

ISO 11999-3:2015-06 (E)

PPE for firefighters - Test methods and requirements for PPE used by firefighters who are at risk of exposure to high levels of heat and/or flame while fighting fires occurring in structures - Part 3: Clothing

Contents		Page
Foreword		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	3
4	Clothing requirements	3
4.1	General	3
4.2	Clothing configuration	3
4.3	Multi-layer clothing assemblies	3
4.4	Component assembly	3
4.5	Attachment of interlining and innermost layers	3
4.6	Extension of interlining and innermost layers	4
4.7	Garment closure systems	4
4.8	Hardware	4
4.9	External pocket requirements	4
4.10	Garment sizing	4
4.11	Neck protection	4
4.12	Wrist protection	4
4.13	High-visibility materials	5
4.13.1	General	5
4.13.2	Option 1 -- Placement based on minimum area of coverage	5
4.13.3	Option 2 -- Placement based on standard pattern	5
4.14	Sampling	7
4.14.1	Samples	7
4.14.2	Sampling levels	7
4.14.3	Exposure surface	7
4.15	Pre-treatment	7
4.15.1	General	7
4.15.2	Pre-treatment by laundering or dry cleaning	7
4.16	Clothing -- Performance requirements	8
4.17	Flame and thermal resistance performance	10
4.17.1	General	10
4.17.2	Flame resistance (surface ignition) for performance level A1	11
4.17.3	Flame resistance (bottom-edge ignition) for performance level A2	11
4.17.4	Heat resistance	11
4.17.5	Heat transfer (flame exposure)	12
4.17.6	Heat transfer (radiant exposure)	12
4.17.7	Heat transfer (combined flame and radiant exposure)	12
4.17.8	Residual strength of material following radiant heat exposure	13
4.17.9	Conductive compressive heat resistance	13
4.17.10	Thread heat resistance	14
4.18	Strength and physical hazard resistance performance	14
4.18.1	Tensile strength	14
4.18.2	Tear strength	14
4.18.3	Seam strength (woven materials)	14
4.18.4	Seam strength (knit or stretch woven materials)	14

4.19	Water and liquid resistance performance	14
4.19.1	General	14
4.19.2	Surface wetting	15
4.19.3	Water absorption resistance	15
4.19.4	Water penetration resistance	15
4.19.5	Liquid penetration resistance (runoff method) for performance level c1	16
4.19.6	Liquid penetration pressure resistance (hydrostatic method) for performance level c2 ..	16
4.19.7	Viral penetration resistance for performance level c2	16
4.19.8	Overall garment liquid penetration resistance for performance level c2	17
4.19.9	Light degradation resistance for performance level c2	17
4.20	Thermal comfort performance	17
4.20.1	General	17
4.20.2	Water vapour resistance	17
4.20.3	Total heat loss	18
4.21	Additional requirements	18
4.21.1	Cleaning shrinkage resistance	18
4.21.2	Hardware corrosion resistance	18
4.21.3	Photometric requirements of high-visibility retroreflective/combined performance materials used on garments	18
4.21.4	Colour requirements of high-visibility fluorescent/combined performance materials used on garments	19
4.21.5	Heat resistance of high-visibility materials used on garments	20
4.21.6	Flame spread of high-visibility materials used on garments	20
4.21.7	Protective wristlets	20
4.21.8	Optional clothing test using an instrumented manikin	20
4.21.9	Optional drag rescue device (DRD)	20
5	Compatibility	21
6	Marking	21
7	Manufacturer's information	21
Annex A (informative)	Comparison of performance requirements for clothing	22