

## MATERIAL SAFETY DATA SHEET

### SECTION 1 – IDENTIFICATION OF THE CHEMICAL PRODUCT AND COMPANY

**Product Name:** Kenso Agcare Ken-Ester LV 680 Selective Herbicide  
**Product Type:** Group I Herbicide  
**Company Name:** Kenso Corporation (M) Sdn Bhd  
**Address:** Unit 3C, 59, Oxford Street, Bulimba Queensland 4171  
**Telephone Number:** (07) 3217 9788  
**Facsimile Number:** (07) 3217 9733  
**Emergency Telephone Number:** 000 (Police or Fire Brigade)  
**13 11 26 (Poisons Information Centre)**  
**Use:** A specially formulated low volatile herbicide for selective control of various weeds in crops, pastures and non-agricultural areas as per Directions for Use Table.

### SECTION 2 – HAZARDS IDENTIFICATION

Classified as hazardous according to criteria of NOHSC.

**Risk Phrases:** R22/36 Harmful if swallowed. Irritating to eyes.  
**Safety Phrases:** S20/25 When using, do not eat or drink. Avoid contact with eyes.  
**SUSDP Classification:** S5  
**ADG Classification:** None allocated. Not a Dangerous Good.  
**UN Number:** None allocated

### Emergency Overview

**Physical Description & colour:** Clear brown liquid.  
**Odour:** Solvent odour.  
**Major Health Hazards:** The oral LD<sub>50</sub> of 2,4-D ranges from 375 to 666 mg/kg in the rat, 370 mg/kg in mice, and from less than 320 to 1000 mg/kg in guinea pigs. The dermal LD<sub>50</sub> values are 1500 mg/kg in rats and 1400 mg/kg in rabbits, respectively. In humans, prolonged breathing of 2,4-D causes coughing, burning, dizziness, and temporary loss of muscle coordination. Other symptoms of poisoning can be fatigue and weakness with possible nausea. On rare occasions following high levels of exposure, there can be inflammation of the nerve endings with muscular effects.

### Potential Health Effects

**Acute:**

**Swallowed:** Ingestion of this product may cause gastrointestinal irritation, nausea, and vomiting.

**Skin:** This product is expected to cause moderate skin irritation. Prolonged or repeated exposure may cause de-fatting of skin, which could lead to secondary dermatitis. Prolonged contact of the concentrate with the skin is harmful.

**Inhaled:** Inhalation of solvent in confined spaces and in hot weather may cause headache, nausea or intoxication. The 2,4-D ester has very low volatility, thus inhalation of the ester from the concentrate is unlikely to be a concern, however, and inhalation of spray mist must be avoided.

**Eye:** Will cause irritation. Prolonged contact with the concentrate may cause damage and can lead to significant 2,4-D absorption.

**Chronic:** Repeated absorption of relatively large amounts of 2,4-D present a risk to the liver and kidneys.

**Carcinogen Status:**

**NOHSC:** No significant ingredient is classified as carcinogenic by NOHSC.

**NTP:** No significant ingredient is classified as carcinogenic by NTP.

**IARC:** No significant ingredient is classified as carcinogenic by IARC.

### SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	CAS number	Proportion
2,4-D (present as the ethyl-hexyl ester)	1928-43-4	68 % w/v
Inert ingredients	secret	<10 % w/w
Hydrocarbon solvent	64742-94-5	To 100%

### SECTION 4 – FIRST AID MEASURES

Swallowed:	If swallowed, do not induce vomiting; seek medical advice immediately.
Skin:	Remove contaminated clothing, wash skin with plenty of soap and water. See a doctor if any signs or symptoms described in this document occur. Discard contaminated non-waterproof shoes and boots. Wash contaminated clothing before re-wearing.
Eyes:	Flush eyes immediately with plenty of fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. However, if irritation persists, see a doctor.
Inhaled:	Remove to fresh air until recovered. See a doctor if discomfort or irritation continues.

**Advice to Doctor**

Treat symptomatically. If vomiting occurs be wary of the onset of pulmonary pneumonitis caused by the solvents.

### SECTION 5 – FIRE FIGHTING MEASURES

**Fire and Explosion Hazards:** This product is classified as a C1 combustible product. There is little risk of an explosion from this product if commercial quantities are involved in a fire. Violent steam generation or eruption may occur upon application of direct water stream on hot liquids. Vapours from this product are heavier than air and may accumulate in sumps, pits and other low-lying spaces, forming potentially explosive mixtures. They may also flash back considerable distances. Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.

**Extinguishing Media:** Preferred extinguishing media are carbon dioxide, dry chemical, foam, water fog.

**Fire Fighting:** When fighting fires involving significant quantities of this product, wear a splash suit complete with self contained breathing apparatus. Do not scatter spilled material with high pressure water jets.

**Flash point:** Not flammable.

**Upper Flammability Limit:** No data.

**Lower Flammability Limit:** No data.

**Autoignition temperature:** No data.

**Flammability Class:** C1.

## SECTION 6 – ACCIDENTAL RELEASE MEASURES

### Spills and Disposal

Contain spill and absorb with sand or proprietary absorbent (vermiculite). Prevent from entering drains, waterways or sewers. Clean up spill immediately. Collect in sealed open-top containers for disposal. Triple rinse containers, and add rinsings to the spray tank, then offer container for recycling / reconditioning, or puncture top, sites and bottom and dispose of in landfill in accordance with local regulations. On-site disposal of concentrate is not acceptable.

## SECTION 7 – HANDLING AND STORAGE

### Storage and Transport

Store in the closed, original container in a well-ventilated area away from children, animals, food, feedstuffs, seed and fertilizers.

Considered non hazardous for transport by the Australian Code for the Transport of Dangerous Goods by Road and Rail.

## SECTION 8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION

### Exposure Limits

No exposure limits have been set for this product, however, a limit has been set for 2,4-D acid at 10mg/m<sup>3</sup>.

### Engineering Control

Natural ventilation only is required. In confined spaces where solvent vapour build-up may make working unpleasant use a local exhaust.

### Protective Equipment

Poisonous if swallowed. Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including elbow-length PVC gloves and face shield. If product contacts skin, immediately wash area with soap and water. After each use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. Wash gloves, face shield and contaminated clothing before reuse.

## SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

<b>Form:</b>	Liquid
<b>Colour:</b>	Clear brown liquid
<b>Odour:</b>	Solvent odour
<b>pH:</b>	3.6 in 5% solution
<b>Melting point (°C):</b>	-5 °C
<b>Boiling point (°C):</b>	190-350 °C
<b>Specific Gravity:</b>	1.138
<b>Vapour Pressure:</b>	~1.5mmHg @ 25 °C (solvent); 2,4-D ester 1.6x10 <sup>-6</sup> mmHg
<b>Flammability Limits:</b>	Upper ~6; Lower ~1
<b>Solubility</b>	N/A
<b>Vapour density</b>	~5

## SECTION 10 – STABILITY AND REACTIVITY

**Reactivity:** This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.

**Conditions to Avoid:** Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.

**Incompatibilities:** strong acids, strong bases, strong oxidising agents.

**Fire Decomposition:** Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Hydrogen chloride gas, other compounds of chlorine. Water. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.

**Polymerisation:** This product will not undergo polymerisation reactions.

## SECTION 11 – TOXICOLOGICAL INFORMATION

**Toxicity:** An information profile for 2,4-D is available at <http://extoxnet.orst.edu/pips/ghindex.html>

**Acute toxicity:** The acid form of 2,4-D is classified as "harmful". The oral LD<sub>50</sub> of 2,4-D ranges from 375 to 666 mg/kg in the rat, 370 mg/kg in mice, and from less than 320 to 1000 mg/kg in guinea pigs. The dermal LD<sub>50</sub> values are 1500 mg/kg in rats and 1400 mg/kg in rabbits, respectively. In humans, prolonged breathing of 2,4-D causes coughing, burning, dizziness, and temporary loss of muscle coordination. Other symptoms of poisoning can be fatigue and weakness with possible nausea. On rare occasions following high levels of exposure, there can be inflammation of the nerve endings with muscular effects.

**Chronic toxicity:** Rats given high amounts, 50 mg/kg/day, of 2,4-D in the diet for 2 years showed no adverse effects. Dogs fed lower amounts in their food for 2 years died, probably because dogs do not excrete organic acids efficiently. A human given a total of 16.3 g in 32 days therapeutically, lapsed into a stupor and showed signs of incoordination, weak reflexes, and loss of bladder control.

**Reproductive effects:** High levels of 2,4-D (about 50 mg/kg/day) administered orally to pregnant rats did not cause any adverse effects on birth weights or litter size. The evidence suggests that if 2,4-D causes reproductive effects in animals, this only occurs at very high doses. Thus reproductive problems associated with 2,4-D are unlikely in humans under normal circumstances.

**Teratogenic effects:** 2,4-D may cause birth defects at high doses. Rats fed 150 mg/kg/day on days 6 to 15 of pregnancy had offspring with increased skeletal abnormalities, such as delayed bone development and wavy ribs. This suggests that 2,4-D exposure is unlikely to be teratogenic in humans at expected exposure levels.

**Mutagenic effects:** 2,4-D has been very extensively tested and was found to be nonmutagenic in most systems. 2,4-D did not damage DNA in human lung cells. However, in one study, significant effects occurred in chromosomes in cultured human cells at low exposure levels. The data suggest that 2,4-D is not mutagenic or has low mutagenic potential.

**Carcinogenic effects:** 2,4-D fed to rats for 2 years caused an increase in malignant tumours. Female mice given a single injection of 2,4-D developed cancer (reticulum-cell sarcomas). Another study in rodents shows a low incidence of brain tumours at moderate exposure levels (45 mg/kg/day) over a lifetime. However, a number of questions have been raised about the validity of this evidence and thus about the carcinogenic potential of 2,4-D. In humans, a variety of studies give conflicting results. Several studies suggest an association of 2,4-D exposure with cancer. An increased occurrence of non-Hodgkin's lymphoma was found among a Kansas and Nebraska farm population associated with the spraying of 2,4-D. Other studies done in New Zealand, Washington, New York, Australia, and on Vietnam veterans from the U.S. were all negative. There remains considerable controversy about the methods used in the various studies and their results. Thus, the carcinogenic status of 2,4-D is not clear.

**Organ toxicity:** Most symptoms of 2,4-D exposure disappear within a few days, but there is a report of liver dysfunction from long-term exposure.

**Fate in humans and animals:** The absorption of 2,4-D is almost complete in mammals after ingestion and nearly all of the dose is excreted in the urine. The compound is readily absorbed through the skin and lungs. Men given 5 mg/kg excreted about 82% of the dose as unchanged 2,4-D. The half-life is between 10 and 20 hours in living organisms. There is no evidence that 2,4-D accumulates to significant level in mammals or in other organisms. Between 6 and 8 hours after doses of 1 mg/kg, peak concentrations of 2,4-D were found in the blood, liver, kidney, lungs, and spleen of rats. There were lower levels in muscle and brain. After 24 hours, there were no detectable tissue residues. Only traces of the compound have been found in the milk of lactating animals for 6 days following exposure.

There is no data to hand indicating any particular target organs.

## SECTION 12 – ECOLOGICAL INFORMATION

This product is biodegradable. It will not accumulate in the soil or water or cause long term problems.

**Effects on birds:** 2,4-D is harmful to wildfowl and slightly to moderately toxic to birds. The LD<sub>50</sub> is 1000 mg/kg in mallards, 272 mg/kg in pheasants, and 668 mg/kg in quail and pigeons.

**Effects on aquatic organisms:** Some formulations of 2,4-D are highly toxic to fish while others are less so. Limited studies indicate a half-life of less than 2 days in fish and oysters. Concentrations of 10 mg/L for 85 days did not adversely affect the survival of adult dungeness crabs. For immature crabs, the 96-hour LC<sub>50</sub> is greater than 10 mg/L, indicating that 2,4-D is only slightly toxic. Brown shrimp showed a small increase in mortality at exposures of 2 mg/L for 48 hours.

**Effects on other organisms:** Moderate doses of 2,4-D severely impaired honeybees brood production. At lower levels of exposure, exposed bees lived significantly longer than the controls. The honeybee LD<sub>50</sub> is 0.0115 mg/bee.

**Environmental Fate:**

**Breakdown in soil and groundwater:** 2,4-D has low soil persistence. The half-life in soil is less than 7 days. Soil microbes are primarily responsible for its disappearance.

**Breakdown in water:** In aquatic environments, microorganisms readily degrade 2,4-D. Rates of breakdown increase with increased nutrients, sediment load, and dissolved organic carbon. Under oxygenated conditions the half-life is 1 week to several weeks.

**Breakdown in vegetation:** 2,4-D interferes with normal plant growth processes. Uptake of the compound is through leaves, stems, and roots. Breakdown in plants is by a variety of biological and chemical pathways. 2,4-D is toxic to most broad leaf crops, especially cotton, tomatoes, beets, and fruit trees.

### SECTION 13 – DISPOSAL CONSIDERATIONS

**Disposal:** Instructions concerning the disposal of this product and its containers are given on the product label. These should be carefully followed.

### SECTION 14 – TRANSPORT INFORMATION

**ADG Code:** This product is not classified as a Dangerous Good. No special transport conditions are necessary unless required by other regulations.

### SECTION 15 – REGULATORY INFORMATION

**AICS:** All of the significant ingredients in this formulation are to be found in the public AICS Database.

### SECTION 16 – OTHER INFORMATION

**This MSDS contains only safety-related information. For other data see product literature.**

**CONTACT POINT:**

Police and Fire Brigade:

Dial 000

**National Poisons Information Centre:**

**Dial 13 11 26 (from anywhere in Australia)**

For 24 hour emergency response:

Dial 0439 933 556

Ask for Murray Goodlich