NFPA Footwear: Performance Requirements

PERFORMANCE REQUIREMENTS	NFPA 1971,2013 Edition Structural and Proximity Fire Fighting
Optional Requirements	CBRN footwear
Abrasion Resistance	Soles and heels shall be tested for resistance to abrasion and the relative volume loss shall not be greater than 200 mm3; (Change from ASTM test method to ISO)
Conductive Heat Resistance (Test 2)	Temperature of insole surface in contact with feet not to exceed 44°C (111°F)
Cut Resistance	TIA upheld; Footwear uppers – distance of blade travel <20mm (.8 in.)
Electrical Insulation	No current leakage in excess of 3.0 mA
Eyelet and Stud Post Attachment	Detachment strength of 294N (66 lbf)
Flame Resistance	Whole boot flame test; requirement is maximum afterflame of 5.0 seconds; shall not melt or drip; and shall not exhibit any burn-through
Flex Cracking	Flex Cracking Resistance Test replaced with ASTM F 2413 for impact, compression, and puncture resistance with exception that flex resistance to cracking be evaluated at 1,000,000 cycles
Heat and Thermal Resistance	No melting, separating, or ignition; No water penetration and all components must remain functional
Impact and Compression Tests	Current test eliminated; New test ASTM F 2413 for impact, compression, and puncture resistance
Label Durability	Legibility test after abrasion & heat
Ladder Shank Bend Resistance	Ladder shanks or whole sole equivalents shall not deflect more than 6 mm (1/4 in)
Liquid Penetration	Upper material composite and seams; 1 hour duration; no penetration
Metal Hardware and Parts	All metal tested for corrosion resistance
Overall Liquid Integrity Test	Errata to eliminate overall liquid integrity test upheld; Part of heat and thermal testing
Puncture Resistance	Footwear uppers shall not puncture under applied force of 60 N (13 lbf); new test ASTM F 1342
Radiant Heat Resistance (Thermal insulation – structural only)	Temperature of upper surface in contact with skin not to exceed 44°C (111°F)
Radiant Heat (Proximity)	Radiant reflective value eliminated; New test Radiant Heat Resistance Test 2, with temperature of upper lining surface in contact with skin not to exceed 44°C (111°F)
Conductive Heat (Thermal insulation – structural only)	Second degree burn time min. 10 seconds, time to pain minimum 6 seconds
Conductive Heat Thermal insulation – proximity only)	Temperature of upper lining surface in contact with skin not to reach 44°C (111°F) in 10 minutes or less
Slip Resistance	New test method whereby footwear shall be tested for slip resistance and shall have a coefficient of friction of 0.40 or greater
Thread	Shall not melt below 260°C (500° F)
TPP	No requirement
Viral Penetration	Footwear upper material composites and seams