



## Non-Metallics <sup>1</sup>



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 page

- |   |  |
|---|--|
| 1 | Standard Test Procedure 5.3 describes the non-metallic test. |
|---|--|



## Non-Metallics <sup>1</sup>

### Long-Term Retardant, Mixed product



#### 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	
<b><u>Products</u></b>	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume
Phos-Chek MVP-Fx <sup>2</sup>	-6.1%	0.0 mL	-2.4%	0.0 mL	-3.2%	-0.1 mL	+1.0%	0.0 mL	+2.5%	0.0 mL	+6.5%	0.0 mL
Phos-Chek MVP-F <sup>2</sup>	-2.9%	0.0 mL	+3.3%	0.0 mL	+1.4%	+0.1 mL	+1.9%	0.0 mL	+3.1%	+0.1 mL	+1.7%	0.0 mL
Phos-Chek 259-Fx <sup>2</sup>	-1.8%	0.0 mL	+1.3%	0.0 mL	+1.1%	0.0 mL	+1.9%	0.0 mL	+5.1%	-0.1 mL	+3.9%	0.0 mL
Phos-Chek LC-95A-R <sup>2</sup>	+1.8%	0.0 mL	+1.1%	0.0 mL	+0.4%	0.0 mL	+1.4%	0.0 mL	+0.6%	0.0 mL	-3.0%	0.0 mL
Phos-Chek LC-95A-Fx	-8.9%	0.0 mL	+0.8%	0.0 mL	+0.4%	0.0 mL	-0.5%	0.0 mL	+1.9%	0.0 mL	+1.8%	0.0 mL
Phos-Chek LC-95A-F <sup>2</sup>	-1.5%	+0.1 mL	+2.5%	0.0 mL	+2.2%	0.0 mL	+3.0%	0.0 mL	+3.1%	0.0 mL	+1.2%	0.0 mL
Phos-Chek LC-95-W	+1.2%	0.0 mL	-0.4%	0.0 mL	±0.0%	0.0 mL	+1.4%	0.0 mL	+0.6%	+0.1 mL	+0.5%	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 <sup>1</sup>



### Long-Term Retardant, 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	
<b>Products</b>	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume
Phos-Chek LCE20-Fx	-0.6%	0.0 mL	+0.3%	0.0 mL	±0.0%	0.0 mL	-1.0%	0.0 mL	-0.6%	0.0 mL	+1.3%	0.0 mL
Fortress FR-100	-2.9%	0.0 mL	-5.6%	0.0 mL	-4.7%	0.0 mL	-3.8%	0.0 mL	-2.4%	0.0 mL	+0.7%	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.											
3	Powder concentrates are not tested to this procedure.											



## Non-Metallics <sup>1</sup>



### Long-Term Retardant, 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	
<b>Products</b>	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume
Phos-Chek MVP-Fx <sup>2, 3</sup>	-	-	-	-	-	-	-	-	-	-	-	-
Phos-Chek MVP-F <sup>2, 3</sup>	-	-	-	-	-	-	-	-	-	-	-	-
Phos-Chek 259-Fx <sup>2, 3</sup>	-	-	-	-	-	-	-	-	-	-	-	-
Phos-Chek LC-95A-R <sup>2</sup>	+0.6%	0.0 mL	+0.7%	0.0 mL	+0.4%	0.0 mL	+0.5%	0.0 mL	±0.0%	0.0 mL	-1.9%	0.0 mL
Phos-Chek LC-95A-Fx	-6.7%	0.0 mL	±0.0%	0.0 mL	-1.0%	0.0 mL	+3.0%	0.0 mL	-1.2%	0.0 mL	±0.0%	0.0 mL
Phos-Chek LC-95A-F <sup>2</sup>	-1.5%	+0.1 mL	+1.2%	0.0 mL	+0.4%	0.0 mL	+2.0%	0.0 mL	+1.2%	0.0 mL	-3.4%	0.0 mL
Phos-Chek LC-95-W	+0.6%	-0.1 mL	+0.4%	0.0 mL	+1.1%	0.0 mL	+1.0%	-0.1 mL	+0.6%	0.0 mL	-1.3%	0.0 mL

#### Notes:

- Results given are the change from initial evaluation. Standard Test Procedure 5.3 describes the non-metallic test.
- Multiple approved formulations exist, most significant change listed.
- Powder concentrates are not tested to this procedure.



## Non-Metallics <sup>1</sup>



### Long-Term Retardant, Product Concentrate

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	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	
<b>Products</b>	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume	Hardness	Volume
Phos-Chek LCE20-Fx	±0.0%	0.0 mL	±0.0%	0.0 mL	+1.1%	0.0 mL	+1.4%	0.0 mL	+0.6%	0.0 mL	+0.6%	0.0 mL
Fortress FR-100 <sup>3</sup>	-	-	-	-	-	-	-	-	-	-	-	-

#### Notes:

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2	Multiple approved formulations exist, most significant change listed.
3	Powder concentrates are not tested to this procedure.