

Product Safety Data Sheet

1. PRODUCT IDENTIFICATION/COMPANY DETAILS

PRODUCT NAME: Aurora Orange Hand Smoke
STOCK CODE: AUROHS
PRODUCT TYPE: Pyrotechnic Device
USE: Signalling
SYNONYMS: Nil
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2. HAZARDS IDENTIFICATION

The contents of this signal are **not considered as hazardous** according to the criteria of WorkSafe Australia Technical Report, "List of Designated Hazardous Substances", [NOHSC:10005(1994)], March 1994.

The signal contains three ingredients (potassium chlorate, silicon and zinc oxide) which are listed as hazardous chemicals according to the criteria of WorkSafe Australia Technical Report, "List of Designated Hazardous Substances", [NOHSC: 10005(1994)], March 1994. No cut-off concentration levels are listed for silicon and zinc oxide and the potassium chlorate percentage is less than the cut-off concentration exposure level.

When activated, a dense orange smoke is emitted which may cause irritation to the eyes and throat.

- **Do not activate in confined spaces.** The signal is designed for outside use only.

DANGEROUS GOODS

The product is classified as **Dangerous Goods, 1.4G**, in accordance with the Australian Code for the Transport of Explosives by Road and Rail, 2nd ed., March 2000.

CLASS: 1.4G **U.N. NO:** 0191
SUBSIDIARY RISK: Nil

Risk Phrases

R2 Risk of explosion by shock, friction, fire or other sources of ignition.
R42/43 May be irritating to eyes, skin and if swallowed.

Safety Phrases

S1/2	Keep locked up and out of the reach of children.
S16	Keep away from ignition sources – No smoking.
S23	Do not breathe smoke.
S24/25	Avoid contact with the skin and eyes.
S34	Avoid shock and friction.
S41	In case of fire do not breathe fumes.

3. COMPOSITION / INFORMATION ON INGREDIENTS

The main ingredients (>10%) are potassium chlorate, lactose and orange dye. The minor ingredients (<10%) are kaolin, silicon, potassium nitrate, gunpowder (SMP), gum Arabic resin, zinc oxide, Pyrodex, and zinc stearate.

4. FIRST AID MEASURES

In the unlikely event of receiving burns from this device, seek medical attention immediately. Exposure to the smoke may cause irritation to the eyes and throat. Move the patient to fresh air. Symptoms that may arise if the product is mishandled are:

Ingestion: Symptoms. Discomfort
Give plenty of water to drink but only if conscious. The smoke pellets contain a significant quantity of potassium chlorate. Treat as for chlorate poisoning.

Eye Contact: Symptoms. Irritation
Immediately flush the eyes with copious quantities of water. Eyelids to be held open. If irritation persists seek medical advice.

Skin Contact: Symptoms. Irritation
Wash the exposed area with copious amounts of soap and water. Remove contaminated clothing and wash before reuse. If irritation occurs seek medical advice.

Inhalation: Symptoms. Throat irritation, shortness of breath
Remove to fresh air. Remove contaminated clothing and loosen remaining clothing. Keep warm. Keep at rest until fully recovered. If irritation persists, seek medical assistance.

Notes to Physician: People subject to complaints with breathing difficulties eg asthmatics, chest infections etc can be adversely affected by contact with the smoke from this product.

5. FIRE FIGHTING MEASURES

Specific Hazards: Sensitive to heat. Readily ignited and burns rapidly. Avoid all ignition sources. Once the device has ignited it will burn until all the composition has been exhausted. Allow to burn out. Apply a water spray to surrounding areas to prevent secondary outbreaks.

Use self-contained breathing apparatus for fires in enclosed areas. Toxic fumes (carbon monoxide and oxides of nitrogen) may be produced in such reactions.

It is recommended that a safety distance of 100 m be applied if the signals are burning in an open area and in bulk quantities.

6. ACCIDENTAL RELEASE MEASURES

Remove ignition sources.

Handle with care. Avoid friction and impact. Sweep up, place in a container and hold for disposal. Spill area can then be washed thoroughly with large quantities of water.

Contact Chemring Australia for further advice.

7. HANDLING AND STORAGE

The composition is an explosive (Class 1) and hence should be handled and stored in accordance with the Explosives Regulations of the relevant Competent Authority.

Store in manufacturer's approved packaging in a well-ventilated area away from sources of heat and direct sunlight.

8. EXPOSURE CONTROLS AND PERSONNEL PROTECTION

Exposure Controls

For frequent exposure, an operator should wear a type P1 disposable respirator. It is important to understand the firing instructions before use.

It is recommended that smoke signals are never functioned in confined environments.

9. PHYSICAL AND CHEMICAL PROPERTIES

The signal consists of a corrosion-resistant steel tube which contains the consolidated smoke composition. The igniter plug contains a friction-sensitive primer which is actuated when the friction wire is pulled. The igniter plug also contains a pyrotechnic delay element (about 2 second duration) which allows for safe functioning. The orange smoke produced burns for up to 1 minute.

The temperature of ignition (T of I) has been measured and determined to be 184°C [1].

10. STABILITY AND REACTIVITY

Stability

This device is stable under normal conditions.

Solubility

The device is sealed from water ingress.

Reactivity

Not applicable.

Chemical Incompatibilities

The O-ring seal may be attacked by organic solvents.

11. TOXICOLOGICAL INFORMATION

No adverse health effects are expected if the product is handled according to this PSDS. If mishandling occurs, consult first aid measures above.

The most likely route of exposure would be by inhalation of the aerosol during burning. It is recommended that any effects from inhalation of the aerosol should be treated as outlined in Section 4: First Aid Measures.

In the normal mode of operation, upon ignition the orange dye is sublimed and re-condenses when released into the atmosphere. Exposure studies from effects of the inhalation of these dyes have been largely confined to acute exposure effects with little information published and even less information available on the chronic exposure effects.

In addition, during the sublimation process there is known to be some thermal degradation of the dyes (typically up to 10%), resulting in various breakdown products of the dyestuff.

The quantity and composition of those breakdown products are dependent on the conditions at the time and hence are ill-defined.

In addition to the orange smoke aerosol released, there will be carbon dioxide and nitrogen gases and water vapour released. Some carbon monoxide may also be released particularly in confined environments.

12. ECOTOXICITY INFORMATION

Spillage of the composition or deposition of the reaction products in the soil or aquatic environment may represent a short term hazard.

In the event of spillage of the signals and their subsequent combustion, the preferred method of disposal would be to sweep up the spent casings and clean up the site with water. If contamination of the waterways occurred this would be expected to be of a relatively low level.

If case rupture has occurred with no ignition the orange smoke pellets can be swept up and the site cleaned up with water. Since the pellets contain potassium chlorate, which is a known biocide, some short term damage is likely to occur to the waterways.

The pellets can be returned to Chemring Australia for correct disposal.

After an ignition there would be an orange smoke aerosol dispersed. Potassium chloride, kaolin and oxides of silicon and zinc, and carbonaceous residues should be confined to the signal.

13. DISPOSAL CONSIDERATIONS

Bulk quantities of or damaged signals should be returned to Chemring Australia in the proper transport containers and destroyed under controlled conditions in accordance with local regulations.

14. TRANSPORT INFORMATION

CLASS: 1.4G **U.N. NO:** 0191
Proper Shipping Name: SIGNAL DEVICES, HAND **NEQ:** 0.07 KG

Packaging instruction 135 for Inner and Outer Packaging (Australian Code for the transport of Explosives by Road and Rail, 2nd ed, March 2000, Appendix A4).

The information in this section can be subject to change because of variations in the interpretation of the Australian Explosives Code between the various relevant State and Federal authorities.

15. REGULATORY INFORMATION

No Poisons Schedule numbers are allocated for the ingredients in this composition.

The UN Classification for this device is Explosive, Class 1.

16. OTHER INFORMATION

Nil

References

1. Explosives Hazards Data Sheet HDS 172a, "Orange Hand Smoke Composition (PWAC 207), Defence Science and Technology Organisation, Edinburgh, South Australia, 10th March, 2003.

Issue date: 21st August, 2006

END of PSDS

This PSDS summarises at the date of issue our best knowledge of the health and safety information of the product particularly in relation to its safe handling and use in its intended environment. Since Chemring Australia cannot anticipate or control the conditions under which the product may be used, each end user should, prior to use, review the PSDS in the context of how the user intends to handle and use the product.

If clarification or further information is needed to ensure that an appropriate assessment can be made, the user should contact Chemring Australia.

Our responsibility for the product as sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is available upon request.
