

# 1 DO YOU KNOW

## HOW DO WE TEST OUR HIGH-VISIBILITY GARMENTS TO EN ISO 20471 AND RIS-3279-TOM?



A Retroreflectometer is used to check the performance of retroreflective tape. Every roll of tape is tested to ensure it meets and exceeds the standard requirements. The retroreflectometer measures the coefficient of two rotating angles. EN ISO 20471 states the reading should not be below 330 (cd/lx.m<sup>2</sup>)



A spectrophotometer is used to check the chromaticity “color intensity” of fabric to ensure every roll of fabric meets the requirements of EN ISO 20471 and RIS-3279-TOM.



RIS imposes a higher concentration for high visibility orange fabric for railway workers. This increases the conspicuous nature of the fabric and ensures that the rail worker is more visible.

# 2 DO YOU KNOW

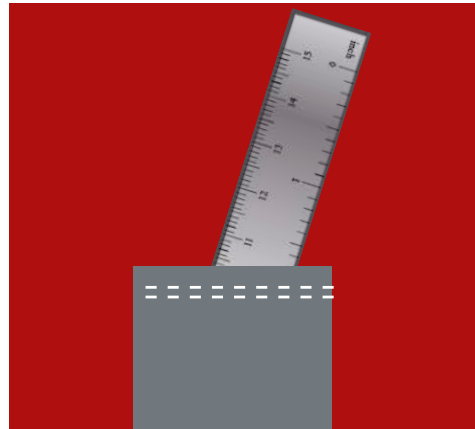
## PROTECTIVE CLOTHING FOR USE IN WELDING AND ALLIED PROCESSES

### EN ISO 11611



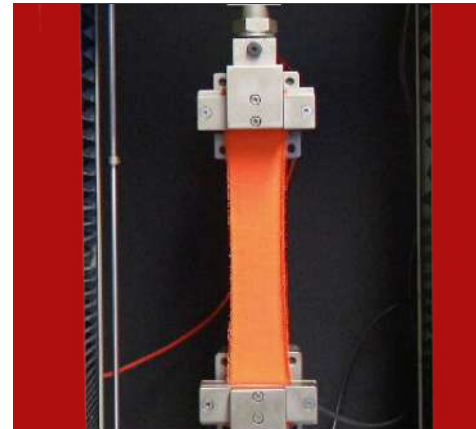
#### FLAP POCKETS

In order to comply with EN ISO 11611 all external pockets must be flapped, except for side pockets below the waist which do not extend more than ten degrees forward of the seam.



#### RULER POCKETS

A single ruler pocket with an opening not greater than 75mm is permitted behind the side seam on one or both legs.



#### TENSILE AND TEAR STRENGTH

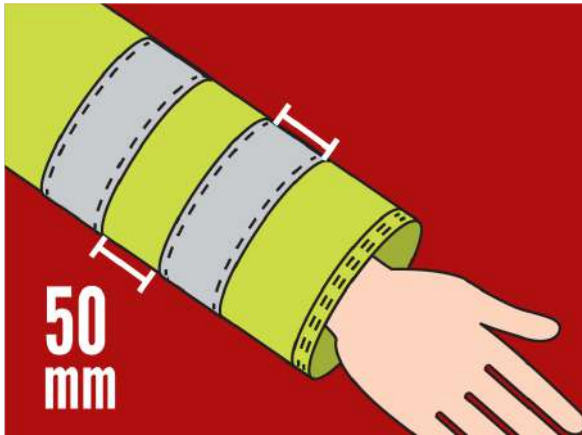
To meet EN ISO 11611 tensile strength must be at least 400N and tear strength must be at least 15N for class 1 and 20N for class 2.



# 3 DO YOU KNOW

RETRO-REFLECTIVE TAPE MUST MEET THE FOLLOWING PARAMETERS:

EN ISO 20471



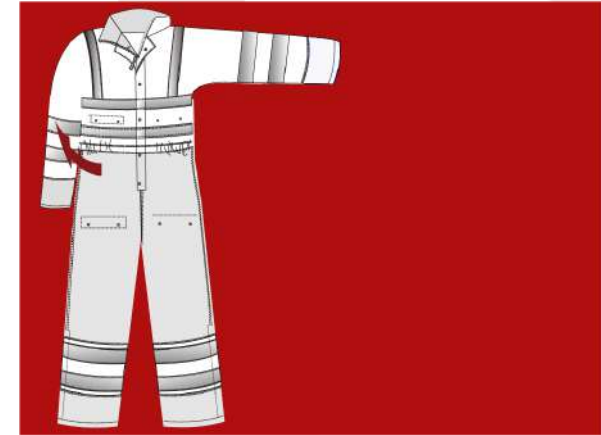
## REFLECTIVE TAPE

- Reflective tape must be at least 50mm wide.
- Bands of reflective tape must be positioned at least 50mm apart.



## DISTANCE FROM HEM

Reflective tape must be positioned 50mm or more from the end of sleeve or leg.



## ALL AROUND THE BODY

Reflective tape must encircle torso and/or limbs to be included in the calculation of the necessary square area of reflective tape. A gap (for fastening system or seam) in the band of reflective tape must be 50mm or less. The total amount of such gaps in every band must not exceed 100mm around the torso and 50mm around the sleeves and legs.



# 4 DO YOU KNOW

## WHAT IS EN 343?



### EN343

EN343 is the European standard that applies to garments worn in adverse weather conditions. This standard specifies requirements and test methods applicable to the materials and seams of protective clothing against the influence of precipitation (e.g. rain, snowflakes), fog and ground humidity.

The standard provides for two performance parameters of which there are 4 levels with Class 4 offering the highest level of protection.

X Water Penetration Resistance (Waterproofness) 4 Levels  
Y Water Vapour Resistance (Breathability) 4 Levels  
R Readymade Garment; Rain Tower Test (optional)  
R may be replaced by an X if the test has not been carried out or is not suitable.



The above pictogram indicates that protection against rain is offered.

| Sample Type   | CLASS        |                 |                 |
|---|--------------|-----------------|-----------------|
|   | 1            | 2               | 3               |
| Fabric before pre-treatment   | Wp > 8000 Pa | No test needed* | No test needed* |
| Fabric after pre-treatment  | N/A          | Wp > 8000 Pa    | Wp > 13,000 Pa  |
| Seams before pre-treatment  | Wp > 8000 Pa | Wp > 8000 Pa    | Wp > 13,000 Pa  |
| *Test not required because the worst situation for classes 2 & 3 is after pre-treatment |              |                 |                 |

WP = Water Penetration Resistance

PA = Pascal Pressure Units

# 5 DO YOU KNOW

## WHAT IS EN 342?



### EN 342

EN342 is the European standard that applies to garments worn in cold environments. This standard specifies requirements and test methods for the performance of clothing ensembles (i.e two-piece suits/coveralls) for protection against the effects of cold environments equal to or below -5°C.

There are three main parameters:

#### A Thermal insulation

*(this is tested using a full-size moving mannequin & measures the amount of energy required to maintain warmth)*

#### B Air Permeability

*(This is a measure of how windproof the garment is), AP, Class 1-3 (where 3 is best)*

#### C Water penetration

*(waterproofness) Class 1-2 (where 2 is best); optional test*

The manikin test measures the amount of energy required to maintain warmth. This result is expressed in square metres Kelvin per Watt (m<sup>2</sup>K/W) this result can be used to estimate the maximum wear time based on the activity level of the wearer, the temperature of the environment and insulation value of the garment.

0.336 I (m<sup>2</sup> clerK/W) (Thermal Insulation) 2 (Air Permeability)  
X (Water Penetration Resistance)

| Insulation                               | Wearer Moving Activity |     |       |     |                |     |       |     |
|--|------------------------|-----|-------|-----|----------------|-----|-------|-----|
| I <sub>cler</sub> [m <sup>2</sup> * K/W] | Light 115 W/m          |     |       |     | Medium 170 W/m |     |       |     |
|  | Air Velocity           |     |       |     |                |     |       |     |
|  | 0,4 m/s                |     | 3 m/s |     | 0,4 m/s        |     | 3 m/s |     |
| 0.265                                    | 8 h                    | 1 h | 8 h   | 1 h | 8 h            | 1 h | 8 h   | 1 h |
| 0.310                                    | 3                      | -12 | 9     | -3  | -12            | -28 | -2    | -14 |
| 0.390                                    | -9                     | -28 | 0     | -16 | -29            | -49 | -16   | -33 |
| 0.470                                    | -17                    | -38 | -6    | -24 | -40            | -60 | -24   | -43 |
| 0.540                                    | -24                    | -45 | -11   | -30 | -49            | -71 | -32   | -52 |
| 0.620                                    | -31                    | -55 | -17   | -38 | -60            | -84 | -40   | -61 |



# 6 DO YOU KNOW

## THAT EN ISO 20471 HAS 3 PERFORMANCE LEVELS:



**EN ISO  
20471**

### THE 3 CLASSES

**Class 3: Highest Level**

**Class 2: Intermediate Level**

**Class 1: Minimum Level**



### CLASS 3: HIGHEST LEVEL

Highest level of protection required for any persons working on or near motorways, dual-carriage ways or airports. Must incorporate a minimum of 0.80m<sup>2</sup> of background material and 0.20m<sup>2</sup> of retro- reflective materials. (4 meters of 5cm wide reflective tape)



### CLASS 2: INTERMEDIATE LEVEL

Required for any persons working on or near A and B class roads, also for delivery drivers. Must incorporate a minimum of 0.50m<sup>2</sup> of background material and 0.13m<sup>2</sup> of retro-reflective material. (2.60 metres of 5cm wide reflective tape)



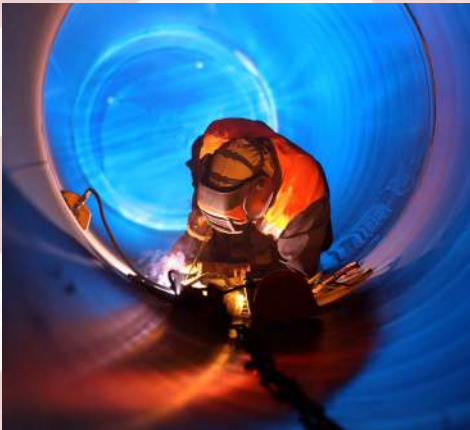
### CLASS 1: MINIMUM LEVEL

Minimum level of protection required for any persons working on a private road or to be used in conjunction with a higher classed garment. Must incorporate a minimum of 0.14m<sup>2</sup> of background material and 0.10m<sup>2</sup> of retroreflective material. (2 metres of 5cm wide reflective tape)



# 7 DO YOU KNOW

## WHAT IS EN ISO 11611?



**This international standard specifies minimum basic safety requirements and test methods for protective clothing to use in welding and allied processes (excluding hand protection). There are two classes with specific performance requirements.**



### CLASS 1 LEVEL PROTECTION

Class 1 is protection against less hazardous welding techniques and situations, causing lower levels of spatter and radiant heat.



### CLASS 2 LEVEL PROTECTION

Class 2 is protection against more hazardous welding techniques and situations, causing higher levels of spatter and radiant heat.



### TESTING

The EN ISO 11611: standard has the following parameters:

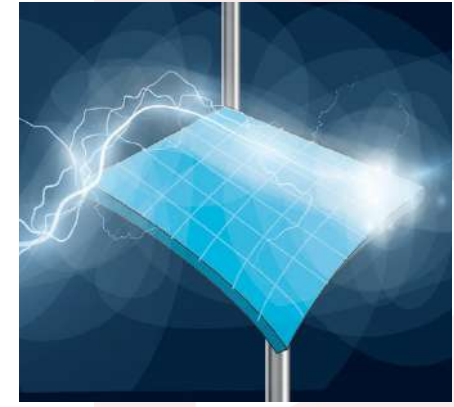
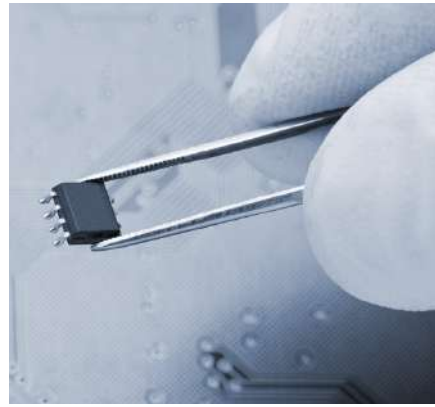
- Tensile Strength
- Tear strength
- Busting strength
- Seam strength
- Dimensional change
- Requirements of leather
- Limited Flame Spread (A1 + A2)
- Molten Droplets
- Heat Transfer (radiation)
- Electrical resistance

# 8 DO YOU KNOW



## WHAT IS EN 61340-5-1?

### PROTECTION OF ELECTRONIC DEVICES FROM ELECTRONIC PHENOMENA



#### WHAT IS EN61340-5-1

Static charge can build up on the body for a number of reasons including personal attire, atmospheric humidity and the way in which a person walks and moves. A build up of electrostatic discharge (ESD) can damage sensitive electronic components or create fire risks when handling solvents and other flammable materials.

#### ESDS

In order for electrostatic sensitive devices (ESDS) to be handled with minimal risk of damage there are specific technical requirements for the design, use and control of an electrostatic protected area (EPA). This includes the use of ESD control items such as garments or footwear.

#### HOW IS IT TESTED

Compliant garments must be clearly marked and must completely cover all clothing in the arms and torso region. The point to point resistance over the outer surface must be less than  $10^{12} \Omega$ .

#### POINT TO POINT RESISTANCE

The point to point resistance is a measure of the conductivity of the material between two points. Conductive fibres in garments work by preventing the static charge build up by allowing it to dissipate through the conductive fibres and go to earth.

#### LOWER IS BETTER

The lower the resistance the higher the conductivity and the lower the risk of electrostatic discharge.





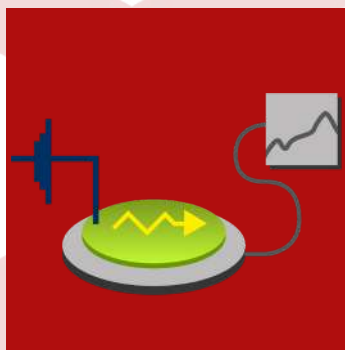
# 9 DO YOU KNOW

## WHAT IS EN 1149-5?



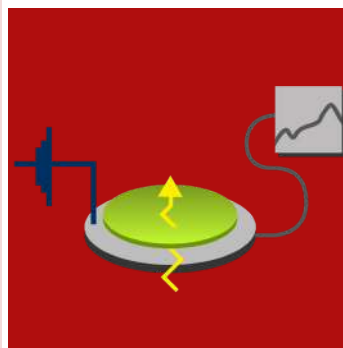
This European standard is part of a series of standards for test methods and requirements for electrostatic properties of protective clothing. The standard specifies material and design requirements for garments used as part of a total earthed system, to avoid incendiary discharges. The requirements may not be sufficient in oxygen enriched flammable atmospheres.

### EN 1149-5: IS A FAMILY OF STANDARDS AND INCLUDES 5 PRIMARY TEST METHODS



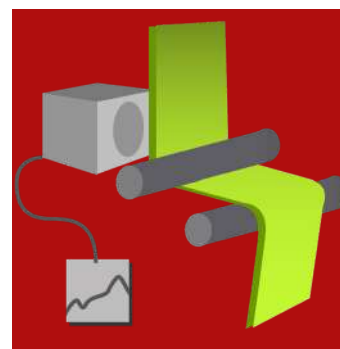
#### EN 1149-1:

Test method for measurement of surface resistivity. Surface resistance measures the conductivity between two points on the surface of a fabric. The lower the resistance the higher the conductivity, resulting in charge going to earth.



#### EN 1149-2:

Test method for measurement of the electrical resistance through a material (vertical resistance). This is the level of conductivity when measured through the depth of a fabric.



#### EN 1149-3:

Test methods for measurement of charge decay. Charge decay measures how long it takes for an electric current to dissipate. The quicker it dissipates the higher the anti-static properties of the garment.



#### EN 1149-5:

EN 1149-5 specifies the performance and design requirements to avoid static discharge for all electrostatic dissipative protective clothing as part of an entire earthed system, shoes, clothing & floor. The material meets the requirements.

# 10 DO YOU KNOW

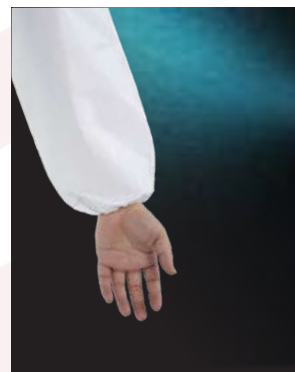
## WHAT IS THE DIFFERENCE BETWEEN TYPE 6 AND TYPE PB [6] CHEMICAL PROTECTION?

### EN 13034

EN 13034 specifies the performance requirements for disposable and re-usable limited performance chemical protective clothing (Type 6 and (Type PB [6]) garments. Limited performance chemical protective clothing (disposable and re-usable) is intended for use in cases of a potential exposure to a light spray, liquid aerosols, low volume splashes and in circumstances where a complete barrier to chemical exposure is not required.



In order to ensure that a chemical protective suit meets Type 6 protection, it is tested using a mist or fine spray of water. The water is dosed with a mild detergent to produce a specified surface tension and injected with a dye to aid the assessment of leakage. The test subject wears an absorbent suit underneath the one to be tested, which absorbs any leaks and is stained by the dye. Success or failure is determined by measuring the total area of any stains on three suits and comparing this with the requirement. Leaks will typically occur at closures and interface areas, but the liquid can also seep through the material itself.



Type PB [6] testing is conducted in a similar way to the Type 6 suit test but only on partial body garments such as sleeves, aprons coats etc.



### EN 13034

#### TYPE 6 . TYPE PB [6]

The standard covers both chemical protective suits (Type 6) and partial body protection (Type PB [6])

#### CHEMICAL PROTECTIVE SUITS (TYPE 6)

cover and protect at least the trunk and the limbs, e.g. one piece coveralls or two piece suits with or without hood, boot-socks or boot covers.

#### PARTIAL BODY PROTECTION

of similar limited performance Type PB [6] covers and protects only specific parts of the body, e.g. coats, aprons, sleeves etc.



# 11 DO YOU KNOW

## WHAT IS EN ISO 11612?



**EN ISO 11612**

**EN ISO 11612** is the standard for protective clothing which protects against heat and flame. Users for these garments include those who work in oil & gas, welding & allied processes, mining, petroleum and many other industries.



### **Flame Spread Test:**

A flame is held against the fabric for ten seconds. After it is removed the fabric should not continue to burn. There should be no hole formation, melting or molten debris.



### **Tensile Strength Test:**

The fabric must be able to withstand a minimum force of 300 newtons while being stretched or grabbed.



### **Tear Resistance Test:**

The fabric must be able to withstand a minimum force of 10 newtons before it will tear.



### **Heat Resistance Test:**

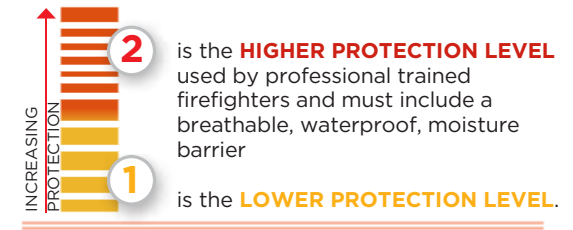
The fabric is placed in an oven at 180 degree celsius and must not ignite melt or shrink within the first 5 minutes in order to comply with the standard.

# 12 DO YOU KNOW

## WHAT IS EN469?

**EN469 IS THE EUROPEAN STANDARD RELATING TO PROTECTIVE CLOTHING FOR FIREFIGHTERS.**

**WITHIN THE STANDARD THERE ARE 2 LEVELS AND A NUMBER OF PHYSICAL TESTS AS DESCRIBED BELOW:**



1 2  
Xf1 or Xf2  
Xr1 or Xr2  
Y1 or Y2  
Z1 or Z2



Level 1 or Level 2

- Level 1 is the lower protection level
- Level 2 is the higher protection level

For professionally trained firefighters and must include a breathable, waterproof, moisture barrier.

- Xf1 or Xf 2 refers to Convective Heat Transfer Xr1 and Xr 2 refers to Radiant Heat Transfer
- Y1 or Y 2 refers to Water Penetration Resistance Z1 or Z 2 refers to Water Vapor Resistance.



### Convective Heat Transfer-Xf1or Xf 2

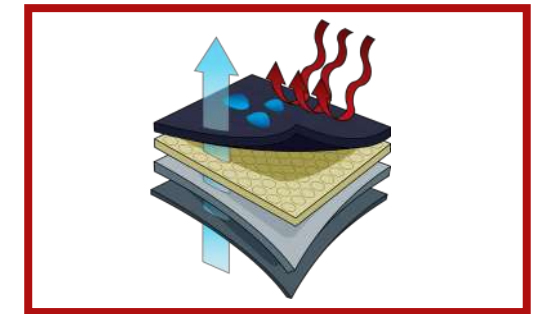
This test measures the time taken to raise the temperature of the fabric based on convective heat passing from the outer to the inner surface e.g. steam.

Convected heat travels through the air, even if there is no immediate appearance of fire.



### Radiant Heat Transfer - Xr1 or Xr2

This test measures the time taken to raise the temperature of the fabric based on heat from a radiant heat source e.g. burning flames or hot objects passing from the outer to the inner surface. Radiant heat is sensitive to the colour of the garment e.g. a lighter coloured fire suit will offer higher radiant protection than a dark coloured suit.



### Water Penetration Resistance -Y1 or Y2 Water Vapour Resistance - Z1 or Z2

These tests measure the level (1 or 2) of protection offered against the transfer of water droplets and the breathability of the fabric. The waterproof and breathability aspects will ensure the inner layer is kept dry, slowing down the transfer of heat from the outer to the inner layer that could result in giving the wearer a burn.



# 13 DO YOU KNOW

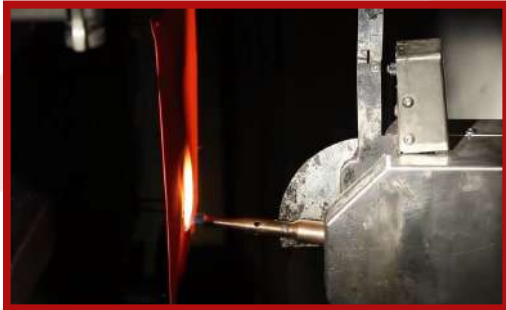


## WHAT IS EN ISO 14116?

### PROTECTIVE CLOTHING AGAINST LIMITED FLAME SPREAD MATERIALS

THIS INTERNATIONAL STANDARD SPECIFIES THE PERFORMANCE REQUIREMENTS FOR THE LIMITED FLAME SPREAD PROPERTIES OF MATERIALS AND PROTECTIVE CLOTHING INTENDED TO PROTECT WORKERS AGAINST OCCASIONAL BRIEF CONTACT WITH SMALL FLAMES.

**There are 3 indices for limited flame spread protection under the standard. Depending on how the fabric performs during the test determines the index or level of protection.**



#### EN ISO 14116 TESTING EQUIPMENT

A specialist test rig is used for testing flame standards on materials under laboratory conditions. A small flame is applied to a fabric sample for 10 seconds and then removed. The condition of the fabric is then examined.

#### INDICES FOR LIMITED FLAME SPREAD PROTECTION

##### INDEX 1

##### THE LOWEST LEVEL OF PROTECTION

The flame does not spread, there are no flaming debris, no afterglow but a hole may be formed

##### INDEX 2

##### A HIGHER LEVEL OF PROTECTION

The flame does not spread, there are no flaming debris, no afterglow and there will be no hole formation.

##### INDEX 3

##### THE HIGHEST LEVEL OF PROTECTION

At this level the flame does not spread, there are no flaming debris, no afterglow, no hole formation and it also specifies that the afterflame time for each individual sample garment is less than 2 seconds.



#### FR-BLAZE GUARD COVERALL

is certified to EN ISO 14116 and is designed to offer full protection against adverse weather conditions and flame hazards.

# 14 DO YOU KNOW

## WHAT IS IEC 61482-2?

THIS STANDARD INVESTIGATES THE FABRIC AND GARMENTS ABILITY TO PROTECT AGAINST THE THERMAL EFFECTS OF AN ELECTRIC ARC. THIS CAN BE DONE VIA TWO TEST METHODS: 1. IEC 61482-1-1 (OPEN ARC TEST METHOD) AND 2. IEC 61482-1-2 (BOX TEST METHOD)



### IEC 61482-1-1 (OPEN ARC TEST METHOD)

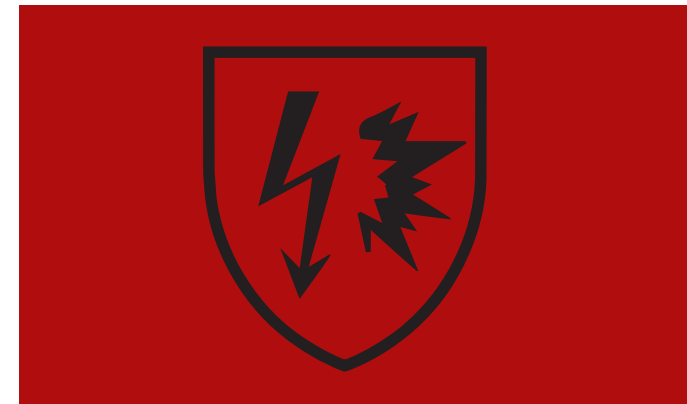
This test method determines the maximum amount of incident energy (ELIM) and the arc thermal performance value (ATPV) of a fabric or garment. These values, expressed in  $\text{cal}/\text{cm}^2$ , represent the highest level of thermal energy that the garment can withstand without causing second-degree burns to the wearer or holes in the fabric. The higher the cal rating of the garment or fabric, the greater the protection it provides.



### IEC 61482-1-2 (BOX TEST METHOD)

This test method aims to establish an APC1 or an APC2 rating of a fabric and/ or garment (APC=Arc Protection Class). Test conditions for APC1 & APC2 try to simulate typical exposure conditions for a short circuit current of 4kA and 7kA respectively.

A single layer garment in most cases will pass APC1. For APC2, a thicker fabric or multi layer system is required.



### WHAT IS AN ARC FLASH:

An electric arc is an intense flash of electricity that can result in numerous injuries. Garments can be layered to achieve a better Cal rating. For example, a thermal layer may achieve an Ebt of  $4.3 \text{ Cal}/\text{cm}^2$ , and an outer coverall may achieve an ATPV of  $13.6 \text{ Cal}/\text{cm}^2$ . However, the combination ATPV/Ebt ratings will be greater than the sum of the two single layers, as the air gap between the two layers affords the wearer additional protection.



# 15 DO YOU KNOW

## WHAT IS EN 14605?

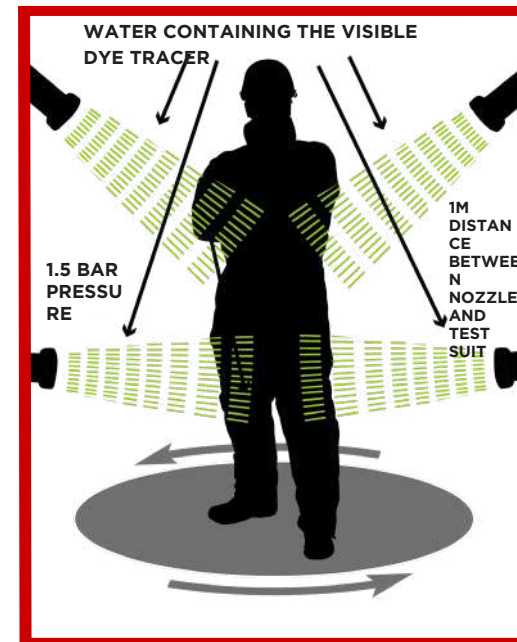
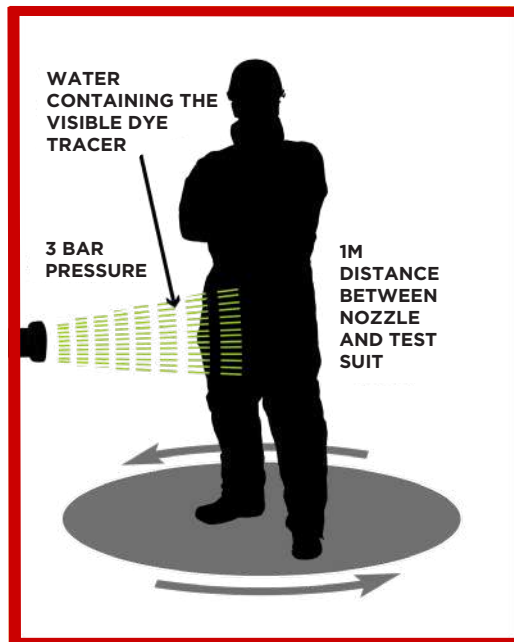
### PROTECTIVE CLOTHING AGAINST LIQUID CHEMICALS

THIS STANDARD SPECIFIES PERFORMANCE REQUIREMENTS FOR CLOTHING WITH LIQUID-TIGHT (TYPE 3) OR SPRAY-TIGHT (TYPE 4) CONNECTIONS, INCLUDING ITEMS PROVIDING PROTECTION TO PARTS OF THE BODY ONLY. (TYPES PB [3] AND PB [4])



#### Liquid Tight Suits. (Type 3)

Suits which protect against strong jets of liquid chemicals. This test involves exposing a whole suit on a rotating platform to a series of short jets of a water based liquid containing a fluorescent or visible dye tracer, aimed at various critical parts of the suit.



**Pass or Fail Criteria for EN 14605** - If any penetration is greater than 3 times the total calibration stain area. The above test's are repeated on 3 suits and all 3 must pass.



#### Spray Tight Suits. (Type 4)

Suits which protect against saturation of liquid chemicals. This test involves exposing a whole suit on a rotating platform to an intense spray of a water based liquids, containing fluorescent or visible dye tracer, aimed at various critical parts of the suit.

# 16 DO YOU KNOW

## WHAT IS ISO 13506?

### ISO 13506 IS PART OF THE HEAT AND FLAME STANDARD EN ISO 11612

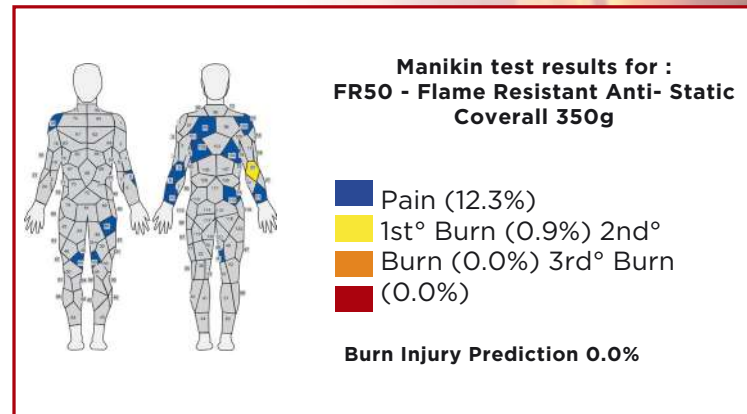
THIS OPTIONAL TEST EVALUATES HOW GARMENTS WILL PERFORM DURING A FLASH FIRE SITUATION. THE TEST GIVES A VERY ACCURATE REPRESENTATION OF THE LEVEL OF BURN INJURY SUSTAINED BY THE WEARER SHOULD THEY BECOME ENGULFED IN FLAMES. A LIFE SIZE, HEAT SENSING MANIKIN IS USED TO PRODUCE A BODY MAP WHICH USES COLOUR CODING TO INDICATE PREDICTED BODY BURN.



The manikin consists of over 100 temperature sensors positioned just beneath the surface on the body, arms, legs and head. The purpose of the sensors is to measure the variation in temperature on the manikin surface after exposure to flame.



In order to replicate a real life situation, the manikin is fitted with both undergarments and the garments to be tested. The manikin is then exposed to total flame engulfment for four seconds. Flames are provided by a system of propane burners surrounding the manikin.



Heat energy absorbed by the sensors is recorded, with data normally collected for up to 120 seconds after the burn. A report is then produced showing a “body map” indicating predicted body burn of either no burns, first, second or third degree burns and where they occurred.



# 17 DO YOU KNOW

## WHAT IS EN 381-5?

**EN 381 IS THE EUROPEAN STANDARD FOR PROTECTIVE EQUIPMENT FOR USERS OF HAND HELD CHAINSAWS. THE STANDARD PROVIDES REQUIREMENTS FOR DIFFERENT TYPES OF PROTECTIVE CLOTHING AS FOLLOWS:**

EN 381- 5: Requirements for leg protectors  
EN 381- 7: Requirements for protective gloves  
EN 381- 9: Requirements for protective gaiters  
EN 381 -11: Requirements for upper body protectors

There are four levels of protection within EN 381. These correspond to the speed of the chainsaw in metres per second.



### **EN 381- 5 SPECIFIES REQUIREMENTS FOR LEG PROTECTORS**

Leg protectors use special fibres that clog the cutting mechanism of a chainsaw and stop the movement. There are three types of leg protection, type A, B, and C.

#### **TYPE A AND B**

Leg protectors provide protection at the front of the legs only and are intended for professional forestry workers.

#### **TYPE C**

Leg protectors have protective fibres around the circumference of the legs and are intended for non professional use.



# 18 DO YOU KNOW

## WHAT IS BS 8599-1? WORKPLACE FIRST AID KITS

The standard specifies the correct contents for small, medium, large or travel-size kits and recommends how many kits are needed depending on the size of the organisation.

Compliance with this standard demonstrates that the kits are a better product and enable customers to meet their health and safety obligations under the Health and Safety Executive (HSE) guidelines.

BS 8599-1 is the standard that sets the minimum level that first aid kits should conform to:



### First Aid Workplace Kit Contents

| Content List  | Small | Medium | Large |
|---|-------|--------|-------|
|   | FA10  | FA11   | FA12  |
| Guidance leaflet  | 1     | 1      | 1     |
| Contents List   | 1     | 1      | 1     |
| Medium sterile dressing: 2m x 7.5cm, absorbent pad 12cm x 12cm  | 2     | 4      | 6     |
| Large sterile dressing: 2m x 10cm, absorbent pad 18cm x 18cm  | 2     | 3      | 4     |
| Triangular bandage: 90cm x 90cm x 127cm   | 2     | 3      | 4     |
| Eye pad sterile dressing: looped bandage 1m x 5cm, oval pad 7.5cm x 5cm Sterile Adhesive Dressings - Assorted | 2     | 3      | 4     |
| Alcohol free moist cleansing wipes: 11 x 7.5cm  | 40    | 60     | 100   |
| Adhesive tape: 5m x 2.5cm   | 20    | 30     | 40    |
| Nitrile disposable gloves: EN 455 size large (Pair)   | 1     | 2      | 3     |
| Finger sterile dressing: 44 x 4cm, absorbent pad 4 x 4cm  | 6     | 9      | 12    |
| Resuscitation face shield with valve*   | 2     | 3      | 4     |
| Foil blanket: 140 x 210cm   | 1     | 1      | 2     |
| Burn dressing: water-based gel soaked dressing 10 x 10cm**  | 1     | 2      | 3     |
| Scissors  | 1     | 2      | 2     |
| Conforming bandage: 4.5m x 7.5cm  | 1     | 1      | 1     |
| Wall mountable bracket  | 1     | 1      | 1     |



# 19 DO YOU KNOW

## WHAT IS RIS-3279-TOM ISSUE 1?

THIS IS A RAILWAY GROUP STANDARD THAT SPECIFIES THE MINIMUM SPECIFICATION FOR HIGH-VISIBILITY WARNING CLOTHING IN THE UK RAIL INDUSTRY ENSURING WORKERS ARE CONSPICUOUS WHEN ON OR NEAR RAILWAY LINES

### RIS-3279-TOM

Is based on the European standard EN ISO 20471. It defines the minimum areas of high-visibility orange background materials to be used within a garment and the minimum level of photometric performance criteria for the reflective tape. The standard requires a reflective tape reading of  $\geq 330$  (cd/ lx.m<sup>2</sup>)

### RIS -3279- TOM

Imposes a higher concentration for high-visibility orange fabric for railway workers. This increases the conspicuous nature of the fabric and ensures the rail worker is more visible. A spectrophotometer is used to check the chromaticity (colour intensity) of the orange high-visibility fabric.





# 20 DO YOU KNOW

## LAUNDERING OF FR PRODUCTS

**GARMENTS MUST BE LAUNDERED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS, INCORRECT LAUNDERING OF FLAME-RESISTANT GARMENTS CAN SERIOUSLY AFFECT THEIR PERFORMANCE AND FIT**



### Pretreatment:

- If dirty stains are difficult to remove, they can be treated before washing with a liquid detergent applied directly to stains and lightly rubbed.
- Never use chlorine bleach or washing detergents containing bleach as these will reduce the flame resistance properties of the fabric.
- Fabric softeners, starches and other laundry additives are not recommended as they can mask the flame resistance performance and may also act as a fuel in case of combustion.



### Washing:

- Always wash contaminated workwear separately Always follow the washing temperature on the garment label.
- Always wash and dry garments inside out to minimize surface abrasion and help maintain the surface appearance of the fabric.
- Zips and Velcro fastenings should be closed during washing.
- To ensure a cleaner wash, avoid overloading the machine so the garments can move freely through the wash and rinse cycles.



### Drying:

- Tumble drying is not usually recommended as the temperature used is often too high and can cause garment shrinkage.
- It is vital that cotton or cotton mix garments are not over-dried as over-drying has been determined to be the main cause of excessive garment shrinkage. Do not hang in direct sunlight as this can cause fading.