



Fish Toxicity ¹



The Forest Service has worked with the United States Geological Service (USGS) for a number of years to develop a fish toxicity test. The work focused on determining the relative sensitivity to wildland fire chemicals of fish and other aquatic species and age classes commonly used for laboratory studies. Young rainbow trout were found to be representative of the most sensitive of this group of aquatic species and as sensitive as the threatened or endangered species that had been studied.

The final test was developed to use 60 days-post-hatch (dph) rainbow trout. The fish were exposed to a series of product dilutions for 96 hours, under static conditions, in ASTM soft water (ASTM E 729), to determine the LC₅₀. The LC₅₀ is the concentration of product in water that results in the death of 50 percent of the aquatic test specimens within a specified time frame, 96 hours in this case.

The LC₅₀, expressed in milligrams of product in a liter of solution (mg/L), is the value reported in the fish toxicity summary.

The reported values are for the product concentrates. Mix ratios must be considered in addition to the LC₅₀ when estimating toxicity in the field. This is especially true when comparing products with very different mix ratios.

It is important to remember when comparing values, that the lower the LC₅₀ value, the greater the toxicity.

It is the goal of the wildland fire agencies to apply these products in a manner that does not allow them to enter waterways. Since this is not always possible and, accidents do happen, careful selection of products can be helpful in minimizing harmful effects.

Product Performance Data on next page

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Standard Test Procedure 1.5 gives instructions for the fish toxicity test.



Fish Toxicity¹ Class A Foam Concentrates



Product	LC ₅₀ ²
FireFoam 103B	12 mg/L
Phos-Chek WD881	11 mg/L
Pyrocap B-136	156 mg/L
Phos-Chek WD881C	17 mg/L
National Foam KnockDown	28 mg/L
FlameOut	130 mg/L
Angus Hi-Combat A	30 mg/L
Buckeye Platinum Class A	39 mg/L
Solberg Fire-Brake 3150A	17 mg/L
First Response	39 mg/L
Ansul Silv-Ex Plus (Also sold as Chemguard Direct Attack)	46 mg/L
1% Bushmaster "A" Class Foam	17 mg/L
Phos-Chek WD881A	17 mg/L
Fomtec Environmental Class A	78 mg/L
Bio-Ex EcoPol-F	334 mg/L
SparkBarrier	17 mg/L
Notes:	
1	All tests are conducted on Rainbow Trout; 60 days-post-hatch with a 96-hr static exposure. USDA Forest Service Standard Test Procedure 1.5 gives instructions for the fish toxicity test. STP-1.5 is available at http://www.fs.fed.us/rm/fire/wfcs/tests/stp01_5.htm
2	Lower values indicate greater toxicity