DO YOU KNOW 1

PORTWEST®

HOW DO WE TEST OUR HIGH-VISIBILITY GARMENTS TO EN 471, EN ISO 20471 AND GO/RT 3279?

We use a retroflectometer to check the performance of every roll of reflective tape. The retroflectometer measures the coefficient of two rotating angles. EN ISO 20471 and EN471 state the reading should not be below 330 however at Portwest we insist on a reading of 400 plus.

A spectrophotometer is used to check the chromaticity – "colour intensity" – of fabric. We use this to ensure every roll of fabric meets the requirements of EN ISO 20471, EN 471 and GO/RT 3279.

GO/RT 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.

DO YOU KNOW 2

PORTWEST®

WHAT IS THE DIFFERENCE BETWEEN EN ISO 20471 AND THE PREVIOUS STANDARD EN471 ?

GARMENT WASHES

Fluorescent background materials must pass colour and luminance tests after stated number of washes on the care label. All Portwest fabrics have been tested and pass after a minimum of **25 washes**

RETRO-REFLECTIVE TAPE

The washing test method for EN ISO 20471 requires each cycle to be a wash and dry cycle. EN471 only required drying after the last wash cycle. Portwest reflective tape passes after a minimum of

25 wash & 25 dry cycles

CLASS 3 UPDATES

To meet Class 3, the standard now imposes that a garment must:

1. Fully cover torso and have full length sleeves

Or

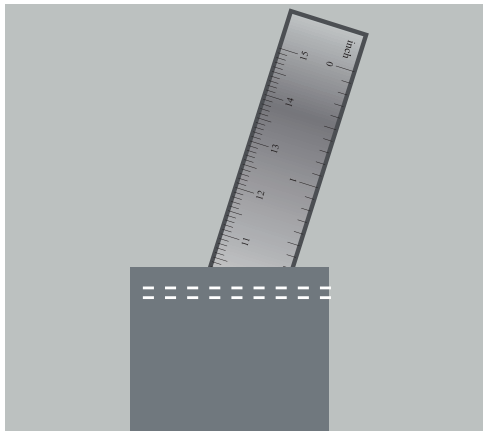
2. Fully cover torso and have full length sleeves and/or full length legs.

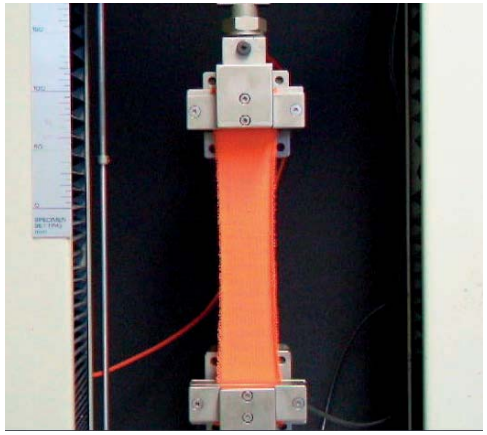
The Styles above are certified to EN ISO 20471 Class 3

DO YOU KNOW 3

PORTWEST®

EN ISO 11611 PROTECTIVE CLOTHING FOR USE IN WELDING AND ALLIED PROCESSES





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.

RULE POCKETS

A single rule 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.

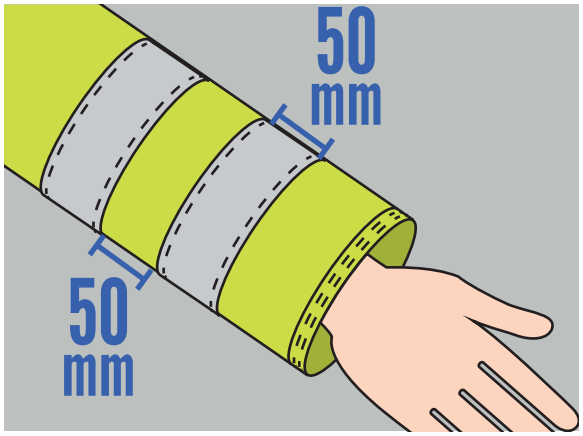
Portwest's winning FR50 style has a tensile strength value of at least 500N and tear strength of at least 25N after 50 washes.

ALL PORTWEST GARMENTS CERTIFIED TO EN ISO 11611 MEET THESE REQUIREMENTS

DO YOU KNOW 4

PORTWEST®

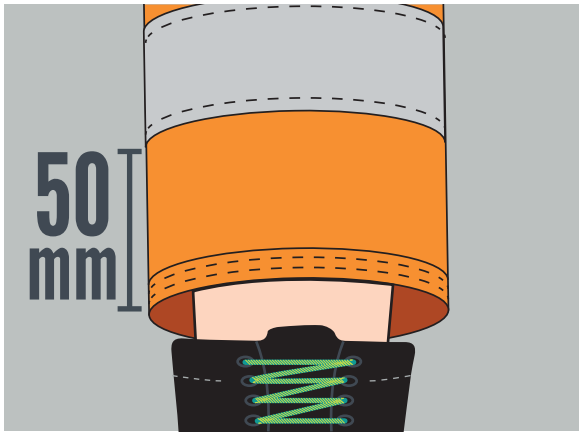
EN471/EN ISO 20471 RETRO-REFLECTIVE TAPE MUST MEET THE FOLLOWING PARAMETERS:



REFLECTIVE TAPE

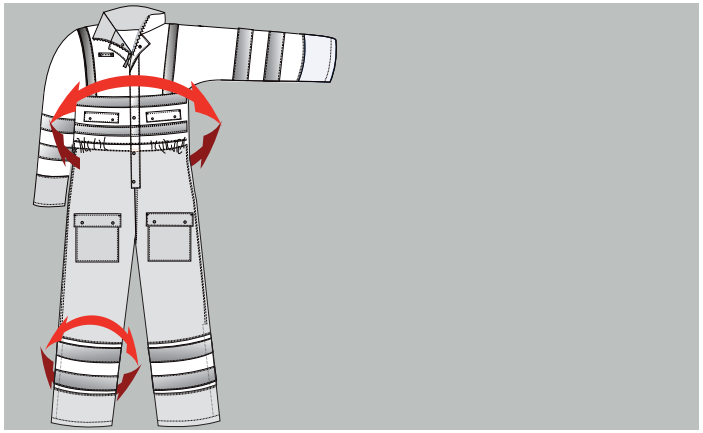
Reflective tape must be at least 50mm wide.

Bands of reflective tape must be at least 50mm apart



DISTANCE FROM SEAM?

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



ALL AROUND THE BODY

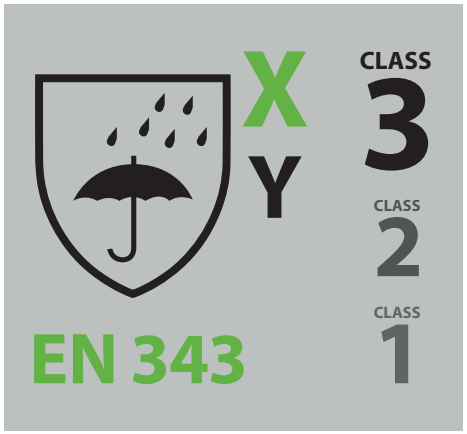
Reflective tape must encircle torso and/or limbs to be included in the calculation of the necessary square area of reflective tape

ALL PORTWEST HI-VIS GARMENTS USING RETRO-REFLECTIVE TAPE CONFORM TO ABOVE REQUIREMENTS

DO YOU KNOW 5

PORTWEST®

WHAT IS EN 343?



EN343

EN343 Is the European Standard that 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. **Waterproofness** and **Water vapour resistance** are the essential properties to be tested.

WHAT DOES X MEAN?

X refers to the **Waterproof** level of which there are 3 classes.
Class 3 being the highest level of waterproof protection.

WHAT DOES Y MEAN?

Y refers to the **Breathable** level of which there are 3 classes.
Class 3 being the highest level of breathable protection.

ALL PORTWEST RAINWEAR GARMENTS CONFORM TO EN 343 REQUIREMENTS

DO YOU KNOW 6

PORTWEST®

WHAT IS EN 342?

Example:

S585
WINTER COVERALL
(page 171)

Has an EN342 rating of 0.503 m². K/W

This **standard** specifies requirements and test methods for performance of two piece suits, coveralls or single garments for protection against cold environments (characterised by a combination of **humidity**, **wind** and at **air temperature** lower than -5 °C).

The following parameters are used:

EN 342

A = Thermal insulation
B = Air permeability (Class 1, 2 or 3)
C = Resistance to water penetration (optional) (Class 1 or 2)

Standing Wearer

Level of Performance		
	Wearer standing activity, 75 W/m²	
Insulation, I_{cle} [m². K/W]	**8 Hours**	**1 Hour**
0,310	11⁰	-2⁰
0,390	7⁰	-10⁰
0,470	3⁰	-17⁰
0,540	-3⁰	-25⁰
0,620	-7⁰	-32⁰

Using S585 thermal rating as an example, a person wearing S585 standing still, can withstand
-17⁰ C for **1 HOUR** and
3⁰ C for **8 HOURS**.

Moving Wearer

Level of Performance				
	Wearer moving activity			
Insulation, I_{cle} [m². K/W]	**Light, 115 W/m²**		**Medium, 170 W/m²**	
	8 h	1 h	8 h	1 h
0,310	-1⁰	-15⁰	-19⁰	-32⁰
0,390	-8⁰	-25⁰	-28⁰	-45⁰
0,470	-15⁰	-35⁰	-38⁰	-58⁰
0,540	-22⁰	-44⁰	-49⁰	-70⁰
0,620	-29⁰	-54⁰	-60⁰	-83⁰

A person wearing S585 performing **light activity** can withstand
-35⁰ C for **1 HOUR** and
-15⁰ C for **8 HOURS**
A person wearing S585 performing **medium activity** can withstand
-58⁰ C for **1 HOUR** and
-38⁰ C for **8 HOURS**

The following styles are certified to EN 342:
FR53,FR58, FR59, RT34, S485, S460, RT30, S466, S467, R460, R463, S463, S434, S433, S482, S585, CS12, CS10, CS11, S816

EN 342

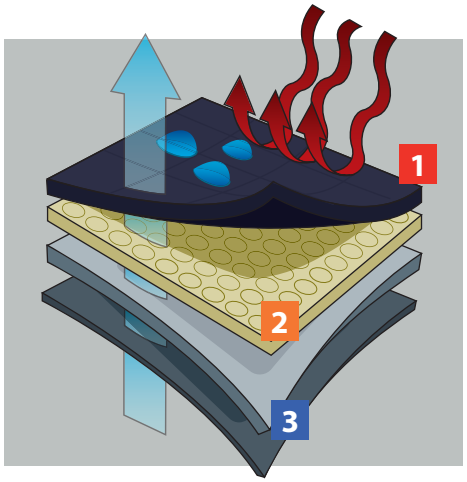
DO YOU KNOW 7

PORTWEST®

PORTWEST SOLAR FIRE SUITS

RETRO-REFLECTIVE

The yellow/silver/yellow tape used on the Solar Fire Suits incorporates two high performance materials in one – **fluorescent yellow** material for daytime visibility and a central **retro-reflective** stripe for night-time or low-light conditions.

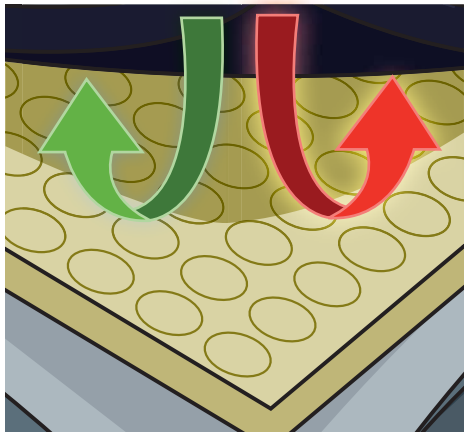


FABRIC COMPOSITION

1 **Outer Layer** – To protect from flame injuries

2 **Moisture Barrier** – to protect from external water penetration and allow internal moisture vapour to escape

3 **Thermal Liner** – to provide heat protection from proximity to flame



LINING

The **PTFE** breathable moisture barrier used in our **Solar 4000** & **Solar 5000** offers protection and penetration resistance against blood-borne pathogens and body-fluids.

FINISHES

The **Solar 3000**, **4000** & **5000** are all certified to **EN469 Level 2** and provide waterproof protection.

INDUSTRIES: Airports, Foundries, Pharmaceutical companies, Car manufacturers, oil & gas industries, Power Stations AND FIRE SERVICES.

THE PORTWEST SOLAR FIRE SUITS HAVE ACHIEVED OUTSTANDING SALES, WINNING FEATURES INCLUDE:

- Enhanced abrasion and tear resistance
- Inherently flame-resistant with exceptional heat resistance
- Superior comfort and durability

DO YOU KNOW 8

PORTWEST®

EN 812:2012 CERTIFIED INDUSTRIAL BUMP CAPS

IMPACT / SHOCK ABSORPTION

Bump caps are intended to protect the wearer from static objects (e.g. walking into low ceilings or hanging obstructions).

To achieve the impact test, a **5 kg flat striker** is dropped onto the Bump Cap from a height of **250 mm**, with a maximum allowable transmitted force of **15 kN**. Impacts are carried out on the front and rear of the Bump Cap, with the headform tilted at **30°** and **60°** to reflect the nature of any impacts likely in use.

PENETRATION

Bump caps are intended to provide protection against sharp or pointed objects (such as corners or protruding elements of static objects)

A Penetration test is carried out at lower energy and involves a 500g striker being dropped from a height 500mm onto the Bump Cap fitted to a fixed headform.

ALL PORTWEST BUMP CAPS PW59, PW79, PW69 & PW89 SURPASS THE EN 812 STANDARD

DO YOU KNOW 9

PORTWEST®

THAT EN ISO 20471/EN471 HAS 3 PERFORMANCE LEVELS:

THE 3 CLASSES

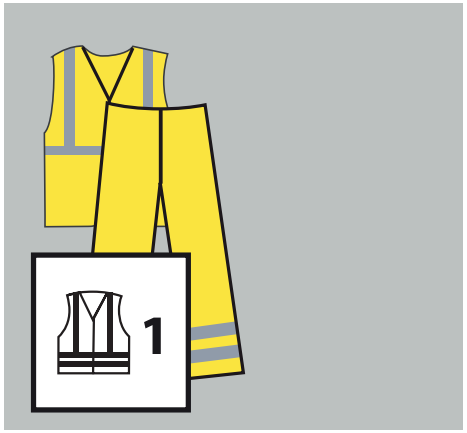
Class 3: Highest Level
Class 2: Intermediate Level
Class 1: Minimum Level

CLASS 3: HIGHEST LEVEL

Highest level of protection - required for any persons working on or near **motorways** or **dual-carriage ways** or **airports**. Must incorporate a minimum of 0.80m^2 of background material and 0.20m^2 of retro-reflective materials. (4 metres 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^2 of background material and 0.13m^2 of retro-reflective material. (2.60 metres of 5cm wide reflective tape)



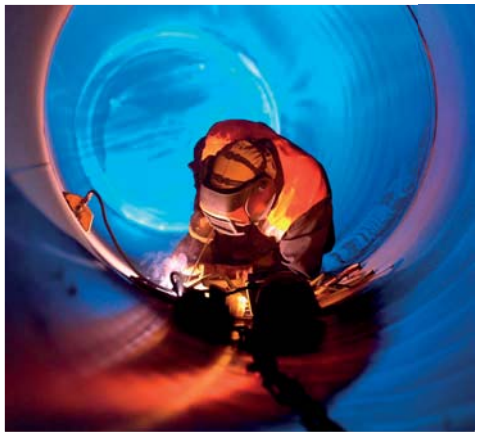
CLASS 1: MINIMUM LEVEL

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^2 of background material and 0.10m^2 of retro-reflective material. (2 metres of 5cm wide reflective tape)

DO YOU KNOW 10

PORTWEST®

WHAT IS EN ISO 11611?



PROTECTION AGAINST...

This international standard specifies minimum basic safety requirements and test methods for protective clothing for 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 11611:2007 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

PORTWEST HAS 40 STYLES CERTIFIED TO THE EN ISO 11611:2007 STANDARD

DO YOU KNOW 11

PORTWEST®

WHAT IS EN 13034 2005 + A1:2009 PROTECTIVE CLOTHING AGAINST LIQUID CHEMICALS

PERFORMANCE REQUIREMENTS

For chemical protective clothing offering limited protective performance against liquid chemicals **(Type 6 and Type PB [6] equipment)**.
This standard specifies the minimum requirements for **limited use** and **re-useable** limited performance chemical protective clothing.

AREA'S OF USE

Limited performance chemical protective clothing is intended for use in cases of a potential exposure to a light spray, liquid aerosols or low pressure, low volume splashes, against which a complete liquid permeation barrier (at a molecular level) is not required.

TYPE 6 REQUIREMENTS

Type 6 Chemical Protective suits must cover and protect at least the trunk and the limbs,
Example One piece coveralls or two piece suits, with or without hood, boot-socks or boot covers.

TYPE PB [6] REQUIREMENTS

Type PB [6] Partial body protection covers and protects only specific parts of the body.
Example coats, aprons, sleeves.

BIZTEX™ - HAZARD PROTECTION

PORTWEST HAS 38 STYLES CERTIFIED TO THE EN 13034 STANDARD

DO YOU KNOW 12

PORTWEST®

WHAT IS BIZWELD™ FABRIC

BIZWELD™ is a 100% cotton flame resistant fabric, globally available and engineered for maximum performance, comfort and durability. This high-technology fabric is used with confidence by thousands of workers in the welding industry and allied industries.

EXCEEDS INTERNATIONAL SAFETY STANDARDS

NFPA® 70E (NFPA 70E) ✓ | NFPA® 2112 (NFPA 2112: 2012) ✓ | ASTM F1506-10a (ASTM F1506-10A) ✓ | EN ISO 11611 ✓ | EN ISO 11612 ✓ | EN 1149 ✓ | IEC 61482-2 ✓ | 2 HRC ✓

- ✓ **ENSURES OUTSTANDING FLAME-RESISTANT PERFORMANCE** exceeds international safety standards for flame & welding protection (EN ISO 11612 & EN ISO 11611)
- ✓ **PROVIDES MULTI PURPOSE PROTECTION** against flame spread, radiant or convective heat, molten metal splashes and welding and allied processes
- ✓ **PROVIDES HRC 2 ELECTRIC ARC PROTECTION** (excluding BZ40)
- **TESTED** over time across **MULTIPLE WASHES** to ensure its FR properties are not compromised over the lifetime of the garment
- ✓ **ANTI-STATIC** Provides anti static properties exceeding EN1149-5 (Bizweld Mole)
- ✓ **PROVIDES CATEGORY III HAZARD PROTECTION** of Molten Iron Splash to EN11612 Class E1

ANTI-STATIC BIZWELD® FLAME-RESISTANT MOLE

Premium-level flame-resistant fabric with additional anti-static and electric-arc resistance. 99% cotton, 1% carbon fibre.
Fabric weight: 450gsm

Tear Strenght (N) Warp x Weft	36 X 41 N ISO 13937-2
Max Wash Temp	60⁰
EN ISO 11611 Class 2	✓
EN ISO 11612	✓
EN 1149	✓
IEC 61482-2	✓

BIZWELD® FLAME-RESISTANT

Premium-level flame-resistant fabric 100% high-grade cotton.
Fabric weight: 330gsm

Tear Strenght (N) Warp x Weft	27 X 26 N ISO 13937-2
Max Wash Temp	40⁰
EN ISO 11611 Class 1	✓
EN ISO 11612	✓
NFPA 2112	✓
NFP 70E	✓
ASTM F1959	✓

DO YOU KNOW 13

PORTWEST®

WHAT IS EN 388? PROTECTIVE GLOVES AGAINST MECHANICAL RISKS

ABRASION RESISTANCE

Measures how resistant gloves are to mechanical wear and damage. Performance is graded across **4 levels** from 1-4, where **1** is the **lowest** and **4** is the **highest**. This performance is determined by the number of cycles required to damage a glove at constant speed. eg: A **Level 4** glove can withstand up to **8000 cycles.** Refer to row 1 in the table below.

BLADE CUT RESISTANCE

Measures how strong/durable a glove is to resisting cuts. The performance is determined by the number of cycles required to cut the samples at constant speed. The **Cut Index** measures a glove on a scale of 1-5 **(5 being the highest level achievable).** Refer to row 2 in the table below.

PORTWEST HAS 2 *NEW* STYLES OF HIGH PERFORMING GLOVES

A721 Anti Impact Grip Glove is constructed with resistant nitrile foam coating which achieves the highest possible **ABRASION PERFORMANCE LEVEL.**

A722 Anti Impact Cut Resistant Glove achieves the highest possible performance levels for **ABRASION & BLADE CUT RESISTANCE.**

EN 388

Test	Level 1	Level 2	Level 3	Level 4	Level 5
Abrasion resistance (number of cycles)	100	500	2000	8000	-
Blade cut resistance (index)	1,2	2,5	5,0	10,0	20

DO YOU KNOW 14

PORTWEST®

WHAT IS DIN 51130:2010? SLIP RESISTANCE STANDARD

WHAT IS DIN51130:2010?

This **standard** specifies a method which serves as a suitability test for the determination and classification of anti-slip properties of **floor coverings** intended to be used in **workrooms** and work related areas with **slip hazards**.

HOW IS THE TEST PREFORMED

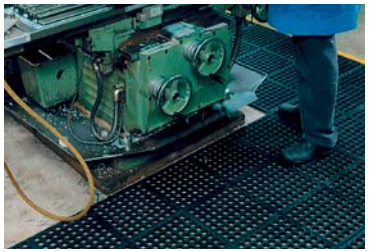
A **test person** with test shoes walks forwards and backwards in an **upright** position over the floor covering to be tested, the slope of which is increased from the initial horizontal state to the **acceptance angle.** The average acceptance angle reached serves to assess the degree of **anti-slip**. The acceptance angle is determined on floor coverings on which a lubricant has been applied.

35% Of **MAJOR** injuries in the food and drink industries are slip and trip injuries causing a broken arm or requiring hospitalisation

90% Of **SLIPS** occur when the floor is wet or contaminated with food product.

75% Of **TRIPS** are caused by obstructions, the remainder by uneven surfaces.

MT52 ANTI-SLIP AND ANTI-FATIGUE IS DIN51130:2010 CERTIFIED



ANTI-SLIP PROPERTIES
The **MT52** is certified to **DIN51130:2010**. It is rated **R10** making it suitable for floors in work rooms and areas where there is an increased risk of slipping due to Grease, oil, water, leftovers, dust, flour, plant clipping..etc

ANTI-FATIGUE PROPERTIES It alleviates pressure on your feet, this stimulated blood circulation, reduces stress on leg joints, your lower back and major muscle groups.

Source: http://www.hse.gov.uk/food/slips.htm

DO YOU KNOW 15

PORTWEST®

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.

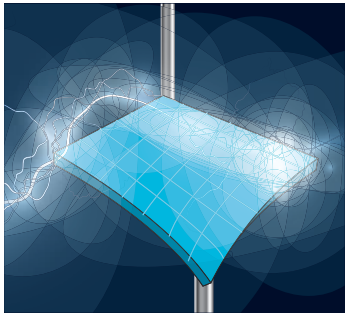
A build up of electrostatic discharge (ESD) can damage sensitive electronic components or create fire risks when handling solvents and other flammable materials.

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} Ω.**



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.

PORTWEST PRODUCTS

Portwest range of products suitable for control of ESD are: AS10, AS11, AS20, A198, A199, FC01, FC02, FC03

DO YOU KNOW 16

PORTWEST®

WHAT IS EN 397? INDUSTRIAL HELMETS

This standard applies to protective helmets for industry where the helmet is intended to protect a static user from predominantly falling hazards. A series of impact tests must be carried out using a fixed head-form and a falling weight in order for a helmet to meet this standard.

THERE ARE FOUR COMPULSORY ELEMENTS TO EN397, IMPACT, PENETRATION, FLAMMABILITY AND ANCHORAGE

IMPACT

The Helmet must not allow more than 5Kn of energy to spread to the head after a fall of a 5kg weight from a 1 meter height. This test is performed at room temperatures of both +50 °C and -10°C.

PENETRATION

The tip of the test mass used (3 kg from 1m height) must not come into contact with the skull. This test is also performed at a room temperature of +50 °C and –10°C.

FLAMMABILITY

The helmet is exposed to a flame and it must not burn with flame emission more than 5 seconds after removal of the flame source.

ANCHORAGE

Helmets can only protect when retained on the head. EN 397 requires that either the helmet shell or the headband is fitted with a chinstrap or with the means of attaching one, i.e. anchorage points.

CHECK YOUR DATES

In accordance with EN 397, marking of the helmet should include the year and quater of manufacture. Period of obsolescence of the helmet and its components must be declared on the User Sheet which is delivered together with the helmet

ALL PORTWEST SAFETY HELMETS MEET EN397

PW98, PW54, PW55, PW97, PW50, PW51, PW57

see pages 368 & 369

DO YOU KNOW 17

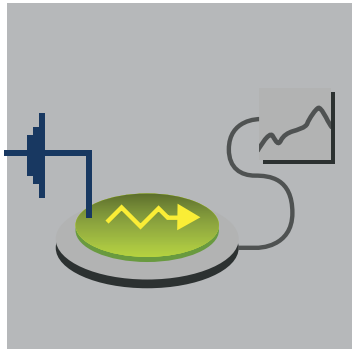
PORTWEST®

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.

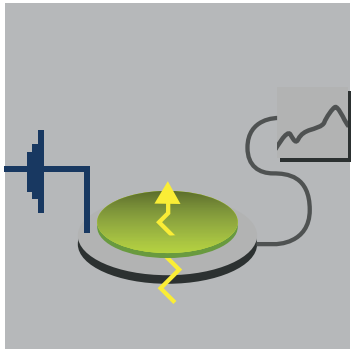
EN 1149-5:2008 IS A FAMILY OF STANDARDS AND INCLUDES 5 PRIMARY TEST METHODS

PLEASE NOTE - EN 1149-4: Garment Test (Is under development). The other test method are described below.



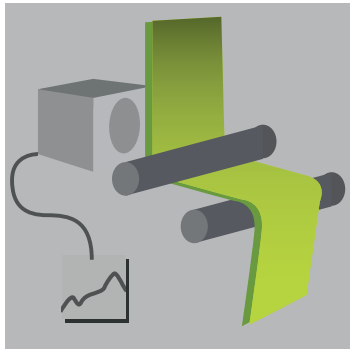
EN 1149-1:

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**.



EN1149-3:

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 anti static discharge for all **electrostatic dissipative** protective clothing as part of an entire earthed system, shoes, clothing & floor. The material meets the requirements.

THIS EUROPEAN STANDARD IS NOT APPLICABLE FOR SPECIFYING PROTECTION AGAINST MAIN VOLTAGES

PORTWEST
ANTI STATIC CLOTHING

The standard of EN1149-5:2008 to include our Araflame, Modaflame, Bizflame and Bizweld Mole product ranges.

ANTI-STATIC BIZFLAME FLAME-RESISTANT CHEMICAL RESISTANT MULTI

ANTI-STATIC BIZFLAME FLAME-RESISTANT PLUS

ANTI-STATIC BIZFLAME FLAME-RESISTANT PRO

ANTI-STATIC BIZFLAME FLAME-RESISTANT RAIN

ANTI-STATIC BIZFLAME FLAME-RESISTANT WORK

ANTI-STATIC BIZFLAME FLAME-RESISTANT

ANTI-STATIC MODAFLAME FLAME RESISTANT

ANTI-STATIC MODAFLAME FLAME RESISTANT KNIT

ANTI-STATIC ARAFLAME FLAME RESISTANT HiVIS MULTI

ANTI-STATIC ARAFLAME FLAME RESISTANT

ANTI-STATIC BIZWELD FLAME-RESISTANT MOLE

DO YOU KNOW 18

PORTWEST®

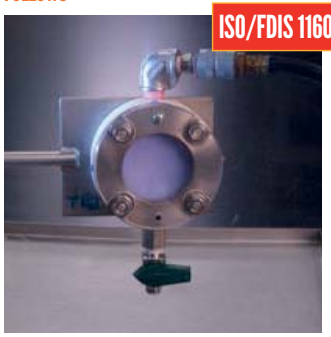
WHAT IS EN 14126?

PERFORMANCE REQUIREMENTS AND TESTS METHODS FOR PROTECTIVE CLOTHING AGAINST INFECTIVE AGENTS

This standard specifies requirements and test methods for re-usable and limited use protective clothing providing protection against infective agents. Protective Clothing against infective agents; bacterial, viral and other micro-organisms has two main functions:

- To prevent infective agents from reaching the (possibly injured) skin
- To prevent the spreading of infective agents to other people and other situations, e.g. eating or drinking, when the person has taken his protective clothing off

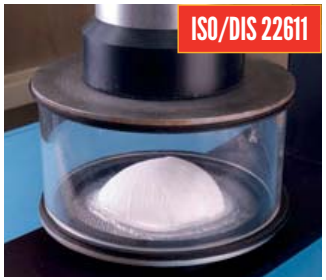
FOR MATERIALS TO COMPLY WITH EN14126 THEY MUST ALSO UNDERGO ADDITIONAL TESTING AS FOLLOWS



PENETRATION TEST USING SYNTHETIC BLOOD

This test identifies the pressurisation at which the infected synthetic blood penetrates the material. The higher the class the greater the protection of the fabric.

Class	Exposure Pressure [kPa]
6	20
5	14
4	7
3	3.5
2	1.75
1	0



RESISTANCE TO PENETRATION BY BIOLOGICALLY CONTAMINATED AEROSOLS

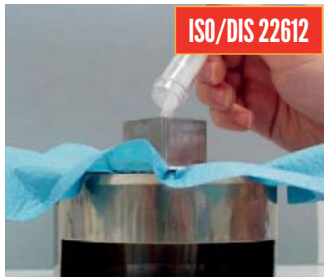
This test is used to assess the barrier's effect against biologically contaminated aerosols. A bacterium solution is suspended in an aerosol and sprayed on to both an unprotected cellulose nitrate membrane, and one covered with the test material. Both membranes are analysed to establish the bacterial load and the results are classified by the penetration ratio. The higher the class the greater the protection of the fabric.

Class	Penetration ratio without/ with test material [log]
3	>5
2	>2
1	>1

RESISTANCE TO PENETRATION BY BACTERIA

This test superimposes a bacterial contaminated donor material on the test material and subjects it to mechanical rubbing. The results are recorded in accordance with breakthrough times ie: the point at which the bacteria penetrates the barrier material measured in minutes as highlighted in the table below. The longer the breakthrough time, the higher the class and therefore the greater the protection of the fabric.

Class	Bacterial Penetration [min]
6	>75
5	>60
4	>45
3	>30
2	>15
1	<15



RESISTANCE TO PENETRATION BY CONTAMINATED DUST

A pre sterilised material is fixed in a testing apparatus and administrated with contaminated talcum power (Bacillus Subtilis). An agar plate is placed underneath the material while it is be shaken. The particles, which penetrate the material, are analysed after incubation of the agar plate and the results are measured in penetration log units as highlighted in the table below: The higher the class the greater the protection of the fabric.

Class	Penetration ratio without/ with test material [log]
3	≤ 1
2	≤ 2
1	≤ 3

RESISTANCE TO PENETRATION BY VIRUSES

This test uses a liquid (instead of synthetic blood) contaminated with a bacteriophage or virus in order to identify the pressurisation at which the liquid penetrates through the material.

Class	Exposure Pressure [kPa]
6	20
5	14
4	7

Class	Exposure Pressure [kPa]
3	3.5
2	1.75
1	0

DO YOU KNOW 19

PORTWEST®

WHAT IS EN 361:2002

PERFORMANCE REQUIREMENTS AND TESTS METHODS FOR FULL BODY HARNESSES

EN 361 is the standard applied to Full Body Harnesses designed to hold the user in place and spread the load in the case of a fall arrest scenario (i.e. being brought to a stop following a period of free-fall).

THERE ARE 3 MAIN PERFORMANCE TESTS IN EN361

DYNAMIC PERFORMANCE

This test aims to simulate the behaviour of the harness in a real- life scenario by subjecting it to a shock test for a load greater than what it would experience in use. Particular focus is given to the angle at which the user is held in the event of a fall.
The harness is fitted with a 100kg solid torso dummy attached to a 2 metre length of 11mm mountaineering rope connected to a solid anchorage point and dropped in free fall for 4 metres. The test is carried out twice on each harness, once from a heads-up position, once from a heads-down position (i.e. with the dummy upside down on release). In order to pass the test the harness must hold the dummy after both drops in a position not exceeding 50 degrees from the upright position.

STRENGTH TESTS

Strength tests known as tensile tests are used to gauge the breaking strength of whole products including harnesses and lanyards. Tensile forces are usually applied for at least 3 minutes to ensure that the breaking strength of the product is in excess of the force specified by the standard. These are based on a safety factor of 6kN, where KN equals Kilonewtons a measure of force.

- Harnesses are subject to 15kN when applied in an upward direction and 10kN when applied in a downward direction.
- Lanyards are either subjected to 22kN or 15 kN applied between the attachment points depending on the materials used.

CORROSION RESISTANCE

The aim of this test is to prove that metallic components used in fall protection equipment can withstand a minimal resistance to environmental corrosion (specifically rust). In order to prove this, metal components are placed in a sealed chamber for 24 to 48 hours and subjected to salt water mist designed to induce rust in unprotected metals. They are then examined for rust and function afterwards.

Source: http://satrappeguide.com/EN361.php

DO YOU KNOW 20

PORTWEST®

WHAT IS EN 166?

EN166 is the core technical standard which applies to all safety eyewear including spectacles, goggles and visors. It does not apply to eye protection for which separate standards exist (anti-laser eye protection, sunglasses for general use).

The main tests on this standard are: Optical Requirements and Mechanical Protection/Impact Resistance

1: OPTICAL REQUIREMENTS

Tests include, transmission and diffusion of light, refractive properties, resistance to aging (stability to heat and resistance to UV), corrosion and ignition. Results of the testing define the Optical Class of the eye protector: which falls into **1 of 3 categories**, where **1** is the **highest** and **3** is the **lowest** as indicated in the table. These categories define the quality of the lens in terms of how much or how little distortion is experienced by the wearer.

Tolerance Of The Optical Power	Optical Class	Application
± 0.06 Dioptres	1	Work all the Time (Distortion free)
± 0.12 Dioptres	2	Work occasionally
± 0.25 Dioptres	3	Work briefly

Note: spectacles can only get a S or F marking, goggles can have a S, F or B whereas grade A is applicable to visors only.

2: MECHANICAL PROTECTION/IMPACT RESISTANCE

This test (applicable to both lens and frame) determines the impact resistance of the eye-protector (Spectacles, goggles or visors) to withstand flying objects without cracking or shattering. The test is performed with steel balls of different diameters and weights which are used to strike the lens and frame at different speeds as indicated in the table.
This results in 4 levels of mechanical protection denoted by the markings; 'S' 'F', 'B' or 'A' on the eye protector where '**S**' is the **lowest** grade, offering the least amount of protection and '**A**' is the **highest** grade offering maximum protection under the standard.

MARKING	MECHANICAL PROTECTION	TESTS DETAILS	Possible On		
S	Minimal impact resistance	22 mm diameter steel ball at a speed of 5,1 m/sec			
F	Low energy impact	6 mm diameter steel ball at a speed of 45 m/sec			
B	Medium energy impact	6 mm diameter steel ball at a speed of 120 m/sec			
A	High energy impact	6 mm diameter steel ball at a speed of 190 m/sec			

OPTIONAL REQUIREMENTS

EN 166 also describes other optional tests which must be applied should the manufacturer wish to make additional claims regarding protection. For example the **Impact Resistance** Against **High Speed Spectacles** At **Extreme Temperature** is conducted on spectacles/goggles and visors conditioned at extreme temperatures from **-5°C** /**+55°C**, resulting in similar markings as the above table, with a **T** denoting temperature: **FT/ BT / AT**.
Note: This does not apply to the S marking catergory.

OTHER OPTIONAL REQUIREMENTS and corresponding markings for EN166 are described in the table below.

MARKING	TYPE OF PROTECTION	TEST - Resistance against	Possible On		
3	CHEMICAL RISK	Liquids (droplets and splashes)			
3	CHEMICAL RISK	Resistance to projections			
4	CHEMICAL RISK	Coarse dust particles (particle with > 5µm grain size)			
5	CHEMICAL RISK	Gas, vapours, mist, smoke and fine dust particles (with < 5µm grain size)			
8	ELECTRICAL RISK	Short circuit arc resistance			
9	THERMAL RISK	Molten Metal splashes and Hot solids projections			
K	LENS TREATMENT	Resistance to surface damage by fine particles (anti-scratch treatment)			
N	LENS TREATMENT	resistance to foggy (anti-fog treatment)			

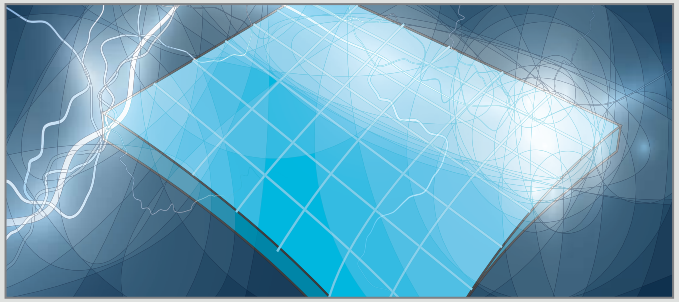
DO YOU KNOW 21

PORTWEST®

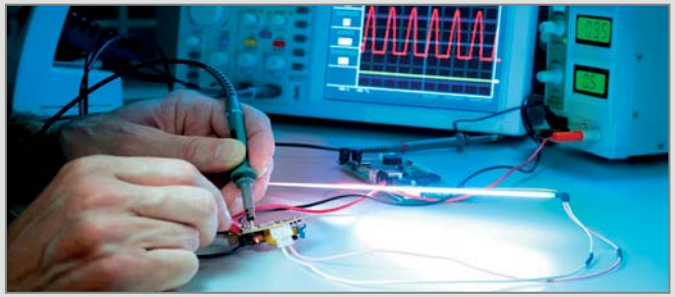
THE DIFFERENCE BETWEEN
ANTISTATIC & ESD FOOTWEAR

Electrical resistance is an important characteristic of safety shoes. Movement and friction causes a build up of electrostatic charge in the body. Shoes and clothing that are not conductive enough can increase this charge. At a certain point a discharge will occur. A discharge that is too high or uncontrolled can result in serious consequences such as an explosion due to spark formation or damage to electronic products and components in a working environment.

ANTI- STATIC FOOTWEAR VS. ESD (ELECTROSTATIC DISSIPATIVE)



1. **Anti-static footwear protects the user** from medium levels of electricity that could cause serious injury whereas **ESD footwear protects the product** i.e. electronic devices and circuitry from a build up of static that can cause damage.



2. Anti-static footwear can be worn in many different work environments whereas ESD footwear is ideally suited for the electronics industry, laboratories and other work places where delicate, electronic components are used.

3. Anti-static shoes have an electrical resistance between **0.1** and **1000 MegaOhm** (MO), measured according to **EN 20344: 2011 5 10** whereas ESD have an extremely low electrical resistance between **0.1** and **100 MegaOhm**.

DO YOU KNOW 22

PORTWEST®

WHAT IS EN 407?

PROTECTIVE GLOVES AGAINST THERMAL RISKS

The **EN407** heat and flame pictogram is accompanied by a 6 digit number. This 6 digit number identifies the performance levels (1-4) which a glove can achieve for each of the tests within the standard. The higher the performance level, the greater the protection of the glove against a range of thermal risks as described below:

1 3 1 2 1 2

F - RESISTANCE TO LARGE SPLASHES OF MOLTEN METAL
Measures the amount of molten iron (in grams) required to cause damage to "simulated skin" placed inside the glove.

E - RESISTANCE TO SMALL SPLASHES OF MOLTEN METAL
Measures the specific amount of molten droplets (from a melted metal rod), required to raise the inside temperature of a glove by 40c.

D - RESISTANCE TO RADIANT HEAT
Measures the ability of a glove to resist heat from a radiant heat source.

C - RESISTANCE TO CONVECTIVE HEAT
Measures the ability of a glove to resist heat from a flame source.

B - RESISTANCE TO CONTACT HEAT
Measures the ability of a glove to resist heat when placed in direct contact with a heated object or hot surface.

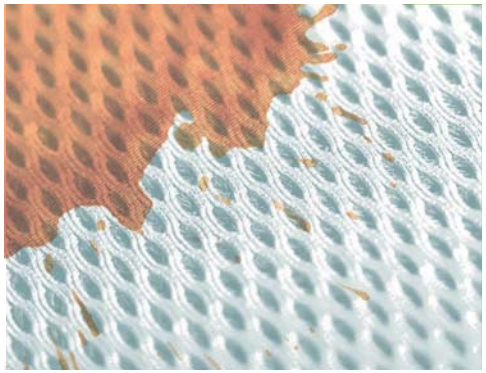
A - RESISTANCE TO FLAMMABILITY
Measures how likely a glove is to catch fire after a flame is applied.

DO YOU KNOW 23

PORTWEST®

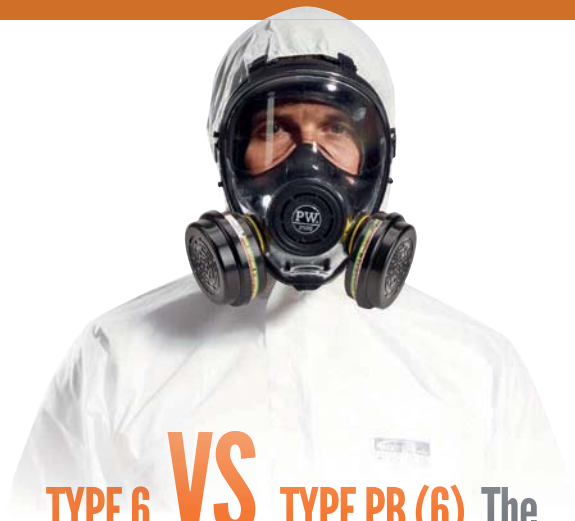
EN 13034 WHAT IS THE DIFFERENCE BETWEEN TYPE 6 AND TYPE PB (6) CHEMICAL PROTECTION?

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.**



TYPE 6 VS. 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.

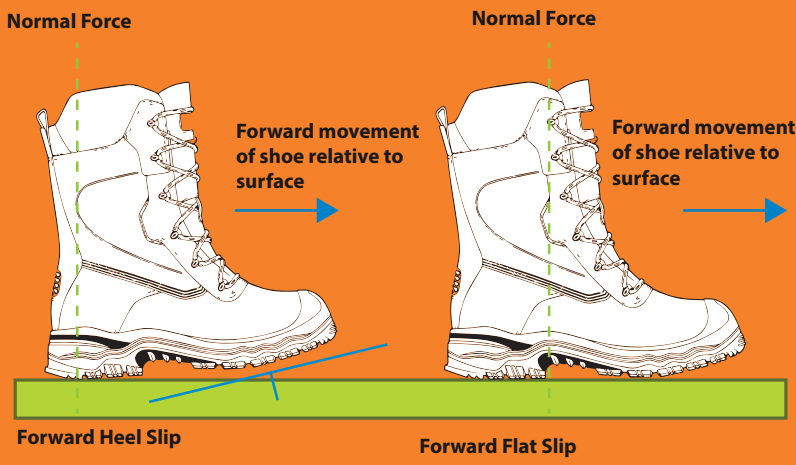
PARTIAL BODY PROTECTION of similar limited performance Type PB (6) covers and protects only specific parts of the body, e.g. coats, aprons, sleeves etc.

DO YOU KNOW 24

PORTWEST®

WHAT IS EN ISO 13287? SLIP RESISTANCE

This standard specifies a method for testing the slip resistance of conventionally soled **SAFETY FOOTWEAR**. It is not applicable to footwear with specific features such as studs or spikes or footwear that is designed for soft ground such as sand and sludge.



EN ISO 13287:2012

Marking Code	Test Surface	Coefficient of Friction (EN 13287)	
		Forward Heel Slip	Forward Flat Slip
SRA	Ceramic tile with SLS*	< 0.28	< 0.32
SRB	Steel floor with Glycerol	< 0.13	< 0.18
SRC	Ceramic tile with SLS* & Steel floor with Glycerol	< 0.28 < 0.13	< 0.32 < 0.18

** Water with 5% Sodium Lauryl Sulphate (SLS) solution*

1. SRA

SRA graded footwear is tested on a ceramic tile floor upon which a solution called sodium Lauryl sulphate (NaLS) is applied. This solution acts as a lubricant to gauge the slip resistance of the footwear in slippery conditions. The slip resistance is determined based on the frictional force of the item of footwear i.e. its ability to resist slipping over the surface. The results are expressed as the dynamic coefficient of friction, a measure of resistance to slip accidents. SRA footwear is tested on ceramic floors only.

2. SRB

SRB graded footwear follows a similar test method as the SRA test described abovel but the test is performed on a steel floor with glycerol.

3. SRC

SRC graded footwear is the marking given to an item of footwear if the outsole passes both the ceramic tile test (SRA) and the steel floor test (SRB).

DO YOU KNOW 25

PORTWEST®

WHAT IS 10819:1997? Mechanical Vibration & Shock

EN ISO 10819 IS THE STANDARD WHICH SPECIFIES THE REQUIREMENTS FOR GLOVES TO PROTECT AGAINST VIBRATIONS.

When working with any equipment producing vibration exposure such as jackhammers, chipping & paving breaker tools, electric hammers etc, users will experience vibration transmission from the tool handle to the palms of the hands hence the reason for wearing anti vibration gloves. **EN ISO 10819** sets out the requirements used to analyse the **'vibration transmissibility' of gloves** i.e. the ability of a glove to protect the users' hands from vibrations within a frequency range of 31.5 Hz to 1250 Hz.

The standard further stipulates that within this frequency range there are 2 classifications which measure the performance of Anti Vibration gloves; **'Medium Frequency'** and **'High Frequency'** consistent with the range parameters defined below:

TR_M: TRANSMISSIBILITY MEDIUM (M) 31.5 HZ – 200 HZ

TR_H: TRANSMISSIBILITY HIGH (H) 200 HZ – 1250 HZ

In order for a glove to comply with the requirements of EN ISO 10819, it must satisfy both the medium and high frequency requirements as outlined below.

MEDIUM FREQUENCY RANGE

When the glove is tested in the medium range, the standard clearly stipulates that the glove must not amplify the vibrations – i.e. the **TR_M** has to be **≤1.0** in order for the glove to pass the standard.

HIGH FREQUENCY RANGE

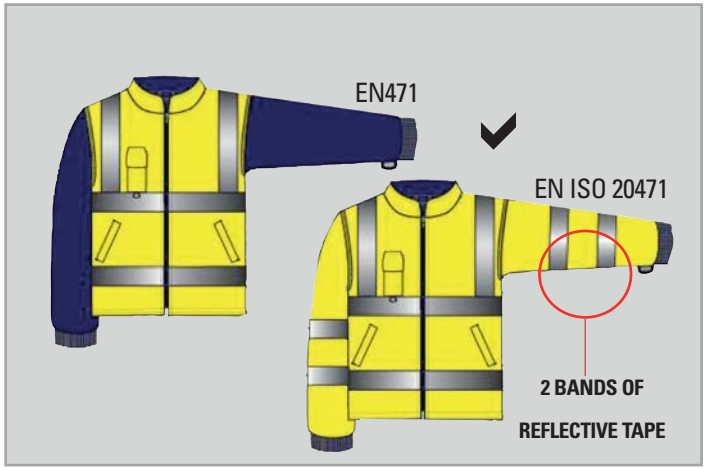
When the glove is tested in the High frequency range the glove must reduce vibration levels by at least 40% i.e. the **TR_H** has to be **≤ 0.6** in order for the glove to pass the standard.

DO YOU KNOW 26

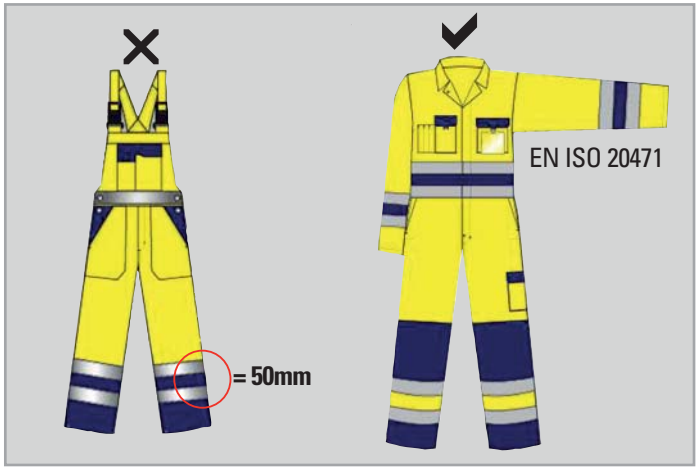
PORTWEST®

WHAT IS THE DIFFERENCE BETWEEN THE OLD EN471 AND ENISO 20471?

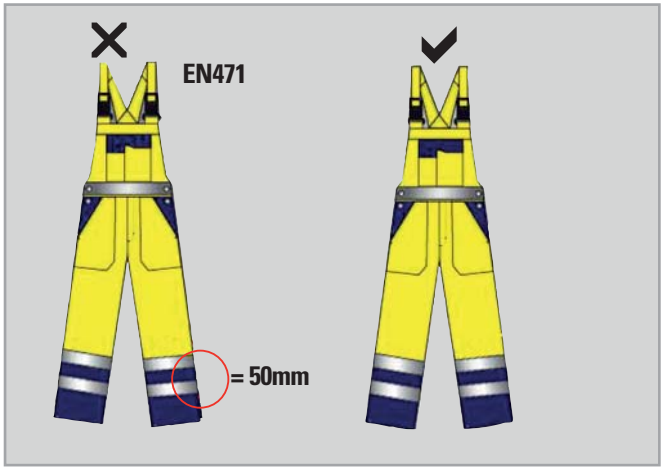
ANSWER: THERE ARE MANY DIFFERENCES. HERE ARE 3 EXAMPLES.



Non-fluorescent sleeves are no longer permitted under the new EN ISO 20471 standard. Sleeves must be made in fluorescent fabric with 2 bands of reflective tape.



Under EN ISO 20471, **Class 3** garments must cover the body and have either sleeves and/or full length trouser legs with reflective bands. Please note a Bib & Brace does not cover the body and therefore does not meet Class 3 Standard.



On a Bib and brace garment, the reflective tape on the waist is no longer included in the calculation to achieve the necessary square area of reflective tape. To maintain **Class 2** status, we need to use 60mm wide tape instead of 50mm wide reflective tape on the legs.

DO YOU KNOW 27

PORTWEST®

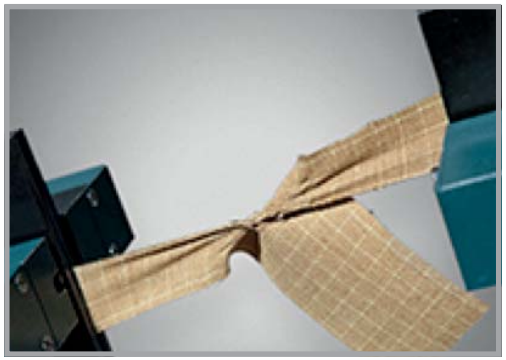
WHAT IS EN ISO 11612:2008

EN ISO 11612:2008 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.**

THERE ARE A HOST OF SPECIFIC TESTS CONDUCTED AS PART OF EN ISO 11612 INCLUDING TESTS FOR:

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°C and must not ignite melt or shrink within the first 5 minutes in order to comply with the standard.

PORTWEST HAS OVER 53 FR STYLES CERTIFIED TO EN ISO 11612:2008 STANDARD

DO YOU KNOW 28

PORTWEST®

WHAT IS EN ISO 20345?

EN ISO 20345:2011 is the European standard relating to safety footwear used for general purposes.

THERE ARE A HOST OF SPECIFIC TESTS CONDUCTED AS PART OF EN ISO 20345 INCLUDING :

Impact Resistance Test:

A steel weight of 20kg is adapted to fall freely on top of the footwear sample in order to assess the strength of the toe cap. After impact the distance between the toe cap and the insole must range between 12.5 –15mm.

Compression Resistance Test:

The footwear sample is subjected to a force of 15kN between two steel plates. Upon completion of the test the distance between the toe cap and the insole must range between 12.5 –15mm.

Anti- Perforation Insert test:

A force of at least 1100N is applied to the tip of a test nail. In order to meet the standard, the tip of the nail must not protrude through the midsole of the footwear sample. A visual inspection is carried out to verify this.

PORTWEST HAS 108 STYLES CERTIFIED TO EN ISO 20345 STANDARD

DO YOU KNOW 29

PORTWEST®

WHAT IS BS7959 FOR SPILL MATERIALS USED FOR THE CONTROL OF LIQUID SPILLAGES.

BS7959 IS THE BRITISH STANDARD, WHICH CONTAINS 3 PARTS FOR SPILL CONTROL PRODUCTS: ABSORBENCY, OIL ONLY SORBENTS AND COLOUR CODING FOR SPILL.

BS 7959-1:2004:

Part 1: Determination of Sorbency

This tests the absorbency rate for a variety of different sorbents ie pads, socks, pillows etc using diesel fuel, hydraulic oil, motor oil, xylene, deionized water. The absorbency is measured in litres of liquid absorbed per Kg. After 30 seconds if the sorbent has retained the liquid it passes the standard.

BS 7959-2:2000:

Part 2: Determination of water repellency or buoyancy for hydrophobic (oil sorbent) materials

This test is performed in the same manner as part 1, however it only measures the absorbency for oil only sorbents.

BS 7959-3:2007:

Part 3: Colour coding of sorbent materials

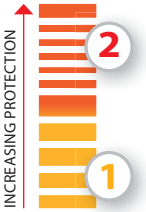
All sorbents are categorised using different colours according to their industrial application:
Oil Only sorbents are **white or blue** and are used with oils, hydrocarbons and liquids which do not mix with or absorb water
Maintenance sorbents are **grey** and are used with most liquids that do not degrade the sorbent
Chemical sorbents are **yellow** and are used with most aggressive chemical liquids

PORTWEST HAS OVER 17 PRODUCTS CERTIFIED TO BS7959 STANDARD

DO YOU KNOW 30

PORTWEST®

WHAT IS EN469-2006



2 is the **HIGHER PROTECTION LEVEL** used by professional trained firefighters and must include a breathable, waterproof, moisture barrier.

1 is the **LOWER PROTECTION LEVEL.**

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** used by professional trained firefighters and must include a breathable, waterproof, moisture barrier.

Xf1 or Xf2 refers to Convective Heat Transfer
Xr1 and Xr2 refers to Radiant Heat Transfer
Y1 or Y2 refers to Water Penetration Resistance
Z1 or Z2 refers to Water Vapour Resistance.

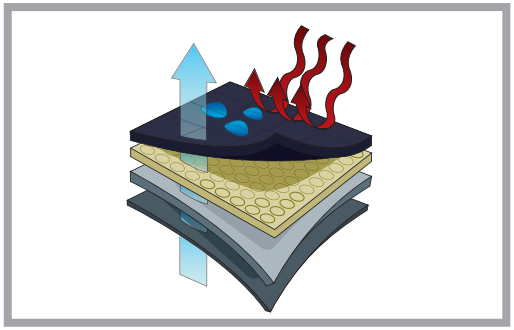
Convective Heat Transfer- Xf1 or Xf 2

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 Xr 2

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 Y 2
Water Vapour Resistance - Z1 or Z 2

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.

PORTWEST HAS 6 PRODUCTS CERTIFIED TO EN469. ALL FIRE SUITS ARE CERTIFIED TO LEVEL 2

DO YOU KNOW 31

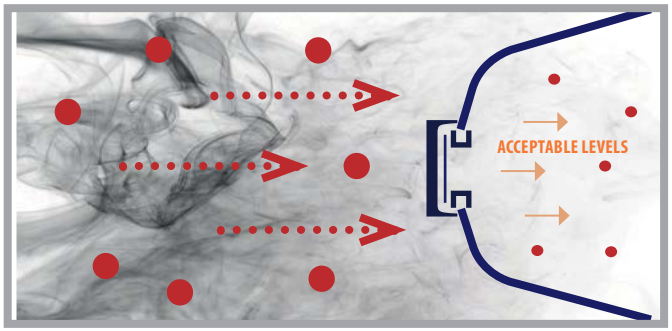
PORTWEST®

WHAT IS EN149?

There are 3 classes of masks as defined by the standard:
FFP1 = Lowest class of protection
FFP2 = Higher class of protection
FFP3 = Highest level of protection

EN 149:2001- A1:2009 IS THE EUROPEAN STANDARD THAT COVERS THE TECHNICAL SPECIFICATIONS FOR RESPIRATORY PROTECTIVE DEVICES - FILTERING HALF MASKS TO PROTECT AGAINST PARTICLES

HERE ARE THE 3 MANDATORY TESTS CONDUCTED UNDER THE STANDARD:



1. TOTAL INWARD LEAKAGE

This test measures the probability of the respiratory mask to protect the wearer against potential hazards.
A test subject wearing the particle mask walks in an enclosed test room, with a constant concentration of sodium chloride aerosol. While the subject breathes, the air inside the mask is sampled and analysed to determine which % of sodium chloride could pass through the mask.

INWARD LEAKAGE %	
FFP1	Not greater than 22%
FFP2	Not greater than 8%
FFP3	Not greater than 2%

The lower the percentage the higher the protection

2. PENETRATION OF FILTER MATERIAL

The goal of this test is to measure the filtering power of the masks.
This test is carried out by exposing a dummy head with a mask to 120mg of 2 test aerosols (Sodium chloride & Paraffin oil). The standard defines the maximum admitted penetration % of the 2 aerosols, for FFP1/ FFP2 and FFP3 masks.

PENETRATION LEVEL %		
CLASS	SODIUM CHLORIDE	PARAFFIN OIL
FFP1	20%	20%
FFP2	6%	6%
FFP3	1%	1%

The higher the penetration levels the lower the protection

3. BREATHING RESISTANCE

This test assesses the ability of the filtering mask to provide protection while allowing the wearer to breathe easily.
The test is carried out using a Sheffield dummy head - breathing machine. Both exhalation and inhalation resistance are measured under a continuous air flow.

BREATHING RESISTANCE - mbar			
CLASS	INHALATION		EXHALATION
	30 l/MIN	95 l/MIN	160 l/MIN
FFP1	0.6	2.1	3.0
FFP2	0.7	2.4	3.0
FFP3	1.0	3.0	3.0

The permitted resistance is lower for FFP1 because it's a lighter mask and it's higher for FFP2 and FFP3 as they are thicker.

PORTWEST HAS 14 MODELS CERTIFIED TO EN149

DO YOU KNOW 32

PORTWEST®

WHAT IS EN 511 PROTECTIVE GLOVES AGAINST COLD

EN511

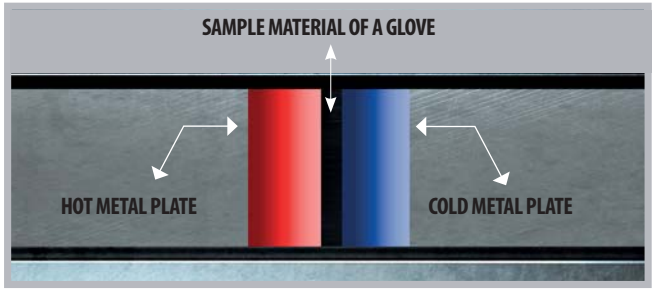
EN 511 IS THE EUROPEAN STANDARD SPECIFYING THE REQUIREMENTS AND TEST METHODS FOR GLOVES WHICH PROTECT AGAINST CONDUCTIVE COLD DOWN TO -50 DEGREES CELSIUS. THIS COLD CAN BE LINKED TO CLIMATE CONDITIONS OR AN INDUSTRIAL ACTIVITY.

EN 511 HAS 3 PERFORMANCE TESTS:

A. CONVECTIVE COLD

A glove is placed on a hand model which is heated between 30-35 degrees Celsius in a test chamber. The amount of energy required to maintain this heat determines the performance level of the glove. This is calculated by applying a specific formula known as the resultant thermal insulation formula or (ITR) as outlined in the table below. There are 4 performance levels overall. The higher the performance level the greater the insulation properties of the glove.

Performance Level	Thermal insulation (ITR) in m2 K/W
1	0,10 ≤ ITR < 0,15
2	0,15 ≤ ITR < 0,22
3	0,22 ITR 0.33
4	0,33 ITR



B. CONTACT COLD

A sample material of a glove is placed into a test chamber between 2 metal plates, one heated and one cold. A Thermal Resistance (R) formula measures the temperature drop across the test sample which is then compared to that of a control sample (non thermal material) in order to calculate its thermal resistance. There are 4 levels ranging from 1-4, the higher the thermal resistance the greater the insulating capacity of the glove to insulate against cold.

Performance Level	Thermal Resistance R in m2 K/W
1	0,025 ≤ R< 0,050
2	0,050 ≤ R< 0,100
3	0,100 ≤ R< 0,150
4	0,150 ≤ R

C. WATER PENETRATION

The Water Penetration test or water Impermeability test is a straight forward test based on a pass/fail basis.
The glove sample is submerged into water, if after 30 minutes no water has managed to penetrate the glove then it is deemed to have passed the test, otherwise it is classed as a fail.

The results are indicated by either 0 or 1.

Result	Duration of test
0 = Fail	Water penetration before 30 minutes.
1 = Pass	No water Penetration before 30 minutes.

9 PORTWEST STYLES ARE TESTED TO AND EXCEED THE EN 511 STANDARD

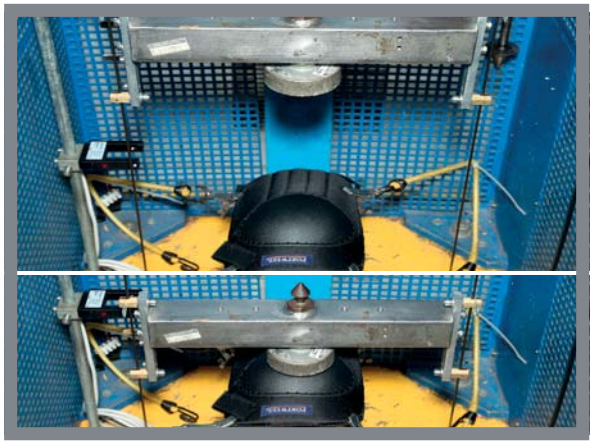
DO YOU KNOW 33

PORTWEST®

WHAT IS EN14404:2004 +A1:2010

This is the European standard which specifies the performance requirements for kneepads.

Here are 3 examples of specific tests conducted as part of the standard.



SHOCK ABSORPTION TEST

This test aims to simulate kneeling several times in quick succession. It involves a machine using a force of five joules of energy which strikes various parts of the knee pad five times within five minutes. The transmitted force (i.e. the residual impact not absorbed by the kneepad) is measured in Kn. In order for the kneepad to pass, the mean average of the 5 tests cannot exceed 3Kn and no single measurement can exceed 4Kn.

PENETRATION RESISTANCE TEST

This test is used to assess the performance level of a kneepad to protect the knee against objects. In order to pass the test, the internal surface of the kneepads must not deflect by more than 5mm when a particular level of force is applied.

FORCE APPLIED	DEFLECTION	LEVEL
100N	> 5mm	0
100N	< or = 5mm	1
250N	< or = 5mm	2

RESTRAINT TESTING

This test is used to gauge how well the kneepads stay in position during use. This test is solely for Type 1 strap on kneepads. The straps must have a maximum width of 30mm and cannot stretch more than 40mm when a force of 10N is applied. This is to ensure that they stay in position and that they are not overly constrictive causing discomfort to the user. A type 1 kneepad is deemed to pass the restraint test based on feedback collated from test subjects.

PORTWEST HAS 6 STYLE (KPSS, KP44, SI56, KP40, KP30 & KP20) CERTIFIED TO EN14404:2004 +A1:2010, WITH 5 MORE PRODUCTS CURRENTLY UNDERGOING TESTING

DO YOU KNOW 34

PORTWEST®

HOW TO DON A HARNESS
IN 6 EASY STEPS

1. Hold the harness up by the back dorsal D ring.
2. Proceed to sling the harness over the shoulders as you would a back pack.

3. Starting at the top, attach the chest and waist belt connections.
4. Reaching under each leg, grab the leg straps and wrap around each thigh and then attach to the connection points at the waist.

5. In order to ensure that the leg straps are tightened correctly, a flat hand (but not a closed fist) should fit between the strap and the leg .
6. Finally tighten all straps to a comfortable but firm fit.

PORTWEST OFFERS 39 PRODUCTS IN IT'S PORTWEST PW HEIGHT RANGE

DO YOU KNOW 35

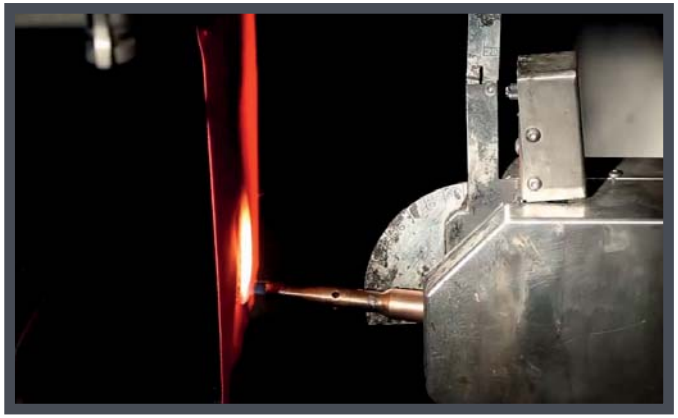
PORTWEST®

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.

FR41

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

PORTWEST HAS 21 STYLES WHICH ARE TESTED TO AND EXCEED THE EN14116 STANDARD

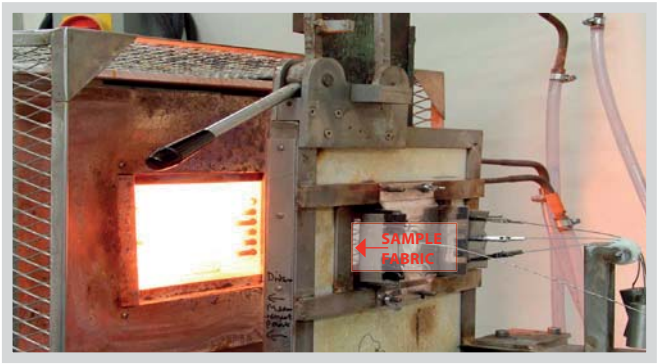
DO YOU KNOW 36

PORTWEST®

WHAT IS EN1486

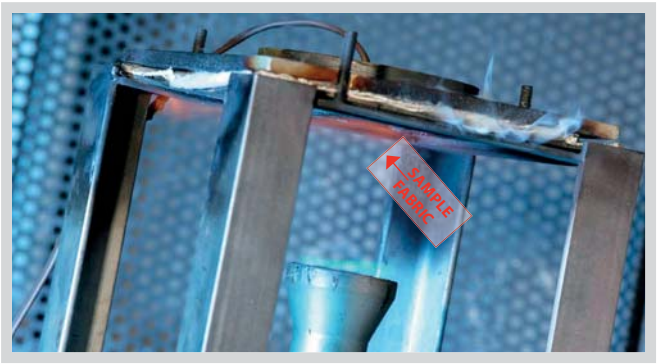
THIS EUROPEAN STANDARD SPECIFIES TEST METHODS AND MINIMUM PERFORMANCE REQUIREMENTS FOR REFLECTIVE PROTECTIVE CLOTHING USED IN SPECIALISED FIRE-FIGHTING. THIS CLOTHING PROVIDES PROTECTION AGAINST FLAME LICK AND INTENSE RADIANT HEAT AND IS WORN FOR SHORT PERIODS ONLY.

WITHIN THE STANDARD THERE ARE A NUMBER OF PHYSICAL TESTS INCLUDING:



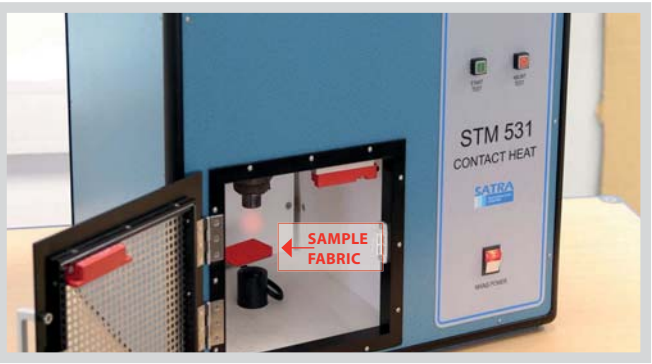
Radiant Heat Transfer:

The outer fabric is exposed to a radiant heat source. Time is recorded in seconds, for a temperature rise of 24°C to the inside of the fabric and this time is expressed as the Radiant Heat Transfer Index (RHTI).



Convective Heat Transfer:

The outer fabric is exposed to an intensive heat flux. The length of time that it takes to transmit heat from the outside through to the inside of the fabric for a temperature rise of 24°C is recorded and expressed as the Heat Transfer Index (HTI)



Contact Heat:

A heater is brought in contact with the fabric and the time taken for a temperature rise of 10°C on the surface of the innermost lining is recorded.

PORTWEST HAS 1 SUIT (COVERALL, GLOVES AND OVERBOOTS) CERTIFIED TO EN1486

DO YOU KNOW 37

PORTWEST®

WHAT IS EN136

European standard for Full Face Masks - Respiratory protective devices

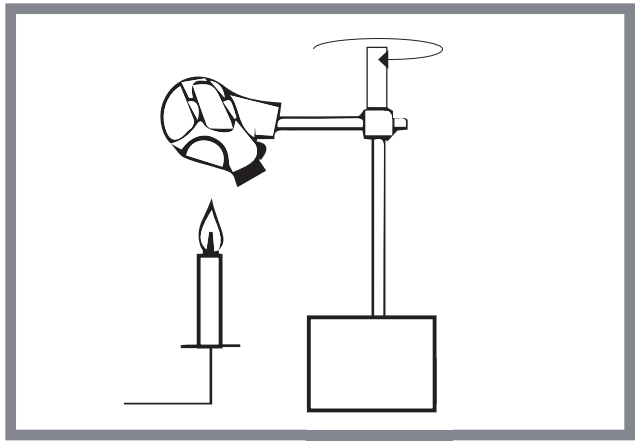
CLASS ONE Full Face Masks for light duty use

CLASS TWO Full Face Masks for general use

CLASS THREE Full Face Masks for special use

Note: There are 3 classes of full face masks, each class gives the same level of respiratory protection but has differences based on its application.

These are some of the main tests conducted as part of the standard

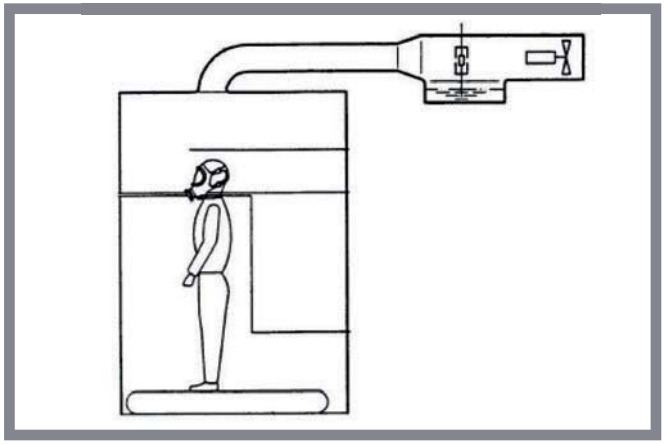


FLAMMABILITY TEST

A dummy head wearing a Full Face (FF) Mask is exposed to a flame. In order to pass the test the FF Mask shall not burn for more than 5 seconds after the flame is removed. This test is necessary for all 3 classes of FF Masks. Note: Class 3 masks are subjected to a more difficult flammability testing procedure.

HEAD HARNESS STRENGTH

When the mask is in position, each strap on the harness should withstand a pull of 100N (CLASS 1), or 150N (CLASES-2&3) applied for 10 seconds in the direction of the pull. The test is deemed successful if there is no permanent linear deformation of the straps i.e. the length of the straps upon completion of the test should not be greater than 5% compared to their pre test measurement. For example 10cm vs. 10.5cm.



INWARD LEAKEAGE

This test is carried out in a test chamber comprising a panel of 10 people and using a test agent of Sodium Chloride while people perform practical exercises that simulate real working conditions. The inward leakage test stipulates that the % of Sodium Chloride shall not exceed an average value of 0.05% of the inhaled air inside the mask.

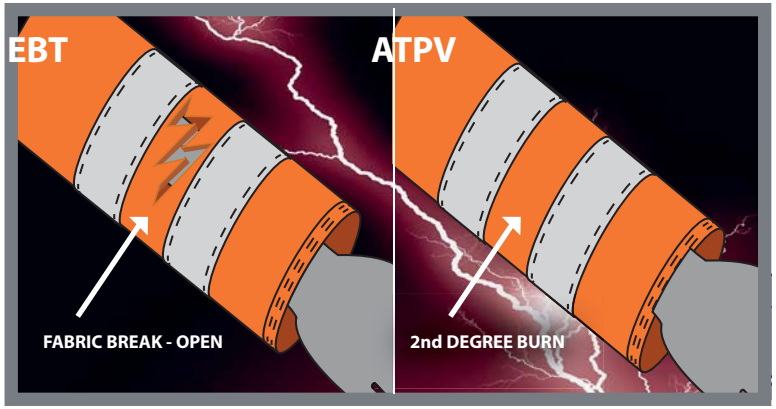
PORTWEST HAS 2 PRODUCTS COMPLYING WITH EN 136 CLASS 2

DO YOU KNOW 38

PORTWEST®

WHAT IS IEC 61482-2:2009

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. BOX TEST METHOD 61482-1-2 AND 2. OPEN ARC METHOD 61482-1-1. THIS PAGE FOCUSES ONLY ON THE OPEN ARC METHOD.



ELECTRIC ARC TEST

1) An electric arc is an intense flash of electricity which can result in numerous injuries.
2) The Open Arc Test Method assesses a fabric's ability to provide resistance against the thermal energy created during an electric arc.
3) This test is part of American standard NFPA 70E and European standard IEC 61482-2.
4) This test aims to establish the ATPV (Arc Thermal Performance Value) or Ebt (Energy Breakopen Threshold) of a fabric.

EBT AND ATPV TEST

1) The Ebt is the amount of energy required to cause a fabric to break open. The ATPV is the amount of energy required to cause a 2nd degree burn through the fabric.
2) Both ATPV and Ebt are expressed in calories per cm2 (Cal/cm2). Fabric is tested with an 8kA arc for various incident durations and an overall Cal rating is calculated.
3) The higher the Cal rating the better protection offered. Workers are assumed to be safe if the arc rating of their clothes exceeds the electric arc incident energy calculated in the worst case scenario of a risk assessment.

CAL RATINGS

1) Garments can be layered to achieve a better Cal rating. For example a thermal layer may achieve an Ebt of 4.3 Cal/cm2, and an outer coverall may achieve an ATPV of 13.6Cal/cm2.
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.

PORTWEST HAS 37 PRODUCTS TESTED TO THE OPEN ARC METHOD WITH CAL RATINGS

DO YOU KNOW 39

PORTWEST®

WHAT IS EN ISO 20347: 2012

THIS INTERNATIONAL STANDARD SPECIFIES BASIC AND ADDITIONAL (OPTIONAL) REQUIREMENTS FOR OCCUPATIONAL FOOTWEAR THAT IS NOT EXPOSED TO ANY MECHANICAL RISKS (IMPACT OR COMPRESSION).

CLASSIFICATION I:

(FOOTWEAR MADE FROM LEATHER AND OTHER MATERIALS EXCLUDING ALL-RUBBER OR ALL-POLYMERIC FOOTWEAR

- **OB** Pass the min basic requirements for occupational footwear.
- **O1** Basic requirements plus oil resistant sole, closed and energy absorbing seat region and antistatic.
- **O2** As O1 plus water penetration and absorption.
- **O3** As O2 plus cleated sole.

CLASSIFICATION II:

(ALL-RUBBER OR ALL-POLYMERIC TYPES)

- **OB** Pass the min basic requirements for occupational footwear.
- **O4** Basic requirements plus oil resistant sole, energy absorbing seat region, antistatic.
- **O5** As O4 plus penetration resistance and cleated sole.

Occupational footwear are safety shoes but do not feature steel toecaps. This type of footwear is designed to provide comfort, durability and slip resistance for workers in environments where the potential hazard of foot injury is considered adequately low.

Occupational footwear is an ideal solution for workers who do not encounter hazards of impact or compression but may encounter hazards such as slips and muscle fatigue. These include offices, service sectors, showrooms and restaurants.

PORTWEST HAS 7 FOOTWEAR STYLES; FW40, FW18, FD90, FW27, FW58, FW20 & FW19 THAT COMPLY WITH EN ISO 20347: 2012

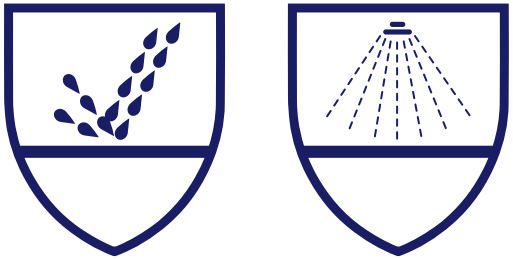
DO YOU KNOW 40

PORTWEST®

WHAT IS EN 14605: 2005

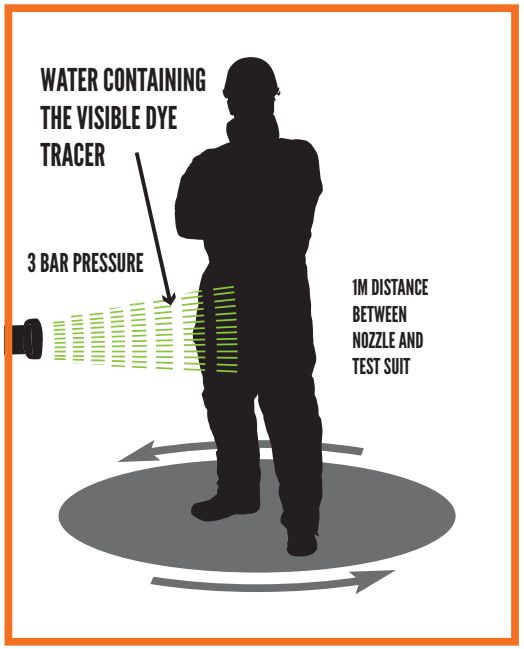
PROTECTIVE CLOTHING AGAINST LIQUID CHEMICALS

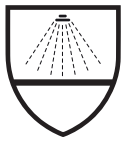
THIS STANDARD SPECIFIES PERFORMANCE REQUIREMENTS FOR CLOTHING WITH LIQUID-TIGHT (TYPE 3) OR SPRAY-TIGHT (TYPE 4) CONNECTIONS, INCLUDING ITEMS PROVIDING PROTECTION TO PARTS OF THE BODY ONLY. (TYPES PB [3] AND PB [4])



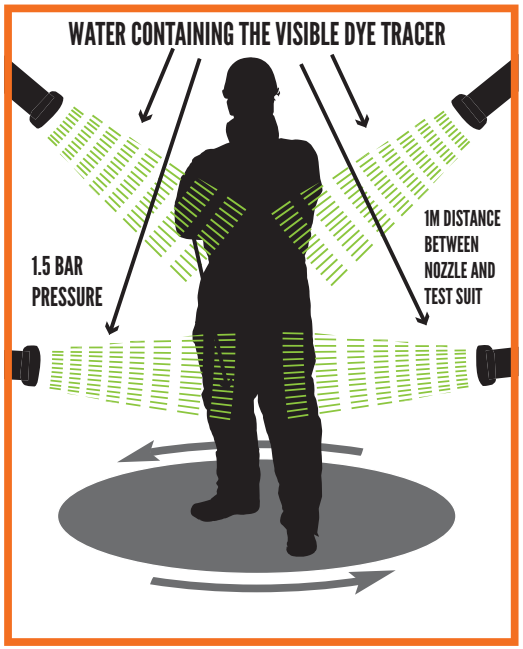
Pass or Fail Criteria for EN 14605 - If any penetration is greater than 3 times the total calibration stain area. The above test's are repeated on 3 suits and all 3 must pass.

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.





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.



PORTWEST'S ST60 AND ST70 CONFORM TO EN14605

DO YOU KNOW 41

PORTWEST®

WHAT IS EN 175

THIS IS THE EUROPEAN STANDARD FOR PPE FOR EYE AND FACE PROTECTION DURING WELDING AND ALLIED PROCESSES

THIS STANDARD SPECIFIES PROTECTION INCLUDING ERGONOMIC ASPECTS AGAINST RISKS OR HAZARDS OF RADIATIVE, FLAMMABLE, MECHANICAL OR AN ELECTRICAL NATURE. WELDING PPE INCLUDE SPECTACLES, GOGGLES AND FACE SHIELDS (MANUAL FACE SHIELDS AND HEAD-GEAR FACE SHIELDS).

THE EN 175 STANDARD INCLUDES:

1. **Principles of design:**
   The standard defines the minimum size of the visual field to allow the user to work safely but also to have a good field of vision during welding activities. Field of vision size is different for spectacles, goggles and face shields.

   It also defines the characteristics of the materials used for this PPE , which must be opaque in all internal parts, to avoid reflecting light during welding processes.

2. **Impact resistance which can be:**
   - Low energy Impact 45 meter/ second: corresponding to marking "F" on the PPE including welding spectacles and goggles.
   - Medium energy impact 120 meter/ second: corresponding to marking "B" on the PPE including goggles and face shields.

3. **Protection against Molten Metal splashes and hot solids projections:**
   This is an optional test for welding goggles and face shields (but not on spectales) - When a PPE item passes this optional test it is marked with a corresponding marking "9".


PW65


PW61

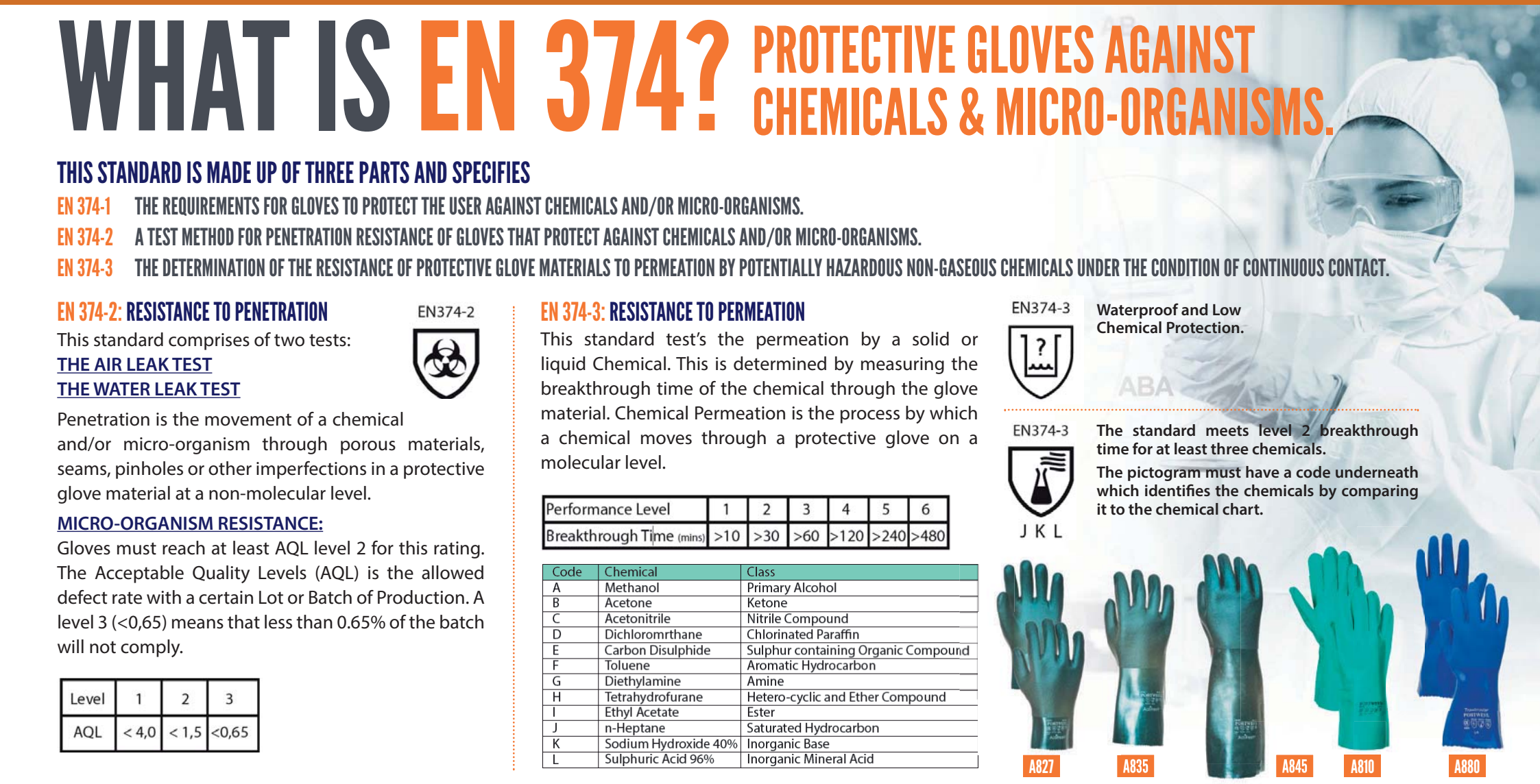

PW60

PORTWEST HAVE 3 STYLES PW65 / PW61 / PW60 COMPLYING WITH EN 175

DO YOU KNOW 42

PORTWEST®

WHAT IS EN 374? PROTECTIVE GLOVES AGAINST CHEMICALS & MICRO-ORGANISMS.



THIS STANDARD IS MADE UP OF THREE PARTS AND SPECIFIES

EN 374-1 THE REQUIREMENTS FOR GLOVES TO PROTECT THE USER AGAINST CHEMICALS AND/OR MICRO-ORGANISMS.

EN 374-2 A TEST METHOD FOR PENETRATION RESISTANCE OF GLOVES THAT PROTECT AGAINST CHEMICALS AND/OR MICRO-ORGANISMS.

EN 374-3 THE DETERMINATION OF THE RESISTANCE OF PROTECTIVE GLOVE MATERIALS TO PERMEATION BY POTENTIALLY HAZARDOUS NON-GASEOUS CHEMICALS UNDER THE CONDITION OF CONTINUOUS CONTACT.

EN 374-2: RESISTANCE TO PENETRATION

EN374-2

This standard comprises of two tests:

THE AIR LEAK TEST

THE WATER LEAK TEST

Penetration is the movement of a chemical and/or micro-organism through porous materials, seams, pinholes or other imperfections in a protective glove material at a non-molecular level.

MICRO-ORGANISM RESISTANCE:

Gloves must reach at least AQL level 2 for this rating. The Acceptable Quality Levels (AQL) is the allowed defect rate with a certain Lot or Batch of Production. A level 3 (<0,65) means that less than 0.65% of the batch will not comply.

Level	1	2	3
AQL	< 4,0	< 1,5	<0,65

EN 374-3: RESISTANCE TO PERMEATION

This standard test's the permeation by a solid or liquid Chemical. This is determined by measuring the breakthrough time of the chemical through the glove material. Chemical Permeation is the process by which a chemical moves through a protective glove on a molecular level.

Performance Level	1	2	3	4	5	6
Breakthrough Time (mins)	>10	>30	>60	>120	>240	>480

Code	Chemical	Class
A	Methanol	Primary Alcohol
B	Acetone	Ketone
C	Acetonitrile	Nitrile Compound
D	Dichloromrthane	Chlorinated Paraffin
E	Carbon Disulphide	Sulphur containing Organic Compound
F	Toluene	Aromatic Hydrocarbon
G	Diethylamine	Amine
H	Tetrahydrofurane	Hetero-cyclic and Ether Compound
I	Ethyl Acetate	Ester
J	n-Heptane	Saturated Hydrocarbon
K	Sodium Hydroxide 40%	Inorganic Base
L	Sulphuric Acid 96%	Inorganic Mineral Acid

EN374-3

Waterproof and Low Chemical Protection.

EN374-3

J K L

The standard meets level 2 breakthrough time for at least three chemicals.

The pictogram must have a code underneath which identifies the chemicals by comparing it to the chemical chart.

A827 A835 A845 A810 A880

PORTWEST HAVE 5 STYLES A827, A835, A845, A810 & A880 CERTIFIED TO EN 374

DO YOU KNOW 43

PORTWEST®

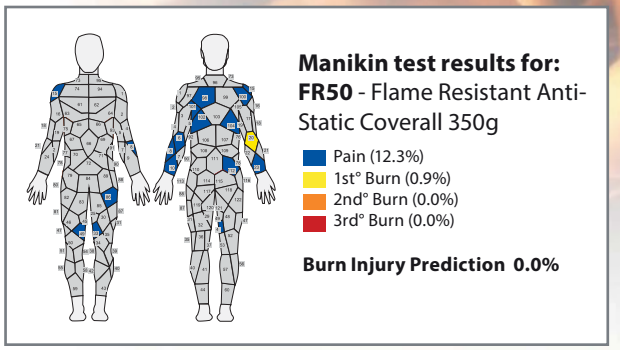
WHAT IS 13506:2008?

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 are 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.

PORTWEST HAS 16 ITEMS (COVERALLS: FR50, FF50, FR60, FR28, FR21, FR22, AF22, AF53 & BIZ1) AND (ENSEMBLES: FR55/FR56, FR55/FR57, FR25/FR26, FR25/FR27, FR61/FR62, FR61/FR63 & BIZ2/BIZ30) TESTED TO ISO 13506

DO YOU KNOW 44

PORTWEST®

WHAT IS EN 1073-2:2002?

PROTECTIVE CLOTHING AGAINST RADIOACTIVE CONTAMINATION

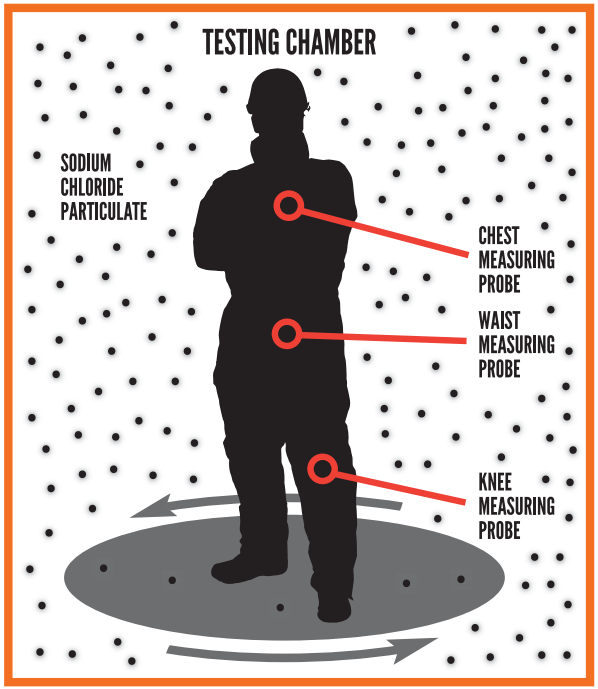
THIS STANDARD SPECIFIES THE REQUIREMENTS AND TEST METHODS FOR NON-VENTILATED PROTECTIVE CLOTHING AGAINST PARTICULATE RADIOACTIVE CONTAMINATION. THE STANDARD TESTS FOR INWARD LEAKAGE OF AEROSOLS & FINE PARTICLES AS TESTED IN EN ISO 13982-1.

PROCESS:

A person wearing the protective suit enters a "testing chamber". Beneath the protective suit, the person has three measuring probes attached (one on the chest, one at the waist and one at the knee). Sodium chloride particulates (average size of 0.6 microns) are distributed throughout the cabin, the wearer performs a series of three physical activities:

» 3 minutes standing still
» 3 minutes "on the spot" walking (5km/h)
» 3 minutes squatting (at a rate of 5 squats per minute)

Sodium chloride particulates that penetrate the protective suit are counted by the probes beneath the suit. The results are used to determine both a **performance classification** and a **"nominal protection factor".**



Nominal Protection Factor & Performance Class for suit particle protection level:

Protection Level	Class	Nominal Protection Factor
Highest Protection	3	500
Medium Protection	2	50
Low Protection	1	5

A suit which offers the **highest protection** to the fine particulates will have **low inward leakage,** and thus a **high nominal protection factor.**

PORTWEST HAVE 3 PRODUCTS ST50, ST60 & ST70 TESTED TO EN 1703-2:2002

DO YOU KNOW 45

PORTWEST®

WHAT IS EN 140:1999?

THIS STANDARD SPECIFIES THE MINIMUM REQUIREMENTS FOR HALF MASKS AND QUARTER MASKS FOR USE AS PART OF RESPIRATORY PROTECTIVE DEVICES, EXCEPT ESCAPE APPARATUS AND DIVING APPARATUS

DEFINITIONS:

Half Mask = A facepiece which covers the nose, mouth and chin

Quarter Mask = A facepiece which covers nose and mouth

DESCRIPTION:

They are intended to provide adequate sealing on the face of the wearer against the ambient atmosphere. Air enters the facepiece and passes directly to the nose and mouth area of the facepiece through inhalation valve(s). When breathing the exhaled air flows to the ambient atmosphere via the exhalation valve(s) of the mask.

KEY TESTS

1. **RESISTANCE TO TEMPERATURE**
   The masks are conditioned for 24h at 70°C and then for 24h at room temperature +30°C. If the facepiece and its components show no appreciable deformation the result is a pass.
2. **RESISTANCE TO FLAMMABILITY**
   The standard describes the procedure to test the masks by exposing them to a direct flame. Parts of the facepiece that might be exposed to flame during use shall either not burn or continue to burn for more than 5 seconds after the flame is removed. Resistance to temperature and flammability tests make sure the mask will maintain its performance in extreme conditions of use.
3. **BREATHING RESISTANCE**
   The breathing resistance of the facepiece when tested with a breathing machine shall not exceed
   - » 2.0 millibar for inhalation
   - » 3.0 millibar for exhalation

   This test ensures breathing is comfortable when wearing the facepiece.
4. **INWARD LEAKAGE**
   When the facepiece is correctly fitted, the % of the ambient atmosphere outside the facepiece which is allowed to pass though the facepiece will not be greater than 2%. This test ensures the masks offers effective protection.

P410

P420

P430

FILTERS
To protect from toxic agents, masks need to be used with filters, which are covered in EN 143 for particulate filters and EN 14387 for gas and combined filters (gas and particulate).

PORTWEST HAS 3 HALF MASKS P410, P420 & P430 CERTIFIED TO EN140

DO YOU KNOW 46

PORTWEST®

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.

Class 0: 16 m/s
Class 1: 20 m/s
Class 2: 24 m/s
Class 3: 28 m/s

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.

PORTWEST HAVE TWO STYLES CERTIFIED TO EN 381-5, CH11 AND CH12. BOTH ITEMS MEET EN 381-5 1995: CLASS 1, TYPE A

DO YOU KNOW 47

PORTWEST®

WHAT ARE L.E.D & CREE L.E.D.?

L.E.D: stands for "Light Emitting Diode", an L.E.D is a small piece of semi conducting material that contains various compounds. When electricity is passed through these semi conductive materials light is emitted in the form of photons. This process is call electro-luminescence.

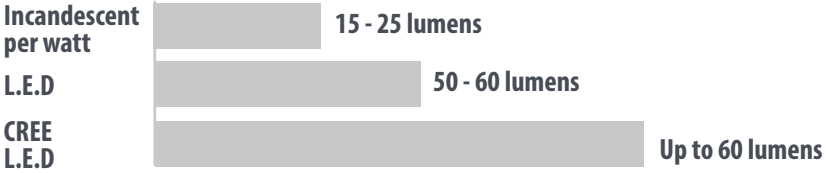
CREE L.E.D: Cree is a new technology that has changed the face of bulbs for the future, using silicon/chip technology CREE lights now use less battery power while providing far superior brightness that is unrivalled by any other lamps on the market.

EFFICIENCY

CREE

Typical L.E.D light life span 20,000 (L.E.D) To 50,000 (Cree L.E.D) Hours

Lumens (i.e brightness)



L.E.D

An L.E.D light can produce the same amount of lumens as an Incandescent while using only 25% of the power. Up to 90% of incandescent lights energy is heat created by electrical resistance filament (i.e they are more efficient as heaters than lights).

RoHS COMPLIANT

RoHS - Restriction Of Hazardous Substances'. The 'Restriction Of Hazardous Substances' directive is put in place to ensure all componenets of our el electrical products will not endanger the user. All our lights are tested to this standard with compliance.

CE

CE - This symbol indicates conformity of essential health and safety requirements as set out in European directives.

L.E.D: PA50, PA62, PA60, PA56 | CREE L.E.D: PA63, PA64, PA61, PA54, PA65, PA66

DO YOU KNOW 48

PORTWEST®

WHAT IS BS 8599-1:2011

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 heath 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:

Content List & Description	FA10 25 people	FA11 25+ people	FA12 100 people
Guidance leaflet	1	1	1
Contents list BS 8599-1:2014	1	1	1
Medium sterile dressing: 2m x 7.5cm, absorbent pad 12cm x 12cm	4	6	8
Large sterile dressing: 2m x 10cm, absorbent pad 18cm x 18cm	1	2	2
Triangular bandage: 20gsm non woven or cotton 90cm x 90cm x 127cm	2	3	4
Safety pins: length 2.5cm	6	12	24
Eye pad sterile dressing: 1.5m x 5cm, oval pad 7cm x 5cm	2	3	4
Sterile adhesive dressings: 7.5cm2, dressing pad >20% of the area	40	60	100
Alcohol free wipes: 80cm^2	20	30	40
Adhesive tape: 2.5cm x 5cm	1	1	1
Gloves: EN455	6	9	12
Finger sterile dressing: 30cm x 3.5, absorbent pad 3.5cm^2	2	3	4
Resuscitation face shield, one way valve	1	1	2
Foil blanket: 130cm x 210cm	1	2	3
Burn dressing: 100cm^2**	1	2	2
Universal shears	1	1	1
Conforming bandage: 4m x 7.5cm	1	2	2
Wall hanging bracket: dust proof container	1	1	1

PORTWEST HAVE 3 STYLES THAT ARE CERTIFIED TO BS 8599-1:2011: FA10, FA11, FA12

DO YOU KNOW 49

PORTWEST®

WHAT IS GO/RT3279 ISSUE 8

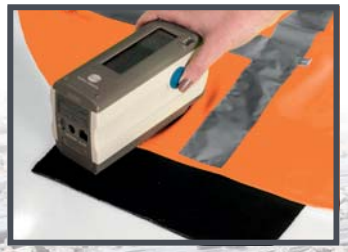
THIS IS A RAILWAY GROUP STANDARD THAT SPECIFIES THE MINIMUM SPECIFICATION FOR HIGH-VISIBILITY WARNING CLOTHING IN THE UK RAIL INDUSTRY ENSURING PEOPLE ARE CONSPICUOUS WHEN ON OR NEAR RAILWAY LINES

GO/RT3279

Is based on the European standard EN ISO20471. 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 ≥ 330 (cd/ lx.m^2) however at Portwest we insist on a reading of ≥ 400 (cd/ lx.m^2).

GO/RT3279

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. Portwest check every roll of fabric to ensure the fabric meets the requirements of GO/RT3279.



GO/RT 3279

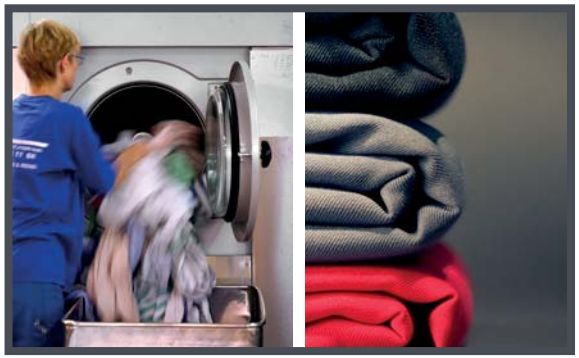
Also specifies the requirements for a high-visibility mini-vest. Mini-vests conform to class 1 design under EN ISO 20471 and exceed the requirements for both the minimum area of the orange background material and retro-reflective tape in the garment.

DO YOU KNOW 50

PORTWEST®

LAUNDERING OF FR PRODUCTS

GARMENTS MUST BE LAUNDERED ACCORDING TO THE MANUFACTURERS 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 hydrogen peroxide 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

THE FLAME RESISTANT FINISH IS RETAINED FOR THE NORMAL LIFE CYCLE OF THE GARMENT PROVIDED THAT THE CARE INSTRUCTIONS ARE ADHERED TO