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MATERIAL SAFETY DATA SHEET

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ProFire Igniter

1.0 PRODUCT / COMPANY IDENTIFICATION

Product Name: ProFire Igniter
Synonyms: Igniter, Initiator
Proper Shipping Name: Igniters
Part Number: INI-150
Product Use: Igniter for solid fuel rocket motor

Manufacturer: Cesaroni Technology Inc.
P.O. Box 246
2561 Stouffville Rd.
Gormley, Ont.
Canada L0H 1G0

Telephone Numbers:
Product Information: 1-905-887-2370
24 Hour Emergency Telephone Number: 1-613-996-6666 (CANUTEC)

2.0 COMPOSITION / INFORMATION ON INGREDIENTS

Overdip composition

Ingredient Name	CAS Number	Percentage
Barium chromate.....	10294-40-3	31-32 %
Magnesium powder.....	7439-95-4	42-43 %
Viton fluoroelastomer	n/a	26-27 %

3.0 HAZARDS IDENTIFICATION

Emergency Overview:

The igniter functions by burning rapidly at high temperature, releasing hot gas and particles that ignite the propellant of a rocket motor when in close proximity. All explosives are dangerous and must be handled carefully and used following approved safety procedures under the direction of competent, experienced personnel in accordance with all applicable federal, state and local laws and regulations.

General Appearance:

Cardboard tubes containing one igniter. Igniter has coiled wire leads terminating in the ignition device itself. Ignition device consists of a small electrical initiator (fuse head) dipped in a rubbery, silver-grey composition. All parts are essentially odourless solids, though trace odors of process solvents may be present.

Potential Health Effects:**Eye:**

Not a likely route of exposure. May cause eye irritation.

Skin:

Not a likely route of exposure. Low hazard for usual industrial handling.

Ingestion:

Not a likely route of exposure.

Inhalation:

Not a likely route of exposure. May cause respiratory tract irritation.

4.0 FIRST AID MEASURES

Eyes:

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin:

Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.

Ingestion:

Induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

Inhalation:

Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Burns: Burns can be treated as per normal first aid procedures.

5.0 FIRE FIGHTING MEASURES

Extinguishing Media:

In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam to contain surrounding fire.

Exposure Hazards During Fire:

Exposure to extreme heat may cause ignition.

Combustion Products from Fire:

During a fire, irritating and toxic gases may be generated by thermal decomposition or combustion.

Fire Fighting Procedures:

Keep all persons and hazardous materials away. Allow material to burn itself out. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

Special Instructions / Notes:

Black powder is a deflagrating explosive. It is very sensitive to flame and spark and can also be ignited by friction and impact. When ignited unconfined, it burns with explosive violence and will explode if ignited under even slight confinement.

6.0 ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel):

Spills: Clean up spills immediately. Replace articles in packaging and boxes and seal securely. Isolate area and remove sources of friction, impact, heat, low level electrical current, electrostatic or RF energy. Sweep or scoop up using non-sparking, non-static producing tools.

7.0 HANDLING AND STORAGE

Handling:

Keep away from heat, sparks and flame. Avoid contamination. Do not get in eyes, on skin or on clothing. Do not taste or swallow. Avoid prolonged or repeated contact of black powder with skin.

Storage:

Store in a cool, dry place away from sources of heat, spark or flame. Keep in shipping packaging when not in use.

8.0 EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls:

Use adequate explosion proof ventilation to keep airborne concentrations low. All equipment and working surfaces must be grounded.

Personal Protective Equipment:**Eyes:**

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin:

Wear appropriate gloves to prevent skin exposure if handling pellets.

Clothing:

Wear appropriate protective clothing to prevent skin exposure if handling pellets. Clothing should be appropriate for handling pyrotechnic substances.

Respirators:

A respirator is not typically necessary. Follow the OSHA respirator regulations found in 29CFR1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

9.0 PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	solid
Appearance:	Rubbery silver-grey composition
Odour:	May have residual odor of process solvents.
Odour Threshold:	Not available.
pH:	6.0-8.0
Vapour Pressure:	Not available.
Vapour Density:	Not available.
Viscosity:	Not available.
Evaporation Rate:	Not available.
Boiling Point:	Not available.
Freezing/Melting Point:	Not available.
Coefficient of water/oil distribution:	Not available.
Autoignition Temperature:	Approximately 285°C (550°F).
Flash Point:	Not available.
Explosion Limits, lower (LEL):	Not available.
Explosion Limits, upper (UEL):	Not available.
Sensitivity to Mechanical Impact:	Composition can be ignited by impact
Sensitivity to Static Discharge:	Composition – low. Initiator may be activated by static discharge
Decomposition Temperature:	Not available.
Solubility in water:	soluble in water
Specific Gravity/Density:	1.7-2.1
Molecular Formula:	Not applicable.
Molecular Weight:	Not available.

10.0 STABILITY AND REACTIVITY

Chemical Stability:

Stable under normal temperatures and pressures.

Conditions to Avoid:

Heat, static electricity, friction, impact

Incompatibilities with Other Materials:

Combustible or flammable materials, explosive materials

Hazardous Products Of Decomposition:

Oxides and fluorides of barium, magnesium. Chromium.

Hazardous Polymerization:

Will not occur.

11.0 TOXICOLOGICAL INFORMATION

Routes of Entry:

Skin contact – not likely
Skin absorption – not likely
Eye contact – not likely
Inhalation – not likely
Ingestion – not likely

Effects of Acute Exposure to Product:

No data available

Effects of Chronic Exposure to Product:

No data available

Exposure Limits:

Overdip composition

Ingredient Name	CAS Number	OSHA PEL	ACGIH TLV
Barium chromate	10294-40-3		
Magnesium powder	7439-95-4		
Viton fluoroelastomer	n/a		

Irritancy of the Product:

No data available

Sensitization to the Product:

No data available

Carcinogenicity:

Not listed by IARC, NTP, or OSHA

Reproductive Toxicity:

No data available

Teratogenicity:

No data available

Mutagenicity:

No data available

Toxically Synergistic Products:

No data available

LD50:

No data available

12.0 ECOLOGICAL INFORMATION**Environmental Data:****Ecotoxicity Data:**

Not determined.

EcoFaTE Data:

Not determined.

13.0 DISPOSAL CONSIDERATIONS**Product As Sold:**

Pack firmly in hole in ground with nozzle pointing up. Ignite motor electrically from a safe distance and wait 5 minutes before approaching. Dispose of spent components in inert trash.

Product Packaging:

Dispose of used packaging materials in inert trash.

Special Considerations:

Consult local regulations about disposal of explosive materials.

14.0 TRANSPORT INFORMATION**Shipping Information – Canada****TDG Classification:**

Class 1.4 Explosive

Proper Shipping Name:

Igniters

UN Number:

0454

UN Classification Code:

1.4 S

Packing Group:

I

UN Packing Instruction:

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Shipping Information - USA / IATA / IMO**Proper Shipping Name:**

Igniters

UN Number:

0454

UN Classification Code:

1.4 S

US DOT Classification Reference Number:

EX2002100114

DOT / IMO / IATA Label:

Class 1 – Explosive – Division 1.4 S

15.0 REGULATORY INFORMATION

Canada

This product has been classified according to the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

WHMIS Classification: Not Controlled (explosive)

CAS# 10294-40-3 (BaCrO₄) is listed on Canada's DSL List.

CAS# 10294-40-3 (BaCrO₄) is not listed on Canada's Ingredient Disclosure List.

CAS# 7439-95-4 (Mg) is listed on Canada's DSL List.

CAS# 7439-95-4 (Mg) is not listed on Canada's Ingredient Disclosure List.

Canadian Explosives Classification: Class 6.1

This product is an authorized explosive in Canada. (File # XP 2050-C50 03091601)

This product may be considered "Controlled Good" in Canada under the Controlled Goods Regulations.

United States of America

TSCA Inventory Status:

CAS# 10294-40-3 (BaCrO₄) is listed on the TSCA inventory.

CAS# 7439-95-4 (Mg) is listed on the TSCA inventory

Hazardous Chemical Lists

CERCLA Hazardous Substance (40 CFR 302.4) No

SARA Extremely Hazardous Substance (40CFR 355) No

SARA Toxic Chemical (40CFR 372.65) No

European/International Regulations

The product on this MSDS, or all its components, is included on the following countries' chemical inventories:
EINECS – European Inventory of Existing Commercial Chemical Substances

European Labelling in Accordance with EC Directives

Hazard Symbols: Explosive.

Risk Phrases:

R 2 Risk of explosion by shock, friction, fire or other sources of ignition.

R 44 Risk of explosion if heated under confinement.

Safety Phrases:

S 1/2 Keep locked up and out of the reach of children.

S 8 Keep container dry.

S 15 Keep away from heat.

S 16 Keep away from sources of ignition – No smoking.

S 17 Keep away from combustible material.

S 18 Handle and open container with care.

S 33 Take precautionary measures against static discharges.

S 41 In case of fire and/or explosion do not breathe fumes.

16.0 OTHER INFORMATION

US DoD Hazard Characteristic Code (HCC): E2 (Explosives, Low Risk)

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The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.