



Non-Metallics ¹



Non-Metallic testing evaluates the general impact that cyclic use of wildland fire chemicals has on the various field components. Non-metallic materials that are commonly found in field equipment are cycled in and out of solutions of fire chemicals to evaluate volume change and hardness.

Fire chemicals must meet each base specification which only allows a set amount of change from the initial non-metallic characteristics.

Characteristics	Allowable Change
Hardness	≤ 10-percent decrease
Hardness	≤ 20-percent increase
Volume	≤ 0.5 mL from initial

The Forest Service requires non-metallic testing to protect the life of field equipment and to reduce frequency of costly replacements.

Proper maintenance and cleaning of field equipment will also help to minimize these observed changes.

Product Performance Data Summary on following pages

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Standard Test Procedure 5.3 describes the non-metallic test.



Non-Metallics ¹ Water Enhancers, Mixed product



Non Metallic Materials

<u>Products</u>	Chloroprene Rubber AMS 3208M		PVC Plastic MIL A-A-55859A		Fiberglass/Epoxy Resin AMS C-9084		HDPE ASTM D 4976		LDPE ASTM D 4976		Flexible Cross-linked Polyolefin AMS DTL-23053/5	
	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume
Barricade II (1.0%)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-2.9%	-0.1 mL	n/a	n/a
Thermo-Gel 200L (3.0%)	-5.9%	±0.0 mL	+1.6%	+0.1 mL	-2.2%	-0.1 mL	+0.4%	±0.0 mL	-0.7%	±0.0 mL	-7.4%	+0.1 mL
Thermo-Gel 500P (1.2%)	-3.5%	±0.0 mL	+2.2%	±0.0 mL	-2.2%	-0.1 mL	+0.6%	-0.1 mL	+1.2%	±0.0 mL	+0.8%	±0.0 mL
Firewall II (3.0%)	-1.5%	±0.0 mL	+0.4%	±0.0 mL	+1.1%	±0.0 mL	-3.4%	±0.0 mL	-6.1%	±0.0 mL	-4.0%	±0.0 mL
BioCentral Blazetamer (0.65%)	±0.0%	±0.0 mL	+0.4%	±0.0 mL	+0.7%	±0.0 mL	-0.5%	±0.0 mL	-1.8%	±0.0 mL	-2.9%	±0.0 mL
Firelce 561 (0.18 lb/gal)	-4.6%	±0.0 mL	+2.9%	±0.0 mL	-0.4%	±0.0 mL	+1.5%	-0.1 mL	+1.2%	±0.0 mL	-2.3%	±0.0 mL
Phos-Chek Insul-8 (3.0%)	-9.7%	+0.1 mL	±0.0 %	±0.0 mL	-1.8%	±0.0 mL	-1.9%	±0.0 mL	-3.1%	+0.1 mL	-3.5%	±0.0 mL

Notes:

- 1 Results given are the change from initial evaluation. Standard Test Procedure 5.3 describes the non-metallic test.
- 2 Multiple approved formulations exist, most significant change listed.



Non-Metallics ¹



Water Enhancers, Mixed product (continued)

Non Metallic Materials

Chloroprene
Rubber
AMS 3208M

PVC Plastic
MIL
A-A-55859A

Fiberglass/Epoxy
Resin
AMS C-9084

HDPE
ASTM D 4976

LDPE
ASTM D 4976

Flexible Cross-
linked Polyolefin
AMS
DTL-23053/5

Products	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume
EarthClean Tetra KO XL-P (1.5%)	-2.4%	±0.0 mL	+0.4%	±0.0 mL	+0.7%	-0.1 mL	+1.5%	±0.0 mL	-1.9%	±0.0 mL	-0.9%	±0.0 mL
Firelce HVB- Fx (2.7%)	-2.4%	+0.1 mL	-1.4%	±0.0 mL	-0.7%	±0.0 mL	+2.0%	±0.0 mL	±0.0%	±0.0 mL	+2.7%	±0.0 mL
StrongWater (1.25%)	-2.3%	±0.0 mL	-3.1%	±0.0 mL	-1.7%	±0.0 mL	-0.3%	±0.0 mL	-0.5%	±0.0 mL	1.1%	±0.0 mL

Notes:

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Non-Metallics ¹



Water Enhancers, Product Concentrate

Non Metallic Materials

	Chloroprene Rubber AMS 3208M		PVC Plastic MIL A-A-55859A		Fiberglass/Epoxy Resin AMS C-9084		HDPE ASTM D 4976		LDPE ASTM D 4976		Flexible Cross-linked Polyolefin AMS DTL-23053/5	
Products	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume
Barricade II	-9.0%	0.1 mL	-3.9%	-0.1 mL	+0.4%	±0.0 mL	-4.2%	0.0 mL	-7.5%	-0.1 mL	-5.7%	0.0 mL
Thermo-Gel 200L	+19.1%	±0.0 mL	+0.7%	±0.0 mL	+8.4%	±0.0 mL	+14.0%	-0.1 mL	-0.5%	±0.0 mL	+4.4%	±0.0 mL
Thermo-Gel 500P	3	3	3	3	3	3	3	3	3	3	3	3
Firewall II	-17.4%	+0.4 mL	-8.6%	±0.0 mL	-5.0%	±0.0 mL	-6.4%	+0.1 mL	-7.4%	+0.1 mL	-8.3%	±0.0 mL
BioCentral Blazetamer	-3.9%	-0.1 mL	+1.3%	±0.0 mL	+1.5%	±0.0 mL	-0.5%	±0.0 mL	-1.9%	±0.0 mL	-2.9%	±0.0 mL
Firelce 561	3	3	3	3	3	3	3	3	3	3	3	3
Phos-Chek Insul-8	-15.2%	+0.1 mL	+1.2%	±0.0 mL	+2.9%	±0.0 mL	-1.5%	±0.0 mL	-9.3%	±0.0 mL	-4.1%	±0.0 mL

Notes:

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|---|--|
| 1 | Results given are the change from initial evaluation. Standard Test Procedure 5.3 describes the non-metallic test. |
| 2 | Multiple approved formulations exist, most significant change listed. |
| 3 | Non-metallics not conducted on powder concentrates |



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Water Enhancers, Product Concentrate (continued)

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Rubber
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A-A-55859A

Fiberglass/Epoxy
Resin
AMS C-9084

HDPE
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Flexible Cross-
linked Polyolefin
AMS
DTL-23053/5

<u>Products</u>	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume
EarthClean Tetra KO XL-P	3	3	3	3	3	3	3	3	3	3	3	3
Firelce HVB- Fx	3	3	3	3	3	3	3	3	3	3	3	3

Notes:

1	Results given are the change from initial evaluation. Standard Test Procedure 5.3 describes the non-metallic test.
2	Multiple approved formulations exist, most significant change listed.
3	Non-metallics not conducted on powder concentrates