

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: AMPACT*/EXCLTAP* Shells **RAY9000 (MSDS 125-6217)**
PRODUCT CODES: Part Number 69338. Product family includes Blue (P/N 69338-1), Red (P/N 69338-2), Yellow (69338-4), White (69338-5), Green (1-69338-6), and Orange (1-69338-7)
MANUFACTURER: Tyco Electronics Corporation
DIVISION: Tyco Electronics Energy Division
ADDRESS: 2901 Fulling Mill Road
 Middletown, PA 17057-3163
SUPPLIERS Tyco Electronics Enterprise Solutions
 8420 Triad Drive
 Greensboro, NC 27409
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: Lead-free cartridges containing granular solid and primer activation system encapsulated in polyethylene. Cartridges do not contain mercury or cadmium.
PRODUCT USE: Cartridges for power-actuated connector installation tools. See Tyco Electronics Product Installation and Use Instructions that accompany the product.

This product is considered a Hazardous Substance, Preparation or Article that is 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/SDS is required for this product considering that when used as recommended or intended, or under ordinary conditions, it may present a health and safety exposure or other hazard.

Additional Information

This product is not intended for harsh environments, such as solvent-containing, or extreme temperature or pressure. Please request information if considering non-STP, harsh-conditions or use beyond current product labeling.

SECTION 2: HAZARDS IDENTIFICATION
GHS Classification:

Health Hazards Acute Toxicity – NL Skin Corrosion/Irritation – Mild skin irritation Eye Corrosion/Irritation - NL Respiratory or Skin Sensitization – Possible skin allergen Mutagenicity – NL	Carcinogenicity – NL Reproductive/Developmental – NL Target Organ Toxicity – NL Physical Hazards Flammability – NL (Not flammable or combustible)	Environmental Hazards Aquatic Toxicity – NL Lead free ⁽²⁾ – Notes: 1. NL = Not listed 2. Cartridges manufactured before January 2005 may contain lead.
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GHS Label: As required for Finished Goods according to End-Use Products Regulations

Symbols: Warning Explosive



Hazard Statements

Fire or projection hazard.
May cause skin irritation or an allergic skin reaction.

Precautionary Statements

In case of fire: Evacuate the area.
Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Do not crush or grind.
Avoid Contact with contents of cartridges.
Avoid breathing dust, fume, vapours, or smoke.

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 exposure to temperatures above 125 °F (52°C). Wear safety glasses when activating this product.

POTENTIAL HEALTH EFFECTS:

EYES: Eye irritation/redness is exposed to contents of cartridge. Possible foreign object damage from granules.

SKIN: Repeated or prolonged contact with some ingredients, such as zinc and other metals, may cause mild skin irritation and possible allergic reaction.

INGESTION: May cause fainting, flushing of the skin, dizziness, rapid heart beat, abdominal pain, liver or kidney damage.

INHALATION: Possible irritation of the respiratory system.

ACUTE HEALTH HAZARDS:

Prolonged contact may cause mild skin irritation.

CHRONIC HEALTH HAZARDS:

Chronic skin contact may result in skin irritation/allergic reaction. Chronic inhalation of select components of this product may result in anemia, liver, kidney, or lung damage. Also possible are heart palpitations, abdominal pain, pain/pressure behind the sternum, muscle twitches, Heinz bodies, methemoglobinemia, depression, and confusion.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Wilson's disease prevents normal elimination of copper and may result in copper-related kidney toxicity. Alcoholism increases the risk of systemic effects, such as liver and kidney damage.

Additional Information

None.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENTS (Chemical/Common Names):</u>	<u>CAS No.:</u>	<u>% by Wt:</u>	<u>EC No.:</u>
Iron	7439-89-6	3-7	231-096
Copper	7440-50-8	1-5	231-159-6
Nitroglycerin	55-63-0	0.5-2	200-240-8
Nitrocellulose	9004-70-0	0.5-2	Not listed
Zinc	7440-66-6	0.5-2	231-175-3
Tetrazene	109-27-3	<0.1	203-659-4
Diazodinitrophenol	87-31-0	<0.2	Not listed

MATERIAL SAFETY DATA SHEET***AMPACT*/EXCLTAP* SHELLS***

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INGREDIENTS (Chemical/Common Names):

Bismuth trioxide

CAS No.:

304-76-3

% by Wt:

<0.3

EC No.:

Not listed

Aluminum

7429-90-5

<0.1

231-072-3

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.

SECTION 4: FIRST AID MEASURES**EYE CONTACT:** Flush eyes with large amounts of water. If symptoms develop, seek medical attention.**SKIN CONTACT:** If skin is exposed to powder or primer, Immediately wipe material from skin and wash affected area(s) with plenty of mild soap and water. If symptoms persist, 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 symptoms persist, seek medical attention to administer oxygen.**Additional Information**

Remove severely contaminated shoes and clothing and clean thoroughly before reuse.

SECTION 5: FIRE-FIGHTING MEASURES**FLAMMABLE PROPERTIES:** See Section 9**SUITABLE EXTINGUISHING MEDIA:**

Water deluge. Note: Ingredients are self-oxidizing.

SPECIAL FIRE FIGHTING PROCEDURES & PROTECTIVE EQUIPMENT:

Avoid breathing vapors. Use full protective equipment (bunker gear) and self-contained breathing apparatus. Cool exposed containers with water spray.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Use caution as powder is sensitive to friction, impact and electrostatic discharge.

SPECIFIC HAZARDS IN CASE OF FIRE:

Highly combustible. Will readily ignite. Protect from fire sparks and extreme heat (temperatures above 392 °F (200 °C)).

Additional Information

This product is sensitive to mechanical impact.

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

Avoid Contact with Skin.

ENVIRONMENTAL PRECATIONS:

Prevent spilled material from entering sewers and waterways.

SPILL CONTAINMENT & CLEANUP METHODS/MATERIALS:

Shut off ignition source, eliminate smoking and 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 a soft bristle brush and a non-conductive plastic shovel wearing nylon or polyethylene gloves. See Section 13 for disposal information. Add absorbent to spill area. Sweep or shovel spilled material and absorbent and place in approved container.

Additional Information

None.

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

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

OTHER PRECAUTIONS (e.g.; Incompatibilities):

Store at temperatures below 125 °F (52 °C), at normal temperature and pressure and below 90% relative humidity. Do not store near acids, bases and oxidizers.

Additional Information

None.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION
ENGINEERING CONTROLS/SYSTEM DESIGN INFORMATION:

Use with adequate ventilation.

VENTILATION:

General dilution ventilation is acceptable. Use local exhaust ventilation in poorly ventilated areas.

RESPIRATORY PROTECTION:

Not required for normal conditions of use. If ventilation is inadequate to keep concentrations below the Exposure Limits, use a NIOSH certified air-purifying respirator with HEPA (P100) filter cartridges. See also special firefighting procedures (Section 5).

EYE PROTECTION:

Wear protective glasses or goggles.

SKIN PROTECTION:

Wear chemical resistant gloves as a standard procedure to prevent skin contact. If exposure to powder charges is possible, nylon or polyethylene gloves with sweat absorptive liners are recommended.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

None required under normal use conditions.

EXPOSURE GUIDELINES & LIMITS: There is no exposure limit for the product mixture.

OSHA	Permissible Exposure Limit (PEL/TWA)	Copper:	0.1 mg/m ³ (as Cu fume)
		Nitroglycerin:	0.2 ppm Ceiling
		Respirable dust:	5 mg/m ³
		Zinc:	5 mg/m ³
ACGIH	Threshold Limit Value (TLV)	Copper:	0.2 mg/m ³ (as Cu fume)
		Nitroglycerin:	0.05 ppm (skin)
		Respirable dust:	3 mg/m ³
		Inhalable dust:	10 mg/m ³
		Zinc:	2 mg/m ³
British Columbia (WorkSafe BC)	Exposure Limits	Copper:	0.2 mg/m ³ (as Cu fume)
		Nitroglycerin:	0.05 ppm (skin)
		Inhalable dust:	10 mg/m ³
		Zinc oxide:	2 mg/m ³ (as fume)
Quebec	Permissible Exposure Value (PEV)	Copper:	0.2 (fumes, as Cu)
		Nitroglycerin:	0.2 ppm
		Particulate:	10 mg/m ³
		Zinc oxide:	5 mg/m ³ (as fume)
Ontario	Occupational Exposure Level (OEL)	Copper:	0.2 mg/m ³ (fumes, as Cu)
		Nitroglycerin:	0.05 ppm (skin)
		Respirable dust:	3 mg/m ³
		Inhalable dust:	10 mg/m ³
		Zinc oxide:	2 mg/m ³ (as fume)
Germany	Maximale Arbeitsplatzkonzentrationen (MAK)	Copper:	0.1 mg/m ³ (fumes, as Cu)
		Nitroglycerin:	0.05 ppm Ceiling
United Kingdom	Occupational Exposure Standard (OES)	Copper:	0.2 (fumes, as Cu)
		Nitroglycerin:	NE
		Respirable dust:	4 mg/m ³

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

Additional Information

The "skin" notation indicates that pure nitroglycerin can be absorbed through the skin. There are exposure limits for other ingredients, but the percentages and hazards of other constituents were lower than the substances above.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Granular solid and primer activation system encapsulated in polyethylene.
ODOR:	Little or no odor
ODOR THRESHOLD:	NA
PHYSICAL STATE:	Solid
pH:	NA
BOILING POINT:	NA
MELTING POINT:	NA
FREEZING POINT:	NA
VAPOR PRESSURE:	Not Available
VAPOR DENSITY (AIR = 1):	Not Available
SPECIFIC GRAVITY (H₂O = 1):	1.67
EVAPORATION RATE:	NA
SOLUBILITY IN WATER:	Insoluble
FLASH POINT:	NA
AUTO-IGNITION TEMPERATURE:	Passes MIL-286B, Para. 404.1. Does not explode at 120 °C for 5 hours.
LOWER EXPLOSIVE LIMIT (LEL):	NA
UPPER EXPLOSIVE LIMIT (UEL):	NA
PARTITION COEFFICIENT:	NA
VISCOSITY (poise @ 25°C):	Not Available
DECOMPOSITION TEMPERATURE:	Not Available

FLAMMABILITY/HMIS HAZARD CLASSIFICATIONS (US/CN/EU): Not determined for mixture. Values shown are for Nitroglycerin

HEALTH: 2 FLAMMABILITY: 2 REACTIVITY: 4

Additional Information

None.

SECTION 10: STABILITY AND REACTIVITY

STABILITY:	Due to the product design and amount of powder in the charge, this product is stable under normal conditions at ambient temperature. Nitroglycerin is shock-sensitive.
INCOMPATIBILITY (MATERIAL TO AVOID):	Acid, bases, and strong oxidizers.
HAZARDOUS DECOMPOSITION OR BY-PRODUCTS:	Smoke, fumes, and oxides of carbon, nitrogen, and various metals and hydrogen cyanide.
HAZARDOUS POLYMERIZATION:	Will not occur.
CONDITIONS TO AVOID:	Avoid acids, crushing, short circuits, open flame, excessive heat and prolonged temperatures above 125 °F (52 °C).

Additional Information

None.

SECTION 11: TOXICOLOGICAL INFORMATION**ACUTE TOXICITY (Test Results Basis and Comments):**

Product not tested as a whole. LD₅₀ for Nitroglycerin: 105 mg/kg (Rat)

SUBCHRONIC/CHRONIC TOXICITY (Test Results and Comments):

No data available. Possible reproductive effects from Nitroglycerin, Aluminum and Copper.

Additional Information

No chronic toxicity data available.

SECTION 12: ECOLOGICAL INFORMATION
PERSISTENCE & DEGRADABILITY:

No data available on biodegradation. Does not contain lead.

BIO-ACCUMULATIVE POTENTIAL (Including Mobility):

No data available on bioaccumulation.

AQUATIC TOXICITY (Test Results & Comments):

Copper, zinc and nitroglycerin are toxic to various aquatic organisms.

Additional Information

- No known effects on stratospheric ozone depletion.
- Volatile organic compounds: <2.4%
- Water Endangering Class (WGK): NA

SECTION 13: DISPOSAL CONSIDERATIONS
WASTE DISPOSAL
METHOD:

Detonated cartridges may be treated as refuse. Undetonated cartridges must be managed as a reactive hazardous waste (Follow local, State/Provincial, and Federal/National regulations applicable to as-used, end-of-life characteristics to be determined by end-user.

HAZARDOUS WASTE
CLASS/CODE:

US EPA: Undetonated cartridge waste is classified as a reactive hazardous waste, D003 and P081.
 CN – Not determined
 EWC – Not determined.

Additional Information

Not Included – Dispose/Recycle as allowed by local jurisdiction for the end-of-life characteristics as-disposed.

SECTION 14: TRANSPORT INFORMATION
US-DOT, DOMESTIC ONLY:

Proper Shipping Name	UN 0323, Cartridges, power device (for powder-actuated connector installation tools, < 2% nitroglycerin each), Class 1.4S, PG II, , USDOT PI-173.62/63, Cargo-Only		
Hazard Class	1.4S	ID Number	UN/NA: UN 0323
Packing Group	II	Labels	ORM-D

GROUND – CAN-TDG/EU-ADR/APEC-ADR:

Proper Shipping Name	UN 0323, Cartridges, power device (for powder-actuated connector installation tools, < 2% nitroglycerin each), Class 1.4S, PG II, Cargo-Only		
Hazard Class	1.4S	ID Number	UN/NA: UN 0323
Packing Group	II	Labels	Consumer Product

AIRCRAFT – ICAO-IATA:

Proper Shipping Name	UN 0323, Cartridges, power device (for powder-actuated connector installation tools, < 2% nitroglycerin each), Class 1.4S, PG II, IATA PI-134, Cargo-Only		
Hazard Class	1.4S	ID Number	UN/NA: UN 0323
Packing Group	II	Labels	Explosive

VESSEL – IMO-IMDG:

Proper Shipping Name	UN 0323, Cartridges, power device (for powder-actuated connector installation tools, < 2% nitroglycerin each), Class 1.4S, PG II, Cargo-Only		
Hazard Class	1.4S	ID Number	UN/NA: UN 0323
Packing Group	II	Labels	Explosive

Additional Information

Transport requires proper packaging and paperwork, including the Nature and Quantity of goods, per applicable origin/destination/customs points as-shipped.

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: The finished product contains 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>
Copper	7440-50-8
Nitroglycerin	55-63-0
Zinc	7440-66-6

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.

<u>Chemical</u>	<u>CAS #</u>	<u>% wt</u>
Copper	7440-50-8	5
Nitroglycerin	55-63-0	2

CERCLA SECTION 311/312 HAZARD CATEGORIES: Note that the finished product is exempt from these regulations.

Fire Hazard	No
Pressure Hazard	No
Reactivity Hazard	Explosive (applies to undetonated cartridges)
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.

INTERNATIONAL REGULATIONS (Non-US):**Canadian Domestic Substance List (DSL)**

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

WHMIS Classifications

Not Regulated.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Controlled Products Regulations.

NPRI and Ontario Regulation 127/01

This product contains the following chemicals subject to the reporting requirements of Canada NPRI +/-or Ont. Reg. 127/01:

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Chemical

Copper

Nitroglycerin

CAS #

7440-50-8

55-63-0

% Wt

5

2

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

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.

SOURCES OF INFORMATION:**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. Cal/EPA (2010) Chemicals Known To the State to Cause Cancer or Reproductive Toxicity, Office of Environmental Health Hazard Assessment, Safe Drinking Water and Toxic Enforcement Act of 1986, State Of California Environmental Protection Agency.
3. 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.
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>.
5. Health Canada (2002), Substances Assessed For Carcinogenicity.
6. IARC (2010) IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 93, in preparation, International Agency for Research on Cancer, World Health Organization, Lyon, France.
7. Ontario Ministry of Labour (2009) "Control of Exposure to Biological or Chemical Agents," R.R.O. 1990, Ontario Regulation 833.
8. U.S. Department of Labor, Occupational Safety and Health Administration (2010), "Air Contaminants," 29 CFR 1910.1000.
9. WorkSafeBC (2010), "Occupational Health and Safety Regulation, Section R5.48," WorkSafeBC (British Columbia Ministry of Labour), Vancouver, British Columbia.

MSDS/SDS PREPARATION INFORMATION:DATE OF ISSUE: **2 August 2010**SUPERCEDES: **31 July 2007****DISCLAIMER:**

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