



## Mammalian Toxicity <sup>1</sup>



The Forest Service has adopted several standard Environmental Protection Agency (EPA) tests to assess mammalian toxicity and irritation to skin and eyes.

The product concentrate and the most concentrated mixed product, based on approved mix ratios, are tested for acute oral and acute dermal toxicity. The results of these tests are reported as an LD<sub>50</sub> value or as greater than an LD<sub>50</sub> if the product is less toxic, higher value, than is required by the specification.

**It is important to remember when comparing LD<sub>50</sub> values, that the lower the LD<sub>50</sub> value, the greater the toxicity.**

Standard EPA skin and eye irritation tests are also performed on the product concentrate and the most concentrated mixed product. The results of these tests provide information needed to specify reasonable personal protective equipment necessary when handling the product.

**When comparing values for eye or skin irritation scores, the lower the value, the lower the irritation.**

Because of individual differences, a product that has acceptable performance on these tests may still cause irritation, allergic reaction, or other sensitizations. If this occurs, the supervisor should be notified as more stringent hygiene practices or additional protective gear may be helpful. In some instances, changes in duties may be required.

Product Performance Data on next page

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Standard Test Procedure 1.3 gives instructions for the mammalian toxicity tests.



## Mammalian Toxicity Water Enhancers Concentrates and Mixtures



Product	Concentration (w/w)	Acute Oral <sup>2</sup> LD <sub>50</sub> (mg/Kg)	Acute Dermal <sup>2</sup> LD <sub>50</sub> (mg/Kg)	Eye Irritation		Skin Irritation Primary Irritation Index
				Non-Washed Eyes	Washed Eyes	
<b>Uncolored</b>						
Barricade II	Concentrate	>5050	>2020	Moderately Irritating	Moderately Irritating	0.1
	5%	>5050	>2020	Minimally Irritating	Practically Non-Irritating	0.2
Thermo-Gel 200L	Concentrate	>5050	>2020	Mildly Irritating	Minimally Irritating	0.9
	3%	>5050	>2020	Minimally Irritating	Minimally Irritating	0.2
Thermo-Gel 500P	Concentrate	>5050	>2020	Mildly Irritating	Minimally Irritating	0.0
	1.2%	>5050	>2020	Minimally Irritating	Minimally Irritating	0.0
Firewall II	Concentrate	>5050	>2020	Mildly Irritating	Mildly Irritating	1.1
	3.0%	>5050	>2020	Minimally Irritating	Minimally Irritating	0.2
BioCentral Blazetamer 380	Concentrate	>5050	>2020	Minimally Irritating	Minimally Irritating	1.1
	0.65%	>5050	>2020	Minimally Irritating	Minimally Irritating	0.0
Firelce 561	Concentrate	>5050	>2020	Mildly Irritating	Minimally Irritating	0.0
	2.1%	>5050	>2020	Non-Irritating	Non-Irritating	0.3
Phos-Chek Insul-8	Concentrate	>5050	>2020	Mildly Irritating	Minimally Irritating	0.9
	3.0%	>5050	>2020	Non-Irritating	Non-Irritating	0.0
EarthClean Tetra KO XL-P	Concentrate	>1200	>2020	Minimally Irritating	Minimally Irritating	0.0
	1.5%	>5050	>2020	Minimally Irritating	Non-Irritating	0.0
StrongWater	Concentrate	>5000	>2020	NA <sup>4</sup>	Minimally Irritating	1.6
	2.0%	>5000	>2020	NA <sup>4</sup>	Non-Irritating	0.2

1	Standard Test Procedure 1.3, available at <a href="http://www.fs.fed.us/rm/fire/wfcs/tests/stp-1_3.htm">http://www.fs.fed.us/rm/fire/wfcs/tests/stp-1_3.htm</a> gives information for the mammalian toxicity tests.
2	Lower values for LD <sub>50</sub> indicate greater toxicity.
3	2-component systems. Each approved color is to be used ONLY with its approved uncolored water enhancer base product.
4	Changes to standard EPA method reporting at contract lab have removed the evaluation of non-washed eyes to conform to the base method; revised December 14, 2017



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Product	Concentration	Acute Oral	Acute Dermal	Eye Irritation		Skin Irritation
	(w/w)	LD <sub>50</sub> (mg/Kg)	LD <sub>50</sub> (mg/Kg)	Non-Washed Eyes	Washed Eyes	Primary Irritation Index
<b>Colored Product – One Component</b>						
Firelce HVB-Fx	Colored Concentrate	>5000	>2020	n/a	Minimally Irritating	0.0
	Mixed at 2.7%	>5000	>2020	n/a	Non-Irritating	0.0
<b>Colored Product – Two-Component Plus Water<sup>2</sup></b>						
Thermo-Gel 200L Blue	Thermo-Gel 200L Uncolored Concentrate	>5050	>2020	Mildly Irritating	Minimally Irritating	0.9
	Color Concentrate	>5050	>2020	Non-Irritating	Minimally Irritating	0.0
	Ready to Use <sup>3</sup> Evaluated at 0.1125% TG Blue color in water; added to dilute uncolored Thermo-Gel 200L to prepare a 1.5% mixture of colored 200L.	>5050	>2020	Minimally Irritating	Minimally Irritating	0.0
Firelce Cool Blue-F	Firelce Uncolored Concentrate	>5050	>2020	Mildly Irritating	Minimally Irritating	0.0
	Firelce Cool Blue Color Concentrate	>5050	>2020	Minimally Irritating	Minimally Irritating	0.0
	Ready to Use <sup>3</sup> - Evaluated at 2.0 g Cool Blue-F color per gallon of water; used to dilute Firelce uncolored, concentrate at 0.18 lb per gallon of colored water.	>5050	>2020	Non-Irritating	Non-Irritating	0.0
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