VOLATILITY (% by weight): <2.4

EVAPORATION RATE: Not applicable

10. STABILITY AND REACTIVITY

STABILITY: Due to the product design and amount of powder in the charge, this product is stable. However, nitroglycerin itself is sensitive to mechanical or localized thermal shock or concussion.

CONDITIONS TO AVOID: Avoid acids, crushing, short circuits, sparks, open flame, excessive heat and prolonged temperatures above 125°F.

INCOMPATIBILITY (Specific Materials to Avoid): Keep away from organic and inorganic acids, bases and strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: See Sections 5: FIRE FIGHTING MEASURES (Hazardous Combustion Products).

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

NOTE

The information presented below corresponds to the individual components of this material. Toxicity studies have not been performed on the product mixture.

LD_{Lo}/ LD₅₀ / LC₅₀:

Polyethylene: LD_{Lo} Oral-mouse – 5 gm/kg

LC₅₀ Inhalation-mouse – 12 gm/m³

Copper: TD_{Lo} Oral-human – 120 ug/kg

TD_{Lo} Multiple dose, oral-rabbit – 3 gm/kg/60D-C

Iron: LD₅₀ Oral-rat – 30 gm/kg

Nitroglycerin: LD₅₀ Oral-mouse – 115 mg/kg

TD_{Lo} Oral-human – 8 ug/kg

LD₅₀ Oral-rabbit – 1607 mg/kg

Nitrocellulose: LD₅₀ Oral-rat – >5 gm/kg

Aluminum: TC_{Lo} Multiple Dose, Inhalation - rat – 206 mg/m³/5H/30D-I

TC_{Lo} Multiple Dose, Inhalation - human – 4 mg/m³/1Y-I

Zinc: TC_{Lo} Inhalation - human – 124 mg/m³/50M

TC_{Lo} Multiple Dose, Inhalation - human – 2.4 mg/m³/5Y-I

Bismuth Oxide: LD₅₀ Oral-mouse – 10 gm/kg

LC₅₀ Inhalation-rat – 22.5 mg/m³

ROUTES OF ENTRY: Skin, eye, ingestion, inhalation.

EFFECTS OF ACUTE OVEREXPOSURE: Acute overexposure of select components of this product may result in respiratory irritation, faintness, skin flush, dizziness, skin irritation, and allergic reaction. Alcohol may intensify the effects.

EFFECTS OF CHRONIC OVEREXPOSURE: Chronic inhalation of select components of this product may result in anemia, liver, kidney and/or lung damage, palpitation, rapid heart beat, abdominal pain, retrosternal discomfort, muscle twitches, Heinz bodies, methemoglobinemia, depression, confusion, skin irritation and allergic reaction. Alcohol may intensify the effects.

IRRITANCY OF PRODUCT: Not determined. Zinc has been shown to cause mild skin irritation.

SENSITIZATION TO MATERIAL: Not determined.

CARCINOGENICITY: IARC, NTP and OSHA do not list any of the components of this product as a carcinogen. Nitroglycerin, Zinc, and Copper have been shown to cause tumorigenic effects in experimental animal studies.

REPRODUCTIVE TOXICITY: Not determined. Nitroglycerin, Aluminum and Copper have been shown to cause reproductive toxicity in experimental animal studies.

TERATOGENICITY: Not determined

MUTAGENICITY: Not determined. Nitroglycerin has been shown to cause mutagenic effects in experimental studies.

TOXICOLOGICALLY SYNERGISTIC PRODUCTS: Not determined

12. ECOLOGICAL INFORMATION

Copper and zinc are toxic to various aquatic organisms.

13. DISPOSAL CONSIDERATION

Hazard Class: Undetonated cartridges must be managed as a reactive hazardous waste (for instance, classed as EPA reactive hazardous waste D003 and P081) and sent to a permitted disposal facility. Detonated cartridges may be treated as refuse.

14. TRANSPORT INFORMATION

NOTE

Transportation of product should be in compliance with all applicable local and governmental laws and regulations.

D.O.T. (U.S. Department of Transportation), TDG (Canada – Transportation of Dangerous Goods), EU (European Union)

Proper Shipping Name: Cartridges, Power Device
Hazard Class: 1.4S
UN/NA: 0323
Hazard Label: Explosive
Regulatory Reference: 49 CFR 172.101; 172.102; 173.62

IATA (International Air Transport Association)

Proper Shipping Name: Cartridges, Power Device
Hazard Class: 1.4S
UN/NA: 0323
Hazard Label: Explosive
Packing Group: II
Labels: Explosive

15. REGULATORY INFORMATION

TSCA: All ingredients are listed on the Inventory of Chemical Substances published by the U.S. EPA.

CANADIAN EXPLOSIVES ACT AND REGULATIONS: Class 6, Division 1

WHMIS CLASSIFICATION FOR PRODUCT: This MSDS has been prepared to meet WHMIS requirements

OSHA: Nitroglycerine: Class 1A Explosive (1910.109)

16. OTHER INFORMATION

Sources of Information:

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

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