



# Escort<sup>®</sup>, Telar<sup>®</sup>

## PRODUCT INFORMATION BULLETIN

ESCORT and TELAR are members of the sulfonyleurea family of chemistry. They are used in industrial weed control situations, in bare-ground programs and for selective weed control. Both products are formulated as dispersible granules and used at the rate of grams per hectare. ESCORT (metsulfuron methyl) is used for broadleaf weed and brush control; and TELAR (chlorsulfuron) is used for broadleaf weed control and for special problem weeds where bare-ground is desired. Plants absorb Telar by foliar and root uptake, and Escort mainly by foliar uptake.

### **Biology**

#### ***Biological Activity and Mode of Action***

Sulfonyleurea herbicides are very effective inhibitors of plant cell division and growth. They inhibit the activity of a key enzyme in plants (acetolactate synthase, or ALS) for plant cell growth. Animals do not possess this enzyme to synthesize proteins, as do plants.

After application, inhibition of growth is rapid in the growing tips of both the roots and shoots of sensitive plants. These growing points or buds then die, followed eventually by the death of the entire plant. A reddish-purple colouring (anthocyanin expression) will be observed on susceptible plant species several weeks after application.

### **Physical Properties**

#### ***Solubility***

ESCORT and TELAR are dispersible in water and must be kept in suspension by hydraulic or mechanical agitation. As the pH of the suspension is raised, the solubility of each compound increases. The aqueous solubility of metsulfuron methyl (ESCORT) at 25°C is 548 ppm at pH 5 and 2,790 ppm at pH 7; and chlorsulfuron (TELAR) is 587 ppm at pH 5 and 31,800 ppm at pH 7. (Determined in buffered solutions. Solubility is lower when buffer is omitted.)

#### ***Compatibility***

Both products are compatible with most noncrop chemicals. Do not mix ESCORT and TELAR with Hyvar<sup>®</sup> X-L or other high-pH formulations. Small quantities of each product should be tested for compatibility with companion products before attempted field-scale use.

#### ***Stability***

ESCORT and TELAR dispersible granules have proven to be stable when stored in their original containers at normal temperatures. Spray preparations of TELAR and ESCORT may degrade in acidic solutions if not used in 24 hours. Both products are stable in alkaline solutions.

#### ***Volatility***

Both products are nonvolatile. They do not evaporate readily at normal atmospheric pressures and temperatures.

## Environmental Fate

### *Soil Dissipation and Biodegradability*

With ESCORT and TELAR, the most common and significant breakdown processes are chemical hydrolysis and microbial degradation. The rate of hydrolysis is increased by high soil temperature, low pH, and the presence of moisture. Hydrolysis is then followed by completed metabolism to non-phytotoxic, low-molecular-weight compounds through normal soil microbial processes. Chemical hydrolysis, followed by microbial degradation, are major factors in the disappearance of these compounds from the soil. The microbial breakdown of ESCORT and TELAR is affected by soil moisture and temperature. They break down to non-phytotoxic degradates. Adequate amounts of moisture promote the growth of microorganisms and therefore the level of microbial activity in the degradation process.

### *Hydrolysis Half-Life*

ESCORT		TELAR	
pH 5	21 days	pH 5	23 days
pH 7	stable for 30 days	pH 7	stable
pH 9	stable for 30 days	pH 9	stable

Temperature is a major factor affecting the rate of chemical hydrolysis of both compounds. The half-life decreases rapidly as the temperature increases from 45°F to 95°F (7°C to 35°C). At temperatures below 50°F (10°C), degradation of ESCORT and TELAR by chemical hydrolysis would have a half-life of several months or more.

### *Metabolism and Bioaccumulation*

Plant species vary widely in their ability to metabolize sulfonylurea products. The ability to metabolize or detoxify these products is the basis for the selectivity shown by tolerant versus susceptible species. Tolerant plants convert or break down ESCORT and TELAR to herbicidally inactive products much faster than do sensitive plants.

These products are very low in toxicity to animals such as mammals, birds, and insects. Animals are able to rapidly metabolize and eliminate the chemicals' active ingredients from their systems. Both products do not bioaccumulate in warm- or cold-blooded animals.

### *Water Quality*

Because ESCORT and TELAR degrade rapidly in the environment and are used at very low rates, it is unlikely that residues will occur in the groundwater in areas where they have been used. Similarly, they have a very low potential to adversely impact surface water quality. If residues did reach a water source, they would pose little threat to human health due to their low toxicity.

### *Wetlands*

Direct application of ESCORT to open water, swamps, bogs, marshes or potholes while water is present, or to areas where run-off is likely to occur is not permitted. See labels for additional information on each product.

Direct application of TELAR to any body of water is not permitted.

The labels of these products also caution against contaminating water when disposing of equipment washwaters. As with any herbicides, please read and follow label instructions.

### *Signal Words*

Agriculture Canada requires ESCORT and TELAR labels to bear the signal words "Caution" "Poison," along with a triangular poison symbol. This is the lowest level of poison assigned by Agriculture Canada, hence the word "Caution" instead of "Warning" or "Danger." For a product to bear no poison symbol at all, it would have to be tested for dermal LD50 at doses higher than toxicologists consider to be practical or

necessary. These products may cause eye irritation. They may also irritate nose, throat, and skin.

### Toxicology (Mammalian)

Study	Results		Comments
	ESCORT	TELAR	
Acute Oral LD50 <sup>1</sup> (Rats)	> 5,000 mg/kg	2,341 to 3,053 mg/kg	Concentrated products had very low toxicity by ingestion.*
<i>*Acute Oral Toxicity Rating</i>		<i>Class</i>	<i>LD50 (mg/kg)</i>
1		<i>Extremely Toxic</i>	<1
2		<i>Highly Toxic</i>	1–49
3		<i>Moderately Toxic</i>	50–499
4		<i>Slightly Toxic</i>	500–4,999
5		<i>Practically Nontoxic</i>	5,000–14,999
<i>(D. Ecobichon, The Basis of Toxicity Testing, 1992)</i>			
Acute Dermal LD50 <sup>1</sup> (Rabbits)	> 2,000 mg/kg	> 2,000 mg/kg	Nonlethal at the highest dose tested.
Acute Inhalation 4-hour LC50 <sup>1</sup> (Rats)	> 5.3 mg/l <sup>2</sup> Very Low Toxicity	> 5.9 mg/l <sup>2</sup> Very Low Toxicity	4-hour exposures to active ingredients resulted in very low acute inhalation toxicity.
Skin Irritation	None/Slight Irritation	None/Slight Irritation	None to moderate irritation resulted after 4-hour direct contact with concentrated products.
Skin Sensitization	Nonsensitizer	Nonsensitizer	None of these products produced an allergic/sensitization response.
Eye Irritation	Mild/Moderate Reversible Irritation	Mild Reversible Irritation	
Mutagenicity/ Genotoxicity <sup>2</sup>	Nonmutagenic	Nonmutagenic	Nonmutagenic based on negative results from a battery of tests for each product.
Reproductive/ Teratogenicity <sup>2</sup>	Nonteratogenic Nonreproductive toxin	Nonteratogenic Nonreproductive toxin	No birth defects or effect on fertility resulted from prolonged and excessive dietary exposure.
Carcinogenicity <sup>2</sup>	Noncarcinogenic	Noncarcinogenic	No tumor response resulted from lifetime and excessive dietary exposures.

### Toxicology (Avian and Aquatic, and Non-Target Insects)<sup>2</sup>

Study	Results	
	ESCORT	TELAR
Acute Oral (LD50 <sup>1</sup> ) Mallard Duck	> 2,510 mg/kg	> 5,000 mg/kg
Acute Oral (LD50 <sup>1</sup> ) Bobwhite Quail	–	> 5,000 mg/kg
8-day Dietary (LC50 <sup>1</sup> ) Mallard Duck	> 5,620 ppm	> 5,000 ppm
8-day Dietary (LC50 <sup>1</sup> ) Bobwhite Quail	> 5,620 ppm	> 5,620 ppm
Bluegill Sunfish (96-hour LC50 <sup>1</sup> )	> 150 ppm	> 300 ppm
Rainbow Trout (96-hour LC50 <sup>1</sup> )	> 150 ppm	> 250 ppm
<i>Daphnia Magna</i> (48-hour LC50 <sup>1</sup> ) (Water Flea)	> 150 ppm	370.9 ppm
Honeybee (Contact LD50 <sup>1</sup> )	> 25 ug/bee	> 25 ug/bee

<sup>1</sup> LD50 and LC50 – dose or concentration that is lethal to 50% of the test population. Doses are commonly defined in milligrams per kilogram of body weight (mg/kg). The smaller the numerical value of LD50 and LC50, the greater the acute toxicity of the substance.

<sup>2</sup> Studies were conducted with the active ingredient.

## ***Effects of Repeated Exposure***

The active ingredients for ESCORT and TELAR have been evaluated in a number of studies to determine the potential effects from multiple exposures. The data briefly summarized in the preceding tables consistently demonstrate the low order of toxicity of these compounds among several species tested. For example, neither was found to be mutagenic/genotoxic, teratogenic, a reproductive toxin, or a carcinogen following prolonged or lifetime dietary exposures. Although effects were observed in some species at higher doses, these were of minimal significance such as reduced food consumption, lower body weight gains, minor organ weight changes, and for one product slightly lower red blood cell count. The laboratory tests reflected exposures that were much greater than those likely encountered by workers, the consumer, or by wildlife. Therefore, when ESCORT and TELAR are used at recommended rates, the margins-of-safety are sufficiently high to be considered nonhazardous to humans and wildlife exposed to these products.

## ***Inerts***

The inert ingredients contained in these product formulations are not classified by authorities as inert ingredients of toxicological concern to humans or the environment.

The inert ingredients in these product formulations are required by law to have been approved by Federal regulatory authorities.

## ***Worker Safety***

Avoid breathing dust or spray mist. Avoid contact with skin, eyes, and clothing. In case of contact with eyes, immediately flush with plenty of water. Get medical attention if irritation persists.

## **Other Information**

### ***Off-Site Movement***

Because of their herbicidal activity at very low rates, precautions must be taken to prevent the movement of ESCORT and TELAR to off-target areas by means of spray drift, run-off, or wind-blown dust from treated areas. Practices to control spray drift and to prevent run-off, such as using low spray pressures, adding drift control agents, and spraying when wind speeds are low, should be used when using either of these products. ESCORT and TELAR should not be applied to water-saturated soils or just before or during heavy rainfall. Carefully follow all label instructions and precautions.

## ***References***

For further information about Du Pont products, contact your local Du Pont representative, or call 1-800-667-3925 in Western Canada or 1-800-387-2169 in Eastern Canada.

For medical emergencies involving this product, contact the Du Pont Haskell Laboratory for Toxicology and Industrial Medicine, 1-800-441-3637.

For transportation emergencies, contact (613) 348-3616.

***For more information on pesticides, feel free to contact any of the following:***

Agriculture Canada Regional Office  
Crop Protection Institute -- (416) 622-9771

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