SAFETY DATA SHEET

DATE: 06/01/2015

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: CLiP® Current Limiting Protector
PAF® Power Assisted Fuse
CLiP® Interrupter Simulator

Company: G&W Electric Company
305 West Crossroads Parkway
Bolingbrook, Illinois, 60440-4938 USA

Telephone: (708) 388-5010
Fax: (708) 388-0755
Emergency Phone: CHEMTREC
United States & Canada- (800) 424-9300
Overseas- (703) 527-3887

2. HAZARDS IDENTIFICATION

OSHA Hazard Classification

Explosive: Division 1.4B ; Class C

Signal Word

Warning

GHS Label elements, including precautionary statements

Hazard Statements

Fire or projection hazard

Precautionary Statements

Prevention	Response	Storage	Disposal
Keep away from heat/sparks/open flames/hot surfaces. No smoking. Ground/bond container and receiving equipment. Do not subject to grinding/shock/friction. Wear face protection.	In case of fire: Evacuate area. Explosion risk in case of fire. Fight fire with normal precautions from a reasonable distance. Do NOT fight fire when fire reaches explosives. Evacuate immediately.	Store in accordance with local/regional/ national/international regulations.	Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazards not otherwise classified: No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Primacord® Detonating Cord

Synonyms: PETN; Penthrit; Nitropentaerythritol
Formula: $C_5H_8N_4O_{12}$
Molecular Weight: 316.17

Component	CAS #	Concentration
Pentaerythritol Tetranitrate (PETN)	78-11-5	N/A

Initiator

Component	CAS #	Concentration
Pentaerythritol Tetranitrate (PETN)	78-11-5	N/A
Lead Azide/Lacquer	13424-46-9	N/A
Lead Azide/PETN	13424-46-9 / 78-11-5	N/A

ICI Aerospace or Network Electronics, MMS Switch

Component	CAS #	Concentration
Lead Azide/PETN	13424-46-9 / 78-11-5	N/A

4. FIRST AID MEASURES

General advice: This is a packaged product that will not result in the exposure to the explosive material or hazardous conditions under normal storage and use.

Inhalation: No hazards which require special first aid measures.

Skin contact: No hazards which require special first aid measures.

Eye contact: No hazards which require special first aid measures.

Ingestion: No hazards which require special first aid measures.

Most important symptoms/effects, acute and delayed: No information available.

Immediate medical attention and special treatment needed, if any: No information available.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Fight adjacent fire with all available means to prevent fire from reaching the product. If fire is reaching the product or the product is burning: Do not try to extinguish the fire for risk of explosion. Immediately evacuate all personnel from the danger zone and warn surrounding areas of risk of explosion.

Specific hazards from combustion: Risk of explosion by shock, friction, fire or other sources of ignition.

Special protective equipment for fire-fighters: When controlling fires before involvement of explosions, wear self-contained breathing apparatus and protective suit. When fire reaches material, evacuate and let it burn to completion.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Follow normal precautions when handling explosives. Only experienced and trained personnel should be allowed to handle the product.

Protective equipment: Use all appropriate Personal Protective Equipment described within section 8.

Emergency procedures: Risk of explosion by shock, friction, fire or other sources of ignition. Evacuate personnel to safe areas.

Environmental precautions: Explosive properties.

Methods and materials for containment and cleaning up: Review fire and explosion hazards and safety precautions before proceeding with clean up. Use appropriate personal protection equipment as specified in Section 8 during clean up. In case of accident or road spill, contact CHEMTREC at 800-424-9300 (US & Canada) or 703-527-3887 (others). Sweep up and shovel into suitable containers for disposal. Use only non-sparking tools. Disposal and clean-up may only be performed by authorized personnel.

7. HANDLING AND STORAGE

Handling: Use appropriate personal protective equipment as specified within Section 8. Only experienced and trained personnel should be allowed to handle the product. Take measures to prevent the buildup of electrostatic charge. Handle and use in a manner consistent with good industrial/manufacturing techniques and practices.

Storage: Store in unopened containers under cool and dry conditions. Keep locked.

Precautions to be Taken in Handling and Storing: Follow DOD Ammunition and Explosives Safety Standard DOD 5154.45 and 4145.26M. Firing leads and shorting wire must remain twisted. Shorting wires must be connected until firing leads have been attached to the Sensing and Firing Logic Terminals. Store in cool dry area. Avoid static electrical charges and stray electrical fields.

**Do not attempt to open any of the sealed canister devices or attempt to disassemble the interrupter and/or fuse element. Do not use if outer casing of canister is damaged.*

**Note: The CLiP® simulator should remain sealed in the metal shipping container until ready for use. All precautions previously outlined apply to the simulator device. Also refer to supplemental information "Hazards and Safe Practices for CLiP®, PAF® and Simulator Handling" within section 16.*

Other Precautions: These devices are regulated by 27CFR part 555 and 49CFR part 172. Theft must be reported to ATF at 800-424-9555.

Incompatibilities: Power sources, stray electrical currents, static electricity, heat, flame, and impact.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limit Values

Component	OSHA PEL	ACGIH TLV	OSHA AL	NIOSH REL
Pentaerythritol Tetranitrate (PETN)	None Established	None Established	None Established	None Established
Lead Azide	0.05 mg/m^3 (as Pb)	0.05 mg/m^3 (as Pb)	0.03 mg/m^3 (as Pb)	0.05 mg/m^3 (as Pb)

Appropriate engineering controls: Under normal use, with the exception of a single exposure to loud noise, no known hazards exist.

Respiratory protection: Not required during normal conditions of use.

Hand protection: Not required during normal conditions of use.

Eye protection: Safety glasses are recommended during normal conditions of use.

Hearing Protection: Hearing Protection is recommended when installing or servicing the devices.

Skin and body protection: Not required during normal conditions of use.

Hygiene measures: No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Primacord- Core of explosive wrapped in textile and/or plastic. The core will contain 25 gr/foot or 5.3 gm/meter of PETN.

Detonator- Round cup detonator, with two wire twisted leads. Core contains 10 mg/m^3 dust of the listed explosive.

MMS Switch- 0.140 Dia., 0.516 long cylinder, with four wire leads, two gold plated and two tin plated. The core will contain 5 mg/m^3 dust of the listed explosive.

Odor: No information available.

Odor threshold: No information available.

pH: No information available.

Melting point: No information available.

Freezing point: No information available.

Initial boiling point: No information available.

Boiling range: No information available.

Flash point: Store at ambient temperature, do not exceed 160 degrees Fahrenheit.

Evaporation rate: No information available.

Flammability: No information available.

Upper/lower flammability or explosive limits: No information available.

Vapor pressure: No information available.

Vapor density: No information available.

Relative density: No information available.

Solubility: Insoluble, immiscible

Partition coefficient n-octanol/water: No information available.

Decomposition temperature: No information available.

Auto-ignition temperature: No information available.

Viscosity: No information available.

10. STABILITY AND REACTIVITY

Reactivity: Non-reactive

Chemical stability: Stable

Possibility of hazardous reactions: Hazardous polymerization will not occur.

Conditions to avoid: Flame, Temperature over 160 degrees Fahrenheit or 71 degrees Celsius, static energy, electrical energy, do not hammer or take apart.

Incompatible materials: Power sources, stray electrical currents, static electricity, heat, flame, and impact.

Hazardous decomposition products: Trace amount of lead fumes and oxides of nitrogen (below Permissible Exposure Limits expected).

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure: This is a packaged product that will not result in the exposure to the chemical components under normal conditions of use.

Inhalation: No information available.

Ingestion: No information available

Skin: No information available

Eye contact: No information available

Symptoms of exposures: No information available

Delayed and immediate effects: No information available

Chronic effects from short- and long-term exposure: No information available

Numerical measures of toxicity: No information available

12. ECOLOGICAL INFORMATION*

Ecotoxicity: No information available.

Persistence and degradability: No information available.

Bioaccumulative potential: No information available.

Mobility in soil: No information available.

Other adverse effects: No information available.

13. DISPOSAL CONSIDERATIONS*

Consult G&W Electric Company or an explosives manufacturer for recommended methods for destroying live explosive materials if the interrupter has not been expended or is ruptured exposing components.

Waste residue: Expended simulators or interrupters can be disposed of according to local ordinances and laws (the unit is no longer dangerous goods). Live interrupters must be disposed of by a licensed explosive removal firm, returned to G&W Electric Company, or detonated and disposed of by the user (contact G&W before attempting).

Handling of waste residue: Wear all appropriate Personal Protective Equipment stated within section 8.

Methods of disposal: If the unit has been expended, it can be safely disposed of according to local laws governing fiberglass and/or epoxy materials. Units not expended or if condition of unit is in doubt, contact G&W Electric Company, at (708) 388-5010 for disposition of material.

Disposing of contaminated packaging: Dispose of as used product.

14. TRANSPORT INFORMATION*

UN number: UN0257

UN proper shipping name: UN0257, Fuzes, Detonating, 1.4B (PG II)

Label: 1.4B and Cargo Aircraft Only

Transport hazard class: 1.4B

Packing group: II

Packing Instructions Number: 141

Environmental hazards: Explosive properties

Special precautions: The unexpended CLiP® and PAF® interrupters are classified as a “Class C” explosive and must be packed in the original UN-certified crate. Unexpended simulators must be packed in their original metal shipping container. Only shredded paper may be used for packing inside of the can. Do not use plastic of any type for packing. Refer to BOE Tariff 6000A for further information.

U.S. Customs Harmonizing Number: 8535.10.0020

15. REGULATORY INFORMATION*

Compliance with DOT 27 CFR parts 555 (Explosives Permitting and Storage): Applicable.

Pennsylvania Title 25, Chapter 211 or customer's similar state regulations: Applicable.

Local Explosive Ordinances: Applicable.

DOT 49 CFR Parts 171 and 172: Applicable.

Dangerous Goods Regulations (IATA): Applicable.

SARA (Superfund Amendments and Reauthorization Act): Not applicable.

Comprehensive Environmental Response Compensation and Liability): Not applicable.

RCRA (Resource Conservation and Recovery Act): Not applicable.

WHMIS (Workplace Hazardous Materials Information System): Not applicable.

TSCA (Toxic Substances Control Act): Not applicable.

California Proposition 65: Not applicable.

For government contracts, compliance with DOD Ammunition and Explosives Safety Standards 4145.26M and 5154.45 is recommended.

16. OTHER INFORMATION

Date of preparation: 06/01/2015

Hazards and Safe Practices of CLiP®, PAF® and Simulator Handling

These devices are designed to be initiated with an electrical pulse. The pulse causes a resistance wire to heat and ignite the explosive end of the detonator. The primer material explodes, followed by intermediate and base charge. This reaction then initiates the Primacord® causing a mild explosion completely contained within the sealed canister.

In normal use, with the exception of a loud noise, no known hazard exists.

When handling any of the devices, safety glasses are recommended. First insure that the firing leads and connecting shorting wire are twisted. Determine if the shorting wire has been cut or removed. If it has, replace the wire or connect the two ends of the firing leads and secure with an appropriate fastener effectively shorting them together. Avoid any type of flame, temperature above 160F/ 71C, static energy, electrical energy or impact shock while handling the device.

These devices are of a one "shot" nature and must be replaced after each operation. Thus one must be certain that the device containing the explosive components has indeed been expended. This can be generally determined by observing for the following indications:

1. Crazing or flaking of the exterior surface paint.
2. Rattling of loose parts inside the tube when the interrupter is shaken or turned on end.
3. Actuation of the local indication of operation. A small diameter pin will project from the end of the interrupter.
4. No continuity across the interrupter conductor.

If device is unexpended, contact G&W Electric Company for proper disposal instructions. If the device has been expended refer to GWI 529-15 for proper disposal. If in doubt as to the condition of the interrupter, contact the factory by phone at (708) 388-5010, or FAX at (708) 388-0755.

NOTICE: This Safety Data Sheet (SDS) conforms to the requirements of OSHA 29 CFR Part 1910 and State of California CCR Title 8, and the recommendations in ANSI Z400.1. The information it contains is offered in good faith as accurate. We have reviewed the information contained in this SDS which we received from sources outside our company. We believe that information to be correct, but we make no representations as to the accuracy or completeness thereof. Health and Safety precautions may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. We disclaim any liability for damage or injury which results from the use of the above information and nothing contained therein shall constitute a guarantee, warranty (including warranty of merchantability) or representation (including freedom from any patent liability) by us with respect to the information, the product described, or their use for any specific purpose, even if that purpose is known to us. In no event will we be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information.

*Note: Since other Agencies regulate this information, OSHA will not be enforcing Sections 12 through 15 (29CFR 1910.1200(g)(2)).