HODGDON®
THE BRAND THAT'S TRUE

Extruded Rifle Powders

SAFETY DATA SHEET

June 2017

The following smokeless powders are
distributed by Hodgdon Powder Company.

H4227® (**NO 1.4C**)
H4895® ***(EX-2015110873)***
H4198® ***(EX-2013031308)***
Varget® ***(EX-2015110873)***
H4350® ***(EX-2015110873)***
H50BMG® ***(EX-2012010785)***
H4831® ***(EX-2015110873)***
H4831SC® ***(EX-2015110873)***
H1000® ***(EX-2015110873)***
Retumbo® ***(EX-2015110873)***
H322® ***(EX-2016090002)***
Benchmark® ***(EX-2016090003)***

1.4C EX Approvals in bold parenthesis

6430 Vista Drive * Shawnee, KS 66218 * Phone (913) 362-9455 * Fax (913-362-1307
www.Hodgdon.com * www.IMRpowder.com * www.WWpowder.com

Propellant BM2

Thales (Thales Australia Limited)

Chemwatch Hazard Alert Code: **3**

Chemwatch: **4693-84**
Version No: **4.1.1.1**
Safety Data Sheet according to WHS and ADG requirements

Issue Date: **17/05/2013**
Print Date: **05/03/2015**
Initial Date: **Not Available**
S.GHS.AUS.EN

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

Product Identifier

Product name	Propellant BM2
Synonyms	AR 2219; H322; AR 2210 V02
Proper shipping name	POWDER, SMOKELESS†
Other means of identification	Not Available

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Propellant for use in centrefire ammunition.

Details of the manufacturer/importer

Registered company name	Thales (Thales Australia Limited)	Thales (Thales Australia Limited)
Address	Private Bag 1 Mulwala 2647 NSW Australia	Bayly Street Mulwala 2647 NSW Australia
Telephone	Not Available	+61 3 5742 2200
Fax	Not Available	+61 3 5744 1873
Website	Not Available	Not Available
Email	Not Available	Not Available

Emergency telephone number

Association / Organisation	Not Available	Thales Australia Mulwala Facility
Emergency telephone numbers	Not Available	03 5742 2200
Other emergency telephone numbers	Not Available	Not Available

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

HAZARDOUS CHEMICAL. DANGEROUS GOODS. According to the Model WHS Regulations and the ADG Code.

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability	3		
Toxicity	2		
Body Contact	2		
Reactivity	3		
Chronic	3		

0 = Minimum
1 = Low
2 = Moderate
3 = High
4 = Extreme

Poisons Schedule	Not Applicable
GHS Classification [1]	Explosive Division 1.3, Acute Toxicity (Oral) Category 4, Acute Toxicity (Dermal) Category 4, Acute Toxicity (Inhalation) Category 4, Germ Cell Mutagen Category 2, Carcinogen Category 1B, Reproductive Toxicity Category 2, STOT - RE Category 2, Chronic Aquatic Hazard Category 3
Legend:	*1. Classified by Chemwatch; 2. Classification drawn from HSIS ; 3. Classification drawn from EC Directive 1272/2008 - Annex VI*

Label elements

GHS label elements	
SIGNAL WORD	**DANGER**

Hazard statement(s)

H203	Explosive; fire, blast or projection hazard
H302	Harmful if swallowed
H312	Harmful in contact with skin

Continued...

H332	Harmful if inhaled
H341	Suspected of causing genetic defects
H350	May cause cancer
H361	Suspected of damaging fertility or the unborn child
H373	May cause damage to organs through prolonged or repeated exposure
H412	Harmful to aquatic life with long lasting effects

Precautionary statement(s) Prevention

P201	Obtain special instructions before use.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P230	Keep wetted with phlegmatizer
P260	Do not breathe dust/fume/gas/mist/vapours/spray.

Precautionary statement(s) Response

P308+P313	IF exposed or concerned: Get medical advice/attention.
P370+P380	In case of fire: Evacuate area.
P372	Explosion risk in case of fire.
P373	DO NOT fight fire when fire reaches explosives.

Precautionary statement(s) Storage

P405	Store locked up.
P401	Store according to local regulations for explosives

Precautionary statement(s) Disposal

P501	Dispose of contents/container to authorised chemical landfill or if organic to high temperature incineration

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
9004-70-0	>90	nitrocellulose
121-14-2	<10	2,4-dinitrotoluene
122-39-4	0-1	diphenylamine
Not Available	<10	additives

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye Contact	If this product comes in contact with eyes: ▸ Wash out immediately with water. ▸ If irritation continues, seek medical attention. ▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin contact occurs: ▸ Immediately remove all contaminated clothing, including footwear. ▸ Flush skin and hair with running water (and soap if available). ▸ Seek medical attention in event of irritation.
Inhalation	▸ If fumes or combustion products are inhaled remove from contaminated area. ▸ Lay patient down. Keep warm and rested. ▸ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. ▸ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. ▸ Transport to hospital, or doctor.
Ingestion	Not considered a normal route of entry. ▸ For advice, contact a Poisons Information Centre or a doctor at once. ▸ Urgent hospital treatment is likely to be needed. ▸ If swallowed do **NOT** induce vomiting. ▸ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. ▸ Observe the patient carefully. ▸ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. ▸ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. ▸ Transport to hospital or doctor without delay.

Indication of any immediate medical attention and special treatment needed

Symptoms of vasodilation and reflex tachycardia may present following organic nitrate overdose; most organic nitrates are extensively metabolised by hydrolysis to inorganic nitrites. Organic nitrates and nitrites are readily absorbed through the skin, lungs, mucosa and gastro-intestinal tract.

Continued...

Delayed pulmonary oedema may result following exposure to nitrous oxides formed on thermal decomposition of the propellant.

SECTION 5 FIREFIGHTING MEASURES

Extinguishing media

	DANGER: Deliver media remotely. ▸ For minor fires: Flooding quantities only. ▸ For large fires: **Do not** attempt to extinguish.

Special hazards arising from the substrate or mixture

Fire Incompatibility	▸ Avoid contact with other explosives, pyrotechnics, solvents, adhesives, paints, cleaners and unauthorized metals, plastics, packing equipment and materials. ▸ Avoid contamination with acids, alkalis, reducing agents, amines and phosphorus.

Advice for firefighters

Fire Fighting	**WARNING: EXPLOSIVE MATERIALS / ARTICLES PRESENT!** ▸ Evacuate all personnel and move upwind. ▸ Prevent re-entry. ▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ May be explosively reactive, detonate and release much heat.
Fire/Explosion Hazard	**WARNING**: HIGH EXPLOSION HAZARD! ▸ Combustible. ▸ Will burn with rapidly increasing intensity of fire. ▸ Dry material is extremely sensitive to shock, friction, heat and sparks. ▸ Avoid metal to metal contact.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Minor Spills	Clean up all spills immediately. Avoid contact with skin and eyes. Wear impervious gloves and safety glasses. Use spark-free tools when handling Remove all ignition sources.
Major Spills	Clear area of personnel. Restrict access to area. Alert Fire Brigade and tell them location and nature of hazard. ▸ May be violently or explosively reactive. |In the case of a transport accident notify the State Police, State|Explosives Inspector and the Manufacturer, Thales Mulwala Facility.|Collect recoverable packages and segregate from spilled loose material.

	Personal Protective Equipment advice is contained in Section 8 of the MSDS.

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling	Use good occupational work practice. Observe manufacturer's storage and handling recommendations contained within this MSDS. Avoid all personal contact, including inhalation Wear protective clothing when risk of exposure occurs. ▸ Avoid smoking, naked lights, heat or ignition sources Must not be struck by metal implements.
Other information	Store in original containers. ▸ No smoking, naked lights, heat or ignition sources. Keep dry. ▸ Keep storage area free of debris, waste and combustibles. |Store cases in a well ventilated magazine licensed for IMCO class 1.3C|Explosives.|NOTE: If deterioration of the explosive occurs or large quantities of|explosive need to be destroyed notify the Manager, Thales MULWALA Facility or|State Explosives Department.

Conditions for safe storage, including any incompatibilities

Suitable container	Check containers are clearly labelled. ▸ Packaging as recommended by manufacturer. Explosives Code Packing Instruction P114(b) or 114(b) General packaging provisions of 4.1.1, 4.1.3 and special provision 4.1.5 are to be met. For UN 0160, 0161 - If outer packaging is drum then inner packaging is not required.
Storage incompatibility	Segregate from strong acids strong alkalis and strong oxidisers ▸ Avoid contact with other explosives, pyrotechnics, solvents, adhesives, paints, cleaners and unauthorized metals, plastics, packing equipment and materials. ▸ Avoid contamination with acids, alkalis, reducing agents, amines and phosphorus.

Continued...

X X X X X X

X — Must not be stored together
0 — May be stored together with specific preventions
+ — May be stored together

PACKAGE MATERIAL INCOMPATIBILITIES

Not Available

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	nitrocellulose	Fume (thermally generated) (respirable dust)(g)	2 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	diphenylamine	Diphenylamine	10 mg/m3	Not Available	Not Available	Not Available

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
nitrocellulose	Pyroxylin; (Cellulose tetranitrate)	15 mg/m3	170 mg/m3	990 mg/m3
2,4-dinitrotoluene	Dinitrotoluene, 2,4-	0.6 mg/m3	4.9 mg/m3	200 mg/m3
diphenylamine	Diphenylamine	30 mg/m3	65 mg/m3	220 mg/m3

Ingredient	Original IDLH	Revised IDLH
nitrocellulose	Not Available	Not Available
2,4-dinitrotoluene	200 mg/m3	50 mg/m3
diphenylamine	Not Available	Not Available
additives	Not Available	Not Available

Exposure controls

Appropriate engineering controls	Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are: Process controls which involve changing the way a job activity or process is done to reduce the risk. Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.
Personal protection	
Eye and face protection	▸ Safety glasses with side shields. ▸ Chemical goggles. ▸ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task.
Skin protection	See Hand protection below
Hands/feet protection	Wear protective gloves, e.g. PVC. ▸ Protective footwear
Body protection	See Other protection below
Other protection	Overalls ▸ Eyewash unit. Ensure ready access to a burns first aid kit |Manufacture may require: Non-static cleanroom clothing.
Thermal hazards	Not Available

Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:
"Forsberg Clothing Performance Index".
The effect(s) of the following substance(s) are taken into account in the ***computer-generated*** selection:
Propellant BM2

Material	CPI
SARANEX-23	C

* CPI - Chemwatch Performance Index
A: Best Selection
B: Satisfactory; may degrade after 4 hours continuous immersion
C: Poor to Dangerous Choice for other than short term immersion
NOTE: As a series of factors will influence the actual performance of the glove, a final

Respiratory protection

Not Applicable

Continued...

selection must be based on detailed observation. -
* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Dark grey tubules. Bulk density 920 g/L. Insoluble in water. WARNING: SEVERE EXPLOSION HAZARD.

Physical state	Manufactured	**Relative density (Water = 1)**	> 1.0
Odour	Not Available	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	170
pH (as supplied)	Not Applicable	**Decomposition temperature**	Explosive.
Melting point / freezing point (°C)	Not available.	**Viscosity (cSt)**	Not Applicable
Initial boiling point and boiling range (°C)	Not available.	**Molecular weight (g/mol)**	Not Applicable
Flash point (°C)	Not Applicable	**Taste**	Not Available
Evaporation rate	Not Applicable	**Explosive properties**	Not Available
Flammability	Not Applicable	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	Not Applicable	**Surface Tension (dyn/cm or mN/m)**	Not Applicable
Lower Explosive Limit (%)	Not Applicable	**Volatile Component (%vol)**	Negligible
Vapour pressure (kPa)	Negligible	**Gas group**	Not Available
Solubility in water (g/L)	Immiscible	**pH as a solution**	Not Applicable
Vapour density (Air = 1)	Not Applicable	**VOC g/L**	Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	▸ Product is considered stable under normal handling conditions. ▸ Stable under normal storage conditions. ▸ Hazardous polymerization will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled	Not normally a hazard due to physical form of product. The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation of dusts, or fumes, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress. |The decomposition vapours are harmful if inhaled in large volume.
Ingestion	Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. The substance and/or its metabolites may bind to haemoglobin inhibiting normal uptake of oxygen. This condition, known as "methaemoglobinemia", is a form of oxygen starvation (anoxia). Symptoms include cyanosis (a bluish discolouration skin and mucous membranes) and breathing difficulties.
Skin Contact	5511r21 The material is not thought to be a skin irritant (as classified by EC Directives using animal models). Abrasive damage however, may result from prolonged exposures. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
Eye	Not normally a hazard due to physical form of product. Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may cause transient discomfort characterised by tearing or conjunctival redness (as with windburn). Slight abrasive damage may also result.
Chronic	Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course. |The principal hazard is related to the potential of fire/explosion and|associated physical injury and toxic fume inhalation.

Propellant BM2	**TOXICITY**	**IRRITATION**

Continued...

	Not Available	Not Available
nitrocellulose	**TOXICITY**	**IRRITATION**
	Oral (rat) LD50: >5000 mg/kg[2]	Not Available
2,4-dinitrotoluene	**TOXICITY**	**IRRITATION**
	dermal (guinea pig) LD50: >1000 mg/kg[2]	Skin (rabbit): 500 mg/24h - mild
	Oral (rat) LD50: 268 mg/kgd[2]	
diphenylamine	**TOXICITY**	**IRRITATION**
	Oral (hamster) LD50: ca.600 mg/kg[1]	Not Available
Legend:	*1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's msds Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances*	

NITROCELLULOSE	No significant acute toxicological data identified in literature search.
2,4-DINITROTOLUENE	for dinitrotoluene (syn: dinitromethylbenzene; DNT) In humans, heavy DNT exposure causes signs of methaemoglobinaemia, which are reversible 2-3 days after removal from exposure. Signs of disturbances in liver function and exposure-dependent nephrotoxic effects directed to the tubular system were additionally found in exposed workers. Single findings in studies without reliable exposure data and/or only small numbers of significantly exposed workers indicating increased incidences of hepatobiliary or urothelial cancer in occupationally DNT exposed workers do not permit a conclusion on the carcinogenicity of DNT in humans. Preliminary observations pointing to an increased risk of ischemic heart disease or to an adverse effect on the human male reproductive system could not be confirmed by further studies In humans dinitrotoluene (DNT, technical grade) is absorbed following dermal and inhalative exposure and is rapidly metabolized and excreted in urine.
DIPHENYLAMINE	Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. ADI: 0.02 mg/kg/day NOEL: 1.5 mg/kg/day

Acute Toxicity	✔	**Carcinogenicity**	✔
Skin Irritation/Corrosion	⊘	**Reproductivity**	✔
Serious Eye Damage/Irritation	⊘	**STOT - Single Exposure**	⊘
Respiratory or Skin sensitisation	⊘	**STOT - Repeated Exposure**	✔
Mutagenicity	✔	**Aspiration Hazard**	⊘

Legend: ✔ *– Data required to make classification available*
✘ *– Data available but does not fill the criteria for classification*
⊘ *– Data Not Available to make classification*

CMR STATUS

Not Applicable

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
2,4-dinitrotoluene	HIGH (Half-life = 360 days)	MEDIUM (Half-life = 118.33 days)
diphenylamine	LOW (Half-life = 56 days)	Not Available

Bioaccumulative potential

Ingredient	Bioaccumulation
2,4-dinitrotoluene	HIGH (BCF = 2507)
diphenylamine	LOW (BCF = 253)

Mobility in soil

Ingredient	Mobility
2,4-dinitrotoluene	LOW (KOC = 363.8)
diphenylamine	LOW (KOC = 1887)

Continued...

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging disposal	▸ Recycle wherever possible. Special hazards may exist - specialist advice may be required. ▸ Consult manufacturer for recycling options. ▸ Consult State Land Waste Management Authority for disposal. |Explosives which are surplus, deteriorated or considered unsafe for|transport, storage or use shall be destroyed and the statutory authorities|shall be notified. Explosive must not be thrown away, buried, discarded or|placed with garbage. This material may be disposed of by burning but the|operation must be performed under the control of a person competent in the|destruction of explosives.

SECTION 14 TRANSPORT INFORMATION

Labels Required

	
Marine Pollutant	NO
HAZCHEM	Not Applicable

Land transport (ADG)

UN number	0161
Packing group	Not Applicable
UN proper shipping name	POWDER, SMOKELESS†
Environmental hazard	No relevant data
Transport hazard class(es)	Class: 1.3C Subrisk: Not Applicable
Special precautions for user	Special provisions: Not Applicable Limited quantity: 0

Air transport (ICAO-IATA / DGR)

UN number	0161
Packing group	Not Applicable
UN proper shipping name	Powder, smokeless †
Environmental hazard	No relevant data
Transport hazard class(es)	ICAO/IATA Class: 1.3C ICAO / IATA Subrisk: Not Applicable ERG Code: 1L
Special precautions for user	Special provisions: Not Applicable Cargo Only Packing Instructions: Forbidden Cargo Only Maximum Qty / Pack: Forbidden Passenger and Cargo Packing Instructions: Forbidden Passenger and Cargo Maximum Qty / Pack: Forbidden Passenger and Cargo Limited Quantity Packing Instructions: Forbidden Passenger and Cargo Limited Maximum Qty / Pack: Forbidden

Sea transport (IMDG-Code / GGVSee)

UN number	0161
Packing group	Not Applicable
UN proper shipping name	POWDER, SMOKELESS
Environmental hazard	Not Applicable
Transport hazard class(es)	IMDG Class: 1.3C IMDG Subrisk: Not Applicable
Special precautions for user	EMS Number: F-B , S-Y Special provisions: Not Applicable Limited Quantities: 0

Continued...

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

Source	Ingredient	Pollution Category
IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk	diphenylamine	Y

SECTION 15 REGULATORY INFORMATION

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

nitrocellulose(9004-70-0) is found on the following regulatory lists	"Australia Exposure Standards","Australia Inventory of Chemical Substances (AICS)","International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs","International Air Transport Association (IATA) Dangerous Goods Regulations - Prohibited List Passenger and Cargo Aircraft","Australia Hazardous Substances Information System - Consolidated Lists"
2,4-dinitrotoluene(121-14-2) is found on the following regulatory lists	"International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs","Australia Inventory of Chemical Substances (AICS)","Australia Hazardous Substances Information System - Consolidated Lists"
diphenylamine(122-39-4) is found on the following regulatory lists	"Australia Exposure Standards","Australia Inventory of Chemical Substances (AICS)","Australia Hazardous Substances Information System - Consolidated Lists"

SECTION 16 OTHER INFORMATION

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.