

Fabric Specification

ThermGuard™ High Visibility

Description: FR Polyester / Meta-Aramid Quilt
Weight: 280g/m² (± 5%)



Test Method		
Dimensional Stability, Strength & Charge Decay	Length	Width
Washing 60°C	ISO 6330: 2001 (5 cycles + 1 dry)	<2.0 %
Pilling 36,000 revs.	ISO 12945-1: 2001	Grade: 4/5
Tear Strength	ISO 13937-2: 2000	>45 N.
Tensile Strength	ISO 13934-1: 1999	>1300 N.
Abrasion (12kPa)	ISO 12947-2: 1999	>20,000 revs.
Charge Decay	EN 1149-3: 2004	Shielding factor: 0.66 t ₅₀ <0.01 sec.
ISO 11612: 2008 - Protective Clothing - Heat & Flame Properties		
Heat Resistance	ISO 17493: 2000 at 180°C	PASS - maximum shrinkage 1%
Flame Spread	ISO 15025: 2000	A1 - Face Ignition A2 - Edge Ignition
Convective Heat	ISO 9151: 1995	B1
Radiant Heat	ISO 6942: 2002 method 'B'	C1
Impact of Spatter	ISO 9150: 1988	Class 2, No ignition, 29 drops
ISO 11611: 2007 - Protective Clothing for Welding ... Heat, Flame & Spatter		
		Class 2
ISO 14116: 2008 - Protective Clothing - Heat & Flame Properties ... Category:		
		3/51/60
ISO 13034: 2009 - Protective Clothing against Liquid Chemicals (Type 6)		
		Level 3*
ISO 15614: 2007 - Protective Clothing for Wildland Firefighting		
		Class A1
Arc rating	Open Arc: EN 61482-1-1: 2009 'Box' method: EN 61482-1-2: 2007	ATPV = 8.5 Cal/cm ² HAF = 70% Class 1
High Visibility Colours to - EN 471: 2003, GO/RT 3279: 2008, EN 1150: 1999		
§ 02238 with chemical resistant finish.		
Care recommendations		

ThermGuard™
A revolution in protection



Conforms to

- ISO 11612 Protective Clothing against Heat and Flames
- ISO 11611 Protective Clothing For Use in Welding and Allied Processes
- ISO 20471 & GO/RT 3279. High Visibility
- EN 61482-1-1 ATPV Electric Arc Protection >8/Cal/cm²
- EN 61482-1-2. Electric Arc Protection, Class 1 ['Box' Method]
- EN 13034 Protective Clothing against Liquid Chemicals [Type 6]
- EN 15614 Protective Clothing For Wildland Firefighting

High visibility; heat flame and electric arc resistant woven fabric

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High visibility: heat flame and electric arc resistant woven fabric

Ultimate protection and visibility

Key Performance Characteristics

- Protects against heat and flame ISO 11612
- Any high visibility colour including GO/RT 3279
- Open arc rating >8cal/cm²
- Can be dyed in deep and traditional colours

- Heat & Flame**
ISO 11612
- High Visibility**
ISO 20471, GO/RT 3276
- Electric Arc**
EN 61482-1-1 Open arc ATPV
EN 61482-1-2 Box Method
- Small Molten Metal Splashes**
ISO 11611: 2007
- Antistatic Properties**
EN 1149
- Liquid Chemicals**
EN 13034
- Wildland Firefighting**
EN 15614



RALPH Manikin test complying to ISO 13506

ThermGuard™ High Visibility testing was undertaken on the 2006 version of the "male" heat sensing manikin known as RALPH developed at BTTF Fire Technology Services. Built to comply with ISO 13506.

Clothing System

ThermGuard™ High Visibility tested in conjunction with long-sleeved vest and long johns. **Flame exposure time: 4 seconds.**

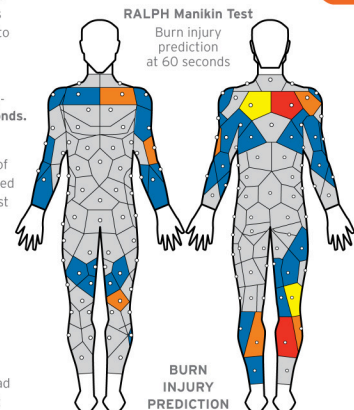
Burn Injury Prediction

The results below are expressed according to clause 9.5.3 of ISO 13506 which calculated the percentage burn injury based on the total area of manikin covered by garments under test being 100%.

Burn Injury Prediction (according to ISO 13506 clause 9.5.3)	Pain	24.6%
1st° Burn	1.8%	
2nd° Burn	5.3%	
3rd° Burn	1.9%	
2nd° + 3rd° Burn	7.1%	

After Test Examination

Coverall: The outer surface of the 2-layer coverall fabric had vapourised leaving a residue of small beads of material but the underlying substrate fabric was intact and flexible.



RALPH Manikin Test

Burn injury prediction at 60 seconds

BURN INJURY PREDICTION

■ No ■ Pain ■ 1st° ■ 2nd° ■ 3rd°

Protection and Visibility

ThermGuard High Visibility is a heat and flame resistant material available in fluorescent and standard shades. This innovative textile solution ensures wearers are conspicuous as well as protected against thermal hazards. Protection includes: resistance to an electric arc, molten metal splashes and static electricity.

Garments manufactured in ThermGuard High Visibility meet the industry's performance standards: ISO 11612 for clothing that protects against heat and flame: EN ISO 11611 for use in welding and allied processes: EN ISO 14116 for limited flame spread protection: EN 1149-3 static electricity discharge: EN 61482-1-1 & 2 protection against the thermal hazards of an electric arc: EN 13034 protection against liquid chemicals and EN 15514 protection for wildland fire fighting.

Typical Applications

- Utilities - electricity and gas distribution
- Railways - maintenance of tracks and power lines
- Chemical and Petrochemical - offshore and onshore platforms and refineries
- Airports - airside refueling

'Toray Textiles' ThermGuard™ High Visibility offers:

- Multi hazard protection including heat and flame with high visibility
- Available in any high visibility colour including GO/RT 3279
- Thermal protection to heat of electric arc
- Breathable, comfortable to wear
- Full shade range with excellent light, colour and wash fastness
- Stable to industrial washing and durable

International patent filed