# Combined Systems MODEL 5440 Launchable Flameless Expulsion OC

**Winchester Australia Ltd**

Chemwatch Hazard Alert Code: **4**

Chemwatch: **5214-34**
Version No: **3.1.1.1**
Safety Data Sheet according to WHS and ADG requirements

Issue Date: **23/06/2016**
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L.GHS.AUS.EN

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

### Product Identifier

| | |
|---|---|
| **Product name** | Combined Systems MODEL 5440 Launchable Flameless Expulsion OC |
| **Synonyms** | Not Available |
| **Proper shipping name** | AMMUNITION, TEAR-PRODUCING with burster, expelling charge or propelling charge |
| **Other means of identification** | Not Available |

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

| | |
|---|---|
| **Relevant identified uses** | Use according to manufacturer's directions. |

### Details of the supplier of the safety data sheet

| | |
|---|---|
| **Registered company name** | **Winchester Australia Ltd** |
| **Address** | 65 Hays Road Moolap, Geelong VIC 3224 Australia |
| **Telephone** | +61 3 5245 2400 |
| **Fax** | +61 3 5248 2409 |
| **Website** | Not Available |
| **Email** | aedmondson@olin.com.au |

### Emergency telephone number

| | |
|---|---|
| **Association / Organisation** | **Winchester Australia Ltd** |
| **Emergency telephone numbers** | **0418 158 337 All hours** |
| **Other emergency telephone numbers** | **Not Available** |

## 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 | 4 | | |
| Chronic | 0 | | |

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

| | |
|---|---|
| **Poisons Schedule** | Not Applicable |
| **Classification [1]** | Explosive Division 1.4, Acute Toxicity (Oral) Category 4, Acute Toxicity (Inhalation) Category 4, Eye Irritation Category 2A |
| ***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** | **WARNING** |

### Hazard statement(s)

| | |
|---|---|
| **H204** | Fire or projection hazard. |
| **H302** | Harmful if swallowed. |
| **H332** | Harmful if inhaled. |

**Continued...**

| | |
|---|---|
| **H319** | Causes serious eye irritation. |

### Precautionary statement(s) Prevention

| | |
|---|---|
| **P210** | Keep away from heat/sparks/open flames/hot surfaces. - No smoking. |
| **P250** | Do not subject to grinding/shock/sources of friction. |
| **P271** | Use only outdoors or in a well-ventilated area. |
| **P280** | Wear protective gloves/protective clothing/eye protection/face protection. |
| **P240** | Ground/bond container and receiving equipment. |
| **P261** | Avoid breathing dust/fumes. |
| **P270** | Do not eat, drink or smoke when using this product. |

### Precautionary statement(s) Response

| | |
|---|---|
| **P370+P380** | In case of fire: Evacuate area. |
| **P372** | Explosion risk in case of fire. |
| **P374** | Fight fire with normal precautions from a reasonable distance. |
| **P305+P351+P338** | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| **P373** | DO NOT fight fire when fire reaches explosives. |
| **P337+P313** | If eye irritation persists: Get medical advice/attention. |
| **P301+P312** | IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. |
| **P304+P340** | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. |
| **P330** | Rinse mouth. |

### Precautionary statement(s) Storage

| | |
|---|---|
| **P401** | Store according to local regulations for explosives. |

### Precautionary statement(s) Disposal

| | |
|---|---|
| **P501** | Dispose of contents/container in accordance with local regulations. |

## SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

### Substances

See section below for composition of Mixtures

### Mixtures

| CAS No | %[weight] | Name |
|---|---|---|
| 1309-48-4. | >50 | magnesium oxide |
| Not Available | 10-25 | silica dimethyl silyate |
| 68917-78-2 | 5-15 | Capsicum annum oleoresin |
| 10294-40-3 | <5 | barium chromate |
| 7440-02-0 | <1 | nickel |
| 55-63-0 | <0.1 | nitroglycerin |
| 122-39-4 | <0.1 | diphenylamine |

## SECTION 4 FIRST AID MEASURES

### Description of first aid measures

| | |
|---|---|
| **Eye Contact** | If this product comes in contact with the eyes:<br>▸ Wash out immediately with fresh running water.<br>▸ 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.<br>▸ Seek medical attention without delay; if pain persists or recurs seek medical attention.<br>▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. |
| **Skin Contact** | If skin contact occurs:<br>▸ Immediately remove all contaminated clothing, including footwear.<br>▸ Flush skin and hair with running water (and soap if available).<br>▸ Seek medical attention in event of irritation. |
| **Inhalation** | ▸ If fumes or combustion products are inhaled remove from contaminated area.<br>▸ Lay patient down. Keep warm and rested.<br>▸ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.<br>▸ 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.<br>▸ Transport to hospital, or doctor. |
| **Ingestion** | ▸ Not considered a normal route of entry.<br>▸ For advice, contact a Poisons Information Centre or a doctor at once.<br>▸ Urgent hospital treatment is likely to be needed.<br>▸ If swallowed do **NOT** induce vomiting.<br>▸ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.<br>▸ Observe the patient carefully. |

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| | |
|---|---|
| | ▸ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.<br>▸ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.<br>▸ Transport to hospital or doctor without delay. |

### Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

## SECTION 5 FIREFIGHTING MEASURES

### Extinguishing media

▸ **WARNING**: Deliver water spray or fog from a safe distance only.

### 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.<br>▸ Avoid contamination with acids, alkalis, reducing agents, amines and phosphorus. |

### Advice for firefighters

| | |
|---|---|
| **Fire Fighting** | **WARNING**: EXPLOSIVE MATERIALS / ARTICLES PRESENT!<br>▸ Evacuate all personnel and move upwind.<br>▸ Prevent re-entry.<br>▸ Alert Fire Brigade and tell them location and nature of hazard.<br>▸ May detonate and burning material may be propelled from fire.<br>▸ Wear full-body protective clothing with breathing apparatus.<br>▸ Prevent, by any means available, spillage and fire effluent from entering drains and water courses.<br>▸ Fight fire from safe distances and from protected locations.<br>▸ Use flooding quantities of water.<br>▸ **DO NOT** approach containers or packages suspected to be hot.<br>▸ Cool any exposed containers not involved in fire from a protected location.<br>▸ Equipment should be thoroughly decontaminated after use. |
| **Fire/Explosion Hazard** | Division 1.4 Substances, mixtures and articles which present no significant hazard: substances, mixtures and articles which present only a small hazard in the event of ignition or initiation. The effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire shall not cause virtually instantaneous explosion of almost the entire contents of the package.<br>Compatibility Group E explosives are articles containing a secondary detonating explosive substance, without means of initiation, with a propelling charge (other than one containing a flammable liquid or gel or hypergolic liquids)<br>\|Individual devices will randomly explode. Will not mass explode if multiple devices are involved.\|In unusual cases, shrapnel may be thrown from exploding devices under containment |
| **HAZCHEM** | 1YE |

## 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** | **WARNING!: EXPLOSIVE.**<br>BLAST and/or PROJECTION and/or FIRE HAZARD<br>▸ Clean up all spills immediately.<br>▸ Avoid inhalation of the material and avoid contact with eyes and skin.<br>▸ Wear impervious gloves and safety glasses.<br>▸ Remove all ignition sources.<br>▸ Use spark-free tools when handling.<br>▸ Sweep into non-sparking containers or barrels and moisten with water.<br>▸ Place spilled material in clean, sealable, labelled container for disposal.<br>▸ Flush area with large amounts of water. |
| **Major Spills** | **WARNING!** EXPLOSIVE.<br>▸ Clear area of personnel and move upwind.<br>▸ Alert Fire Brigade and tell them location and nature of hazard.<br>▸ May be violently or explosively reactive.<br>▸ Wear full body protective clothing with breathing apparatus.<br>▸ Consider evacuation (or protect in place).<br>▸ In case of transport accident notify Police, Emergency Authority, Competent Explosives Authority or Manufacturer.<br>▸ No smoking, naked lights, heat or ignition sources.<br>▸ Increase ventilation.<br>▸ Use extreme caution to prevent physical shock.<br>▸ Use only spark-free shovels and explosion-proof equipment.<br>▸ Collect recoverable material and segregate from spilled material.<br>▸ Wash spill area with large quantities of water. |

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

## SECTION 7 HANDLING AND STORAGE

### Precautions for safe handling

**Continued...**

| | |
|---|---|
| **Safe handling** | ▸ Handle gently. Use good occupational work practice.<br>▸ Observe manufacturer's storage and handling recommendations contained within this SDS.<br>▸ Avoid all personal contact, including inhalation.<br>▸ Avoid smoking, naked lights, heat or ignition sources.<br>▸ Explosives must not be struck with metal implements.<br>▸ Avoid mechanical and thermal shock and friction.<br>▸ Use in a well ventilated area.<br>▸ Avoid contact with incompatible materials.<br>▸ When handling **DO NOT** eat, drink or smoke.<br>▸ Avoid physical damage to containers.<br>▸ Always wash hands with soap and water after handling.<br>▸ Work clothes should be laundered separately.<br>\|Under normal handling, no exposure to harmful materials will occur. |
| **Other information** | ▸ Store cases in a well ventilated magazine licensed for the appropriate Class, Division and Compatibility Group.<br>▸ Rotate stock to prevent ageing. Use on FIFO (first in-first out) basis.<br>▸ Observe manufacturer's storage and handling recommendations contained within this SDS.<br>▸ Store in a cool place in original containers.<br>▸ Keep containers securely sealed.<br>▸ No smoking, naked lights, heat or ignition sources.<br>▸ Store in an isolated area away from other materials.<br>▸ Keep storage area free of debris, waste and combustibles.<br>▸ Protect containers against physical damage.<br>▸ Check regularly for spills and leaks<br>**NOTE**: If explosives need to be destroyed contact the Competent Authority. |

### Conditions for safe storage, including any incompatibilities

| | |
|---|---|
| **Suitable container** | ▸ All packaging for Class 1 Goods shall be in accordance with the requirements of the relevant Code for the transport of Dangerous Goods.<br>▸ 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 |
| **Storage incompatibility** | ▸ Reacts with acids producing flammable / explosive hydrogen (H2) gas<br>▸ Avoid reaction with oxidising agents<br>▸ Avoid strong acids, acid chlorides, acid anhydrides and chloroformates.<br>▸ Explosion hazard may follow contact with incompatible materials |

X X X X X X X

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

## 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 | magnesium oxide | Magnesium oxide (fume) | 10 mg/m3 | Not Available | Not Available | Not Available |
| Australia Exposure Standards | barium chromate | Chromium (VI) compounds (as Cr), certain water insoluble | 0.05 mg/m3 | Not Available | Not Available | Not Available |
| Australia Exposure Standards | nickel | Nickel, metal | 1 mg/m3 | Not Available | Not Available | Not Available |
| Australia Exposure Standards | nickel | Nickel, powder | 1 mg/m3 | Not Available | Not Available | Not Available |
| Australia Exposure Standards | nitroglycerin | Nitroglycerine (NG) | 0.05 ppm / 0.46 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 |
|---|---|---|---|---|
| magnesium oxide | Magnesium oxide | 30 mg/m3 | 120 mg/m3 | 730 mg/m3 |
| barium chromate | Barium chromate | 0.15 mg/m3 | 13 mg/m3 | 77 mg/m3 |
| nickel | Nickel | 4.5 mg/m3 | 50 mg/m3 | 99 mg/m3 |
| nitroglycerin | Nitroglycerin | 0.1 mg/m3 | 2 mg/m3 | 75 mg/m3 |
| diphenylamine | Diphenylamine | 30 mg/m3 | 180 mg/m3 | 220 mg/m3 |

| Ingredient | Original IDLH | Revised IDLH |
|---|---|---|
| magnesium oxide | 750 mg/m3 | Not Available |
| Capsicum annum oleoresin | Not Available | Not Available |
| barium chromate | Not Available | Not Available |

**Continued...**

| | | |
|---|---|---|
| nickel | Not Available | Not Available |
| nitroglycerin | 75 mg/m3 | Not Available |
| diphenylamine | Not Available | Not Available |

**MATERIAL DATA**

### Exposure controls

| | |
|---|---|
| **Appropriate engineering controls** | Usually used outdoors. |
| **Personal protection** |  |
| **Eye and face protection** | ▸ Chemical goggles.<br>▸ Full face shield may be required for supplementary but never for primary protection of eyes.<br>▸ 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 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** | Wear physical protective gloves, e.g. leather<br>▸ Heavy weight Rubber gloves<br>▸ Rubber boots<br>· 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 an 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** | For handling explosives or explosive compositions:<br>▸ Wear close-fitting flame-protection treated clothing closed at the neck and sleeves.<br>▸ Cotton underwear, socks and conductive shoes are recommended to avoid human static discharge. |

### Respiratory protection

Type A-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required.
Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

| Required Minimum Protection Factor | Half-Face Respirator | Full-Face Respirator | Powered Air Respirator |
|---|---|---|---|
| up to 10 x ES | A-AUS P2 | - | A-PAPR-AUS / Class 1 P2 |
| up to 50 x ES | - | A-AUS / Class 1 P2 | - |
| up to 100 x ES | - | A-2 P2 | A-PAPR-2 P2 ^ |

^ - Full-face
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)

- 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.
- 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** | Grey odourless solid. |

| | | | |
|---|---|---|---|
| **Physical state** | Manufactured | **Relative density (Water = 1)** | Not Applicable |
| **Odour** | Not Available | **Partition coefficient n-octanol / water** | Not Available |
| **Odour threshold** | Not Available | **Auto-ignition temperature (°C)** | Not Available |
| **pH (as supplied)** | Not Applicable | **Decomposition temperature** | Not Applicable |
| **Melting point / freezing point (°C)** | Not Applicable | **Viscosity (cSt)** | Not Applicable |
| **Initial boiling point and boiling range (°C)** | Not Applicable | **Molecular weight (g/mol)** | Not Applicable |

**Continued...**

| | | | |
|---|---|---|---|
| **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)** | Not Available |
| **Vapour pressure (kPa)** | Not Applicable | **Gas group** | Not Available |
| **Solubility in water** | Not Applicable | **pH as a solution (1%)** | Not Applicable |
| **Vapour density (Air = 1)** | Not Available | **VOC g/L** | Not Available |

## SECTION 10 STABILITY AND REACTIVITY

| | |
|---|---|
| **Reactivity** | See section 7 |
| **Chemical stability** | ▸ Presence of shock and friction<br>▸ Presence of heat source and ignition source<br>▸ Product is considered stable under normal handling conditions.<br>▸ Stable under normal storage conditions.<br>▸ Hazardous polymerization will not occur.<br>Avoid contact with other chemicals.<br>|May detonate if case is punctured or severely damaged. |
| **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.<br>Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system, in a substantial number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage. The repair process, which initially evolved to protect mammalian lungs from foreign matter and antigens, may however, produce further lung damage resulting in the impairment of gas exchange, the primary function of the lungs. Respiratory tract irritation often results in an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system.<br>Capsaicin temporarily causes bronchoconstriction, coughing, nausea, and incoordination in the upper body in humans following inhalation. Capsaicin administered in a nasal spray resulted in human volunteers experiencing greatly increased nasal discharge and lacrimation, and burning sensation. |
| **Ingestion** | Not normally a hazard due to physical form of product. |
| **Skin Contact** | Not normally a hazard due to physical form of product.<br>The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. |
| **Eye** | Not normally a hazard due to physical form of product.<br><br>The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. |
| **Chronic** | Chronic feeding studies in rodents consistently demonstrated weight loss when animals were either dosed via gavage or when the capsaicin was mixed with the food. However, another feeding study showed no such effects using ground red pepper *Capsicum annuum* at up to 10% of the total diet in mice. Different diets affected the toxic effects of capsaicin on the liver and spleen in rabbits, such that effects were greatest in animals fed the high-fat diets. In contrast, animals fed high protein, high carbohydrate diets showed no effects relative to<br>controls. Test animals were given 5 g/kg of “red pepper” daily for one year.<br>Researchers applied pure capsaicin topically to the backs of mice once weekly for 26 weeks. Doses of 0.64, 1.28, and 2.56 mg/mouse/week resulted in skin abnormalities including inflammation, epidermal crusts, epidermis thickening, and ulcerations. Other signs included gross lesions in the stomach, salivary glands, and oral cavity.<br>Capsaicin applied to the hind-paws of rats twice daily for 10 weeks led to increased pain sensitivity in the animals exposed to the highest dose (0.75% capsaicin) although this sensitivity decreased with time. Rats treated with a lower dose (0.075% capsaicin) demonstrated reduced function in certain cells known as C fibers following prolonged dosing,but this impairment disappeared after treatment stopped.<br>Chronic exposure to capsaicin in a factory setting resulted in cough thresholds that were related to the extent of exposure on the job. Workers exposed to capsaicin demonstrated a bimodal cough threshold response that was not observed in unexposed workers, who showed a unimodal response. Some exposed workers were much more sensitive to capsaicin than other exposed workers<br>A condition known as “Hunan hand”, which is a form of contact dermatitis, has been noted in workers handling peppers<br>|May cause damage to organs through prolonged or repeated exposure.|Explosive components are completely sealed within the metal container.|Under normal handling of this product, no exposure to harmful materials will occur. |

| | | |
|---|---|---|
| **Combined Systems MODEL 5440 Launchable Flameless Expulsion OC** | **TOXICITY** | **IRRITATION** |
| | Not Available | Not Available |
| **magnesium oxide** | **TOXICITY** | **IRRITATION** |
| | Not Available | Not Available |
| **Capsicum annum oleoresin** | **TOXICITY** | **IRRITATION** |
| | dermal (rat) LD50: >2500 mg/kg[2] | Not Available |

**Continued...**

| | | |
|---|---|---|
| | Inhalation (rat) LC50: >10 mg/l/4h*[2] | |
| | Oral (rat) LD50: >3000 mg/kg[2] | |
| **barium chromate** | **TOXICITY** | **IRRITATION** |
| | dermal (rat) LD50: >2000 mg/kg[1] | Eye: no adverse effect observed (not irritating)[1] |
| | Oral (rat) LD50: 52 mg/kg[1] | Skin: no adverse effect observed (not irritating)[1] |
| **nickel** | **TOXICITY** | **IRRITATION** |
| | Oral (rat) LD50: 5000 mg/kg[2] | Eye: no adverse effect observed (not irritating)[1] |
| | | Skin: no adverse effect observed (not irritating)[1] |
| **nitroglycerin** | **TOXICITY** | **IRRITATION** |
| | dermal (rat) LD50: =29.2 mg/kg[2] | Eye: no adverse effect observed (not irritating)[1] |
| | Oral (rat) LD50: 105 mg/kg[2] | Skin: adverse effect observed (irritating)[1] |
| **diphenylamine** | **TOXICITY** | **IRRITATION** |
| | Dermal (rabbit) LD50: >2000 mg/kg[2] | Eye: adverse effect observed (irritating)[1] |
| | Oral (rat) LD50: 1120 mg/kg[2] | 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* |

**CAPSICUM ANNUM OLEORESIN**

No significant acute toxicological data identified in literature search.
For capsaicin (as a congener of the capsaicinoids)
High subcutaneous doses of capsaicin were not teratogenic in rats. However, there was evidence that capsaicin crosses the placenta and exerts a toxic effect on the peripheral nerves of foetuses, provoking extensive depletion of substance P from
immunoreactive nerve fibre from the dorsal horn of the spinal cord. Prenatal treatment of rats with high subcutaneous doses of capsaicin (50 mg/kg) caused functional neuronal defects; whereas neonatal treatment caused retarded body growth and sexual maturation, decreased mating frequency and reduced gestations.
Published data on potential mutagenicity and carcinogenicity of capsaicin were inconclusive.
Repeated exposure leads to desensitization. Experimenters who desensitized their tongues to capsaicin found that their taste thresholds for other pungent compounds, such as ginger and mustard, also increased, but their ability to perceive tactile stimuli or basic tastes, such as sweet, salt, sour, or bitter, was not affected. Capsaicin apparently acts via a receptive site in the nociceptor. This site seems also to be involved in the perception of temperatures which are dangerously high (perhaps explaining why pungent foods are perceived as 'hot'). Capsaicin kills the nociceptor, or destroys its peripheral terminals. This has been exploited in the topical use of capsaicin as an analgesic to treat conditions such as shingles and rheumatoid arthritis.
The biological actions of capsaicin are primarily attributable to release of the neuropeptide substance P, calcitonin gene–related peptide (CGRP), and neurokinin A from sensory neurons. These transmitters from primary sensory neurons communicate with other cell types. They produce alterations in the airway mucosa and neurogenic inflammation of the respiratory epithelium, airway blood vessels, glands, and smooth muscle. Alterations in multiple effector organs lead to bronchoconstriction, increased vascular permeability, oedema of the tracheobronchial mucosa, elevated mucosal secretion, and neutrophil chemotaxis. Capsaicin-induced effects of bronchoconstriction, vasodilation, and plasma protein extravasation are mediated by substance P. In addition, substance P can cause bronchoconstriction through stimulation of c-fibers in pulmonary and bronchial circulation
**Acute toxicity:** Capsaicin can cause skin irritation. Little absorption occurs across the skin. Oedema following dermal exposure in mouse ears in several studies peaked within 1 hour of application, although subsequent applications produced less of a response. Capsaicin can severely irritate the eyes, and was found to cause corneal lesions in rats and mice
Airway resistance increased following inhalation of capsaicin in both mild asthmatics and non-asthmatic people at doses that are below those eliciting the cough response
People suffering from asthma and other respiratory diseases may be more sensitive to capsaicin than other individuals.
A more recent study suggested that people with sensory hyper-reactivity have enhanced sensitivity to capsaicin. This was associated with increased levels of serum nerve growth factors in nasal lavage fluid.
Capsaicin produces its repellent effect when it contacts either eye or respiratory tract mucus membranes. In animals signs of acute exposure include coughing, inability to vocalise, and temporary blindness.
Mice and rats dosed orally with 96 to 200 mg/kg capsaicin demonstrated immediate salivation, convulsions, reddening of the skin, and dyspnea, or labored breathing. Animals either died within 26 minutes of dosing, or showed no further symptoms 24 hours after dosing. Capsaicin fed to rats was rapidly absorbed from the stomach, with 85% of a 3 mg dose absorbed within 3 hours
Inhalation exposure to capsaicinoids in pepper sprays damaged rat bronchial, tracheal, nasal, and alveolar cells, causing acute inflammation.
**Carcinogenicity**: Several researchers reviewed evidence that capsaicin is carcinogenic in animals and found that the evidence was inconclusive.
Researchers have demonstrated that capsaicin is mutagenic and genotoxic in some studies using bacterial and rodent models but not in others.
Researchers applied pure *trans*-capsaicin to the dorsal skin of mice weekly for 26 weeks at rates of 0.64, 1.28, or 2.56 mg/ mouse/week. No increase of neoplastic skin lesions or other abnormal skin growth was noted over control mice. A lifetime diet containing 0.03% capsaicin fed to mice led to slight increases in benign tumors of the caecum
Capsaicinoids fed to male mice at 1% of the diet for 79 weeks resulted in kidney lesions in male mice. However, female mice fed a diet of 0.25% capsaicinoids for 83 weeks developed fewer tumors compared with controls. Hepatocellular neoplasms, or abnormal growths in the liver, also occurred less often in male and female mice fed greater concentrations of capsaicinoids in their diet.
**Genetic toxicity:** Capsaicin has demonstrated mutagenic effects in some research but not in other studies. Impurities in the extract may be responsible for mutagenic effects because the studies that failed to demonstrate mutagenic effects used pure capsaicin.
People consuming 90-250 mg of capsaicin per day (in the form of jalapeno peppers) had a greater risk of gastric cancer compared with people who consumed less capsaicin (0-29.9 mg capsaicin per day).
Capsaicin exerted an anti-proliferative effect on human prostate cancer cells in vitro in a dose-dependent manner, completely halting proliferation at 5 x 10-4 mol/L.
**Distribution:** Rats injected intravenously accumulated capsaicin primarily in the brain and spinal cord 3 minutes after dosing, with lower levels found in the liver and blood. Ten minutes after dosing, the greatest concentrations remained in the spinal cord.
When the capsaicin was injected subcutaneously, rat blood concentrations peaked 5 hours following dosing, and brain and spinal cord tissue concentrations were somewhat lower. Kidneys contained the greatest concentrations and liver concentrations were low. Researchers detected capsaicin in all tissues 10 minutes following dosing but residues were undetectable in any tissues 17 hours later. The researchers concluded that the low concentrations in the liver were due to metabolic breakdown of the capsaicin
**Metabolism:** Metabolism occurs primarily by the liver in the rat Metabolism of capsaicin by P450 enzymes may follow a number of pathways and produce a variety of metabolites, some of which may be associated with increased toxicity. Research using human, rat, mouse, goat, and rabbit liver and lung

**Continued...**

| | |
|---|---|
| | microsomes demonstrated that metabolism rates were much greater in liver microsomes compared with lung microsomes for each species. Although the same metabolites were produced, the relative amounts of each metabolite were species-dependent.<br>**Excretion:** • Less than 10% of an oral dose of capsaicin given to rats was excreted unchanged 48 hours after dosing<br>Capsaicin is representative of the capsaicinoids although each may differ in potency Capsaicin is the main capsaicinoid in chili peppers, followed by dihydrocapsaicin. These two compounds are also about twice as potent to the taste and nerves as the minor capsaicinoids nordihydrocapsaicin, homodihydrocapsaicin, and homocapsaicin. The pharmacological action and toxicology of capsaicin has been well developed in both human and animal studies. Capsaicin is highly toxic by all routes of administration except rectal and dermal. Intravenous doses cause convulsions within 5 secs and death within 2 to 5 minutes. Toxic signs include excitement, convulsions with limbs extended, dyspnea and death due to respiratory failure. Capsaicin's acute toxicity in mice falls between that of nicotine and strychnine, two well known potent poisons. The toxicity of the oleoresin which contains capsaicin, in female mice, is around 4 times more toxic than capsaicin alone. Guinea pigs appear to more susceptible than rats and mice whilst hamsters and rabbits were less vulnerable to the toxic effects both capsaicin<br>Inhalation of capsaicin is consistent with the induction of the Kratshmer reflex, which is apnoea, bradycardia, and a biphasic fall and rise in aortic blood pressure. Exposure to capsaicin cause bronchoconstriction in animals and humans, the release of substance P, a neuropeptide, from sensory nerve terminals and mucosal oedema. The pulmonary effects appear to be species dependent. In guinea pigs, intravenous and intra-arterial administration causes bronchoconstriction. The bronchoconstriction in dog and cat after intravenous capsaicin depends on vagal cholinergic reflex, as does bronchoconstriction in the cat after aerosol exposure. In guinea pig, bronchoconstriction following aerosol exposure suggest both a vagal-cholinergic and non-cholinergic local axon reflex<br>The burning and painful sensations associated with capsaicin result from its chemical interaction with sensory neurons.<br>Capsaicin triggers the release of the neuropeptide P from the sensory nerve fibers of the C type. In mammals, capsaicin (a member of the vanilloid family .binds to a receptor called the vanilloid receptor subtype 1 (TRPV1). TRPV1 is an ion channel-type receptor. TRPV1, which can also be stimulated with heat and physical abrasion, permits cations to pass through the cell membrane and into the cell when activated. The resulting depolarisation of the neuron stimulates it to signal the brain. By binding to the TRVP1 receptor, the capsaicin molecule produces the same sensation that excessive heat or abrasive damage would cause, explaining why the spiciness of capsaicin is described as a burning sensation.Research has shown that the capsaicinoids are all physiologically (virtually) identical, with very few differences other than binding efficacy to TRPV1. Upon binding to TRPV1 receptor capsaicin releases sensory neuropeptides that trigger a neurogenic inflammatory response<br>The material may produce respiratory tract irritation. Symptoms of pulmonary irritation may include coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and a burning sensation.<br>Unlike most organs, the lung can respond to a chemical insult or a chemical agent, by first removing or neutralising the irritant and then repairing the damage (inflammation of the lungs may be a consequence).<br><br>The repair process (which initially developed to protect mammalian lungs from foreign matter and antigens) may, however, cause further damage to the lungs (fibrosis for example) when activated by hazardous chemicals. Often, this results in an impairment of gas exchange, the primary function of the lungs. Therefore prolonged exposure to respiratory irritants may cause sustained breathing difficulties.<br><br>The material may produce severe skin irritation after prolonged or repeated exposure, and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) thickening of the epidermis.<br>Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. Prolonged contact is unlikely, given the severity of response, but repeated exposures may produce severe ulceration.<br>Convulsions, excitement, respiratory tract changes recorded. |
| **BARIUM CHROMATE** | **WARNING:** This substance has been classified by the IARC as Group 1: **CARCINOGENIC TO HUMANS**. |
| **NICKEL** | **WARNING:** This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans.<br>Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen<br>[*National Toxicology Program: U.S. Dep. of Health & Human Services 2002*]<br>Oral (rat) TDLo: 500 mg/kg/5D-I Inhalation (rat) TCLo: 0.1 mg/m3/24H/17W-C |
| **NITROGLYCERIN** | The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.<br>Substance has been investigated as a tumorigen, mutagen and reproductive effector. Equivocal tumorigen by RTECS criteria. Reproductive effector in rats. |
| **DIPHENYLAMINE** | For substituted diphenylamines:<br>Based upon reviewed data the physicochemical and toxicological properties of the substituted diphenylamines are similar and follow a regular pattern as a result of that structural similarity.<br>Because of their powerful antioxidant properties, Substituted Diphenylamines, along with their common starting material, Diphenylamine, are regulated for use in several food-contact applications by the Food and Drug Administration as Indirect Food Additives under the following sections of the Code of Federal Regulations (CFR):<br>Heating may generate vapors which can irritate the eyes and respiratory passages. Drying of skin and mucous membranes leading to irritation may be possible from prolonged or repeated contact. Overexposure to vapors from heating the product may cause and/or skin irritation and respiratory tract irritation with symptoms such as, but not limited to, dizziness and flu-like symptoms<br>**Acute toxicity:** As a group these materials do not produce significant acute toxicity in mammals. All show a slight to very low order of toxicity following oral administration, with LD50 values ranging from >5000 to > 34,000 mg/kg. Overall, the acute dermal LD50 for these materials was greater than the 2000 mg/kg limit dose indicating a very low order of toxicity.<br>**Mammalian Toxicology - Mutagenicity**. Data from bacterial reverse mutation assays, in vitro and in vivo chromosome aberration studies, as well as additional supporting in vitro and in vivo genetic toxicity studies indicate a low concern for mutagenicity either for aryl or alkyl substituted materials. Similarly, the data for a mixed aryl/alkyl substituted molecule also indicates a lack of mutagenicity.<br>**Acute toxicity:** Diphenylamine and its substituted derivatives all show a slight to moderate order of toxicity following oral administration, with LD50 values ranging from >500 to > 34,000 mg/kg. Overall, the acute dermal LD50 for these materials was greater than the 2000 mg/kg limit dose indicating a very low order of toxicity.<br>**Mutagenicity:** Of five substituted diphenylamines tested, there was one weakly positive mutagenic response with in the bacterial mutagenicity test, with diphenylamine (122-39-4). Overall weight of evidence for this material, as well as the category indicates a negative evaluation for bacterial mutagenicity. Substituted diphenylamines have been tested for mutagenicity in tests for gene mutations and chromosomal aberrations. The assays included point mutations in bacterial cells, *in vitro* chromosomal aberrations in mammalian cells, and *in vivo* chromosomal aberrations. With one exception, the data consistently demonstrate no evidence of genotoxicity for this category of materials. This suggests that all members of the category lack genotoxicity due to their similarity in chemical structures and physicochemical properties<br>**Repeat Dose Toxicity**. Diphenylamine (122-39-4) was tested in a 28 day oral study with rats. A NOAEL of 111 mg/kg/day was identified. Diphenylamine is not only the common precursor for the materials of this category, but also theoretically the most toxic of the class since it is the smallest member of the class. The addition of alkyl groups onto the diphenylamine molecule results in even lower water solubility and, therefore, becomes less bioavailable. Diphenylamine, styrenated (68442-68-2) was tested in a 28day oral gavage study in rats. A NOAEL of 100 mg/kg/day was identified. Diphenylamine styrenated was tested in a 28-day gavage study in rats; 100 mg/kg/day was selected as the NOAEL. Diphenylamine-, reaction products with styrene and 2,4,4-trimethylpentene (68921-45-9) was tested in a 64 week rat dietary study; a LOEL of 2500 ppm was identified. .<br>**Reproductive and Developmental Toxicity:** Diphenylamine was administered in feed at 0.1, 0.25 or 0.5% (ca. 67, 167 or 333 mg/kg/day) to rats in a two-generation reproductive toxicity study. In general, the average size of the litters decreased as the concentration of dietary diphenylamine increased. A NOEL was not established. A developmental study was also conducted with diphenylamine in rabbits. The test article was administered by gavage at dose levels of 0, 33, 100 and 300 mg/kg/day for gestation days 7-19. The test article produced minimal effects (decreased food consumption and mean body weight) to maternal rats at 300 mg/kg during pregnancy; there were no other signs of maternal toxicity. NOAEL for maternal toxicity was established at 100 |

**Continued...**

| | |
|---|---|
| | mg/kg/day. The NOAEL for teratogenicity/developmental effects was greater than 300 mg/kg/day.<br>ADI: 0.02 mg/kg/day NOEL: 1.5 mg/kg/day |
| **MAGNESIUM OXIDE & BARIUM CHROMATE & NICKEL** | The following information refers to contact allergens as a group and may not be specific to this product.<br>Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested. |
| **MAGNESIUM OXIDE & CAPSICUM ANNUM OLEORESIN & 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. 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. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production. |
| **CAPSICUM ANNUM OLEORESIN & NITROGLYCERIN** | The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. |

| | | | |
|---|---|---|---|
| **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*

## SECTION 12 ECOLOGICAL INFORMATION

### Toxicity

**Combined Systems MODEL 5440 Launchable Flameless Expulsion OC**

| ENDPOINT | TEST DURATION (HR) | SPECIES | VALUE | SOURCE |
|---|---|---|---|---|
| Not Available | Not Available | Not Available | Not Available | Not Available |

**magnesium oxide**

| ENDPOINT | TEST DURATION (HR) | SPECIES | VALUE | SOURCE |
|---|---|---|---|---|
| Not Available | Not Available | Not Available | Not Available | Not Available |

**Capsicum annum oleoresin**

| ENDPOINT | TEST DURATION (HR) | SPECIES | VALUE | SOURCE |
|---|---|---|---|---|
| Not Available | Not Available | Not Available | Not Available | Not Available |

**barium chromate**

| ENDPOINT | TEST DURATION (HR) | SPECIES | VALUE | SOURCE |
|---|---|---|---|---|
| LC50 | 96 | Fish | >=3.3mg/L | 2 |
| EC50 | 96 | Algae or other aquatic plants | 0.32mg/L | 2 |
| NOEC | 72 | Algae or other aquatic plants | >=1.15mg/L | 2 |

**nickel**

| ENDPOINT | TEST DURATION (HR) | SPECIES | VALUE | SOURCE |
|---|---|---|---|---|
| LC50 | 96 | Fish | 0.0000475mg/L | 4 |
| EC50 | 48 | Crustacea | 0.001-0.576mg/L | 2 |
| EC50 | 72 | Algae or other aquatic plants | 0.00094mg/L | 2 |
| BCF | 1440 | Algae or other aquatic plants | 0.47mg/L | 4 |
| NOEC | 240 | Crustacea | >0.001-0.715mg/L | 2 |

**nitroglycerin**

| ENDPOINT | TEST DURATION (HR) | SPECIES | VALUE | SOURCE |
|---|---|---|---|---|
| LC50 | 96 | Fish | 1.38mg/L | 4 |
| EC50 | 48 | Crustacea | 46mg/L | 4 |
| EC50 | 96 | Algae or other aquatic plants | 0.4mg/L | 4 |
| BCF | 192 | Fish | 0.42mg/L | 4 |
| NOEC | 1440 | Fish | 0.03mg/L | 2 |

**diphenylamine**

| ENDPOINT | TEST DURATION (HR) | SPECIES | VALUE | SOURCE |
|---|---|---|---|---|
| LC50 | 96 | Fish | 3.287mg/L | 3 |
| EC50 | 48 | Crustacea | 0.31mg/L | 4 |

**Continued...**

| | | | | | |
|---|---|---|---|---|---|
| EC50 | 72 | Algae or other aquatic plants | 0.048mg/L | 1 |
| BCF | 768 | Fish | 0.0437mg/L | 4 |
| NOEC | 504 | Crustacea | 0.16mg/L | 1 |

| | |
|---|---|
| ***Legend:*** | *Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 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* |

**DO NOT** discharge into sewer or waterways.

### Persistence and degradability

| Ingredient | Persistence: Water/Soil | Persistence: Air |
|---|---|---|
| nitroglycerin | LOW (Half-life = 14 days) | LOW (Half-life = 0.73 days) |
| diphenylamine | LOW (Half-life = 56 days) | Not Available |

### Bioaccumulative potential

| Ingredient | Bioaccumulation |
|---|---|
| diphenylamine | LOW (BCF = 253) |

### Mobility in soil

| Ingredient | Mobility |
|---|---|
| diphenylamine | LOW (KOC = 1887) |

## SECTION 13 DISPOSAL CONSIDERATIONS

### Waste treatment methods

| | |
|---|---|
| **Product / Packaging disposal** | ▸ Explosives must not be thrown away, buried, discarded or placed with garbage.<br>▸ Explosives which are surplus, deteriorated or considered unsafe for transport, storage or use shall be destroyed and the statutory authorities shall be notified.<br>▸ This material may be disposed of by burning or detonation but the operation may only be performed under the control of a person trained in the safe destruction of explosives. |

## SECTION 14 TRANSPORT INFORMATION

### Labels Required


| | |
|---|---|
| **Marine Pollutant** | NO |
| **HAZCHEM** | 1YE |

### Land transport (ADG)

| | |
|---|---|
| **UN number** | 0301 |
| **UN proper shipping name** | AMMUNITION, TEAR-PRODUCING with burster, expelling charge or propelling charge |
| **Transport hazard class(es)** | Class: 1.4G<br>Subrisk: 6.1, 8 |
| **Packing group** | Not Applicable |
| **Environmental hazard** | Not Applicable |
| **Special precautions for user** | Special provisions: Not Applicable<br>Limited quantity: Not Applicable |

### Air transport (ICAO-IATA / DGR)

| | |
|---|---|
| **UN number** | 0301 |
| **UN proper shipping name** | Ammunition, tear-producing with burster, expelling charge or propelling charge |
| **Transport hazard class(es)** | ICAO/IATA Class: 1.4G<br>ICAO / IATA Subrisk: 6.1, 8<br>ERG Code: 1CP |
| **Packing group** | Not Applicable |
| **Environmental hazard** | Not Applicable |

**Continued...**

| | | |
|---|---|---|
| **Special precautions for user** | Special provisions | Not Applicable |
| | Cargo Only Packing Instructions | 130 |
| | Cargo Only Maximum Qty / Pack | 75 kg |
| | 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** | 0301 | |
| **UN proper shipping name** | AMMUNITION, TEAR-PRODUCING with burster, expelling charge or propelling charge | |
| **Transport hazard class(es)** | IMDG Class | 1.4G |
| | IMDG Subrisk | 6.1, 8 |
| **Packing group** | Not Applicable | |
| **Environmental hazard** | Not Applicable | |
| **Special precautions for user** | EMS Number | F-B , S-Z |
| | Special provisions | Not Applicable |
| | Limited Quantities | 0 |

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

Not Applicable

## SECTION 15 REGULATORY INFORMATION

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

**MAGNESIUM OXIDE(1309-48-4.) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

Australia Exposure Standards
Australia Inventory of Chemical Substances (AICS)

**CAPSICUM ANNUM OLEORESIN(68917-78-2) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

Australia Inventory of Chemical Substances (AICS)

**BARIUM CHROMATE(10294-40-3) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

Australia Dangerous Goods Code (ADG Code) - Dangerous Goods List
Australia Dangerous Goods Code (ADG Code) - List of Emergency Action Codes
Australia Explosives Code (AE Code)
Australia Exposure Standards
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Inventory of Chemical Substances (AICS)
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Index
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Part 2, Section Seven - Appendix I
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Air Transport Association (IATA) Dangerous Goods Regulations
International Maritime Dangerous Goods Requirements (IMDG Code)
United Nations Recommendations on the Transport of Dangerous Goods Model Regulations

**NICKEL(7440-02-0) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

Australia Exposure Standards
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Hazardous chemicals which may require Health Monitoring
Australia Inventory of Chemical Substances (AICS)
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

**NITROGLYCERIN(55-63-0) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

Australia Dangerous Goods Code (ADG Code) - Dangerous Goods List
Australia Dangerous Goods Code (ADG Code) - Goods Too Dangerous To Be Transported
Australia Explosives Code (AE Code)
Australia Exposure Standards
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Inventory of Chemical Substances (AICS)
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix A
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix G
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Index
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 3
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4
International Air Transport Association (IATA) Dangerous Goods Regulations
International Air Transport Association (IATA) Dangerous Goods Regulations - Prohibited List Passenger and Cargo Aircraft
International Maritime Dangerous Goods Requirements (IMDG Code)
United Nations Recommendations on the Transport of Dangerous Goods Model Regulations

**DIPHENYLAMINE(122-39-4) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

**Continued...**

| | |
|---|---|
| Australia Dangerous Goods Code (ADG Code) - Dangerous Goods List | Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 10 / Appendix C |
| Australia Dangerous Goods Code (ADG Code) - List of Emergency Action Codes | Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6 |
| Australia Exposure Standards | GESAMP/EHS Composite List - GESAMP Hazard Profiles |
| Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals | IMO IBC Code Chapter 17: Summary of minimum requirements |
| Australia Inventory of Chemical Substances (AICS) | IMO MARPOL (Annex II) - List of Noxious Liquid Substances Carried in Bulk |
| Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix B (Part 3) | International Air Transport Association (IATA) Dangerous Goods Regulations |
| Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2) | International Maritime Dangerous Goods Requirements (IMDG Code) |
| Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix F (Part 3) | United Nations Recommendations on the Transport of Dangerous Goods Model Regulations |
| Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Index | |

### National Inventory Status

| National Inventory | Status |
|---|---|
| Australia - AICS | Yes |
| Canada - DSL | Yes |
| Canada - NDSL | No (Capsicum annum oleoresin; barium chromate; magnesium oxide; nickel; nitroglycerin; diphenylamine) |
| China - IECSC | No (nitroglycerin) |
| Europe - EINEC / ELINCS / NLP | No (Capsicum annum oleoresin) |
| Japan - ENCS | No (Capsicum annum oleoresin; nickel) |
| Korea - KECI | Yes |
| New Zealand - NZIoC | Yes |
| Philippines - PICCS | Yes |
| USA - TSCA | Yes |
| Taiwan - TCSI | Yes |
| Mexico - INSQ | No (Capsicum annum oleoresin) |
| Vietnam - NCI | Yes |
| Russia - ARIPS | No (Capsicum annum oleoresin) |
| Thailand - TECI | No (barium chromate; nitroglycerin) |
| ***Legend:*** | *Yes = All CAS declared ingredients are on the inventory*<br>*No = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)* |

## SECTION 16 OTHER INFORMATION

| | |
|---|---|
| **Revision Date** | 23/06/2016 |
| **Initial Date** | Not Available |

### Other information

### Ingredients with multiple cas numbers

| Name | CAS No |
|---|---|
| magnesium oxide | 1309-48-4., 83897-85-2 |
| Capsicum annum oleoresin | 68917-78-2, 8023-77-6 |

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
OSF: Odour Safety Factor
NOAEL :No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index



**end of SDS**