



U.S. Department
of Transportation

East Building, PHH – 32
1200 New Jersey Avenue, Southeast
Washington, D.C. 20590

**Pipeline and Hazardous
Materials Safety Administration**

**The US Department of Transportation
Competent Authority for the United States**

CLASSIFICATION OF EXPLOSIVES

(FIRST REVISION)

Based upon a request by MASS Systems / A Unit of Ameron Global, Inc., 4601 Littlejohn Street, Baldwin Park, CA, the following items are classed in accordance with Section 173.56, Title 49, Code of Federal Regulations (49 CFR). A copy of your application, all supporting documentation and a copy of this approval must be retained and made available to DOT upon request.

U.N. PROPER SHIPPING NAME AND NUMBER:

Cartridges, power device, UN0323

U.N. CLASSIFICATION CODE: 1.4S

REFERENCE NUMBER

EX2008070244

PRODUCT DESIGNATION/PART NUMBER

P/N M30903962-1, P/N M30903963-1,
P/N M30903824-1

NOTES:

This classification is only valid when there are threaded (and vented on output end only) protective caps installed on the device during transport. The following packaging method is assigned: Inner Packaging - Bags, static-resistant plastic overwrapped in cellulosic or bubble wrap sheeting. Intermediate Packaging - Box, cardboard, each containing one inner packaging. Outer Packaging - UN 4G fiberboard box, each containing not more than one hundred and forty-four (144) intermediate packagings.

DATED: August 29, 2008

Approved by:

Theodore L. Willke
Associate Administrator
for Hazardous Materials Safety

Material Safety Data Sheet

U.S. Department of Labor

Occupational Safety and Health Administration

May be used to comply with
OSHA's Hazard Communication Standard,
49 CFR 1910.1200. Standard must be
consulted for specific requirements

Section I – Company Information / Product Identification

Manufacturer's Name

MASS Systems / A Unit of Ameron Global, Inc.
4601 Littlejohn St.
Baldwin Park, California 91706 – U.S.A

Telephone Numbers

Emergency: 800-255-3924
Information: 626-337-4640
Release Date: 7-25-08

Identification

Name: Cartridge, Power Device

Part Number: See Table I below

Hazard Class: 1.4s

UN Number: UN 0323

Type: 1A/1W No-Fire, 3.5 All-Fire, Single/Dual Bridge Hermetic Detonator Design

Section II – Hazardous Ingredients

<u>Hazardous Mixtures or Constituents</u>		<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits Recommended</u>	<u>% (Approx.)</u>
HNS	CAS 2691-41-0	N/A		3.0 mg/m ³ STEL; skin	62
Lead Azide*	CAS 13424-46-9	0.5 mg/m ³	0.5 mg/m ³		17
Zirconium	CAS 7440-67-7	5 mg/m ³	10 mg/m ³		20
Boron	CAS 7440-42-8	N/A			
Calcium Chromate	CAS 13765-19-0	0.5 mg/m ³			
Potassium Perchlorate	CAS 7778-74-7	N/A			
TOTAL NET EXPLOSIVE WEIGHT:		322 mg/unit maximum			

* Denotes material known by the State of California to cause cancer, birth defect, or reproductive harm. This article does not contain material listed as a known or suspect carcinogen by OSHA / NTP / IARC.

Section III – Physical Data

General Description: Electro-explosive Device (1 ampere, 1 watt device)

Appearance: Manufactured Article – no chemical exposure under normal handling conditions except when device is ignited. General product packaging takes the form of hermetically sealed metal cases.

Section IV- Fire and Explosion Hazard Data

<u>Flash Point</u> N/A	<u>Flammable Limits</u> Keep fire away	<u>LEL</u> N/A	<u>UEL</u> N/A
<u>Auto Ignition Temperature</u> ≥ +520°F (271°C)			

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Extinguishing Media

N/A – Ordnance devices are not extinguishable. They may be activated by fire in surrounding packaging or combustibles. Utilizing media appropriate for surrounding fire conditions if safe.

Special Fire Fighting Procedures – For Ordnance devices of UN/DOD Class 1, Division 4 (Class C)

In Transportation: Follow North American Emergency Response Guidebook No. 114. If fire reaches cargo, **DO NOT FIGHT FIRE**. Evacuate all persons and responders to 1500 feet (457 m) in all directions. Move all personnel from line-of-sight exposures and keep away from windows. For truck or equipment fires prevent fire from reaching cargo with water, CO₂, or dry chemical media, as appropriate.

At Fixed Facilities: DOD 4145.26M Contractor Safety Manual states that fires involving units in Division 1.4 may be fought but only from safe fire-fighting operational distance. Evacuate all personnel from immediate area of fire involving any explosives.

WARNING: Unpackaged units may propagate to exposed adjacent units unless handled / stored in non-propagating trays, fixtures, safes, or packaging.

Unusual Fire and Explosion Hazards

Explosive UN/DOD 1.4 (formerly DOT Class C explosive) is a moderate fire hazard. **DO NOT** store with other high explosives. Keep away from fire.

DANGER: Detonation of unit will create some fragmentation capable of causing serious injury or death to exposed personnel. Toxic and irritating smoke, fumes, and gases are also released.

Section V – Health Hazard Data

Effects of Overexposure

Inhalation of combustion products may irritate respiratory system. Contact with eyes may cause irritation.

Emergency and First Aid Procedures

Follow appropriate local emergency reaction plans. Give first aid appropriate to injury.

WARNING: Exposure of personnel to ignition of this unit may result in physical injury.

Avoid breathing or ingesting products of combustion. If exposed to combustion products, remove to area of fresh air. Rinse eyes with water if affected. Seek immediate medical attention if necessary.

Inhalation, Skin Contact, Eye Contact, or Ingestion

Not likely routes of exposure for sealed hazardous constituents. Seek immediate medical attention as necessary.

Section VI – Reactivity Data

Stability

Explosive product is stable when handled properly. Avoid conditions listed below.

Conditions To Avoid

Avoid open flames, high temperature, electrostatic discharge, impact, friction, electrical current, or RF energy.

Incompatibility (Materials To Avoid)

Product is sealed preventing exposure to hazardous internal ingredients – Do not store with flammable liquids, strong acids or bases.

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Hazardous Decomposition Products

Upon ignition, products of combustion may include the following gases, fumes, or residues in tiny amounts: Oxides of Carbon, Nitrogen, Boron, Calcium, Tellurium, Chromium, and Lead, as well as Fluoride compounds.

Hazardous Polymerization

Will not occur.

Section VII – Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled

Use appropriate personal protective equipment. Isolate area and remove sources of friction, impact, heat, low level electrical current, electrostatic or RF energy. Only competent, experienced persons should be involved in cleanup procedures. Sweep up with non-sparking tools and remove.

If unit becomes damaged so as to expose sealed material, consult with MASS Systems Engineers for guidance.

Waste Disposal Method

Units may only be disposed of in accordance with all applicable federal Resource Conservation and Recovery Act (RCRA), state and local regulations, after complete functioning by test-firing and /or thermal treatment in an approved, permitted facility. Ash residues may be lead-bearing EPA D008 RCRA hazardous waste.

Section VIII– Special Protection Information

Respiratory Protection (Specify type)

Test fire units only in location isolated from personnel and vented to outside work area. If exposed to combustion products, use a NIOSH approved organic vapor, acid gas cartridge respirator with dust filters. In emergency fire situations of when combustion products from large numbers of units are involved self-contained breathing air and full face protection is recommended.

Ventilation for Testing

Local Exhaust: To outside atmosphere

Mechanical (General): N/A

Special: N/A

Other: N/A

Protective Gloves

Impervious rubber gloves

Eye Protection:

Safety Glasses (ANSI –Z87 STD) with side shields

Other Protective Equipment

Flame retardant, cotton clothing, conductive footwear, or other personnel grounding recommended, where appropriate and feasible, when handling exposed units. Operational shielding and hearing protection is recommended for testing or other processing as needed.

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Section IX – Special Precautions

Precautions To Be Taken In Handling and Storing

Authorize handling only by trained, qualified personnel. Handle, store, and transport as Explosive UN/DOD, Class 1, Division 4 (DOT Class C). Store only in approved explosive magazines in accordance with BATF, OSHA, DoD, and State / local fire marshal as applicable. Storage Compatibility Group: B.

Former DOT Proper Shipping Name / Hazard Class

Detonators, Class C Explosives / Class C Explosives

Other Precautions

Keep unit shunted until connection to circuitry. Never attempt to disassemble, machine, or otherwise modify unit or physical injury hazard may result.

The above information is believed to be correct, but does not purport to be all-inclusive and shall be used only as a guide in conjunction with approved safety procedures and all applicable regulatory requirements.

Section X – MSDS History

Initial Release: Rev. N/C, Dated 2-15-05 (New MSDS)

Revision 1: Rev. 1, Dated 4-13-05

Revision 2: Rev. 2, Dated 8-5-05

Revision 3: Rev. 3, Dated 5-22-06

Revision 4: Rev. 4, Dated 7-25-08

Table I: Applicable MASS Systems PMA Cartridge Part Numbers

M262299-2	M30903891	M30903939	M446518-1
M30900000M	M30903894	M30903940	M446616
M30903801	M30903895	M30903941	M446617
M30903822	M30903896	M30903942	M472001-01
M30903827	M30903898	M30903943	M841155-1
M30903828	M30903899	M30903944	M861345
M30903836	M30903912	M30903945	M861355
M30903852	M30903913	M30903949	M861375
M30903856	M30903927	M30903959	M861385
M30903857	M30903928	M30903964	M873364-1
M30903859	M30903929	M446090	M873571-02
M30903870	M30903930	M446090-2	M876299-3
M30903871	M30903931	M446090-3	M877744-03
M30903872	M30903932	M446158	M895408-01
M30903874	M30903933	M446189-1	M895409-1
M30903875	M30903934	M446201	M897776-01
M30903876	M30903935	M446203	MA805300-12
M30903886	M30903936	M446290	MA805300-41
M30903889	M30903937	M446307	MA805300-43
M30903890	M30903938	M446384-1	MA805300-44

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Table I: Applicable MASS Systems PMA Cartridge Part Numbers

M876296-3	M30903872-1	M30903963-1	M30903962-1
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>>> END OF MSDS <<<