

1.0 PRODUCT / COMPANY IDENTIFICATION

1.1 Product Identifier

Product Name: Pro150 Rocket Motor Reload Kit

Synonyms: Rocket Motor, Hobby Rocket Motor, HPR Reload Kit, Solid Rocket Fuel

Part Numbers: Reload kit: P150R-Y-#G-XX
Where: Y = reload type (A = adjustable delay, C = C-slot)
= number of grains, &
XX = propellant type

1.2 Relevant Identified Uses

Product Use: Solid fuel motor for propelling rockets

1.3 Details of the Supplier of the SDS

Manufacturer / Supplier: Cesaroni Technology Inc.
P.O. Box 246
2561 Stouffville Rd.
Gormley, Ont.
Canada L0H 1G0
E-mail: regulatory@cesaroni.net

1.4 Emergency Telephone Numbers

Telephone Numbers:

Product Information:	Tel: +1-905-887-2370	Fax: +1-905-887-2375
24 Hour Emergency Telephone Number:	Tel: +1-613-996-6666 (CANUTEC)	

2.0 HAZARDS IDENTIFICATION

2.1 Classification

Classification: Explosive Article – Division 1.3 (UN GHS – ST-SG-AC10-30-Rev5e)
(WHMIS 2015 – Canada, HazCom 2012 – USA, Regulation (EC) No. 1272/2008 [CLP] – EU, 67/548/EEC or 1999/45/EC – EU)

2.2 Label Elements

Signal Word: Danger

GHS Pictogram:



Hazard Statement: H203 Explosive; Fire, Blast or Projection Hazard

Precautionary Statements

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking
P250 Do not subject to grinding/shock/friction.
P370+P380 In case of fire: Evacuate Area.
P372 Explosion risk in case of fire.
P373 DO NOT fight fire when fire reaches explosives.
P401 Store in accordance with local/regional/national regulations.
P501 Dispose of in accordance with local/regional/national regulations.

2.3 Other Hazards

Emergency Overview:

These articles contain cylinders of ammonium perchlorate composite propellant, encased in inert plastic parts. The SRM 3.0 rocket motors are classified as explosives, and may cause serious injury, including death if used improperly. 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. Avoid inhaling exhaust products.

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/hobby handling.

Ingestion:

Not a likely route of exposure.

Inhalation:

Not a likely route of exposure. May cause respiratory tract irritation. Do not inhale exhaust products.

3.0 COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances n/a

3.2 Mixtures

3.2.1 Description of the Mixtures

Propellant cylinders of ammonium perchlorate and powdered metals distributed in synthetic rubber

3.2.2 Hazardous Ingredients

Propellant

Name	CAS No.	EC No.	REACH Registration No.	% [weight]	Classification according to Regulation (EC) No. 1278/2008 (CLP)
Ammonium Perchlorate	7790-98-9	232-235-1	01-2119490079-30-0000	40-85 %	O; R9 R44
Metal Powders				1-45 %	
Synthetic Rubber				10-30 %	Not Classified

4.0 FIRST AID MEASURES

4.1 Description of First Aid Measures

4.1.1 General Information

Burns received from lit propellant may be treated as regular burns, following normal first aid procedures.

4.1.2 Following Inhalation

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

4.1.3 Following Skin Contact

Most people will not react to skin contact. If there is any sign of skin reaction or irritation, 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.

4.1.4 Following Eye Contact

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

4.1.5 Following Ingestion

Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

4.1.6 Self-Protection of the First Aider

Avoid inhaling exhaust products.

4.2 Most Important Symptoms and Effects, both acute and delayed

4.2.1 Symptoms:

Skin rash

4.2.2 Effects:

Continued rash may indicate sensitivity to ammonium perchlorate composite propellant

4.3 Indication of any immediate medical attention and special treatment needed

4.3.1 Notes for the doctor:

Treat with regular procedures

4.3.2 Special Treatment:

No special treatments required

5.0 FIRE FIGHTING MEASURES

5.1 Extinguishing Media

5.1.1 Suitable Extinguishing Media

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

5.1.2 Unsuitable Extinguishing Media

None

5.2 Special Hazards Arising from the Substance or Mixture

5.2.1 Hazardous Combustion Products

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

5.3 Advice for Fire Fighters

Keep all persons and hazardous materials away. It is physically impossible to extinguish burning propellant. Allow it to burn out and prevent flames from spreading to surrounding areas. Avoid breathing exhaust products. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

5.4 Additional Information

These articles burn rapidly and generate a significant flame for a short period of time. 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. Do not inhale exhaust products.

6.0 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

Protective equipment:

If no source of ignition present, no special PPE is required.

Emergency procedures:

Replace articles in packaging and boxes and seal securely. Sweep or scoop up using non-sparking tools.

6.1.2 For emergency responders

Personal protective equipment:

If no source of ignition present, no special PPE is required.

6.2 Environmental precautions

Be sure to sweep or scoop up complete spill.

6.3 Methods and material for containment and cleaning up

- 6.3.1 For containment:** Prevent reload kits from contaminating surface and ground water. If black powder spills, prevent wind from carrying particles away.
- 6.3.2 For cleaning up:** Clean up spills immediately. Replace articles in packaging and boxes and seal securely. Sweep or scoop up using non-sparking tools.
- 6.3.3 Other information:** None

6.4 Reference to other sections See section 13 for disposal procedures.

6.5 Additional information: None

7.0 HANDLING AND STORAGE

7.1 Precautions for safe handling

- 7.1.1 Protective measures:**
- Advice on safe handling: Do not get in eyes, on skin or on clothing. Do not taste or swallow. Avoid prolonged or repeated contact with skin. Follow manufacturer's instructions for use.
- Fire preventions: Keep away from sources of heat or ignition.
- Aerosol and dust generation preventions: n/a
- Environmental precautions: Store in a cool, dry place.

7.1.2 Advice on general occupational hygiene

7.2 Conditions for safe storage, including any incompatibilities

- Technical measures & storage conditions: Store in a cool, dry place, away from sources of heat or ignition.
- Packaging materials: Store in original packaging until immediately before use.
- Requirements for storage rooms and vessels: Store in accordance with local requirements for explosives.
- Hints on storage assembly: n/a
- Storage class: n/a
- Materials to avoid: Do not store with combustibles.
- Further information on storage conditions: n/a

7.3 Specific end uses

- Recommendations: Use as per supplied instructions.
- Specific end uses: Use in accordance with national regulations for High Power Rocketry.

8.0 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters

8.1.1 Occupational Exposure Limits
No occupational exposure limits listed

8.1.2 Biological Limit Values
No biological limits listed

8.1.3 Exposure Limits at Intended Use

8.1.4 DNEL/PNEC Values
Ammonium Perchlorate
Long term exposure – inhalation – systemic effects DNEL 0.28 mg/m³

No PNEC values listed.

8.1.5 Risk management measures according to used control banding approach
Employ good industrial hygiene practices.

8.2 Exposure Controls

8.2.1 Appropriate Engineering Controls

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

8.2.2 Personal Protective Equipment

8.2.2.1 Eye/Face Protection

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.

8.2.2.2 Skin Protection

Clothing should be appropriate for handling pyrotechnic substances.

8.2.2.3 Respiratory protection

A respirator is not typically necessary.

8.2.2.4 Thermal Hazards

Burning propellant and/or black powder can cause severe burns. Follow supplied instructions.

8.2.3 Environmental Exposure Controls

8.2.4 Consumer Exposure Controls

Follow supplied instructions.

9.0 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on Basic Physical and Chemical Properties

9.1.1 Appearance

Physical State:	solid
Appearance:	rubber cylinders inside plastic parts
Odour:	none
Odour Threshold:	Not available.
pH:	Not available.
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:	280°C
Flash Point:	Not available.
Explosion Limits, lower (LEL):	Not available.
Explosion Limits, upper (UEL):	Not available.
Sensitivity to Mechanical Impact:	see section 9.2
Sensitivity to Static Discharge:	Not Available
Decomposition Temperature:	> 400°C
Solubility in water:	Not available
Specific Gravity/Density:	Propellant = 1.34-1.83
Molecular Formula:	Not applicable
Molecular Weight:	Not applicable.

9.2 Other Information

Safety Characteristics	Method	Value / Result
Sensitiveness to Impact	UN Series 3 (a)(i) – Bureau of Explosives Impact machine	“+”, positive
Sensitiveness to Impact	UN Series 3 (a)(v) – Modified Type 12 Impact Tool	H50 = 27 cm
Sensitiveness to Friction	UN Series 3 (b)(i) – BAM Friction Apparatus	60N, “+”, positive
Thermal Stability	UN Series 3 (c) – Thermal Stability Test at 75°C	“-”, negative
Response to Fire	UN Series 3 (d) – Small Scale Burning Test	“-”, negative
Thermal Stability	UN Series 4 (a) – Thermal Stability Test	“-”, negative

Danger from Dropping	UN Series 4 (b) – 12m Drop Test	“-“, negative
Mass Explosion (single package)	UN Series 6 (a) – Single Package Test	No mass explosion
Mass Explosion (bonfire)	UN Series 6 (c) – Bonfire Test	No mass explosion

10.0 STABILITY AND REACTIVITY

10.1 Reactivity

10.2 Chemical Stability

Under storage at normal ambient temperatures (minus 40° C to + 40° C), the product is stable.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization will not occur.

10.4 Conditions to Avoid

Heat, static electricity, friction, impact

10.5 Incompatible Materials

Combustible or flammable materials, explosive materials

10.6 Hazardous Decomposition Products

Oxides of Nitrogen, hydrochloric acid

11.0 TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects

11.1.1 Substances not applicable

11.1.2 Mixtures

(a) Acute toxicity	no data available
(b) Irritation	no data available
(c) Corrosivity	no data available
(d) Sensitisation	no data available
(e) Repeated dose toxicity	no data available
(f) Carcinogenicity	no data available
(g) Mutagenicity	no data available
(h) Toxicity for reproduction	no data available

11.2 Other Information

Exposure Limits:

Propellant

Ingredient Name	CAS Number	OSHA PEL	ACGIH TLV
Ammonium Perchlorate	7790-98-9	not established	not established
metal powder		varies	varies
Synthetic Rubber		not established	not established

12.0 ECOLOGICAL INFORMATION

12.1 Toxicity	No Data Available
12.2 Persistence and Degradability	No Data Available
12.3 Bioaccumulative Potential	No Data Available
12.4 Mobility in Soil	No Data Available
12.5 Results of PBT and vPvB Assessment	No Data Available

12.6 Other Adverse Effects The substance has a very low global warming potential.

13.0 DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods

13.1.1 Product/Packaging Disposal

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. Dispose of used packaging materials in inert trash.

13.1.2 Waste Treatment Options

Propellant should be burned before disposal.

13.1.3 Other Disposal Recommendations

Consult local regulations about disposal of explosive materials.

13.2 Additional Information

None

14.0 TRANSPORT INFORMATION

	Land Transport (ADR/RID)	Inland Waterway Transport (AND)	Sea Transport (IMDG)	Air Transport (ICAO-TI/IATA- DGR)
14.1 UN No.	UN 0186			
14.2 UN Proper Shipping Name	Rocket Motors			
14.3 Transport Hazard Class	1.3 C			
14.4 Packing Group	n/a			
14.5 Environmental Hazards	None listed			

14.6 Special Precautions for the User

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not designed for bulk transport.

14.8 Additional Information

14.8.1 All Transport Carriers

See below

14.8.2 Land Transport (ADR/RID)

Limited Quantity: 0
Special Provisions: none
Tunnel Restriction Code: C5000D
Classification Code: 1.43
Transport Category: 1
Hazard Identification Number (Kemler No.): none
Remark:

14.8.3 Inland Waterway Transport (ADN)

Limited Quantity: 0
Special Provisions: none
Category: not applicable
Remark: Handling provisions- LO01, HA01, HA03

14.8.4 Sea Transport (IMDG)

Limited Quantity: None
Special Provisions: None
Marine Pollutant: not applicable
Segregation Group: not applicable
Remark: Packing Instruction 101

14.8.5 Air Transport (ICAO-TI / IATA-DGR)

Limited Quantity: None
Special Provisions: A802
Remark: Cargo Aircraft Only, Max. 220 kg per package

15.0 REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislation

15.1.1 EU Regulations

Authorizations

No current EU approvals

Restrictions on Use

Follow local regulations for use and storage of class 1.3C explosives

Other EU Regulations

15.1.2 National Regulations

Canada

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

WHMIS Classification:

Not Controlled (explosive)

Canadian Explosives Classification:

Rocket Motors - **R2, PE3**

These products are authorized explosives in Canada.

These products are not considered "Controlled Goods" in Canada under the Controlled Goods Regulations.

United States of America

EPA Hazard Categories (SARA 311,312)

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
Massachusetts Right-To-Know Substance List (MSL)	No
Pennsylvania Right-To-Know Substance List	No
New Jersey Worker & Community Right-To-Know Act	No
California Proposition 65	No

Chemical Inventories

Canada	All ingredients are listed on the DSL.
United States	All ingredients are listed on the TSCA Inventory.
Europe	All ingredients are listed on the EINECS inventory.
Australia	All ingredients are listed on the AICS Inventory.
China	All ingredients are listed on the IECSC Inventory.
Japan	All ingredients are listed on the ENCS Inventory.
Korea	All ingredients are listed on the Existing Chemicals List (ECL).
Philippines	All ingredients are listed on the PICCS.

15.2 Chemical safety Assessment

A Chemical Safety Assessment is not required for this product.

16.0 OTHER INFORMATION

16.1 Changes From Last Version

Corrected 15.1.1 to read 1.3C.

16.2 Abbreviations and Acronyms

DNEL	Derived No-Effect Exposure Limit
HS	Globally Harmonized System
PNEL	Predicted No Effect level

16.3 Key Literature References and Sources of Data

GESTIS

16.4 Classification for mixtures and used evaluation method according to regulation (EC) 1207/2008 [CLP]

No tests conducted.

16.5 Relevant R-, H-, and EUH- Phrases

Risk Phrases:

R 2	Risk of explosion by shock, friction, fire or other sources of ignition.
R 11	Highly flammable
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.

16.6 Training Advice

Follow supplied instructions carefully.

16.7 Further Information

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