

MATERIAL SAFETY DATA SHEET

Product Trade Name: **DELAY OUTPUT ASSEMBLY MODULAR**

Revision Date: 04-Jan-2011

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: DELAY OUTPUT ASSEMBLY MODULAR
Synonyms: None
Chemical Family: Explosive
Application: Explosive Charge

Manufacturer/Supplier: Halliburton Energy Services
P.O. Box 1431
Duncan, Oklahoma 73536-0431
Emergency Telephone: (281) 575-5000

Prepared By: Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT	ACGIH TLV-TWA	OSHA PEL-TWA
Barium chromate	10294-40-3	30 - 60%	0.01 mg/m ³ C (Cr+6) 0.5 mg/m ³ (Ba)	0.1 mg/m ³ C (Cr+6) 0.5 mg/m ³ (Ba)
Tungsten	7440-33-7	10 - 30%	5 mg/m ³	Not applicable
Potassium perchlorate	7778-74-7	10 - 30%	Not applicable	Not applicable
Zirconium	7440-67-7	1 - 5%	5 mg/m ³	5 mg/m ³
2-Chloro-1,1,2-trifluoroethylene-1,1-difluoroethylene polymer	9010-75-7	0 - 1%	Not applicable	Not applicable
Tetramethylammonium perchlorate	2537-36-2	0 - 1%	Not applicable	Not applicable
Iron oxide	1309-37-1	0 - 1%	5 mg/m ³	10 mg/m ³
Silica, amorphous - diatomaceous earth	68855-54-9	1 - 5%	10 mg/m ³	10 mg/m ³
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	1 - 5%	Not applicable	Not applicable
Lead azide	13424-46-9	0 - 1%	Not applicable	0.05 mg/m ³

3. HAZARDS IDENTIFICATION

Hazard Overview Explosive. May cause eye, skin, and respiratory irritation. May cause headache, dizziness, and other central nervous system effects. May be harmful if swallowed. May cause birth defects. Potential carcinogen.

4. FIRST AID MEASURES

Inhalation If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult give oxygen. Get medical attention.

Skin Wash with soap and water. Get medical attention if irritation persists.

Eyes	In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.
Ingestion	Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.
Notes to Physician	Treat symptomatically.

5. FIRE FIGHTING MEASURES

Flash Point/Range (F):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (F):	> 572
Autoignition Temperature (C):	> 300
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined

Fire Extinguishing Media None. Do NOT fight fire. Isolate area and evacuate personnel to a safe area. Guard against intruders. Allow fire to burn itself out.

Special Exposure Hazards May detonate with impact or on heating. May explode and throw fragments 1 mile or more in fire. Evacuate all persons, including emergency responders.

Special Protective Equipment for Fire-Fighters Not applicable.

NFPA Ratings: Health 1, Flammability 0, Reactivity 4
HMIS Ratings: Health 1, Flammability 0, Reactivity 4

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment. Use only competent persons for cleanup.

Environmental Precautionary Measures Prevent from entering sewers, waterways, or low areas.

Procedure for Cleaning / Absorption Isolate area and remove sources of friction, impact, heat, low level electrical current, and RF energy. Remove ignition sources and work with non-sparking tools.

7. HANDLING AND STORAGE

Handling Precautions Only allow trained personnel to handle product. Do NOT consume food, drink, or tobacco in contaminated areas. Avoid contact with eyes, skin, or clothing. Launder contaminated clothing before reuse. Wash hands after use.

Storage Information Store only in ATF approved magazines. Keep away from friction, impact, and heat.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls Use in a well ventilated area.

Respiratory Protection Dust/mist respirator. (95%)

Hand Protection Cloth gloves.

Skin Protection Cotton coveralls, undergarments, and socks. Conductive soled shoes. Anti-static clothing.

Eye Protection	Wear safety glasses or goggles to protect against exposure.
Other Precautions	None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Color:	Metallic
Odor:	Odorless
pH:	Not Determined
Specific Gravity @ 20 C (Water=1):	Not Determined
Density @ 20 C (lbs./gallon):	Not Determined
Bulk Density @ 20 C (lbs/ft3):	Not Determined
Boiling Point/Range (F):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (F):	Not Determined
Freezing Point/Range (C):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Insoluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (lbs./gallon):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistrokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	May detonate with friction, impact, heat, and low level electrical current.
Incompatibility (Materials to Avoid)	Strong acids. Strong alkalis.
Hazardous Decomposition Products	Shrapnel. Oxides of nitrogen. Metal oxides. Chlorine. Fluorides. Chromates and oxides of chromium. Carbon monoxide and carbon dioxide.
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure	Eye or skin contact, inhalation. Product does not present exposures health hazards during normal handling and use. However, this product is an explosive material and uncontrolled detonation may cause severe physical injury including death. All explosives are dangerous and must be handles carefully and used following approved safety procedures under the direction of competent, experience persons in accordance with all applicable regulations and ordinances.
Inhalation	May cause effects to the blood and blood system. May cause central nervous system depression including headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness. May cause damage to the nervous, urinary, and reproductive systems. Nitrogen oxides generated during use are irritating to the respiratory system.

Skin Contact	May be absorbed through the skin and contribute to the symptoms listed under ingestion. Nitrogen oxides generated during use are skin irritants.
Eye Contact	May cause eye irritation.
Ingestion	May cause abdominal pain, vomiting, nausea, and diarrhea.
Aggravated Medical Conditions	None known.
Chronic Effects/Carcinogenicity	Prolonged or repeated exposure may cause blood forming system, nervous, urinary tract and reproductive system damage. Prolonged or repeated exposure may cause embryo and fetus toxicity. Contains hexavalent chromium, a suspected lung carcinogen.
Other Information	None known.
Toxicity Tests	
Oral Toxicity:	Not determined
Dermal Toxicity:	Not determined
Inhalation Toxicity:	Not determined
Primary Irritation Effect:	Not determined
Carcinogenicity	Not determined
Genotoxicity:	Not determined
Reproductive / Developmental Toxicity:	Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air)	Not determined
Persistence/Degradability	Not applicable
Bio-accumulation	Not determined

Ecotoxicological Information

Acute Fish Toxicity:	Not determined
Acute Crustaceans Toxicity:	Not determined
Acute Algae Toxicity:	Not determined
Chemical Fate Information	Not determined
Other Information	Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method	Disposal should be made in accordance with federal, state, and local regulations.
Contaminated Packaging	Do NOT reuse container. Store only in ATF approved magazines.

14. TRANSPORT INFORMATION

Land Transportation

DOT

UN0276, Cartridges, Power Device, 1.4C, II
EX-9108042
NAERG 114

Canadian TDG

Cartridges, Power Device, 1.4C, UN0276, II
EX-9108042

ADR

UN0276, Cartridges, Power Device, 1.4C, II
EX-9108042

Air Transportation

ICAO/IATA

UN0276, Cartridges, Power Device, 1.4C, II
EX-9108042

Sea Transportation

IMDG

UN0276, Cartridges, Power Device, 1.4C, II
EX-9108042
EmS F-B, S-X

Other Shipping Information

Labels: Explosive 1.4C

15. REGULATORY INFORMATION

US Regulations

US TSCA Inventory	Product contains one or more components not listed on inventory.
EPA SARA Title III Extremely Hazardous Substances	Not applicable
EPA SARA (311,312) Hazard Class	Acute Health Hazard Fire Hazard Sudden Release of Pressure Hazard
EPA SARA (313) Chemicals	This product contains toxic chemical(s) listed below which is(are) subject to the reporting requirements of Section 313 of Title III of SARA and 40 CFR Part 372: Lead//7439-92-1 Barium Compounds//10294-40-3 Chromium and Compounds//10294-40-3
EPA CERCLA/Superfund Reportable Spill Quantity	EPA Reportable Spill Quantity is 1443 Pounds based on Lead and Lead Compounds (CAS: 13424-46-9).

EPA RCRA Hazardous Waste Classification

If product becomes a waste, it does meet the criteria of a hazardous waste as defined by the US EPA, because of:

Reactivity D003
Toxicity D005
Toxicity D007
Toxicity D008

California Proposition 65

The California Proposition 65 regulations apply to this product.

MA Right-to-Know Law

One or more components listed.

NJ Right-to-Know Law

One or more components listed.

PA Right-to-Know Law

One or more components listed.

Canadian Regulations

Canadian DSL Inventory

Product contains one or more components not listed on inventory.

WHMIS Hazard Class

F Dangerously Reactive Material

16. OTHER INFORMATION

The following sections have been revised since the last issue of this MSDS

Not applicable

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Material Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****