



Single Base Powders
SAFETY DATA SHEET
February 2022

The following smokeless powders
are distributed by
IMR Legendary Powders

IMR 8208 XBR

1.4C EX Approval= (EX-2015110873)

Propellant AR22 Series

Thales Australia Limited

Chemwatch Hazard Alert Code: 3

Chemwatch: 5189-29

Issue Date: 10/12/2021

Version No: 7.1

Print Date: 02/02/2022

Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements

S.GHS.AUS.EN.3

SECTION 1 Identification of the substance / mixture and of the company / undertaking

Product Identifier

| | |
|-------------------------------|--|
| Product name | Propellant AR22 Series |
| Chemical Name | Not Applicable |
| Synonyms | AR2205; AR2205(H); AR2206; AR2206(H); AR2207; AR2208; AR2209; AR2210; AR2210 V01; AR2210 V02; H322; AR2211; AR2213; AR2213(SC); AR2217; AR2217 V01; AR2218; AR2219; AR2220; AR2220 V01; AR2225; AR2210 V03 |
| Proper shipping name | POWDER, SMOKELESS |
| Chemical formula | Not Applicable |
| 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 supplier of the safety data sheet

| | |
|-------------------------|---|
| Registered company name | Thales Australia Limited |
| Address | 7 Murray Rose Avenue Sydney Olympic Park NSW 2127 Australia |
| Telephone | +61 (0)2 9562 3069 |
| Fax | Not Available |
| Website | Not Available |
| Email | Not Available |

Emergency telephone number

| | |
|-----------------------------------|------------------------------|
| Association / Organisation | CHEMWATCH EMERGENCY RESPONSE |
| Emergency telephone numbers | +61 1800 951 288 |
| Other emergency telephone numbers | +61 2 9186 1132 |






Once connected and if the message is not in your preferred language then please dial 01

SECTION 2 Hazards identification

Classification of the substance or mixture

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

ChemWatch Hazard Ratings

| | Min | Max | |
|--------------|-----|---|--|
| Flammability | 1 |  | |
| Toxicity | 2 |  | |
| Body Contact | 2 |  | |
| Reactivity | 2 |  | |
| Chronic | 3 |  | |

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

| | |
|------------------|----------------|
| Poisons Schedule | Not Applicable |
|------------------|----------------|

Propellant AR22 Series

| | |
|--------------------------------------|--|
| Classification ⁽¹⁾ | Explosives Division 1.3, Acute Toxicity (Oral) Category 4, Acute Toxicity (Inhalation) Category 4, Germ Cell Mutagenicity Category 2, Carcinogenicity Category 1B, Reproductive Toxicity Category 2, Specific Target Organ Toxicity - Repeated Exposure Category 2, Hazardous to the Aquatic Environment Long-Term Hazard Category 2 |
| Legend: | 1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI |

Label elements

| | |
|----------------------------|---|
| Hazard pictogram(s) |  |
| Signal word | Danger |

Hazard statement(s)

| | |
|--------|--|
| H203 | Explosive; fire, blast or projection hazard. |
| H302 | Harmful if swallowed. |
| H332 | Harmful if inhaled. |
| H341 | Suspected of causing genetic defects. |
| H350 | May cause cancer. |
| H361fd | Suspected of damaging fertility. Suspected of damaging the unborn child. |
| H373 | May cause damage to organs through prolonged or repeated exposure. |
| H411 | Toxic 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. |
| P234 | Keep only in original packaging. |
| P250 | Do not subject to grinding/shock/sources of friction. |
| P260 | Do not breathe dust/fume. |
| P271 | Use only outdoors or in a well-ventilated area. |
| P280 | Wear protective gloves, protective clothing, eye protection, face protection and hearing protection. |
| P240 | Ground and bond container and receiving equipment. |

Precautionary statement(s) Response

| | |
|---------------------|---|
| P308+P313 | IF exposed or concerned: Get medical advice/ attention. |
| P370+P372+P380+P373 | In case of fire: Explosion risk. Evacuate area. DO NOT fight fire when fire reaches explosives. |
| P391 | Collect spillage. |
| P301+P312 | IF SWALLOWED: Call a POISON CENTER/doctor/physician/first aider if you feel unwell. |
| P304+P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |
| P330 | Rinse mouth. |

Precautionary statement(s) Storage

| | |
|------|---|
| P405 | Store locked up. |
| P401 | Store in accordance with local/regional/national/international regulations. |

Precautionary statement(s) Disposal

| | |
|------|--|
| P501 | Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation. |
| P503 | Refer to manufacturer or supplier for information on disposal/recovery/recycling. |

SECTION 3 Composition / information on ingredients

Propellant AR22 Series

Substances

See section below for composition of Mixtures

Mixtures

| CAS No | %[weight] | Name |
|---------------|-----------|--|
| 9004-70-0 | >60 | <u>nitrocellulose</u> |
| 121-14-2 | <15 | <u>2,4-dinitrotoluene</u> |
| 122-39-4 | <1 | <u>diphenylamine</u> |
| Not Available | <5 | Ingredients determined not to be hazardous |

Legend: 1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&L; * EU IOELVs available

SECTION 4 First aid measures

Description of first aid measures

| | |
|---------------------|--|
| Eye Contact | <p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> ▶ Wash out immediately with fresh running water. ▶ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. ▶ Seek medical attention without delay; if pain persists or recurs seek medical attention. ▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. |
| Skin Contact | <p>If skin or hair contact occurs:</p> <ul style="list-style-type: none"> ▶ Immediately flush body and clothes with large amounts of water, using safety shower if available. ▶ Quickly remove all contaminated clothing, including footwear. ▶ Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre. ▶ Transport to hospital, or doctor. |
| Inhalation | <ul style="list-style-type: none"> ▶ 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, without delay. |
| Ingestion | <ul style="list-style-type: none"> ▶ IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY. ▶ For advice, contact a Poisons Information Centre or a doctor. ▶ Urgent hospital treatment is likely to be needed. ▶ In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition. ▶ If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the SDS should be provided. Further action will be the responsibility of the medical specialist. ▶ If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the SDS. <p>Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:</p> <ul style="list-style-type: none"> ▶ INDUCE vomiting with fingers down the back of the throat, ONLY IF CONSCIOUS. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. <p>NOTE: Wear a protective glove when inducing vomiting by mechanical means.</p> |

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. Periodic medical examinations, including a complete blood count and liver function tests, are recommended for workers with dinitrotoluene (DNT) exposure. In male workers DNT metabolites produced as a result of exposure in a single shift are largely excreted in the urine by the beginning of the following shift. Metabolites include dinitrobenzoic acid (52%), 2-amino-4-nitrobenzoic acid (37.2) and dinitrobenzol glucuronide (9.5%). Treat symptomatically.

SECTION 5 Firefighting measures

Extinguishing media

Continued...

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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

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|-----------------------------|--|
| Fire Incompatibility | ▸ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result |
|-----------------------------|--|

Advice for firefighters

| | |
|------------------------------|--|
| Fire Fighting | <p>WARNING: EXPLOSIVE MATERIALS / ARTICLES PRESENT!</p> <ul style="list-style-type: none"> ▸ 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. ▸ Wear full-body protective clothing with breathing apparatus. ▸ Prevent, by any means available, spillage and fire effluent from entering drains or watercourses. ▸ Fight from safe distances and protected locations. ▸ Use flooding quantities of water. ▸ DO NOT approach containers suspected to be hot. <p>For Division 1.3 Explosives Evacuation is required in case of Emergency. For quantities of up to:</p> <ul style="list-style-type: none"> ▸ 1000 kg, the evacuation distance is 100 metres ▸ 5000 kg, the evacuation distance is 150 metres ▸ 20000 kg, the evacuation distance is 200 metres ▸ 40000 kg, the evacuation distance is 250 metres |
| Fire/Explosion Hazard | <p>WARNING: EXPLOSION HAZARD!</p> <ul style="list-style-type: none"> ▸ Combustible. ▸ Detonation may occur from heavy impact or excessive heating. ▸ Mixing with incompatible chemicals may cause expansion, decomposition or detonation. ▸ Heat affected containers remain hazardous. ▸ Explosives can supply own oxygen for combustion and smothering action of foam or dry chemical may be ineffective. ▸ Combustion or decomposition produces oxides of nitrogen (NOx), carbon monoxide (CO) and carbon dioxide (CO2). |
| HAZCHEM | E |

SECTION 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

| | |
|---------------------|---|
| Minor Spills | <p>WARNING!: EXPLOSIVE.</p> <p>BLAST and/or PROJECTION and/or FIRE HAZARD</p> <ul style="list-style-type: none"> ▸ Clean up all spills immediately. ▸ Avoid inhalation of the material and avoid contact with eyes and skin. ▸ Wear impervious gloves and safety glasses. ▸ Remove all ignition sources. ▸ Use spark-free tools when handling. ▸ Sweep into non-sparking containers or barrels and moisten with water. ▸ Place spilled material in clean, sealable, labelled container for disposal. ▸ Flush area with large amounts of water. <p>Environmental hazard - contain spillage.</p> |
| Major Spills | <p>In the case of transport accident notify the State Police, State Explosives Inspector and the Manufacturer, Thales Mulwala Facility. Collect recoverable packages and segregate from loose, spilled material.</p> <p>WARNING!: EXPLOSIVE.</p> <ul style="list-style-type: none"> ▸ Clear area of personnel and move upwind. ▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ May be violently or explosively reactive. ▸ Wear full body protective clothing with breathing apparatus. ▸ Consider evacuation (or protect in place). ▸ In case of transport accident notify Police, Emergency Authority, Competent Explosives Authority or Manufacturer. ▸ No smoking, naked lights, heat or ignition sources. ▸ Increase ventilation. |

Continued...

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Environmental hazard - contain spillage.

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

SECTION 7 Handling and storage

Precautions for safe handling

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|--------------------------|---|
| Safe handling | <ul style="list-style-type: none"> ▶ Handle gently. Use good occupational work practice. ▶ Observe manufacturer's storage and handling recommendations contained within this SDS. ▶ Avoid all personal contact, including inhalation. ▶ Avoid smoking, naked lights, heat or ignition sources. ▶ Explosives must not be struck with metal implements. ▶ Avoid mechanical and thermal shock and friction. ▶ Use in a well ventilated area. ▶ Avoid contact with incompatible materials. ▶ Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions) ▶ Minimise airborne dust and eliminate all ignition sources. Keep away from heat, hot surfaces, sparks, and flame. ▶ Establish good housekeeping practices. ▶ Remove dust accumulations on a regular basis by vacuuming or gentle sweeping to avoid creating dust clouds. ▶ Use continuous suction at points of dust generation to capture and minimise the accumulation of dusts. Particular attention should be given to overhead and hidden horizontal surfaces to minimise the probability of a "secondary" explosion. According to NFPA Standard 654, dust layers 1/32 in.(0.8 mm) thick can be sufficient to warrant immediate cleaning of the area. ▶ Do not use air hoses for cleaning. ▶ Minimise dry sweeping to avoid generation of dust clouds. |
| Other information | <ul style="list-style-type: none"> ▶ Store cases in a well ventilated magazine licensed for the appropriate Class, Division and Compatibility Group. ▶ Rotate stock to prevent ageing. Use on FIFO (first in-first out) basis. ▶ Observe manufacturer's storage and handling recommendations contained within this SDS. ▶ Store in a cool place in original containers. ▶ Keep containers securely sealed. ▶ No smoking, naked lights, heat or ignition sources. ▶ Store in an isolated area away from other materials. ▶ Keep storage area free of debris, waste and combustibles. |

Conditions for safe storage, including any incompatibilities

| | |
|--------------------------------|---|
| Suitable container | <ul style="list-style-type: none"> ▶ All packaging for Class 1 Goods shall be in accordance with the requirements of the relevant Code for the transport of Dangerous Goods. ▶ Class 1 is unique in that the type of packaging used frequently has a very decisive effect on the hazard and therefore on the assignment to a particular division <p>Packaging for explosive substances shall meet the test requirements for Packaging Group II. 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. For UN 0160, 0161 - If outer packaging is 1A2 or 1B2 metal drums then drum construction shall be such that risk of explosion, by reason of increase by internal pressure from internal or external causes, is prevented. For UN 0077, 0132, 0234, 0235, 0236, packagings are to be lead free, otherwise: Inner Packagings: Bags: Paper Kraft, Plastics, Textiles - sift proof, Woven Plastic - sift proof Receptacles: Fibreboard, Metal, Paper, Plastic, Woven Plastic - sift proof Intermediate Packagings: Not necessary Outer Packagings: Boxes: Natural Wood (4C1), Natural Wood -sift proof (4C2), Plywood (4D), Reconstituted Wood (4F), Fibreboard (4G) Drums: Steel, Removable Head (1A2), Aluminium, removable head (1B2), Plywood (1D), Fibre (1G), Plastic, removable head (1H2)</p> <ul style="list-style-type: none"> ▶ Packaging as recommended by manufacturer. <p>Check containers are clearly labelled.</p> |
| Storage incompatibility | <ul style="list-style-type: none"> ▶ 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. <p>Store drums on end and invert them regularly (at least monthly) to avoid separation of the desensitising liquid. Keep dampened. Do NOT allow to dry.</p> <ul style="list-style-type: none"> ▶ Avoid reaction with oxidising agents, bases and strong reducing agents. ▶ Avoid strong acids, bases. ▶ Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous |

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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 | diphenylamine | Diphenylamine | 10 mg/m3 | Not Available | Not Available | Not Available |

Emergency Limits

| Ingredient | TEEL-1 | TEEL-2 | TEEL-3 |
|--------------------|-----------|-----------|-----------|
| 2,4-dinitrotoluene | 0.6 mg/m3 | 12 mg/m3 | 200 mg/m3 |
| diphenylamine | 30 mg/m3 | 180 mg/m3 | 220 mg/m3 |

| Ingredient | Original IDLH | Revised IDLH |
|--------------------|---------------|---------------|
| nitrocellulose | Not Available | Not Available |
| 2,4-dinitrotoluene | Not Available | Not Available |
| diphenylamine | Not Available | Not Available |

Occupational Exposure Banding

| Ingredient | Occupational Exposure Band Rating | Occupational Exposure Band Limit |
|--------------------|-----------------------------------|----------------------------------|
| 2,4-dinitrotoluene | E | ≤ 0.01 mg/m ³ |

Notes: Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.

Exposure controls

| | |
|----------------------------------|---|
| Appropriate engineering controls | <p>Adequate ventilation should be provided to keep dust concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with applicable air pollution control regulations. Use a local mechanical ventilation system if needed, preferably with explosion proof construction, and with a suitable dust filter installed at inlet to suction piping to the system to prevent accumulation of explosive dust in ventilation piping and blower.</p> <p>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.</p> <p>The basic types of engineering controls are:</p> <ul style="list-style-type: none"> 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. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use. <p>Employers may need to use multiple types of controls to prevent employee overexposure.</p> <ul style="list-style-type: none"> Employees exposed to confirmed human carcinogens should be authorized to do so by the employer, and work in a regulated area. Work should be undertaken in an isolated system such as a "glove-box". <p>Engineering controls for explosive substances are designed to reduce or eliminate fragmentation and/or blast effects either by suppression of the source of detonation or by protection at the exposed location, or both. Barricades, shields, contained detonation chambers, and "zero quantity-distance (Q-D)" magazines are examples of engineering controls.</p> <p>Engineering controls are designed and tested in a rigorous fashion. The construction of the engineering control must be carefully duplicated in field applications to assure it will function properly.</p> <p>It is thus imperative that engineering controls be built exactly in accordance with the design package, and that they be used only for the substances for which they are authorised.</p> |
| Personal protection |  |
| Eye and face protection | <ul style="list-style-type: none"> 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. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should |

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|------------------------------|---|
| | be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent] |
| Skin protection | See Hand protection below |
| Hands/feet protection | <ul style="list-style-type: none"> ▸ Wear chemical protective gloves, e.g. PVC. ▸ Wear safety footwear or safety gumboots, e.g. Rubber <p>NOTE:</p> <ul style="list-style-type: none"> ▸ The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact. ▸ Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed. <p>The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.</p> <p>The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.</p> <p>Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.</p> <p>Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:</p> <ul style="list-style-type: none"> · frequency and duration of contact, · chemical resistance of glove material, · glove thickness and · dexterity <p>Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).</p> <ul style="list-style-type: none"> · Non-sparking or conductive footwear essential. Conductive footwear describes a boot or shoe with a sole made from a conductive compound chemically bound to the bottom components, for permanent control to electrically ground the foot and shall dissipate static electricity from the body to reduce the possibility of ignition of volatile compounds. Electrical resistance must range between 0 to 500,000 ohms. Conductive shoes should be stored in lockers close to the room in which they are worn. Personnel who have been issued conductive footwear should not wear them from their place of work to their homes and return. |
| Body protection | See Other protection below |
| Other protection | <ul style="list-style-type: none"> ▸ Employees working with confirmed human carcinogens should be provided with, and be required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area. [AS/NZS ISO 6529:2006 or national equivalent] ▸ Employees engaged in handling operations involving carcinogens should be provided with, and required to wear and use half-face filter-type respirators with filters for dusts, mists and fumes, or air purifying canisters or cartridges. A respirator affording higher levels of protection may be substituted. [AS/NZS 1715 or national equivalent] ▸ Emergency deluge showers and eyewash fountains, supplied with potable water, should be located near, within sight of, and on the same level with locations where direct exposure is likely. ▸ Prior to each exit from an area containing confirmed human carcinogens, employees should be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers must be identified with suitable labels. For maintenance and decontamination activities, authorized employees entering the area should be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood. ▸ Prior to removing protective garments the employee should undergo decontamination and be required to shower upon removal of the garments and hood. <p>For handling explosives or explosive compositions:</p> <ul style="list-style-type: none"> ▸ Wear close-fitting flame-protection treated clothing closed at the neck and sleeves. ▸ Cotton underwear, socks and conductive shoes are recommended to avoid human static discharge. <p>Manufacture may require:</p> <ul style="list-style-type: none"> ▸ Non-static flame retardant treated clothing ▸ Access to deluge Safety shower ▸ Barrier cream. |

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:
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| Material | CPI |
|------------|-----|
| SARANEX-23 | A |

* 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,

Respiratory protection

Particulate. (AS/NZS 1716 & 1715, EN 143:2000 & 149:001, ANSI Z88 or national equivalent)

| Required Minimum Protection Factor | Half-Face Respirator | Full-Face Respirator | Powered Air Respirator |
|------------------------------------|----------------------|----------------------|------------------------|
| up to 10 x ES | P1 Air-line* | - | PAPR-P1 - |
| up to 50 x ES | Air-line** | P2 | PAPR-P2 |
| up to 100 x ES | - | P3 | - |
| | | Air-line* | - |
| 100+ x ES | - | Air-line** | PAPR-P3 |

* - Negative pressure demand ** - Continuous flow

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a final 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.

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO₂), G = Agricultural chemicals, K = Ammonia(NH₃), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

If inhalation risk of exposure to dinitrotoluenes (DNT) or trinitrotoluenes (TNT) exists, wear air-supplied breathing apparatus. In confined spaces or at elevated temperatures, where mist of fumes are present, an impervious suit ventilated by a supply of clean, cooled air may be required.

- Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.
- The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).
- Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory protection. These may be government mandated or vendor recommended.
- Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.
- Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU)
- Use approved positive flow mask if significant quantities of dust becomes airborne.
- Try to avoid creating dust conditions.

SECTION 9 Physical and chemical properties

Information on basic physical and chemical properties

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

SECTION 10 Stability and reactivity

| | |
|------------|---------------|
| Reactivity | See section 7 |
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Continued...

Propellant AR22 Series

| | |
|---|--|
| Chemical stability | <ul style="list-style-type: none"> ▸ Presence of shock and friction ▸ Presence of heat source and ignition source ▸ Product is considered stable under normal handling conditions. ▸ Stable under normal storage conditions. ▸ Hazardous polymerization will not occur. ▸ 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. |
| 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 | <p>Inhalation of dusts, generated by the material, during the course of normal handling, may be harmful. Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.</p> <p>If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures.</p> |
| Ingestion | <p>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.</p> <p>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).</p> <p>Symptoms include cyanosis (a bluish discolouration skin and mucous membranes) and breathing difficulties. Symptoms may not be evident until several hours after exposure.</p> <p>At about 15% concentration of blood methaemoglobin there is observable cyanosis of the lips, nose and earlobes. Symptoms may be absent although euphoria, flushed face and headache are commonly experienced. At 25-40%, cyanosis is marked but little disability occurs other than that produced on physical exertion. At 40-60%, symptoms include weakness, dizziness, lightheadedness, increasingly severe headache, ataxia, rapid shallow respiration, drowsiness, nausea, vomiting, confusion, lethargy and stupor. Above 60% symptoms include dyspnea, respiratory depression, tachycardia or bradycardia, and convulsions.</p> |
| Skin Contact | <p>Skin contact with the material may be harmful; systemic effects may result following absorption.</p> <p>Open cuts, abraded or irritated skin should not be exposed to this material</p> <p>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.</p> |
| Eye | <p>There is some evidence to suggest that this material can cause eye irritation and damage in some persons.</p> |
| Chronic | <p>Strong evidence exists that this substance may cause irreversible mutations (though not lethal) even following a single exposure. There is ample evidence that this material can be regarded as being able to cause cancer in humans based on experiments and other information.</p> <p>Harmful: danger of serious damage to health by prolonged exposure if swallowed.</p> <p>This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects.</p> <p>Ample evidence from experiments exists that there is a suspicion this material directly reduces fertility.</p> <p>Laboratory (in vitro) and animal studies show, exposure to the material may result in a possible risk of irreversible effects, with the possibility of producing mutation.</p> <p>Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.</p> <p>There is some evidence that inhaling this product is more likely to cause a sensitisation reaction in some persons compared to the general population.</p> <p>There is limited evidence that, skin contact with this product is more likely to cause a sensitisation reaction in some persons compared to the general population.</p> <p>Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis, caused by particles less than 0.5 micron penetrating and remaining in the lung.</p> <p>This material contains a substantial amount of polymer considered to be of low concern. These are classified under having MWs of between 1000 to 10000 with less than 25% of molecules with MWs under 1000 and less than 10% under 500; or having a molecular weight average of over 10000.</p> |

| | | |
|-------------------------------|-----------------|-------------------|
| Propellant AR22 Series | TOXICITY | IRRITATION |
| | Not Available | Not Available |

Propellant AR22 Series

| | | |
|--------------------|--|--|
| 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] Oral (Rat) LD50; 268 mg/kg ^[2] | Skin (rabbit): 500 mg/24h - mild |
| diphenylamine | TOXICITY | IRRITATION |
| | Dermal (rabbit) LD50: >2000 mg/kg ^[2] Oral (Guinea) LD50; 300 mg/kg ^[2] | Eye: adverse effect observed (irritating) ^[1] Skin: no adverse effect observed (not irritating) ^[1] |
| Legend: | 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. 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 | <p>For dinitrotoluene (dinitromethylbenzene; DNT): In humans, heavy DNT exposure causes signs of methaemoglobin in the blood, which are reversible 2-3 days after removal from exposure. Signs of disturbances in liver function and exposure-dependent toxic effects on the kidney tubules were additionally found in exposed workers. In humans, DNT is absorbed after inhalation and skin contact, and is rapidly metabolized and excreted in urine. Acute toxicity: Animal testing indicates that DNT has relatively low acute toxicity by skin contact and moderately toxic by swallowing. DNT is not considered to irritate the human eye. There is inadequate data to evaluate the sensitizing potential of DNT. Repeat dose toxicity: Animal testing showed that chronic feeding of DNT led to blood changes (especially methaemoglobin in the blood), and toxicity to the liver, kidney, adrenal glands and testicles. No safe level has been defined. Genetic toxicity: Based on testing results, technical grade DNT shows the potential to cause genetic toxicity. Cancer-causing potential: Animal testing shows DNT has the potential to cause liver cancer. Reproductive toxicity: According to animal testing, the impairment of male fertility following chronic exposure to toxic doses cannot be excluded. Developmental toxicity: According to animal testing DNT did not cause birth defects or developmental toxicity, even at levels which were toxic to the mother. The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.</p> <p>WARNING: This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans.</p> |
| DIPHENYLAMINE | <p>Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. On the other hand, industrial bronchitis is a disorder that occurs as a result of exposure due to high concentrations of irritating substance (often particles) and is completely reversible after exposure ceases. The disorder is characterized by difficulty breathing, cough and mucus production. Heating of substituted diphenylamines may generate vapours which can irritate the eyes and airways. Drying of skin and mucous membranes leading to irritation may occur with prolonged or repeated contact. Overexposure may cause skin and airway irritation with dizziness and flu-like symptoms. All show a slight to very low order of toxicity following oral or topical administration. There is very low potential to cause gene mutations. Diphenylamine and all its substituted derivatives show slight to moderate acute toxicity. Overall, it is not considered to cause mutations or genetic toxicity. In animal testing, higher concentrations appear to reduce the number of viable offspring. ADI: 0.02 mg/kg/day NOEL: 1.5 mg/kg/day</p> |

| | | | |
|--|---|---------------------------------|---|
| 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 either not available or does not fill the criteria for classification
✓ – Data available to make classification

Propellant AR22 Series

Toxicity

| | Endpoint | Test Duration (hr) | Species | Value | Source |
|------------------------|--|--------------------|-------------------------------|-----------------|---------------|
| Propellant AR22 Series | Not Available | Not Available | Not Available | Not Available | Not Available |
| | Not Available | Not Available | Not Available | Not Available | Not Available |
| nitrocellulose | Endpoint | Test Duration (hr) | Species | Value | Source |
| | Not Available | Not Available | Not Available | Not Available | Not Available |
| 2,4-dinitrotoluene | Endpoint | Test Duration (hr) | Species | Value | Source |
| | NOEC(ECx) | 504h | Crustacea | 0.02mg/L | 5 |
| | LC50 | 96h | Fish | 23.7mg/l | 1 |
| | EC50 | 48h | Crustacea | 22mg/l | 4 |
| | EC50 | 96h | Algae or other aquatic plants | 1.912-3.497mg/L | 4 |
| diphenylamine | Endpoint | Test Duration (hr) | Species | Value | Source |
| | EC50(ECx) | 72h | Algae or other aquatic plants | 0.048mg/l | 1 |
| | BCF | 1344h | Fish | 51-253 | 7 |
| | LC50 | 96h | Fish | 2.088-3.596mg/L | 4 |
| | EC50 | 72h | Algae or other aquatic plants | 0.048mg/l | 1 |
| EC50 | 48h | Crustacea | 0.27-0.36mg/l | 4 | |
| Legend: | Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data | | | | |

Toxic to aquatic organisms.
May cause long-term adverse effects in the aquatic environment.
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) |

SECTION 13 Disposal considerations

Waste treatment methods

| | |
|------------------------------|--|
| Product / Packaging disposal | <ul style="list-style-type: none"> Containers may still present a chemical hazard/ danger when empty. Return to supplier for reuse/ recycling if possible. |
| | <p>Otherwise:</p> <ul style="list-style-type: none"> If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill. Where possible retain label warnings and SDS and observe all notices pertaining to the product. <p>Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.</p> <p>A Hierarchy of Controls seems to be common - the user should investigate:</p> |

Continued...

Propellant AR22 Series

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate. In most instances the supplier of the material should be consulted.

Small quantities of dinitrotoluenes (DNT) may be destroyed by burning, but the operation should be performed by a person competent in destruction of explosives.

- Explosives which are surplus, deteriorated or considered unsafe for transport, storage or use shall be destroyed and the statutory authorities shall be notified.
- Explosives must not be thrown away, buried, discarded or placed with garbage.
- This material may be disposed of by burning or detonation but the operation must be performed under the control of a person competent in the destruction of explosives.

Disposal by detonation:



- The explosives to be destroyed must be placed in direct contact with fresh priming charge in a hole which is at least 0.6 metre deep and then adequately stemmed.
- No detonators shall be inserted into defective explosives.
- Personnel must be evacuated to a safe distance prior to initiation/firing of the charge.

Disposal by burning:

- Make a sawdust bed or trail adequate for the quantity of explosives to be burned, approximately 400 mm wide and 40 mm deep, upon which the explosive will be laid.
- If sawdust is not available, newspaper may be used.
- Normal precautions shall be taken to avoid the spread of fire.
- **DO NOT allow wash water from cleaning or process equipment to enter drains.**
- It may be necessary to collect all wash water for treatment before disposal.
- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
- Where in doubt contact the responsible authority.

SECTION 14 Transport information

Labels Required

| | |
|------------------|---|
| |  |
| Marine Pollutant |  |
| HAZCHEM | E |

Land transport (ADG)

| | | |
|------------------------------|---------------------------|----------------|
| UN number | 0161 | |
| UN proper shipping name | POWDER, SMOKELESS | |
| Transport hazard class(es) | Class | 1.3C |
| | Subrisk | Not Applicable |
| Packing group | Not Applicable | |
| Environmental hazard | Environmentally hazardous | |
| Special precautions for user | Special provisions | Not Applicable |
| | Limited quantity | 0 |

Air transport (ICAO-IATA / DGR)

| | | |
|----------------------------|---------------------|----------------|
| UN number | 0161 | |
| UN proper shipping name | Powder, smokeless | |
| Transport hazard class(es) | ICAO/IATA Class | 1.3C |
| | ICAO / IATA Subrisk | Not Applicable |
| | ERG Code | 1L |

Propellant AR22 Series

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

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

Not Applicable

Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

| Product name | Group |
|--------------------|---------------|
| nitrocellulose | Not Available |
| 2,4-dinitrotoluene | Not Available |
| diphenylamine | Not Available |

Transport in bulk in accordance with the ICG Code

| Product name | Ship Type |
|--------------------|---------------|
| nitrocellulose | Not Available |
| 2,4-dinitrotoluene | Not Available |
| diphenylamine | Not Available |

SECTION 15 Regulatory information

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

| | |
|--|---|
| nitrocellulose is found on the following regulatory lists | |
| Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals | Australian Inventory of Industrial Chemicals (AIIC) |
| 2,4-dinitrotoluene is found on the following regulatory lists | |
| Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals | International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs |
| Australian Inventory of Industrial Chemicals (AIIC) | International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B: Possibly carcinogenic to humans |
| Chemical Footprint Project - Chemicals of High Concern List | |
| diphenylamine is found on the following regulatory lists | |

Propellant AR22 Series

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
Australian Inventory of Industrial Chemicals (AIIC)

National Inventory Status

| National Inventory | Status |
|---|---|
| Australia - AIIC / Australia Non-Industrial Use | Yes |
| Canada - DSL | Yes |
| Canada - NDSL | No (nitrocellulose; 2,4-dinitrotoluene; diphenylamine) |
| China - IECSC | Yes |
| Europe - EINEC / ELINCS / NLP | No (nitrocellulose) |
| Japan - ENCS | Yes |
| Korea - KECI | Yes |
| New Zealand - NZIoC | Yes |
| Philippines - PICCS | Yes |
| USA - TSCA | Yes |
| Taiwan - TCSI | Yes |
| Mexico - INSQ | Yes |
| Vietnam - NCI | Yes |
| Russia - FBEPH | Yes |
| Legend: | Yes = All CAS declared ingredients are on the inventory No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration. |

SECTION 16 Other information

| | |
|---------------|------------|
| Revision Date | 10/12/2021 |
| Initial Date | 10/08/2015 |

SDS Version Summary

| Version | Date of Update | Sections Updated |
|---------|----------------|--|
| 6.1 | 01/11/2019 | One-off system update. NOTE: This may or may not change the GHS classification |
| 7.1 | 10/12/2021 | Classification change due to full database hazard calculation/update. |

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.

The 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.

Definitions and abbreviations

PC—TWA: Permissible Concentration-Time Weighted Average
 PC—STEL: Permissible Concentration-Short Term Exposure Limit
 IARC: International Agency for Research on Cancer
 ACGIH: American Conference of Governmental Industrial Hygienists
 STEL: Short Term Exposure Limit
 TEEL: Temporary Emergency Exposure Limit.
 IDLH: Immediately Dangerous to Life or Health Concentrations
 ES: Exposure Standard
 OSF: Odour Safety Factor
 NOAEL :No Observed Adverse Effect Level
 LOAEL: Lowest Observed Adverse Effect Level
 TLV: Threshold Limit Value
 LOD: Limit Of Detection

Propellant AR22 Series

OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index
AIIIC: Australian Inventory of Industrial Chemicals
DSL: Domestic Substances List
NDSL: Non-Domestic Substances List
IECSC: Inventory of Existing Chemical Substance in China
EINECS: European Inventory of Existing Commercial chemical Substances
ELINCS: European List of Notified Chemical Substances
NLP: No-Longer Polymers
ENCS: Existing and New Chemical Substances Inventory
KECI: Korea Existing Chemicals Inventory
NZIoC: New Zealand Inventory of Chemicals
PICCS: Philippine Inventory of Chemicals and Chemical Substances
TSCA: Toxic Substances Control Act
TCSI: Taiwan Chemical Substance Inventory
INSQ: Inventario Nacional de Sustancias Químicas
NCI: National Chemical Inventory
FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

Notes

When the propellant variations AR2205, AR2207, AR2206 AR2206H, AR2208, AR2209, AR2210, AR2219, AR2210VO1, AR2210VO2, BenchMark 1, BenchMark 2, AR2211, AR2213SC, AR2215, AR2217, AR2225, AR2218 and AR2220 are packed as in packaging UN4GY12.5/S/**/AUS/ABBE 30818 they are suitable for air transport as follows:

Air Transport IATA:

ICAO/IATA Class 1.4C ICAO/IATA Subrisk: None

UN/ID Number: 0509 Packing Group:-

Special Provisions: None

Cargo Only Packing Instructions: 114 Maximum Qty/Pack: 10kg

Passenger and Cargo Packing Instructions: Forbidden Maximum Qty/Pack: Forbidden

Passenger and Cargo Limited Quantity

Packing Instructions: Forbidden Maximum Qty/Pack: Forbidden Sea Transport IMDG:

IMDG Class: 1.4C IMDG Subrisk: None

UN/ID Number: 0509

Packing Group: -

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