NFPA Standards

A Concise Reference Guide To NFPA Apparel Standards.

The National Fire Protection Association (NFPA) develops, publishes and disseminates consensus codes and performance standards intended to minimize the possibility and effects of fire and other risks. For additional information on NFPA or other technical issues, please contact Customer Service at 1-800-600-4019 or email customerservice@kappler.com.

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Overview of NFPA Standards

Below is an overview of the protective clothing standards now consolidated under NFPA 1990. For details on the NPFA 1990 consolidation visit kappler.com/nfpa-1990-consolidation. For additional protective clothing standards see page 3.

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NFPA 1990 Consolidated Standard

	NFPA 1990 (1991)	NFPA 1990 (1992)	NFPA 1990 (1994) Class 1	NFPA 1990 (1994) Class 2/2R	NFPA 1990 (1994) Class 3/3R	NFPA 1990 (1994) Class 4/4R	NFPA 1990 (1994) Class 5
	Hazardous Materials and CBRN Operations Vapor and Liquid	Hazardous Materials and CBRN Operations Liquid Splash	Hazardous Materials and CBRN Operations Vapor and Liquid	Hazardous Materials and CBRN Operations Vapor and Liquid	Hazardous Materials and CBRN Operations Vapor and Liquid	Hazardous Materials and CBRN Operations Particle	Hazardous Materials and CBRN Operations Flammable Gases not Toxic to skin
CHEMICAL RESISTANCE VS GARMENT FABRIC, SEAMS, VISORS, GLOVES, BOOTS	Permeation resistance 1 hr vs 21 industrial chemicals, 4 toxic industrial chemicals and agents mustard and soman	Penetration resistance 1 hr vs 10 industrial chemicals	Permeation resistance 1 hr vs 10 toxic industrial chemicals and agents mustard and soman	Permeation resistance 1 hr vs 5 toxic industrial chemicals and agents mustard and soman	Permeation resistance 1 hr vs 5 toxic industrial chemicals and agents mustard and soman	N/A	Liquid Repellency resistance ISO 6530 4 non-toxic liquids
CHEMICAL CHALLENGE LEVEL	Liquids 100 g/m^2 Concentration Vapors 100%	100% concentration and full contact	Liquids 20 g/m^2 concentration Vapors 10,000 ppm Closed Top Cell	Liquids 10 g/m^2 concentration Vapors 350 ppm Closed Top Cell	Liquids 10 g/m^2 concentration Vapors 40 ppm Open Top Cell	N/A	Low Level Splash
CHEMICAL BREAKTHROUGH CRITERIA	ASTM F 739 Cumulative (ug/cm^2) 6.0 TIC's, 4.0 mustard, 1.25 soman	ASTM F 903 Visual liquid	Cumulative (ug/cm^2) 6.0 TIC's, 4.0 mustard, 1.25 soman	Cumulative (ug/cm^2) 6.0 TICs, 4.0 mustard, 1.25 soman	Cumulative (ug/cm^2) 6.0 TICs, 4.0 mustard, 1.25 soman	N/A	ISO 6530 > 80% repellency
SYSTEM TESTS	ASTM F 1052 Pressure MIST Inward Leakage PPDF > 488 Shower > 60 min	ASTM F 1359 Shower > 20 min	MIST PPDF > 441 ASTM F 1359 Shower > 20 min	MIST PPDF > 328 ASTM F 1359 Shower > 20 min	MIST PPDF > 328 ASTM F 1359 Shower > 8 min	ASTM F 1359 Shower > 4 min Particle Inward Leakage No visible particles on test subject	NA
FLAME RESISTANCE and FLAME BREAK OPEN RESISTANCE	ASTM F 1358 3 sec burn only FTM 191A	N/A	ASTM F 1358 3 sec burn only FTM 191A	N/A	N/A	N/A	N/A
FLASH FIRE/THERMAL PROTECTION	Optional ASTM F 1358 12 sec burn ASTM F 2700 > 8 cal/cm^2	Optional ASTM F 1358 12 sec burn ASTM F 2700 > 8 cal/cm^2	Optional ASTM F 1358 12 sec burn ASTM F 2700 > 8 cal/cm^2	Optional ASTM F 1358 12 sec burn ASTM F 2700 > 8 cal/cm^2	Optional ASTM F 1358 12 sec burn ASTM F 2700 > 8 cal/cm^2	Optional ASTM F 1358 12 sec burn ASTM F 2700 > 8 cal/cm^2	ASTM F 1358 12 sec burn ASTM F 2700 > 20 cal/cm^2
COMFORT TOTAL HEAT LOSS EVAPORATIVE RESISTANCE	N/A	Option/Label Information THL > 200 W/m^2 Ret < 30 Pa•m^2/W	N/A	Option/Label Information THL > 200 W/m^2 Ret < 30 Pa•m^2/W	THL > 200 W/m^2 Ret < 30 Pa•m^2/W	THL > 450 W/m^2 Ret < 30 Pa•m^2/W	THL > 450 W/m^2 Ret < 30 Pa•m^2/W
VIRAL PENETRATION RESISTANCE				ASTM F 1671	ASTM F 1671	ASTM F 1671	
TYPE R "RUGGEDIZED" REQUIREMENTS				Laundering 5 cycles prior to MIST testing, higher physicals and increased flex/abrade prior to permeation	Laundering 5 cycles prior to MIST testing, higher physicals and increased flex/abrade prior to permeation	Laundering 5 cycles prior to MIST testing, higher physicals and increased flex/abrade prior to permeation	

Overview of NFPA Standards *(continued)*

NFPA 1999

Emergency Medical Services Single Use

	TEST METHOD
COMFORT Moisture Vapor Transmission Rate (MVTR)	ASTM E96, Procedure B ≥ 650 g/m^2 / 24 hour
VIRAL PENETRATION RESISTANCE	ASTM F1671 PASS
SYSTEM TEST	ASTM F1359 Shower > 8 min

NFPA 2112

Flame-Resistant Clothing for Industrial Personnel

	TEST METHOD
FABRIC HEAT TRANSFER PERFORMANCE (HTP)	ASTM F2700 Contact > 3 cal/cm^2 Spaced > 6 cal/cm^2
FABRIC FLAME RESISTANCE	ASTM D6413 < 2s after-flame, < 4 inch char length, no melt or drip
FABRIC HEAT AND THERMAL SHRINKAGE	ASTM F2894 Less than 10% shrinkage, no melt or drip
SYSTEM TEST THERMAL MANIKIN (PYROMAN)	ASTM F1930 Less than 50% body burn

NFPA 70E & ASTM F1891

Electrical Safety in the Workplace

	TEST METHOD
ARC FLASH PERFORMACE & RATING	ASTM F1959 APTV 8-25 cal/cm^2 HRC Class 2

For details on Kappler's NFPA-certified products visit kappler.com/nfpa-products

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PERTINENT CODES & INFORMATION

DUNS # 180036501 • **CAGE Code** 0WR15 • **EIN** 63-0943684

NAICS Codes 315210, 315220, 315280, 315990, 339113, 541715