SAFETY DATA SHEET

SECTION 1 – IDENTIFICATION OF THE CHEMICAL PRODUCT AND COMPANY

Product Name	**Ken-Ester LV 680 Selective Herbicide**
Company Name	Kenso Corporation (M) Sdn Bhd
Address	2 Bond Crescent, Forrest Hill, Auckland 0620 New Zealand
Telephone	0800 536 766
Emergency Telephone	**0800 CHEMCALL (0800 243 622) (24 hours)**
National Poisons Centre	**0800 POISON (0800 764 766) (24 hours)**
Use	For broadleaf weed control in pasture and turf.

SECTION 2 – HAZARDS IDENTIFICATION

Hazard Pictograms	
Hazard Classification	**6.1D, 6.3B, 6.5B, 6.9A, 9.1A, 9.2A, 9.3C**
Priority Identifier	**HARMFUL** **KEEP OUT OF REACH OF CHILDREN**
Secondary Identifier	6.1D = Harmful if swallowed 6.3B = Irritating to skin 6.5B = May cause sensitisation by skin contact 6.9A = May cause eye damage from repeated oral exposure at high doses. 9.1A = Very toxic to aquatic organisms 9.2A = Very toxic in the soil 9.3C = Harmful to terrestrial vertebrates

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	**CAS No**	**Proportion**
2,4-D (present as the ethyl-hexyl ester)	1928-43-4	68% w/v
Inert ingredients	secret	To 100% w/v

SECTION 4 – FIRST AID MEASURES

Ingestion	If swallowed, do not induce vomiting; seek medical advice immediately.
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
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..
Inhalation	Give artificial respiration or oxygen if breathing is shallow or stopped. Get medical attention immediately. Otherwise remove to fresh air until recovered See a doctor if discomfort or irritation continues.
Advice to Doctor	Treat symptomatically.

SECTION 5 – FIRE FIGHTING MEASURES

Fire/Explosion Hazard	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.
HAZCHEM Code	2X
IER Guide No	47
Extinguishing Media	Preferred extinguishing media are carbon dioxide, dry chemical, foam, water fog.

Fire Fighting Instructions	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.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions	For appropriate personal protective equipment (PPE), refer to section 8.
Spillage	Wear suitable protective clothing including face shield, impervious gloves and boots. Prevent the product or spilled material from entering water bodies. Absorb liquid spills with inert material such as earth or sand and place in waste containers. Wash area with detergent and water and absorb with further inert material. Dispose of safely.
Environmental Precautions	The product is relatively toxic to fish and hence should be kept from entering water bodies. Triple rinse containers, add rinsate to the spray tank, then offer container for recycling/reconditioning, or puncture top, sides and bottom and dispose of in an approved waste receival facility. in accordance with local regulations. On-site disposal off concentrate is not acceptable.

SECTION 7 – HANDLING AND STORAGE

Storage	Keep out of reach of children. Store in original container, tightly closed, away from animal and human foodstuffs and remedies, food packaging, seeds, fertilisers, fungicides and insecticides other Hazardous Subtances of Classes 1, 4, & 5. Store in a secure, cool, dry, well ventilated place and protect from sunlight.
Handling	Avoid contact with skin and eyes and inhalation of concentrate or spray mist. When using, do not eat, drink or smoke. Wash face and hands before eating, drinking or smoking.
Cerfitied Handler	Not required.
Record Keeping	Tracking is not required however records of use must be kept.
Additional Requirements	All aspects of storage, handling, use, disposal and record keeping must be in accordance with NZS 8409:2004 ‘Management of Agrichemicals’, and relevant local and regional council plans.

SECTION 8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION

Workplace Exposure Standards	No exposure limits have been set for this product, however, a limit has been set for 2,4-D acid at 10mg/m^3.
Engineering Controls	Natural ventilation only is required. In confined spaces where solvent vapour build-up may make working unpleasant use a local exhaust.
Personal Protection	Poisonous if swallowed. Avoid contact with eyes and skin. Do not inhale spray mist Wear chemical resistant protective clothing including coveralls, boots,elbow-length gloves and face shield and respiratory protection . 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 protective clothing before reuse.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Form	Liquid
Colour	Clear brown
Odour	Solvent odour
pH	3.6 in 5% solution
Flash point (^{o}C)	NA
Flammability Limits	Upper ~6; Lower ~1
Density (at 20^{o}C)	1.138
Miscibility	Forms emulsion
Oxidising properties	Not oxidising
Explosive properties	Not explosive

SECTION 10 – STABILITY AND REACTIVITY

Stability	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.
Incompatibility	Strong acids, strong bases, strong oxidising agents.
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

This section describes effects which could occur if this product is not handled in accordance with this data sheet.

Acute Toxicity (Active Ingredient)	The acid form of 2,4-D is classified as "harmful". The oral LD_{50} 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_{50} 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.
Sensitisation Effects	Not a sensitizer
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.
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.
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 (Birth) 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.
Systemic Effects	None

SECTION 12 – ECOTOXICITY INFORMATION

This section describes effects which could occur if this material is not handled in accordance with this data sheet.

The following information is presented in respect of the active ingredient:

Ecotoxic Effects	**Effects on birds:** 2,4-D is harmful to wildfowl and slightly to moderately toxic to birds. The LD_{50} 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_{50} 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_{50} 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

Product	Dispose of this product only by using according to the label, or at an approved waste disposal facility l or other approved facility.
Container	Ensure the container is empty. Triple rinse empty container and add rinsate to the spray tank. Recycle empty container through Agrecovery (0800 247 326, www.agrecovery.co.nz). Otherwise submit to an approved waste recieval facility. DO NOT reuse this container for any other purpose.

SECTION 14 – TRANSPORT INFORMATION

Dangerous Goods	
UN Number	3082
Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains 2,4-D Ester)
Class	9
Subsidiary Class	None
Packaging Group	III
Additional Information	MARINE POLLUTANT
MTQ (Non-Commercial)	250 L

SECTION 15 – REGULATORY INFORMATION

HSNO Approval No	HSR000962
ACVM Approval No	P8710

SECTION 16 – OTHER INFORMATION

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

Contact Points	
Police, Ambulance and Fire Service	111

National Poisons Information Centre	0800 POISON (0800 764 766)
Hazardous Substances Emergency	0800 Chemcall (0800 243 622)