

Garment Specification

Style – Jacket with GORE® PYRAD® fabric technology

Colour – EN 20471 Yellow with Navy contrast on the shoulders and cuffs

Product Code – FK25JKR

Garment features:-

Outer collar rear zip carrier to take detachable hood (separate part number)

Hanging loop, inside of collar

Inner storm collar

Fully lined with FR fabric

Front fastening with single way zip and Velcro storm flap

One nelson style pocket on inside of storm flap – left hand side as worn

One inner poacher pocket with Velcro tab fastening

Two outer self- fabric chest loops

Ergonomic design for ease of movement

Two large outer side hand warmer type pockets zip fastening with storm flaps, FR fleece lined

Soft inner FR storm cuffs

Adjustable external Velcro cuffs

Technical specification for Arc Rated Foul Weather Garments

Garments are to be designed and certified as category 3 PPE clothing for use in the electrical utility sector.

A. Performance criteria for outer textiles:

1. High visibility warning clothing for professional use EN ISO 20471.
2. Protection against rain EN 343 3/3
3. Protective clothing – Clothing to protect against heat and flame EN ISO 11612 A1, A2 B2, C1, D2, E1 F1.
4. Live working protective clothing against the thermal hazards of an electric arc IEC 61482-1-2 Class 2.
5. Welding protection EN ISO 11611 Class 2¹.
6. Protective clothing against liquid chemicals EN 13034 (Type 6).
7. Protective clothing electrostatic properties EN 11049-3.
8. Öeko-Tex® Standard 100 product class 2.

B. Key performance criteria for garments:

1. Garments are based on ePTFE lamination technology where the face fabric is Flame Retardant and Arc rated.
2. Garments must have sealed seams to ensure waterproofness. Garment seams are sealed using tape with similar properties as the membrane and in all cases must be compatible with each other.
3. The seam tape must not compromise the garment durability and have a proven performance record. All seams must be sealed in such a way as to provide good adhesion of seam seal tape, rendering them waterproof. Evidence of regular testing on Sutter Tester / Hydrostatic Head Tester for waterproofness, must be recorded in garment manufacturing and retained showing frequency of tests, dates, results etc.
4. All seams and cross over seams must be waterproof to 3psi for 2 minutes.
5. Garments must have durable wicking barriers at the inner edges of bottom areas where there is a likelihood of water wicking into the garment
6. EN ISO 20471 requirement to be fulfilled where applicable colours are present in the garment. Where appropriate all none hi visibility components must comply with EN ISO 20471 for contrast colour requirements.
7. Laminate supplier has the ability to provide technical support and product training for end users as required.
8. Prototype garments must be tested in accordance with the Protective Clothing - Against Rain EN 14360 rain tower (or equivalent). Preconditioning of the test samples must be carried out by laundering the garment following the care label instructions without detergent to minimum of 15 cycles. This will ensure all Durable Water Repellent (DWR) is removed and support assimilating performance of the garment after extended use. Dry the garments according to A1, drying method (air dry). Assess readiness for rain tower test by carrying out Spray Rate test, result <2 (ISO 4920).
9. EN 14360 test assessment criteria as follows:

Criteria	Max. tolerance
Wicking length at hems	< 5cm ²
Wicking length at trouser hems	< 10cm ²
Wet tricot area	0 cm ²

¹ Tested with Lining: 50%aramid / FR Viscose – nominal mass 120g/m²

Remark: The measure of the wicking length starts at the last stitched through seam. Wet or clammy parts of the tricot caused by condensation effects on membrane side are not considered as fail.

C. Sewn & taped seams

1. All shell seams are to be a maximum of 0.6cm wide and fully taped with laminate manufacturers supplied seam tape.
2. Garments must have seam tape applied to all stitched seams to create a garment that is waterproof, windproof and breathable to meet the standards and test criteria.
3. All loose threads should be trimmed before seam tape is applied.
4. No laminate seam tape shall be applied to the face side of fabric. All tape should be applied to the membrane side for 2 Layer laminate or knit side of 3 layer laminate.
5. There should be no scorching along seam tape edges from the sealing process.
6. All seams at a minimum must pass a low hydrostatic pressure test of 3psi hydrostatic head for a 2 minute duration.
7. Any wrinkles in the laminate fabric as a result of taping a seam shall be repaired to ensure the resulting seam does not leak.
8. Manufacturer must be able to provide evidence of mechanisms of controlling seam sealed areas of garments, e.g. Seam sealing machines with speed limitation controls, evidence of in production testing frequency and results thereof.
9. All markings should comply fully with the requirements of EN340.

D. Performance criteria of functional ePTFE 2 layer laminate

Performance criteria of functional ePTFE 2 layer laminate			
No.	Properties	Standard / Property	Requirement
1.	Face fabric properties		
1.1.	Composition	Outer face material	99,4% Polyester; 0,6% Carbon fibre
1.2.	Material content		
1.3.	Construction	ISO 9354	Twill 1/2
2.	Functional layer		Bicomponent membrane based on ePTFE
2.1.	Water-vapour permeability (Ret)	EN 31092	≤ 12 m ² Pa/W
2.2.	Resistance to delamination after 30 x wash cycles	EN ISO 6330/6N, dry method F	No delamination, cracks, holes or bubbles bigger than 3mm
3.	Seam tape		Bicomponent tape based on ePTFE, width 22mm
4.	Physical & Mechanical laminate properties		
4.1.	Weight per unit area [g/m ²]	ISO 3801 Method 5	215 g/m ² + 10 g/m ²

4.2.	Tensile strength	EN ISO 1421, method 1	warp ≥ 700 N weft ≥ 600 N
4.3.	Tear strength (Tounge)	EN ISO 4674 -1, method A	Warp ≥ 40 N Weft ≥ 35 N
4.4.	Dimensional stability to Wash, 5 x cycle	EN ISO 5077 EN ISO 6330, 6N, drying method F	Warp $\leq \pm 3\%$ Weft $\leq \pm 3\%$
4.5.	Water Entry Presure (WEP)	EN 20811 (60 \pm 3) mbar/min pressure increase, first drop	
4.6.	Initial		≥ 100 kPa (1bar)
4.7.	After 30 Wash/Dry cycles	EN ISO 6330, 6N, drying method F	≥ 100 kPa (1bar)
4.8.	After 10 Dry cleaning cycles	EN ISO 3175-2	≥ 100 kPa (1bar)
4.9.	Initial (on cross seams)		≥ 20 kPa (0,2bar)
4.10.	After 30 Wash/Dry cycles, (on cross seams)	EN ISO 6330, 6N, drying method F	≥ 20 kPa (0,2bar)
4.11.	Industrial Laundry suitable	EN ISO 15797	No WEP leakage on textile or seam sealed seams after 10 cycles
4.12.	Spray rate initial	EN 24920	5
4.13.	Oil rate - initial	EN ISO 14419	5
5.	Colour fastness		
5.1.	Colour fastness to light	EN ISO 105-B02, method 2	≥ 4
5.2.	Colour fastness to washing 60°C	EN ISO 105-C06, C1S	Staining to; Cotton ≥ 4 Polyester ≥ 4 Colour change: ≥ 4
5.3.	Colour fastness to water	EN ISO 105-E01	Staining to; Cotton ≥ 4 Polyester ≥ 4 Colour change: ≥ 4
5.4.	Color fastness to perspiration	EN ISO 105-E04	Staining to;

		(alkaline/acid)	Cotton ≥ 4 Polyester ≥ 4 Colour change: ≥ 4
5.5.	Colour fastness to rubbing	EN ISO 105-X12	dry: ≥ 4 wet: ≥ 4
5.6.	Colour fastness to organic solvents	EN ISO 105-X05	Staining to; Cotton ≥ 4 Polyester ≥ 4 Colour change: ≥ 4
5.7.	Colour fastness to dry cleaning	EN ISO 105-D01	Staining to; Cotton ≥ 4 Polyester ≥ 4 Colour change: ≥ 4

E. Certification:

Garments for this purpose are Category 3 PPE. Performance requirements of the materials must be approved by a Notified Body. The garments must be Type Approved and CE marked based on the risk assessment.

1. Protective clothing - General requirements EN 340 - Compliance required.
2. Protection against rain EN 343 3/3.
9. Protective clothing – Clothing to protect against heat and flame EN ISO 11612 A1, A2 B2, C1, D2, E1 F1.
3. Live working protective clothing against the thermal hazards of an electric arc IEC 61482-1-2 Class 2.
4. Fabric assembly tested to IEC 61482-1-1 Cal rating ≥40.
5. Welding protection EN ISO 11611.
6. Protective clothing against liquid chemicals EN 13034 (Type 6).
7. Protective clothing electrostatic properties EN 11049-3.
8. Öeko-Tex® Standard 100 product class 2.