

Stam* Herbicide

SECTION 1: Identification of the Material and Supplier

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SECTION 2: Hazards Identification

Hazardous according to the criteria of the National Occupational Health & Safety Commission (NOHSC). Risk Phrases: R20 – Harmful by inhalation, R22 – Harmful if swallowed, R36 – Irritating to eyes, R65 – Harmful: May cause lung damage if swallowed.

SECTION 3: Composition/Information on Ingredients

Chemical Entity	CAS No.	Proportion
Propanil	CAS # 000709-98-8	44.8%
Balance, Total, Including		55.2%
Isophorone	CAS # 000078-59-1	
Methyl isobutyl ketone	CAS # 000108-10-1	

SECTION 4: First Aid Measures

Symptoms of exposure: May cause severe eye irritation with corneal injury. Vapour may cause eye or throat irritation, experienced as mild discomfort and redness. Symptoms of excessive exposure may be anaesthetic or narcotic effects; dizziness and drowsiness may be observed. Low toxicity if swallowed.

Consult the Poisons Information Centre, (Australia Ph: 13 11 26) or a Doctor in every case of suspected chemical poisoning. Never give fluids or induce vomiting if a patient is unconscious or convulsing regardless of cause of injury. If breathing difficulties occur seek medical attention immediately.

Swallowed: If swallowed, call the Poisons Centre or a Doctor. Do not induce vomiting unless told to do so by the Poisons Centre or a Doctor.

Skin: If present on the skin, Wash-off immediately. Take off contaminated clothing. Call a doctor if irritation occurs.

Eyes: If in eyes, Hold open eyes and rinse slowly with plenty of water. Remove contact lenses, if present, and continue flushing eyes for 15 minutes. Obtain medical attention without delay.

Inhalation: If affected, move person to fresh air. If effects occur call a doctor or the Poisons Centre for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel.

Advice to Doctor: If lavage is performed, suggest endotracheal and/or oesophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Maintain adequate ventilation and oxygenation of the patient. Administer 100% oxygen to relieve headache and a general sense of weakness. Determine methemoglobin concentration of blood every 3 to 6 hours for first 24 hours. It should return to normal within 24 hours. The treatment of toxic methemoglobinemia may include the intravenous administration of methylene blue.

Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress.

Workplace facilities (manufacturing and packaging): Provide emergency showers and eyewash facilities.

SECTION 5: Fire Fighting Measures

Flammable properties:	FLAMMABLE LIQUID 3
Polymerisation:	Not known to occur.
Hazardous Combustion Products:	Pesticide particulates can become airborne. Combustion generates toxic fumes of the following: hydrogen chloride and/or chlorine gas.
Fire & Explosion Hazards:	Flash Point: 43°C (110°F) Auto-Ignition Temperature: 675°F (357°C) Methyl isobutyl ketone) Lower Explosive Limit: 0.8% (Isophorone) Upper Explosive Limit: 7.5% (Methyl isobutyl ketone).
Special Fire Fighting procedures:	Evacuate personal to a safe area. If the product is on fire wear positive-pressure self-contained breathing apparatus and full protective clothing. Do not allow water from fire-fighting to enter water supplies, or drainage systems
Extinguishing Media:	Foam, CO ₂ , dry chemical, water spray.

SECTION 6: Accidental Release Measures

Wear appropriate protective equipment (see Section 8). Clear area of all unprotected personnel. Prevent entry of chemical or used/damaged containers into sewers, drains, streams or waterways. If necessary, inform the police and the relevant State Authority.

Small Spill:	For clean-up of a spill from a single shipping pack absorb with sand or other inert absorbent material and place into containers for disposal. If applicable wash area with detergent and water.
Large Spill:	Eliminate all sources of sparks or open flame. Wear protective clothing. Stop further release or spread of spilled material. For clean up of multiple shipping packs, pump or scoop up liquid into a salvage drum. Absorb remaining liquid as for small spills. Place clean-up material and damaged containers into salvage drums for disposal. If applicable, wash the area with detergent and water. For spills on open ground soils, skim off the upper contaminated layer and collect it for disposal. If further information is required, telephone the emergency contact number.

SECTION 7: Handling and Storage

Handling

Keep out of reach of children and animals. After work, remove protective equipment, and wash hands before eating, smoking, drinking or using the toilet. Clean up spilled material immediately, and wash clothes, equipment and work area after use. Avoid breathing spray mist or vapours. Avoid splashes of material to the eye.

Storage

Keep out of reach of children and animals. Store in tightly closed original containers in a cool, well-ventilated area set aside for flammable liquids, out of direct sunlight. Do not store with food, feedstuffs, fertilisers and seeds.

SECTION 8: Exposure Control/Personal Protection

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE STANDARDS

Propanil: Dow AgroSciences Industrial Hygiene Guide is 5 mg/M³ TWA and 10 mg/M³ STEL.

Isophorone: ACGIH TLV is 5 ppm. OSHA PEL is 25 ppm TWA. Methyl isobutyl ketone: ACGIH TLV is 50 ppm TWA, 75 ppm STEL. OSHA PEL is 100 ppm TWA.

The ADI (Acceptable Daily Intake) for propanil is set at 0.2 mg/kg/day. The corresponding NOEL (No-observable-effect-level) for propanil is set at 20 mg/kg/day. ADI and NOEL values are taken from Australian ADI List, June, 2004.

ENGINEERING CONTROLS

Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines. Use only with adequate ventilation.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required, use Australian Standards approved air-purifying or positive-pressure supplied-air respirator depending on the potential airborne concentration. For emergency and other conditions where the exposure guideline may be greatly exceeded, use Australian Standards approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. In confined or poorly ventilated areas, use Australian Standards approved positive-pressure supplied-air respirator.

SKIN PROTECTION: When opening the container and preparing the spray, wear cotton overalls buttoned to the neck and wrists, washable hat, PVC rubber apron elbow length PVC gloves, imperious footwear and face shield or goggles.

EYE/FACE PROTECTION: Use face shield or chemical goggles. If vapour exposure causes eye discomfort, use Australian Standards approved full-face respirator.

APPLICATORS AND ALL OTHER HANDLERS: Refer to the product label for personal protective clothing and equipment.

SECTION 9: Physical and Chemical Properties

Appearance:	Black to brown liquid
Odour:	Sweet
Viscosity:	50 CPS (Estimate)
Specific gravity (Water =1):	1.07 to 1.08
Solubility in water:	Dispersible
Percentage volatility	41 to 47%
Vapour Pressure:	5.3 mmHg@ 20° C
Boiling point	116° C (Methyl isobutyl ketone)
Flammability/combustibility:	Flammable Liquid 3

See also Section 5 and 10

SECTION 10: Stability and Reactivity

Chemical Stability:	Stable under normal storage conditions.
Conditions to avoid:	Avoid temperatures at or near flash point, open flame, sparks and direct sunlight.
Materials to avoid:	Strong oxidising materials.
Hazardous Decomposition Products:	Thermal decomposition may yield hydrogen chloride gas.
Hazardous polymerisation:	Not known to occur

SECTION 11: Toxicological Information

Based on the individual components present in the formulation.

Health effects: See Symptoms of Exposure in Section 4

Acute

Swallowed: Low toxicity if swallowed. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Aspiration into the

lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia. The oral LD₅₀ for rats is 1420-1580 mg/kg (males) and 960-1090 mg/kg (females).

Eye: May cause severe eye irritation with corneal injury. Vapour may cause eye irritation experienced as mild discomfort and redness.

Skin: Brief contact may cause moderate skin irritation with local redness. May cause drying and flaking of the skin. Prolonged skin contact is unlikely to result in absorption of harmful amounts. The LD₅₀ for skin absorption in rabbits is >5000 mg/kg.

Inhaled: Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. Symptoms of excessive exposure may be anaesthetic or narcotic effects; dizziness and drowsiness may be observed.

Mutagenicity: Propanil did not show mutagenic effects in a wide range of *in vitro* and *in-vivo* tests. For the other components tested, in-vitro genetic toxicity studies were predominantly negative. Animal genetic studies were negative.

Reproductive and Developmental toxicity: Propanil in animal studies has been shown to interfere with reproduction in laboratory animals. No information was found for the other components.

Carcinogenicity: Propanil has caused cancer in laboratory animals. Isophorone has caused cancer in some laboratory animals. For methyl isobutyl ketone, kidney effects and/or tumours have been observed in male rats. These effects are believed to be species specific and unlikely to occur in humans.

Systemic and other target organ effects: Excessive exposure to propanil may cause methemoglobinemia, thereby impairing the blood's ability to transport oxygen. Excessive exposure may cause haemolysis, thereby impairing the blood's ability to transport oxygen. In animals, effects have been reported on the following organs: blood, liver, and male reproductive organs. Excessive exposure to methyl isobutyl ketone may cause respiratory irritation, gastrointestinal distress, anaesthesia, and kidney and liver effects.

SECTION 12: Environmental Information

ECOTOXICITY

Based largely or completely on information for propanil.

Material is highly toxic to aquatic organisms on an acute basis (LC₅₀ or EC₅₀ is between 0.1 and 1 mg/L in most sensitive species).

Material is moderately toxic to birds on an acute basis (LD₅₀ is between 51 and 500 mg/kg).

Material is slightly toxic to birds on a dietary basis (LC₅₀ between 1001 and 5000 ppm).

ENVIRONMENTAL FATE

Breakdown of Chemical in Soil and Groundwater: Based largely or completely on information for propanil.

Bioconcentration potential is moderate (BCF is between 100 and 3000 or Log Pow between 3 and 5).

Potential for mobility in soil is medium (Koc is between 150 and 500).

Based largely or completely on information for the solvents.

Bioconcentration potential is high (BCF is >3000 or Log Pow between 5 and 7).

SECTION 13: Disposal Considerations

DISPOSAL

Contaminated spill cleanup or unusable material must be disposed of in accordance with all local and State authority requirements.

Dispose of usable product by use according to label instructions, or via a drum *Muster* collection.

Dispose of empty containers according to label instructions.

SECTION 14: Transport Information

UN No.:	1993
Shipping Name:	Flammable Liquid, N.O.S. (contains Ketones)
Dangerous Goods Class:	3
Sub Risk Class:	Not applicable
Packaging Group:	III
Hazchem Code:	2[Y]E

SECTION 15: Regulatory Information

Stam* Herbicide is a registered product under the *Agricultural and Veterinary Chemicals Code Act 1994*. Approval Number: 58977 and a Schedule 5 Poison according to the Standard for the Uniform Scheduling of Drugs and Poisons.

SECTION 16: Other Information

Glossary

ACGHI American Conference of Governmental Industry Hygienists which recommends exposure limits (TLVs and BEIs).

BEI - Biological Exposure Index, the maximum recommended value of a substance in blood, urine or exhaled air.

ADI - Acceptable daily intake, the level of intake of a chemical that can be ingested daily over an entire lifetime without appreciable risk to health. It is calculated by dividing the overall NOEL for animal studies by a safety factor.

Explosive Limits - The range of concentrations (% by volume in air) of a flammable gas or vapour that can result in an explosion for ignition in a confined space.

K_{oc} - the organic carbon partition coefficient (mL soil water /g organic carbon).

LC₅₀ - Lethal Concentration 50%. A concentration of chemical in air or water that will kill 50% of the test organisms. inhaling or ingesting it.

LD₅₀ - Lethal Dose-50%. The dos of a chemical that will kill 50% of the test animals receiving it.

NIOSH - American national Institute of Occupational Safety and Health, a federal agency which conducts research on occupational safety and health questions and recommends new standards.

NOEL - No-observable-effect-level, the highest administered dose which does not cause any detectable (usually adverse) effect in the study. The overall NOEL for a chemical determined in the most sensitive species is used to estimate the ADI.

NOHSC - National Occupational Health and Safety Commission of Australia.

OSHA American Occupational Safety and Health Administration.

PEL - Permissible Exposure Level, a maximum allowable exposure level by law.

pH - Measure of how acidic or alkaline a material is using a 1 - 14 scale. pH 1 is strongly acidic and pH 14 strongly alkaline.

Polymerisation - a chemical reaction in which small molecules (monomers) combine to form much larger molecules (polymers). A hazardous polymerisation reaction is one that occurs at a fast rate and releases large amounts of energy.

P_{ow} - The octanol-water partition coefficient is the ratio of the concentration of a chemical in octanol and in water at equilibrium and at a specified temperature. Octanol is an organic solvent that is used as a surrogate for natural organic matter. This parameter is used in many environmental studies to help determine the fate of chemicals in the environment.

Skin notation following the exposure guideline refers to the potential for significant contribution to the overall exposure by the cutaneous route, including mucous membranes and the eyes, either by contact with vapours or, of probable greater significance, by direct skin contact with the substance." Properties such as "causing irritation, dermatitis, and sensitisation in workers" are not considered relevant when assigning the "Skin" notation. "Use of the 'Skin' notation is intended to alert the reader that air sampling alone is insufficient to accurately quantify exposure and that measures to prevent significant cutaneous absorption may be required.

STEL - Short-Term Exposure Limit. A term used to indicate the maximum average concentration allowed for a continuous 15 minute exposure period.

TVL - Threshold Limit Value, an exposure limit set by a competent authority

TWA - Time Weighted Average. The average concentration of a chemical in air over the total exposure time - usually an 8 hour work day.

WEEL - Workplace Environmental Exposure Level set by the WEEL Committee of AIHA.

References

National Code of Practice for the Preparation of Material Safety Data sheets 2nd Edition [NOHSC:2011 (2003)]

AS/NZS 1715-1994 Selection Use and Maintenance of Respiratory Protective Devices.

ASNZS 1716 - 1994 Respiratory protective devices.

FOR FURTHER PRODUCT INFORMATION CALL DOW AGROSCIENCES CUSTOMER SERVICE REPRESENTATIVES TOLL FREE 1800 700 096 DURING BUSINESS HOURS.

This MSDS summarises our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. It is subject to revision as additional knowledge and experience is gained. No warranty, express or implied is made. Each user should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace including in conjunction with other products. If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company. The responsibility for products sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available on request.