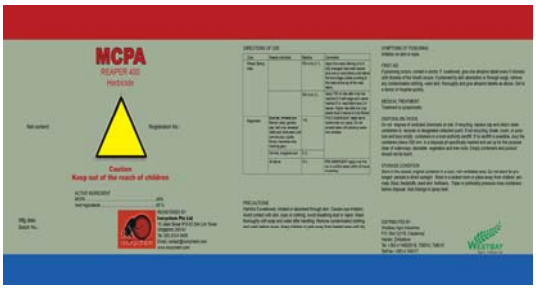
READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.

USE ONLY IN ACCORDANCE WITH INSTRUCTIONS.

KEEP OUT OF REACH OF CHILDREN

REAPER 400 SL



INGREDIENTS

MCPA 40%
Inert ingredients..... 60%

REAPER 400 SL is a systemic postemergence phenoxy herbicide used to control annual and perennial weeds (including thistle and dock) in cereals, flax, rice, vines, peas, potatoes, grasslands, forestry applications, and on rights-of-way. This herbicide is very compatible with many other compounds and may be used in formulation with many other products, including bentazone, bromoxynil, 2,4-D, dicamba, fenoxaprop, MCPB, mecoprop, thifensulfuron, and tribenuron.

REAPER 400 SL is a slightly toxic compound in EPA toxicity class III, and is a General Use Pesticide (GUP). Labels for products containing REAPER 400 SL must carry the Signal Word DANGER due to its potential to cause severe eye irritation.

Trade Names Of Other Firms**:** Trade names for products containing MCPA include Agritox, Agroxone, Agrozone, Agsco MXL, Banlene, Blesal MC, Bordermaster, Cambilene, Cheyenne, Chimac Oxy, Chiptox, Class MCPA, Cornox Plus, Dakota, Ded-Weed, Empal, Envoy, Gordon's Amine, Kilsem, Legumex, Malerbane, Mayclene, MCP, Mephanac, Midox, Phenoxylene, Rhomene, Rhonox, Sanaphen-M, Shamrox, Selectyl, Tiller, U 46 M-Fluid, Vacate, Weed-Rhap, and Zhelan.

What is REAPER 400 SL and how does it work?

REAPER 400 SL is a water-soluble liquid herbicide containing MCPA. Use REAPER 400 SL in rangeland and permanent grass pastures to selectively control many annual biennial and perennial broadlead weeds and woody species.

Key Benefits of RANGER:

1. Has residual activity control.
2. Allows for more even disbursement during application
3. Highly effective against target weeds

PRECAUTIONS

Corrosive. Harmful if swallowed, inhaled or absorbed through skin. Causes irreversible eye damage. Avoid contact with skin, eyes or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling and before eating, drinking or using tobacco. Remove contaminated clothing and wash before reuse. Keep children or pets away from treated area until dry.

SYMPTOMS OF POISONING

Irritation on skin or eyes.

MEDICAL TREATMENT

No specific antidote is available. Treatment is symptomatic.

FIRST AID

If on skin, remove contaminated clothes. Rinse and then rinse skin immediately with plenty of water and soap for 15-20 minutes. Call a poison control centre or doctor for treatment advice.
If inhaled, move person for fresh air. If person is not breathing, call for an ambulance, then give artificial respiration, preferably mouth-to-mouth if

possible. Call a poison control centre or doctor for further treatment advice.
If in eyes, first hold eye open and rinse with plenty of water for 15-20 minutes (remove contact lenses if easily possible). Call poison control center or doctor for treatment advice.

If ingested, call a poison control centre or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do NOT induce vomiting unless told to do so by poison control center or doctor. Do not give anything to an unconscious person.

DIRECTIONS OF USE

Situation & Crop	Weeds controlled	Rate/ha	Comments
Wheat, Barley, Oats,		700 ml to 2.1 L	Apply from early tillering (4 to 5 fully emerged main stem leaves plus one or more tillers) until before the boot stage (visible swelling of the head at the top of the main stem).
		700 ml to 2 L	Apply 700 ml rate after crop has reached 2-3 leaf stage and weeds marked E in weed table have 2-4 leaves. Higher rate after the crop plants have 5 leaves to fully tillered
Wheat, Barley, Cereal, Rye	Cape weed, doublegee, Erodium, mustard, Rapistrum, wild turnip, wild radish	400 ml plus 350 ml Flowable Diuron	CROP: 3-4 leaf stage
		500 ml plus 400 ml flowable diuron	CROP: 4-5 leaf stage
			Apply by boom spray or aircraft with 20-100L/ha water, when most weeds have germinated and are in 2-5 leaf stage. Crop and weeds should be dry at the time of application. Some temporary yellowing of crap may occur after application. Undersown subclovers may be slightly retarded. DO NOT apply to undersown medics.
	Amsinckia (yellow burr), capeweed, charlock, deadnettle, doublegee (spiny emex, three corner jack), erodium, mustard, turnip weed, white ironweed (corn gromwell, sheepweed), wild radish, wild turnip	500ml plus 500 ml flowable diuron	Apply by boom spray or aircraft when the crop is at the 3-5 lead stage and 5 leaf stage. Weeds must be in the 2-5 leaf stage. Do not apply to undersown medic or lucerne. Do not use on Kamilarol, Kitr, Olympic or shortim wheat. Do not use on very light sandy soils.
	Cape weed, mustard, three cornered jack, turnip weed, wild radish, wild turnip, wards weed, common ice plant, pimpernet	350 ml plus 500 ml flowable diuron	
Wheat, barley, oats, triticale	Soldier thistle	700ml plus 200 ml lontrel	Apply to crop at tillering stage after crop has 5 leaves and before the crop commences jointing.
	Skeleton weed	700ml plus 500 ml lontrel	Apply to rosettes from 5-15 cm diameter when the crop is between the 5 leaf and late tillering growth stages. It is essential that all the skeleton weed is emerged and minimum of 5cm diameter, which is usually not before August. This rate will provide control of skeleton weed until harvest and will substantially reduce seed numbers the following season

Linseed		700ml to 2.1L	Apply when crop is 10-15 cm tall with at least 170L/ha of water. Do not spray after buds appear. Some wilting effect may be seen following application but crop usually recovers quickly. Do not apply by aircraft.
Sugarcane	Blue top, chinese burr, flannel weed, gambia pea, bell vine, streaked rattle pod, bindweed, pink convolvulus, cupids flower, merremia vine, morning glory	1.4L	POST-EMERGENT: apply as directed inter-row spray. Do not exceed rates with phenoxy sensitive varieties.
	Fat hen, noogoora burr	2.1L	
	All above	10 L	PRE-EMERGENT: apply over the row in a 45cm band within 24 hours of planting
Flax		490 ml	Apply to crop when 8-20 cm high
Grass pastures		700ml to 4L	Apply to established grass based pastures. Damage may occur to legumes if present. NOTE: capeweed, paterson's curse and variegated thistle may be poisonour to stock after spraying.
	Salvation jane	1L plus 400 ml flowable diuron	Use this mixture only if spraying is delayed until early winter. Rosettes should not exceed 20cm in diameter.
	Soldier thistle	700ml to 2.1L	Use low rate on seedlings with no more than 2 true leaves. Use 100 litres of water for best results. If clover present, do not exceed 600ml
Grass pastures	Seedling and established horehound	3L	Apply in autumn when horehound plants are at the seedling stage. If subclover or medic plants are present, they will be damaged by this application
Grass seed crops		700ml-4L	Apply to established grass seed crops.

Weeds controlled	**Application rate per hectare**	**Comments**
Ball mustard	1.7L	Apply at rosette stage
Bathurst burr	2L	Spray young seedlings only
Black bindweed	1.4-2L	Apply at young stage prior to flowering.
California burr	1-2.2L	Spray young seedlings only.
Cape Tulip	2 L	Apply just prior to flowering. Gives mild suppression only.
Capeweed	2.1L	Apply at seedling stage.
Carrot weed	2L	Apply at seedling stage.
Charlock	700ml – 2.2L	Spray up to rosette stage.
Cutleaf mignoette	2.1L	Apply at young rosette stage.
Dandelion	2L	Apply at young rosette stage.
Deadnettle	2.1L	Moderately susceptible. Apply at seedling stage
Docks	2.1L	Apply at rosette stage and before flower heads emerge. Only the top growth of old established plants will be affected.
Fat hen	1-2L	Spray up to rosette stage.
Fennel	2.7L	Apply at young stage.
Field bindweed		Apply at bud stage, repeating over several seasons
Field cress		Apply at young stage
Flatweed or catsear		Apply when weeds are 10-15 cm high
Fumitory (red)		Apply at young stage prior to flowering
Hoary cress		Apply before flowering
Horehound	2.1-3L	Apply at rosette stage

Hedge mustard	700ml – 1.25L	Apply at rosette stage
Hexham scent or Meliotus	1.2-1.5L	Apply at young seedling stage
Lesser swinecress	2.2L	Apply at young stage
Lincoln weed	700ml	Apply at roseete stage
London rocket	1.25L	
Lupins	700ml -1.25L	Spray up to 10 cm high
Mintweed	2L	Spray young seedlings only
Mustards	1-1.25L	Spray up to rosette stage
Noogoora burr	1-2L	Spray young seedlings only
Opium poppy	2.2L	Apply at young stage
Paterson's curse	1-4L	Apply early rosette stage
Pimpernel	700ml	Apply at rosette stage
Plantains	2L	Apply at rosette stage
Rapeseed	1-1.5L	Spray up to rosette stage
Rough poppy	700ml -1.5L	Spray up to rosette stage
Safflower	700ml – 1L	Spray up to rosette stage
Sheperd's purse	2.2L	Apply at rosette stage
Skeleton weed	1.5 – 2L	Spray rosettes before aerial growth commences
Sorrel	2.1L	Apply to rosette stage.
Stinkwort	1-2L	Apply when weeds are 10-15cm high.
Sunflower (seedlings)	1-1.5L	Spray up to rosette stage.

DISPOSAL METHODS

Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.

STORAGE CONDITION

Do not contaminate water, food or feed by storage or disposal. Store in a locked room or place away from children, animals, flood, feedstuffs, seed and fertilizers.Store in the closed, original container in a cool, well-ventilated area. Do not store for prolonged periods in direct sunlight. If exposed to subfreezing temperatures (below 32º F), the product should be warmed to at least 40º F and agitated thoroughly before using.

Do not reuse container. Triple or preferably pressure rinse containers before disposal in a sanitary landfill, or by other procedures approved by state and local authorities, by burning. If burned, stay out of smoke.

For More Details including effects on environment, email contact@ivorychem.com with Subject "REAPER 400 SL DETAILS"

More Details:

TOXICOLOGICAL EFFECTS

- **Acute toxicity:** MCPA acid is slightly toxic via ingestion, with reported oral LD50 values for the technical product in rats ranging from 700 mg/kg to 1160 mg/kg [5,6] and ranging in mice from 550 to 800 mg/kg [5,6]. It is slightly toxic via the dermal route as well, with reported dermal LD50 values ranging from greater than 1000 mg/kg in rats to greater than 4000 mg/kg in rabbits [5,6]. Symptoms in humans from very high acute exposure could include slurred speech, twitching, jerking and spasms, drooling, low blood pressure, and unconsciousness [1].
- **Chronic toxicity:** Dietary levels of approximately 50 mg/kg/day and 125 mg/kg/day over 7 months caused reduced feeding rates and retarded growth rates in rats [1]. White blood cell counts and ratios were not affected, but some reductions in red blood cell counts and hemoglobin did appear to be associated with exposure to MCPA at oral dose levels of approximately 20 mg/kg/day. In the same study, oral doses of approximately 5 mg/kg/day caused increased relative kidney weights, and oral doses of approximately 20 mg/kg/day caused increased relative liver weights [1]. Another study in rats showed no effects on kidney or liver weights over an unspecified period at oral doses of 60 mg/kg/day, but oral doses of 150 mg/kg/day did cause reversible

increases in these weights over a course of 3 months [1]. Very high dermal doses of 500 mg/kg/day caused reduced body weight, and even higher dermal doses of 1000 and 2000 mg/kg/day resulted in increased mortality and observable changes in liver, kidney, spleen, and thymus tissue [1].

- **Reproductive effects:** A two-generation rat study at doses of up to 15 mg/kg/day affected reproductive function. Even smaller amounts of the compound were toxic to the fetuses. Dogs receiving relatively small amounts of MCPA (8 and 16 mg/kg) for 13 weeks showed adverse sperm and testes changes [8]. It is unlikely that humans will experience these effects under normal exposure conditions.
- **Teratogenic effects:** Offspring of pregnant rats fed low to moderate doses of MCPA (20 to 125 mg/kg) on days 6 to 15 of gestation, had no birth defects. However, when the ethyl ester form of MCPA was fed to pregnant rats (2 to 100 mg/kg/day on days 8 to 15 of gestation), cleft palate, heart defect, and kidney anomalies were observed in the offspring [7]. Mice fed 5 to 100 mg/kg/day of MCPA on days 6 to 15 showed significantly reduced fetal weight and delayed bone development at the highest dose [24]. Teratogenic effects in humans are unlikely at expected exposure levels.
- **Mutagenic effects:** MCPA is reportedly weakly mutagenic to bone marrow and ovarian cells of hamsters, but negative results were reported for other mutagenic tests [38]. It was negative in a bacterial test system (both with and without metabolic activation), negative in spot tests, and negative in host-mediated tests [1]. It produced no detectable increase in chromosomal aberrations in house flies [4]. Some irregularities occurred in gene transfer during cell division in brewers yeast, although at levels which caused massive cell death [1]. It appears that the compound poses little or no mutagenic risk.
- **Carcinogenic effects:** All of the available evidence on MCPA indicates that the compound does not cause cancer [1]. Forestry and agricultural workers occupationally exposed to MCPA in Sweden did not show increased cancer incidence [39].
- **Organ toxicity:** Target organs identified in animal studies include the liver, kidneys, spleen. and thymus. Farm worker exposure has resulted in reversible anemia, muscular weakness, digestive problems, and slight liver damage [1].
- **Fate in humans and animals:** MCPA is rapidly absorbed and eliminated from mammalian systems [1]. Rats eliminated nearly all of a single oral dose within 24 hours, mostly though urine with little or no metabolism [1,6]. In another rat study, three quarters of the dose was eliminated within 2 days. All was gone by the 8 days [1]. Humans excreted about half of a 5 mg dose in the urine within a few days. No residues were found after day 5 [1]. Cattle and sheep fed low to moderate doses of MCPA in the diet for 2 weeks showed no residues from levels less than about 18 mg/kg [1]. The major metabolite of MCPA is 2-methyl-4-chlorophenol in the free and conjugated form, which is formed in the liver [38].
- **ECOLOGICAL EFFECTS**
- **Effects on birds:** MCPA is moderately toxic to wildfowl; the LD50 of MCPA in bobwhite quail is 377 mg/kg [5,6].
- **Effects on aquatic organisms:** MCPA is only slightly toxic to freshwater fish, with reported LC50 values ranging from 117 [5] to 232 mg/L in rainbow trout [6]. MCPA is practically nontoxic to freshwater invertebrates, and estuarine and marine organisms.
- **Effects on other organisms:** It is nontoxic to bees, with a reported oral LD50 of 104 ug/bee [5,6].

ENVIRONMENTAL FATE

- **Breakdown in soil and groundwater:** MCPA and its formulations are rapidly degraded by soil microorganisms and it has low persistence, with a reported field half-life of 14 days to 1 month, depending on soil moisture and soil organic matter [21]. Decreased soil moisture and microbial activity, as well as increased soil organic matter, will prolong the field half-life for MCPA [12]. With less than 10% organic matter in soil, the compound is degraded in 1 day and, with greater than 10% levels in soil, it takes 3 to 9 days to degrade. The half-life is 5 to 6 days in slightly acidic to slightly alkaline soils [12]. MCPA readily leaches in most soils, but its mobility decreases with increasing organic matter [12]. MCPA and its formulations show little affinity for soil.
- **Breakdown in water:** It is relatively

stable to light breakdown [5], but can be rapidly browken down by microorganisms. In sterilized water, it takes about 5 weeks for half of the compound to degrade due to the action of sunlight. In rice paddy water, however, MCPA is almost totally degraded by aquatic microorganisms in under 2 weeks [12].

- **Breakdown in vegetation:** MCPA is readily absorbed and translocated in most plants [5]. It works by concentrating in the actively growing regions of a plant (meristematic tissue), where it interferes with protein synthesis, cell division, and ultimately the growth of non-resistant plants [7]. It is actively broken down in plants, the major metabolite being 2-methyl-4-chlorophenol [5].

PHYSICAL PROPERTIES AND GUIDELINES

Physical Properties:

- **Appearance:** Pure MCPA occurs as colorless crystals [6].
- **Chemical Name:** (4-chloro-2-methylphenoxy)acetic acid [6]
- **CAS Number:** 94-74-6
- **Molecular Weight:** 200.62
- **Water Solubility:** 825 mg/L @ 25 C (acid) [5]
- **Solubility in Other Solvents:** v.s. in ether, ethanol, toluene, xylene; s. in methanol [6]
- **Melting Point:** 118-119 C [6]
- **Vapor Pressure:** 0.2 mPa @ 20 C [6]
- **Partition Coefficient:** Not Available
- **Adsorption Coefficient:** MPCA acid, 100; MCPA salts, 20 (estimated); MCPA ester, 1000 (estimated) [21]

Exposure Guidelines

- **ADI:** Not Available
- **MCL**: Not Available
- **RfD:** 0.0005 mg/kg/day [31]
- **PEL:** Not Available
- **HA**: 0.01 mg/L (lifetime) [38]
- **TLV**: Not Available

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