



U.S. Department  
of Transportation

**Pipeline and Hazardous  
Materials Safety  
Administration**

1200 New Jersey Avenue, SE  
Washington, DC 20590

OCT 11 2018

Paul Ames  
BCB International Ltd  
Lamby Industrial Park  
Wentloog Avenue  
Cardiff CF3 2EX  
United Kingdom

Reference No. 18-0018

Dear Mr. Ames:

This letter is in response to your February 7, 2018, letter requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to the classification of Meals, Ready to Eat (MREs) packaged with the heating source for operational rations. In your letter and subsequent phone call, you describe and provide safety data sheets (SDS) for an ethyl alcohol fuel source, classified as a Division 4.1 flammable solid in Packing Group (PG) III. You explain the fuel blocks are individually packaged in two individually sealed capsules containing 1 ounce or less of fuel, which are further contained in a sealed pouch with other non-hazardous materials. You include a picture of this configuration in an image showing a pouch titled "Cold Weather Meal." Specifically, you ask whether these MREs are subject to the HMR as a hazardous material.

PHMSA regulates the transportation in commerce of hazardous materials in an "amount and form [that] may pose an unreasonable risk to health and safety or property" in accordance with 49 U.S.C 5103, as delegated to PHMSA in 49 CFR §§ 1.96(b) and 1.97(b). As described in your letter, the fuel blocks meet the definition of a PG III flammable solid hazard and, therefore, meet the definition of a hazardous material subject to the HMR. However, based on the information provided in your letter, your product may meet the excepted quantities provisions of § 173.4 and/or the exceptions for Class 4 materials in § 173.151, but not the de minimis exception in § 173.4b.

I hope this information is helpful. Please contact us if we can be of further assistance.

Sincerely,

T. Glenn Foster  
Chief, Regulatory Review and Reinvention  
Standards and Rulemaking Division

Lehman  
Packaging General  
18-0018

**January, Ikeya CTR (PHMSA)**

---

**From:** INFOCNTR (PHMSA)  
**Sent:** Tuesday, February 13, 2018 9:44 AM  
**To:** Hazmat Interps  
**Subject:** FW: Cold Weather Ration  
**Attachments:** Intpretation2017.pdf; page-8.pdf; page-9.pdf; page-6.pdf; page-7.pdf; Shane Kelly - DOT 7th Feb.pdf; MSDS 001 Issue 6 - FireDragon Solid.pdf; fire dragon cold weather ration.pdf

Hello All,

Please see the below and attached LOI request.

Regards,

-Breanna

**From:** Paul Ames [mailto:pa@bcbin.com]  
**Sent:** Wednesday, February 07, 2018 11:25 AM  
**To:** INFOCNTR (PHMSA) <INFOCNTR.INFOCNTR@dot.gov>  
**Subject:** FW: Cold Weather Ration

Dear Mr Shane Kelly,

I hope this mail finds you well.

BCB is a British Manufacture of Survival products and we have recently developed a new HEAT SOURCE which is rapidly replacing the old typed of TOXIC heat sources used by militaries world wide. (Hexamine, Trioxane, Gas, Methyl Ester etc...)

BCB's new Fire Dragon is an ECO Friendly & CLEAN Burning Fuel which is currently being trialled by NATICK (U.S. Department of Defence) for inclusion within their Cold Weather Ration Pack.

**Code:** CN336  
**Description:** Solid Fuel Block  
**Weight:** 27g (1 oz) per block  
**NATO approved:** NSN-9110-99-426-2694  
**Air Transportable:** UN Class 4.1 Packing Class III

However we have been asked by NATICK if we can provide some supporting documentation (as per attached) that our product doesn't or wont pose any transport restriction when placed inside the ration, similar to what they experienced with FRH (Flameless Ration Heater) which I believe your department reviewed and accepted.

We are hoping to apply the same rule/regulation in support of our product being included in the COLD WEATHER RATION.

I look forward to any advice and support you can offer me on this subject and if you require any additional information in order to make a decision please don't hesitate to contact me.

Thank you for taking the time to evaluate my request.

Warm regards

Paul

[www.firedragonfuel.com](http://www.firedragonfuel.com) .




Saving and protecting lives  
in hostile environments  
through innovation


 **Paul Ames** | Business Development Manager

**BCB International Ltd** new address from April 2018 will be ...

 **Lamby Industrial Park, Wentloog Avenue, Cardiff CF3 2EX, UK**  
*Our current address is Clydesmuir Rd Ind Est, Cardiff, CF24 2QS, UK*

 **Email: [pa@bcbin.com](mailto:pa@bcbin.com) | Cell: +44 7974 373 954**

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**for Police and Special Equipment Frankfurt, Germany**

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Current Address: BCB International Ltd, Clydesmuir Rd Ind Est, Cardiff CF24 2QS, UK



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Mr. Shane Kelley  
Acting Director, Standards and Rulemaking Division  
U.S. DOT/PHMSA (PHH-10)  
1200 New Jersey Avenue, SE East Building, 2nd Floor  
Washington, DC 20590  
[infocntr@dot.gov](mailto:infocntr@dot.gov)

Date 07.02.2018

REF: NATICK/HAZ/PA070218

Dear Mr Shane Kelley,

I hope this letter finds you well.

BCB is a UK based manufacturer of Individual Safety and Survival Products which are widely used by Militaries, Humanitarian and Expeditionary Forces worldwide.

We recently developed a new product for our own UK Defence Force which is rapidly growing in demand by Military Forces worldwide to include as part of their heating source for individual heating requirements whilst cooking in the field.

BCB's new **FIRE DRAGON** is a heat source used by soldiers for heating MRES (Meals Ready to Eat) and boiling water within Ration Packs. (see image attached)

CN336 Fire Dragon 27gr (1oz) Blocks  
CN336S Fire Dragon 16gr (0.5oz) Blocks

Specifically, the US ARMY is completing trials and now wish to include these in their rations.

The US Army have requested that we review its current hazardous classification, as these goods are classified as Class 4.1, Packing Group III, which could pose a transport restriction when packaged inside the ration.

They would like us to investigate whether BCB Fire Dragon when suitably packaged in a MRE / Ration Pack, given its relatively small mass being used for personal consumption can also be exempt from its normal hazardous classification. Similarly, they have another product FRH (Flameless Ration Heater) in service whereby you have deemed that given its relatively small mass packaged inside the ration also doesn't pose a hazardous risk based on PHMSA in 49 C.F.R. 1.53 (b) and 49 U.S.C. 5103.

*See Attached letter - Flameless Ration Heater.*



Company Registration No. 1442485 VAT Reg No GB 108 2991 08

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I have enclosed our current MSDS as well as some information on the product and its packaging for you to review and advise how I can support the U.S. DOD request.

I would greatly appreciate your soonest reply as they are requesting an update from us given this urgent demand.

Looking forward to your reply.

Paul Ames  
Business Development Manager



Company Registration No. 1442485 VAT Reg No GB 108 2991 08

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U.S. Department  
of Transportation

Pipeline and Hazardous  
Materials Safety  
Administration

1200 New Jersey Avenue, SE  
Washington, DC 20590

JUN 06 2017

John King  
Chief, Rations & Equipment Branch  
Defense Logistics Agency  
700 Robbins Avenue  
Philadelphia, PA 19111

Reference No. 17-0002

Dear Mr. King:

This letter is in response to your December 29, 2016, letter requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to the transportation of flameless ration heaters (FRH) as a component packaged into individual operational rations. In your letter and subsequent phone call, you describe and provide safety data sheets (SDS) for certain Individual Operational Rations, including, but not limited to Meal, Ready-to-Eat (MRE) that are packed with an FRH containing 8 grams of magnesium alloy.

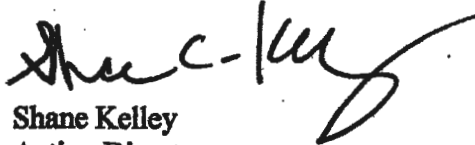
We have paraphrased and answered your questions as follows:

- Q1. You ask whether Individual Operational Rations packed with an FRH that contains 8 grams of magnesium alloy or less is subject to the HMR as a hazardous material.
- A1. PHMSA regulates the transportation in commerce of materials in an "amount and form [that] may pose an unreasonable risk to health and safety or property." 49 U.S.C 5103, as delegated to PHMSA in 49 C.F.R 1.53(b). This Office determined in Ref. No. 08-0046 that an MRE packed with an FRH containing 8 grams or less of magnesium alloy is not in a quantity and form that poses an unreasonable risk to health, safety, or property during transportation regardless of the number of MREs in a package. This interpretation remains valid. Therefore, Individual Operational Rations, such as MREs, are not subject to the HMR. Please note that this determination does not apply to FRH devices shipped separately from Individual Operational Rations that are not hermetically sealed or to FRH devices containing more than 8 grams of magnesium alloy, which must be shipped in conformance with the applicable requirements of the HMR.
- Q2. You ask if an SDS for the magnesium alloy needs to accompany shipments of MREs that contain an FRH.

A2. The HMR does not require an SDS to accompany a shipment of hazardous materials. In addition, based on the above determination, no other documentation or hazard communication requirements of the HMR apply.

I hope this information is helpful. Please contact us if we can be of further assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Shane C. Kelley". The signature is fluid and cursive, with a long horizontal stroke at the end.

Shane Kelley  
Acting Director  
Standards and Rulemaking Division



# MATERIAL SAFETY DATA SHEET

Date / Revised: 14/03/2017

Product Name: FireDragon Green & Clean Solid Fuel

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Name: FireDragon Green & Clean Solid Fuel  
Product No. FD336B, CN336, CN336S  
Product Application True-gel alcohol fuel. Intended for use as a firelighter and/or cooking fuel. May be used as a hand cleanser. Use in accordance with product instructions.  
Supplier BCB International LTD  
Unit 7 & 8 Clydesmuir Road Industrial Estate  
Cardiff,  
CF24 2QS  
United Kingdom

Emergency Telephone +44 (0) 29 2043 3700/ +44 (0) 1554 823824  
(08:00 – 17:00 Mon-Fri only)

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1 Classification of the substance or mixture

#### Classification according to Regulation (EC) No. 1272/2008

One or more of the substances in this product feature the following hazards as a raw material:

Flammable solid (Category 2), H228  
Eye irritant (Category 2), H319  
STOT single exposure (Category 3), H336

For the full text of the H-statements mentioned in this section, see section 16.

### 2.2 Label elements

#### Labelling according to Regulation (EC) No 1272/2008

Pictogram



Signal word

Warning

Hazard statement(s)

H228 Flammable solid.  
H319 Causes serious eye irritation.  
H336 May cause drowsiness or dizziness.

Precautionary statement(s)

P101 If medical advice is needed, have product container or label at hand.  
P103 Read label before use



P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P261 Avoid breathing vapours.

P271 Use only outdoors or in a well-ventilated area.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

For full list of precautionary statements, see section 16.

Supplemental hazard statements

### 2.3 Other hazards

This product is highly flammable. With container open, explosive vapour/air may be formed even at normal room temperatures.

During combustion/fire, the product becomes molten and exhibits flow.

In high concentrations, vapours and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea.

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	EC No.	Content (%)	Classification acc. to Regulation (EC) No 1272/2008
Ethanol, denatured	64-17-5	200-578-6	85-95	Flam. Liq. 2 (H225), Eye Irrit. 2 (H319)
Sodium stearate	822-16-2	212-490-5	<2	N/A
Hydroxypropyl methylcellulose	9004-65-3	N/A	<5	N/A

The full text for all H-statements are given in section 16.

## SECTION 4: FIRST-AID MEASURES

### 4.1 Description of first aid measures

<b>General Advice</b>	Rest, warmth and fresh air. Seek medical attention if symptoms persist. Show this safety data sheet to the physician in attendance. Never give an unconscious person anything by mouth.
<b>Inhalation</b>	Remove to fresh air and rest. If not breathing, give artificial respiration. If symptoms persist, seek medical attention.
<b>Ingestion</b>	Do NOT induce vomiting. Rinse mouth immediately and give plenty of water or milk to drink. If symptoms persist, seek medical attention. Never give an unconscious person anything by mouth.
<b>Skin contact</b>	Remove contaminated clothing. Wash affected area with soap and water.
<b>Eye contact</b>	Flush with water for at least 15 minutes. Remove contact lenses if present and safe to do. Avoid washing chemical from one eye into the other. Ensure to rinse thoroughly under the eyelid. If symptoms persist, seek medical attention.

- 4.2 Most important symptoms and effects, both acute and delayed.**
- |              |   |
|--------------|---|
| Inhalation   | May cause respiratory irritation. May cause drowsiness, dizziness and/or headaches. |
| Ingestion    | Gastrointestinal symptoms; nausea, upset stomach, vomiting.                         |
| Skin contact | Repeated exposure may cause skin dryness or cracking.                               |
| Eye contact  | Irritation may occur, causing redness and pain.                                     |
- 4.3 Indication of any immediate medical attention and special treatment needed**  
Treat symptomatically.

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**SECTION 5: FIRE-FIGHTING MEASURES**

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- 5.1 Extinguishing Media**
- |                                       |   |
|---------------------------------------|---|
| <b>Suitable extinguishing media</b>   | Alcohol-resistant foam, dry powder, carbon dioxide, water fog and sand. |
| <b>Unsuitable extinguishing media</b> | Do not use high-pressure water jets.                                    |
- 5.2 Special hazards arising from the mixture**
- Carbon oxides, nitrogen oxides (NO<sub>x</sub>) and oxides of sodium may be produced during combustion.
- Product may produce vapour which may be invisible, heavier than air and spread along the ground. During combustion, solid fuel will become molten and exhibit flow. Vapours may form explosive mixtures with air. Flash-back possible over some distance.
- 5.3 Advice for firefighters**
- Wear self-contained breathing apparatus. Wear full-protective gear if necessary. Keep containers cool with water spray. Water run-off or discharge should not enter drains.
- 5.4 Further information**
- No information available.

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**SECTION 6: ACCIDENTAL RELEASE MEASURES**

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- 6.1 Personal precautions, protective equipment and emergency procedures**
- Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. For personal protection see section 8.
- 6.2 Environmental precautions**
- Ensure waste and contaminated materials are collected and removed from the work area as soon as possible in a suitably labelled container. Do not allow water run-off or discharge to enter drains or environment.

<b>6.3</b>	<b>Methods and materials for containment and cleaning up</b>	Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local/national regulations (see section 13). Collect waste absorbent with either an electrically protected vacuum cleaner or by wet-brushing. Wash area thoroughly with water after.
<b>6.4</b>	<b>Reference to other sections</b>	See section 1 for emergency contact information. See section 8 for personal protective equipment. See section 13 for waste treatment information.

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**SECTION 7: HANDLING AND STORAGE**

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<b>7.1</b>	<b>Precautions for safe handling</b>	Avoid skin and eye contact. Avoid spillages. Avoid inhalation of vapour or mist. Keep away from sources of ignition. No smoking. Take measures to prevent the build-up of electrostatic charge. If left exposed, flammable and irritating vapours will be emitted. Ensure adequate ventilation. For precautions see section 2.2.
<b>7.2</b>	<b>Conditions for safe storage, including any incompatibilities</b>	Store in a cool, dry place. Keep container closed in a well-ventilated place. Keep away from direct sunlight and sources of heat or ignition. Do not store with oxidising agents.
<b>7.3</b>	<b>Specific end use(s)</b>	Apart from the uses mentioned in section 1.2, no other end uses are stipulated.

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**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

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**8.1 Control Parameters**

**Components with workplace control parameters**

Due to the nature of the product, workplace exposure limits are unlikely to be exceeded. The product has not been tested for workplace exposure limits when used as stipulated in section 1.2.

One or more component exhibits workplace exposure limits as a raw material, as below:

Ethanol	EH40 WEL, TWA – 8h	1,000ppm, 1,920mg/m <sup>3</sup>
	ELV (IE), STEL	1,000ppm

**8.2 Exposure Controls**

**Appropriate engineering controls**

Provide adequate to ensure the defined work place exposure limits are not exceeded.

**Personal protective equipment**

**Skin protection**

Where possible, wear suitable gloves. As the product is a mixture of several substances, the durability of the glove material cannot be calculated in advance and should be tested before use. Protective gloves

should be replaced is damaged or otherwise compromised through wear and tear. Protective gloves should comply with EN 374.

<b>Eye/face protection</b>	Contact lenses should be avoided when working with this product. Safety glasses, when worn, should comply with EN 166.
<b>Body protection</b>	Due to the nature/size of the product, specific clothing is not usually necessary. Impervious clothing, Flame-retardant antistatic protective clothing may be worn when handling large quantities.
<b>Respiratory protection</b>	Due to the nature of the product, no personal respiratory protective equipment is normally required in well ventilated areas. In case of insufficient ventilation, wear suitable respiratory aid equipment. A Type A filter is recommended and mask to EN 143
<b>Control of environmental exposure</b>	Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

#### **SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

Appearance	Solid, colourless. Usually translucent, sometimes opaque
Odour	Alcoholic
pH	8
Melting/freezing point	60-65°C
Initial boiling point	78°C
Flash point	17°C (Cleveland open cup; BS EN ISO 2592:2001)
Upper explosion limit	19% (V)
Lower explosion limit	3.3% (V)
Vapour pressure	5.85kPa (20°C)
Flammability	No data available
Relative density	0.84g/cm <sup>3</sup> (20°C)
Water solubility	Partially soluble (20°C)
Auto-ignition temperature	363°C
Decomposition temperature	No data available
Viscosity	No data available
Oxidising properties	No data available
Explosive properties	Formation of explosive air/vapour mixtures is possible.
Gross calorific value	29MJ/kg (approx.)

#### **SECTION 10: STABILITY AND REACTIVITY**

<b>10.1</b>	<b>Reactivity</b>	Stable under recommended storage conditions.
<b>10.2</b>	<b>Chemical stability</b>	Stable under recommended storage conditions.
<b>10.3</b>	<b>Possibility of hazardous reactions</b>	No data available.
<b>10.4</b>	<b>Conditions to avoid</b>	Heat, flames, sparks, extremes of temperature and direct sunlight.
<b>10.5</b>	<b>Incompatible materials</b>	Alkali metals, ammonia, oxidising reagents, peroxides.

<b>10.6</b>	<b>Hazardous decomposition products</b>	Other decomposition products – no data available. In the event of fire, see section 5.
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**SECTION 11: TOXICOLOGICAL INFORMATION**

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**11.1 Information on toxicological effects**

<b>Acute toxicity</b>	Toxic Dose – LD <sub>50</sub> >2000 mg/kg (oral rat) Toxic Concentration – LC <sub>50</sub> >20 mg/l (4hr mouse)
<b>Skin corrosion/irritation</b>	Repeated exposure may cause skin dryness or cracking.
<b>Serious eye damage/irritation</b>	Causes serious eye irritation. May cause redness and pain.
<b>Respiratory damage/irritation</b>	May cause mechanical respiratory irritation. May cause drowsiness, dizziness and/or headaches.
<b>Ingestion</b>	Gastrointestinal symptoms; nausea, upset stomach and/or vomiting.
<b>Respiratory or skin sensitisation</b>	No data available.
<b>Germ cell mutagenicity</b>	No data available.
<b>Carcinogenicity</b>	No data available.
	IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probably, possible or confirmed human carcinogen by IARC.
<b>Reproductive toxicity</b>	No data available.
<b>Specific target organ toxicity – single exposure</b>	Ethanol is a CNS depressant. Exposure to vapours may cause dizziness, drowsiness and/or headaches.
<b>Specific target organ toxicity – repeated exposure</b>	No data available. Similar symptoms to STOT – single exposure may occur.
<b>Aspiration hazard</b>	No data available.

The chemical, physical and toxicological properties have not been thoroughly investigated for this product.

Values presented are based on available literature. No testing was carried out for this product.

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**SECTION 12: ECOLOGICAL INFORMATION**

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<b>12.1</b>	<b>Toxicity</b>	LC <sub>50</sub> : > 100 mg/l (96 hrs, Fish) EC <sub>50</sub> : > 100 mg/l (48 hrs, Daphnia)
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IC<sub>50</sub>: > 100 mg/l (72 hrs, Algae)

<b>12.2</b>	<b>Persistence and degradability</b>	No data available.
<b>12.3</b>	<b>Bioaccumulative potential</b>	No data available.
<b>12.4</b>	<b>Mobility in soil</b>	No data available.
<b>12.5</b>	<b>Results of PBT and vPvB assessment</b>	PBT and vPvB assessment not available as chemical safety assessment not required, not conducted. No component of this product is deemed PBT or vPvB
<b>12.6</b>	<b>Other adverse effects</b>	Will dissolve and disperse in an aqueous environment. Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration.

Values presented are based on available literature.

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### SECTION 13: DISPOSAL CONSIDERATIONS

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#### 13.1 Waste treatment methods

<b>Product</b>	Burn in a chemical incinerator equipped with an afterburner and scrubber, but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable product to a licensed hazardous waste disposal company. Any material used to control spillage must be disposed of in the same way. Dispose of in accordance to local and national regulations.
<b>Contaminated packaging</b>	Empty contaminated packaging thoroughly. This can be recycled after thorough and proper cleaning. Packaging that cannot be cleaned is to be disposed of in the same manner as the product.

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### SECTION 14: TRANSPORT INFORMATION

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One or more of this product's components are classified as dangerous good for transportation by ADR/RID, IMDG or IATA. Available information and product testing allows determination of dangerous goods transport class for this product.

<b>14.1</b>	<b>UN number</b>	
	ADR/RID	1325
	IMDG	1325
	IATA	1325
<b>14.2</b>	<b>UN proper shipping name</b>	
	ADR/RID	Flammable solid, organic, N.O.S, (ethanol mixture)
	IMDG	Flammable solid, organic, N.O.S, (ethanol mixture)
	IATA	Flammable solid, organic, N.O.S, (ethanol mixture)
<b>14.3</b>	<b>Transport hazard class(es)</b>	

ADR/RID	Class 4.1: Flammable solid
IMDG	Class 4.1: Flammable solid
IATA	Class 4.1: Flammable solid

Packing label	
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**14.4 Packing group**

ADR/RID	III
IMDG	III
IATA	III

**14.5 Environmental hazard**

ADR/RID	No
IMDG	No
IATA	No

**14.6 Special precautions for user** No data available.

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**SECTION 15: REGULATORY INFORMATION**

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This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

Take note of regulation (EC) 1272/2008 on the classification, labelling and packaging of substances and mixtures.  
 Take note of the control of substances hazardous to health (COSHH) regulations, 2002.  
 Take note of directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.  
 Take note of directive 92/85/EEC on the protection of the health and safety of pregnant workers.  
 Take note of directive 94/33/EC on the protection of young people at work  
 Take note of workplace exposure limits, 2005 (EH40)

**15.2 Chemical safety assessment**

For this product a chemical safety assessment was not carried out.

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**SECTION 16: OTHER INFORMATION**

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**Full text of H-statements referred to under sections 2 and 3.**

H228	Flammable solid
H319	Causes serious eye irritation
H336	May cause drowsiness or dizziness

**Full text of P-statements referred to under section 2.**

P101	If medical advice is needed, have product container, or label at hand.
P102	Keep out of reach of children.
P103	Read label before use.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240	Ground/bond container and receiving equipment.

P241	Use explosion-proof electrical/ventilating/light/equipment.
P261	Avoid breathing vapours.
P264	Wash hands thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P304 + P340 + P312	IF INHALED: remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTRE or doctor/physician if you feel unwell.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313	If eye irritation persists get medical advice/attention.
P370 + P378	In case of fire: Alcohol resistant foam, Dry Powder, Carbon Dioxide, Water Fog, Sand.
P501	Dispose of container/packaging in accordance with local regulations on waste disposal.
EUH066	Repeated exposure may cause skin dryness or cracking.

#### Acronyms

STOT	Specific-target organ toxicity.
STEL	Short-term exposure limit.
TWA	Time-weighted average.
LC <sub>50</sub>	Lethal concentration - concentration at which 50% of the population is killed.
LD <sub>50</sub>	Lethal dose – dose at which 50% of the population is killed in a given period of time.
IC <sub>50</sub>	Inhibitor concentration – concentration of an inhibitor where the response/binding is reduced by half.
IARC	International agency for research on cancer.
ADR/RID	European agreement concerning the international carriage of dangerous goods by road and railway.
IMDG	International maritime dangerous goods code.
IATA	International air transport association.
PBT	Persistent, bioaccumulative and toxic.
vPvB	Very persistent, very bioaccumulative.

#### Further information

The information in this Safety Data Sheet should be provided to all who will use, handle, store, transport or otherwise be exposed to this product. This information has been prepared for the guidance of plant engineering, operations, management and for people working with or handling this product. This information is believed to be reliable and correct at the Revision Date, and represents the best information currently available and known by BCB International Ltd. However, BCB International Ltd makes no guarantee or warranty, express or implied, with respect to such information and we assume no liability and anticipated used and is for the material without chemical additions or alterations. Users should make their own investigations to determine the suitability of the information for their particular purposes. It is the responsibility of the user to undertake a suitable risk assessment/COSHH assessment prior to using the material.





# FIRE DRAGON

## MILITARY COOKING BIOFUEL

- Made from natural ingredients
- Non toxic
- All Weather
- Easy to light
- Long burn
- Can be used as a hand cleanser



BCBs new all-weather biofuel FireDragon is made from UK sourced ethanol. FireDragon Fuel can be used in most cooking stoves and barbecues, as well as for fire lighting.

- Ideal in the outdoors to cook your rations and boil your brews quickly, safeguard your health, while protecting the environment.
- Our fuel is non-toxic, non-drip and made from 100% natural renewable ingredients.
- It is easy to light, burns cleanly and independent research shows that it boils quicker than all other solid fuels.
- In the driving rain, the freezing Arctic, at high altitudes or searing heat, FireDragon will perform in the most extreme conditions.



**Hand Cleanser**



**All Weather**



### Clean burn

The gel produces very little soot on the bottom of your pan.



### Air transportable

Safe to be packed and transported on cargo planes by air.



### Long shelf life

FireDragon has a shelf life of more than 5 years.



### Safe to be packed with food.



### Patented

Unique patented technology granted worldwide.  
Patent number: 2500062 22-01-2014



**Quick & easy to light**



**Clean burn**





# COOKING > Fire lighting

In extensive field testing by the **British Army**, FireDragon proved to be the best of all five fuels tested.

## Fire Dragon beats:

- ✓ **Hexamine** which gives off Cyanide
- ✓ **Trioxane** which gives off Formaldehyde
- ✓ **Gas fuels** which are unable to be transported by air
- ✓ **Methyl Esters** which gives off a lot of soot

**START** Quick, simple & easy to ignite



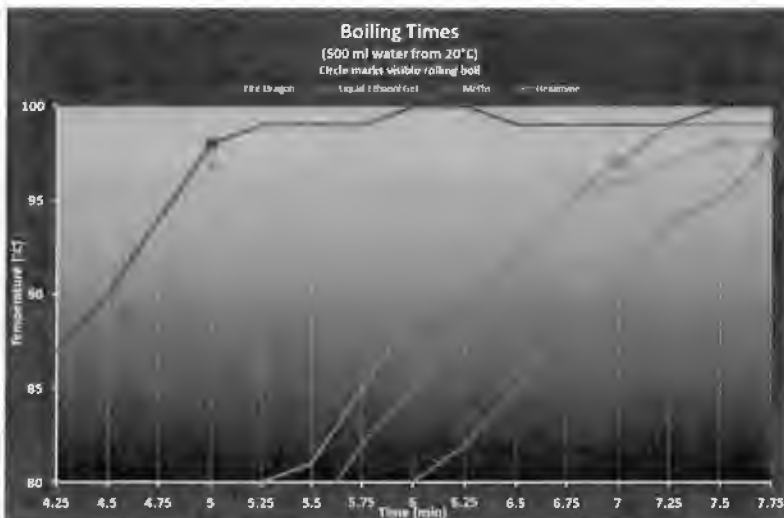
## Comparison table - Better than the rest!

	Hexamine	Trioxane	Butane Gas	Methyl Ester	FireDragon
Non Toxic	X	X	✓	✓	✓
Renewably Sourced	X	X	X	✓	✓
Suitable for extreme conditions (wind & rain)	X	✓	✓	✓	✓
Burns whilst wet	X	X	✓	X	✓
Easy to ignite	X	X	✓	X	✓
Odourless	X	X	✓	X	✓
Hand steriliser	X	X	X	X	✓
Low soot	X	X	X	X	✓
Safe for wildlife	X	X	X	X	✓
Long shelf life	✓	✓	✓	✓	✓
Air transportable	✓	✓	X	X	✓
Indoor & outdoor use (provided suitable airflow)	X	X	✓	X	✓
Low luminosity flame	X	X	X	X	✓
Made in the UK	X	X	✓	X	✓

**3 MINUTES** Starting to boil. Little flame visible



## Performance table - Quicker than the rest!



"The small FireDragon tablets are easy to use and fit perfectly into my survival tin and mess kit"

Sgt, Special Forces

COOKING	SURVIVAL	CAMP KIT PIPS	BODY ARMOUR	LOCATION	MEDICAL	PROTECTION	LOAD CARRIAGE	TOOLS
CAMOUFLAGE	SPECIAL OPS	NONLETHAL	LIGHTING	HYGIENE	HYDRATION	CLOTHING	RESCUE	

# FIRE DRAGON



## Fuel for the future!

As part of the British military evaluation for a new field cooking and cooker fuel independent laboratory tests were conducted which compared **FireDragon** against 5 other solid and gel fuels including Hexamine. **FireDragon** was proven to be the best.

*FireDragon gives 20 times more heat energy than a normal camp stove fuel rate within the first five minutes of burn compared to hexamine and other solid fuels tested...*

*FireDragon had an average ignition time of 2 seconds. Hexamine by comparison was 9.5 seconds...*



### FIRE DRAGON GEL FUEL

CODE: CN336D (1 LITRE)

CODE: CN336C (250ML)

MADE IN  
BRITAIN

Our all-weather gel biofuel derived from FireDragon Solid fuel technology. Made from UK sourced ethanol, FireDragon Gel Fuel can be used in multi-fuel outdoor cooking stoves, and barbecues, as well as for fire lighting.

- Ideal in the outdoors to cook your rations and boil your brews quickly, safeguard your health, while protecting the environment.
- Our fuel is non-toxic, non-drip and made from 100% natural ingredients.
- It is easy to light, burns cleanly and our research shows that it boils quicker than most other non-gas fuels.
- In the driving rain, the freezing Arctic, at high altitudes or searing heat, FireDragon will perform in the most extreme conditions.



### FIRE DRAGON SOLID FUEL

CODE: CN336 (CASE 60 - PACKS EACH 6 X 27G)

**A new innovative environmentally friendly solid fuel.**

- Non-toxic and odourless
- Highly effective, high burn fuel
- Easy and quick to ignite - use the flint, match or lighter.
- Low luminosity
- Very little soot given off, so doesn't dirty your cooking pot or mess tin.
- Easy to store and handle
- Safe to be packed with food
- High calorific value 28,000 kJ / kg
- Suitable for all weather conditions
- Each block will burn for about 8 minutes.
- Will light & burn even when wet
- Can be used with a variety of cookers
- Made from sustainable, natural biofuel
- Air transportable
- Patented

**Weight:** 6 X 27g (0.9oz) per pack

**NATO approved:** NSN-9110-99-426-2694

**Air Transportable:** UN Class 4.1 Packing Class III

Can be used as a  
hand cleanser.

Confirms to BS EN 1276:2009





# COOKING > Fire lighting

## MULTI-FUEL COOKER

CODE: CN337

This high quality cooker is made from aluminium and it is small and lightweight. It comes with a wind shield and fuel receiver. The fuel receiver adds to the performance of the system as it helps to channel and focus the flame up onto the cooking vessel, effectively like a chimney. The central fuel receiver helps to improve the burn efficiency so improving your cooking time and reducing the amount of fuel you need.

You can store 3 FireDragon solid blocks inside the folded closed stove. Ideal while carrying and storing.

- Easy to use
- Compact
- Lightweight
- Waterproof
- Reusable
- MOD Issue
- Efficient
- You can burn many fuels (not petrol) in its central fuel receiver

**Weight:** 110g (3.8oz)

**NATO approved:** NSN-7310-99-587-4226

**Size when closed:** 115L x 70W x 25Hmm (4.5" x 2.7" x 0.9")



BEST COOKER  
IN RECENT  
TRIALS



SCAN  
WITH YOUR  
SMARTPHONE  
TO VIEW VIDEO



See videos of how to use it at [www.firedragonfuel.com](http://www.firedragonfuel.com)

COOKING	SURVIVAL	CAMP KIT PIPS	BODY ARMOUR	LOCATION	MEDICAL	PROTECTION	LOAD CARRIAGE	TOOLS
CAMOUFLAGE	SPECIAL OPS	NON LETHAL	LIGHTING	HYGIENE	HYDRATION	CLOTHING	RESQUE	