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HEAVY INDUSTRY · FR GARMENT CARE

FR Garment Care & Lifecycle Guide

Washing protocols by fabric type, inspection frequency and the retirement criteria that keep FR protection real.

Version 1.0 Last updated: September 11, 2026

DISCLAIMER

This resource is practical procurement guidance written from a China-side workwear factory's perspective. It is not legal, safety or compliance advice. FR and hi-vis standards, arc ratings and certification scope vary by garment, market and edition; confirm every value against the current standard, a verifiable certificate and an accredited lab report before you commit funds.

Heavy industry PPE resource | Document ID: SPEC-HVY-CARE-001

Purpose

Proper care directly impacts FR protection. This guide covers washing protocols by fabric type, inspection frequency, retroreflectivity benchmarks, and retirement criteria — helping you maximize garment service life while maintaining compliance.

Washing Protocols by Fabric Type

FABRIC TYPE	WASH TEMPERATURE	DETERGENT	CRITICAL RULES
Treated FR Cotton (ammonia-based)	≤ 60°C (140°F)	pH-neutral liquid detergent. No soap flakes.	Never use chlorine bleach. No fabric softeners. Hard water (>250ppm): use water softener additive. Hydrogen peroxide-based stain removers only.
Inherent FR Modacrylic Blends	≤ 75°C (167°F)	pH-neutral liquid detergent. No soap.	No chlorine bleach. Fabric softener reduces flame resistance by coating fibers — prohibited. Industrial laundry: 5.5-6.5 pH final extract.
FR Cotton-Nylon Blend	≤ 60°C (140°F)	pH-neutral. No animal-fat-based soaps.	Avoid starch/sizing (flammable). Tumble dry low. Over-drying accelerates fiber degradation.
Aramid (Nomex/Kevlar)	≤ 95°C (203°F)	pH-neutral. No chlorine bleach.	Can withstand higher wash temperatures. Avoid overloading — insufficient rinsing deposits detergent residue. Tumble dry medium.
Anti-Static FR (carbon-core filament)	≤ 40°C (104°F)	pH-neutral. No bleach.	Lower temperatures protect conductive filament grid. No fabric softener (coats filaments). Air dry preferred; tumble dry low if needed.

Industrial Wash Durability Benchmarks

50+	100+	75+	>100
WASH CYCLES (TREATED FR)	WASH CYCLES (INHERENT FR)	WASH CYCLES (FR COTTON-NYLON)	WASH CYCLES (ARAMID)

*Cycles until FR performance shows measurable degradation per ASTM D6413 after-laundering test. Actual life varies by wash conditions, contaminant exposure, and garment construction.

Retroreflectivity Inspection & Degradation Benchmarks

INSPECTION FREQUENCY	WHAT TO CHECK	FAILURE CRITERIA
Every wash cycle	Visual check: tape peeling, cracking, delamination at edges	Any edge lifting > 3mm or visible substrate exposure
Every 25 washes	Retroreflectivity quick-check with calibrated retroreflectometer (ASTM E809)	RA value below ANSI/ISEA 107 minimum for garment Class
Every 50 washes	Full photometric lab test if quick-check is borderline	Below ANSI/ISEA 107 Table 2 minimums: Class 2 = 330 cd/(lx·m^2) at observation angle 12', entrance angle 5°

3M Scotchlite vs Generic Tape — Degradation Comparison

METRIC	3M SCOTCHLITE	GENERIC TAPE
Wash durability (to 50% degradation)	50-75 industrial cycles	10-25 industrial cycles
Retroreflectivity retention after 50 washes	≥ 70% of original RA	Often < 30% or complete delamination
Edge adhesion (50 washes)	Minimal lifting	Common peeling, cracking, substrate exposure
Certificate of Authenticity	Batch-level verification available	Typically none

Garment Retirement Criteria

- □ FR Performance: After-laundering ASTM D6413 test shows char length > 152mm (6 in) or afterflame > 2 seconds.
- □ Retroreflectivity: Below ANSI/ISEA 107 minimum RA for garment class. Any delaminated tape section > 10% of total tape area.
- □ Physical Damage: Holes, tears, or abrasion exposing underlying fabric. Damaged closures (zippers, snaps, buttons). Broken or missing anti-static grounding points.
- □ Contamination: Oil, grease, or chemical contamination that cannot be removed. Contaminants can ignite, compromise FR treatment, or reduce arc flash protection.
- □ Labeling: Missing or illegible FR certification label. Without the label, the garment cannot be verified — retire immediately.

50-Wash Tracking Log Template

DATE	WASH #	GARMENT ID	VISUAL CHECK	RETROREFLECTIVITY	ACTION	INITIALS
			☐ Pass ☐ Fail	☐ Pass ☐ Fail		
			☐ Pass ☐ Fail	☐ Pass ☐ Fail		
			☐ Pass ☐ Fail	☐ Pass ☐ Fail		

Photocopy this row for each garment in your program. Maintain the log in your EHS management system for audit purposes.

Pro Tip: Implement a color-coded marking system: stitch a colored thread onto the care label at each 50-wash increment. Inspectors can identify garment age at a glance without pulling records. Different colors for 50/100/150 washes.

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FR protection ends where care stops.

Send the fabric types and laundry method — a care protocol, a retirement policy and a wash-log template are returned.

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