MULTILAYERED FIRE PROXIMITY SUIT

Governing Specifications

and Test details for

New Generation 3 layered

Fire Fighter Suit

EN 469 : 2005

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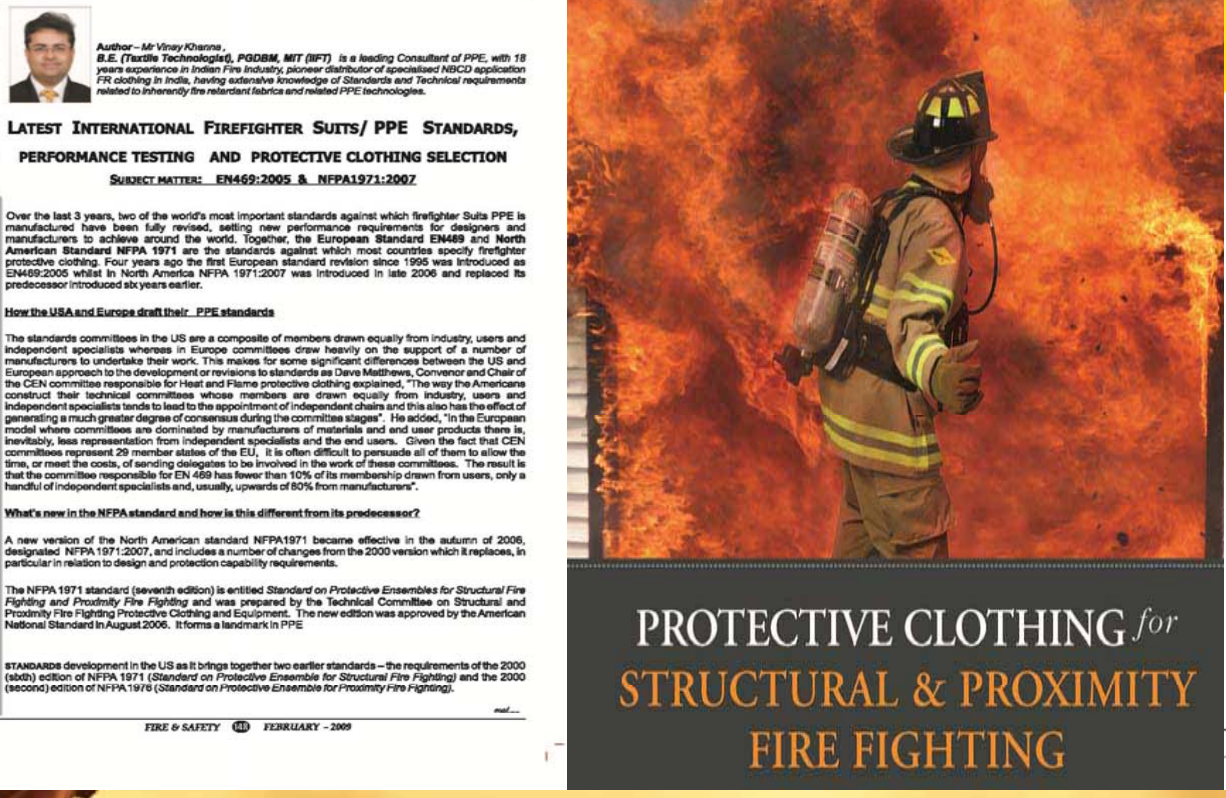
www.firesuitindia.com

FIRE PROXIMITY SUIT

Governing Specifications and Testing details

Introduction



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LATEST INTERNATIONAL FIREFIGHTER SUITS/ PPE STANDARDS, PERFORMANCE TESTING AND PROTECTIVE CLOTHING SELECTION

SUBJECT MATTER: EN469:2005 & NFPA1971:2007

Over the last 3 years, two of the world's most important standards against which firefighter Suits PPE is manufactured have been fully revised, setting new performance requirements for designers and manufacturers to achieve around the world. Together, the **European Standard EN469** and **North American Standard NFPA 1971** are the standards against which most countries specify firefighter protective clothing. Four years ago the first European standard revision since 1995 was introduced as EN469:2005 whilst in North America NFPA 1971:2007 was introduced in late 2006 and replaced its predecessor introduced six years earlier.

How the USA and Europe draft their PPE standards

The standards committees in the US are a composite of members drawn equally from industry, users and independent specialists whereas in Europe committees draw heavily on the support of a number of manufacturers to undertake their work. This makes for some significant differences between the US and European approach to the development or revisions to standards as Dave Matthews, Convenor and Chair of the CEN committee responsible for Heat and Flame protective clothing explained, "The way the Americans construct their technical committees whose members are drawn equally from industry, users and independent specialists tends to lead to the appointment of independent chairs and this also has the effect of generating a much greater degree of consensus during the committee stages". He added, "In the European model where committees are dominated by manufacturers of materials and end user products there is, inevitably, less representation from independent specialists and the end users. Given the fact that CEN committees represent 29 member states of the EU, it is often difficult to persuade all of them to allow the time, or meet the costs, of sending delegates to be involved in the work of these committees. The result is that the committee responsible for EN 469 has fewer than 10% of its membership drawn from users, only a handful of independent specialists and, usually, upwards of 80% from manufacturers".

What's new in the NFPA standard and how is this different from its predecessor?

A new version of the North American standard NFPA1971 became effective in the autumn of 2006, designated NFPA 1971:2007, and includes a number of changes from the 2000 version which it replaces, in particular in relation to design and protection capability requirements.

The NFPA 1971 standard (seventh edition) is entitled *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting* and was prepared by the Technical Committee on Structural and Proximity Fire Fighting Protective Clothing and Equipment. The new edition was approved by the American National Standard in August 2006. It forms a landmark in PPE

STANDARDS development in the US as it brings together two earlier standards – the requirements of the 2000 (sixth) edition of NFPA 1971 (*Standard on Protective Ensemble for Structural Fire Fighting*) and the 2000 (second) edition of NFPA 1976 (*Standard on Protective Ensemble for Proximity Fire Fighting*).

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Press Release

New revision in Standards of Fire Fighter Suit

Mr Vinay Khanna , B.E. (Textile Technologist),

Mr Vinay Khanna , B.E. (Textile Technologist), PGDBM , MIT (IIFT – Topper & Medalist) is a leading Consultant of PPE, with 19 years experience in Indian Fire Industry, pioneer distributor of specialised Proximity / NBCD application FR clothing in India, having extensive knowledge of Standards and Technical requirements related to inherently fire retardant fabrics and related PPE technologies.

Improvement of PPE and Fire Clothing has been a continuous process since centuries and Fire Professionals are taking advantage of technology developments and innovations to ensure that life saving clothing like Fire Fighter Suits are deployed as per the latest VERSIONS of International Standards In lieu of older or outdated version of Standards with limited or redundant capability.

The prindpal standards setting bodies for Fire Fighter Structural-Proximity Suits cover Europe ("EN" Standards) , the USA ("NFPA" Standards) and a worldwide International Group which sets ISO Standards.

In India, advanced Structural Fire Fighter Proximity Suits were introduced in the period 1990-1992 and since then has become the preferred choice of Fire Departments in various Sectors including State Fire Brigades, Industrial Fire Services, Defence and new sectors like Aviation/ Thermal Power Plants / Marine Shipping / large scale Commercial establishment including Hotels, Offices besides Oil Sector (where these Suits are also refered to as "Bunker Gear")

Bureau Of Indian Standards(BIS) has also recently initiated a process of establishing the Indian Standards for Fire Suits. As observed globally, new Standards typically take years to develop and gain International agreement and acceptance. At present , more than 85% Users/ Fire Departments in India procure Fire Fighter Suits based on EN 469 Standards , which being lightweight in configuration and are considered as a preferred choice, suitable for deployment in hot Indian tropical climate conditions with minimal heat stress on the users

The aforesaid Standards are regularly revised in the span of 7-15 years and it has been observed that during introduction of new version/ upgrades , many global manufacturers are known to hold huge inventories and stocks of older version Fire apparel. Although it is legal to use the older version Fire Suits in many countries , end users in Europe and USA prefer to purchase the new version Fire Suits as better comfort, greater safety and improved fire fighting capabilities are always given preference in the west / developed countries.

One of the common practices employed by many OEMs is that the older version Fire Suits are sold to third world countries to ignorant end-users / fire departments at cheap discounted rates and it is not uncommon to see Vendors in India promoting older EN469 :1995 version Fire Suit instead of EN 469: 2005 Fire Suit. Similarly , old NFPA 1971, 2000 Edition has been superceded by NFPA 1971, 2007 Edition Standard.

This current – first part of Article focuses on EN 469 Standards - with latest version of 2005

What does the New version 2005 of EN 469 Standard cover?

The requirements of the new standard can be categorised under a number of headings relating to performance levels, sizing, practical performance testing, sampling and pre-treatment, visibility and whole garment testing. Some of these changes/ points are provided below for all professionals involved in the design, manufacture, supply and use of PPE . The main focus is to review the implications and highlight some of the more important differences between the old and new standards.

Performance Level - (Level or Level 2) clauses 6.2, 6.3, 6.11, and 6.12.

There are now two performance level which specify the minimum requirements for garments to be worn during firefighting operations- the First relates to clothing which does not provide protection against the hazards of entrapment (level 1) whilst the other covers the requirements for structural firefighting (level 2)

Level 1 is a lower specification and may be considered adequate for activities such as rescue work, disaster assistance, road traffic collisions, perimeter support for the Main Fire attack team and wildland firefighting, whilst Level 2 is the higher requirement for fire fighting

Altogether, there are four different requirements covering respectively heat transfer (flame), heat transfer (radiation), resistance to water penetration, and water vapour resistance.

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EN 469:2005

FOREMOST

EUROPEAN STANDARDS

FOR FLAME RESISTANT

PERSONAL PROTECTIVE CLOTHING

FIRE PROXIMITY SUIT

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CE

EUROPEAN STANDARD **EN 469**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2005

ICS 13.340.10

Supersedes EN 469:1995

English Version

Protective clothing for firefighters - Performance requirements for protective clothing for firefighting

Vêtements de protection pour sapeurs pompiers - Exigences de performance pour les vêtements de protection pour la lutte contre l'incendie

Schutzkleidung für die Feuerwehr - Leistungsanforderungen für Schutzkleidung für die Brandbekämpfung

This European Standard was approved by CEN on 22 July 2005.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN 469:2005: E

FIRE PROXIMITY SUIT

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EN 469:2005

ROADMAP FOR COMPLETE EN TESTING AS PER EEC GUIDELINES

- Test Certificate
- Test Report
- EC TYPE Examination Certificate

→ CE

Use of Logo permitted at this stage

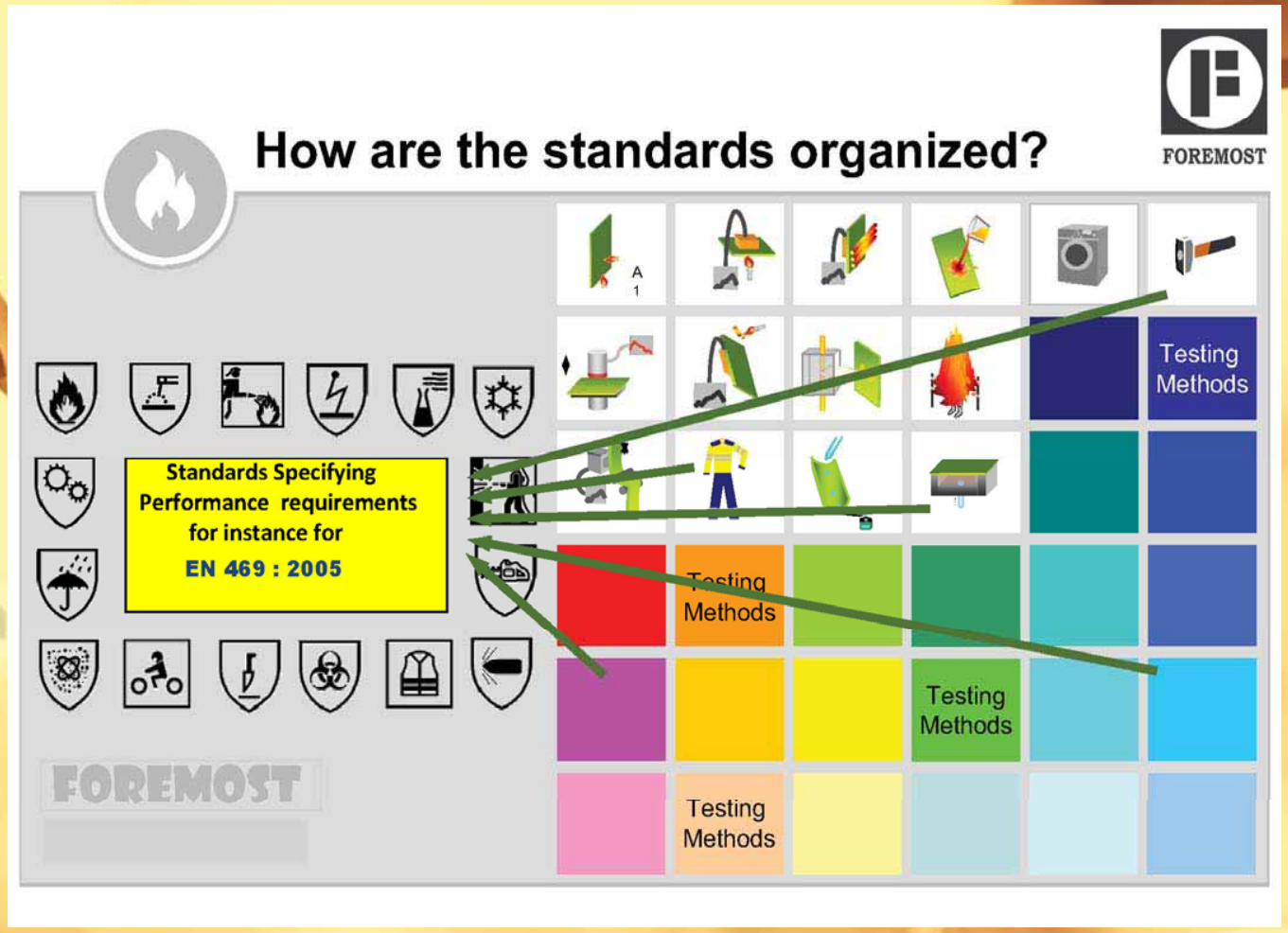
- Technical File
- Final stage Audit

Article 11 - EC Quality Certificate

Important Certification for Life saving Garment

FIRE PROXIMITY SUIT

Governing Specifications and Testing details



EN 469:2005

EN 469

- First Introduced in the Year 1995 and revised in year 2005
- LATEST Revision 2014 is in progress and expected to be ratified by end 2015
- Balance between Heat protection, Breathability & Weight
- Two Levels of Protection covered under this Standard
- Applicable standards for fire fighters for all EU member countries ; in active deployment in Europe and also ROW

FIRE PROXIMITY SUIT

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EN 469:2005

The EN 469:2005 standard demands high performances that are described in 20 tests.

The standard critically addresses **4 key test values** : which are to be checked on garment label with levels of protection mentioned on the following

X_f (flame)

X_r (radiation)

Y (waterproofness)

Z (breathability)

FIRE PROXIMITY SUIT

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EN 469:2005

LEVEL 1

- Lower Level of Protection
- Generally 2 layered assembly, Lightweight
- High Breathability, Limited Heat protection
- Suitable for Urban Search, Rescue Teams and fire attack support teams

FIRE PROXIMITY SUIT

Governing Specifications and Testing details

EN 469:2005

LEVEL 2

- Higher Level of Protection
- Generally 3 layered assembly, Medium weight
- Medium Breathability, High Heat protection
- Suitable for Frontline / First Response Fire Fighting and proximity operations

EN 469:2005

The EN 469:2005 standard demands high performances that are described in 20 tests.

The standard critically addresses **4 key test values** : which are to be checked on garment label with levels of protection mentioned on the following

X_f (flame)

X_r (radiation)

Y (waterproofness)

Z (breathability)

FIRE PROXIMITY SUIT

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FOREMOST

Fire Fighters Protective Clothing EN 469

Protective Clothing for firefighters - Performance requirements for protective clothing for firefighting

- Flame spread tested according to EN ISO 15025 procedure A (surface ignition)
- Heat transfer flame tested acc. EN ISO 9151 - 2 level
- Heat transfer radiation tested acc. EN ISO 6942 - 2 level
- Residual tensile strength of material when exposed to radiant heat
- Heat resistance 180°C, 5 min tested acc. ISO 17493
- Textile durability requirements
- Surface wetting
- Resistance to penetration by liquid chemicals tested acc. EN ISO 6530
- Resistance to water penetration tested acc. EN 20811 – 2 level
- Water vapour resistance tested acc. EN 31092 – 2 level
- Ergonomic performance acc. to annex D
- Visibility acc. to annex B and point 5.1 of EN 471:2003
- Optional whole garment testing acc. annex E

EN 469:2005

Overview of Tests Covered under

EN 469:2005 standards

FIRE PROXIMITY SUIT

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EN 469:2005

FOREMOST

Vertical flame test EN ISO 15025

Protective Clothing – Protection against heat and flame – Method of test for limited flame spread

- EN ISO 15025 (ex EN 532)
- 6 specimen (3 warp 3 weft direction)
- 200 x 160 mm
- Vertical orientation
- Flame exposure = 10 sec.
- 2 Procedures: A Surface, B Edge

Observations shall be recorded:

- Flaming to the top or side edge of the specimen
- Time of afterburn
- Afterglow outside of the charred area
- Time of afterglow
- Molten or flaming debris
- Ignition of filterpaper (if used) by flaming or molten debris
- Hole formation and in which layer in case of multilayers

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EN 469:2005

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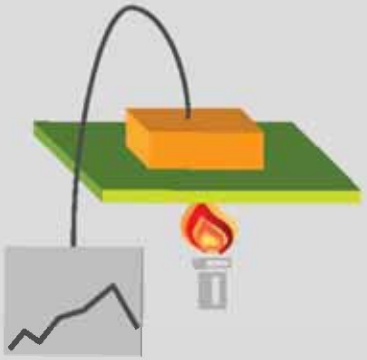
Convective heat test EN ISO 9151

Protective Clothing against heat and flame – Determination of heat transmission on exposure to flame



- EN ISO 9151 (ex EN 367)
- 3 specimen
- 140 x 140 mm
- Horizontal orientation
- Heatflux = 80kW/m²
- Time until second degree bum
- Classification according to the relevant standard e.g. EN ISO 11612

FIRE PROXIMITY SUIT

Governing Specifications and Testing details

EN 469:2005

FOREMOST

Radiant heat test EN ISO 6942

Protective Clothing – Protection against heat and fire – Method of test: Evaluation of materials and material assemblies when exposed to a source of radiant heat

- EN ISO 6942 (ex EN 366)
- 3 specimen
- 230 x 70 mm
- Vertical orientation
- Heatflux = 20kW/m²
- Time until second degree burn
- Classification according to the relevant standard e.g. EN ISO 11612

FIRE PROXIMITY SUIT

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EN 469:2005

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High Visibility test EN 471

High – visibility warning clothing for professional use – Test methods and requirements

- EN 471
- min. amount of contrast and retro-refective material
- 3 Classes
- Color and luminance factor requirement has to be matched
- Different fastness requirements e.g. sweat, washing…
- Washing stability
- Textile durability requirements
- Watervapour resistance RET

FIRE PROXIMITY SUIT

Governing Specifications and Testing details

EN 469:2005

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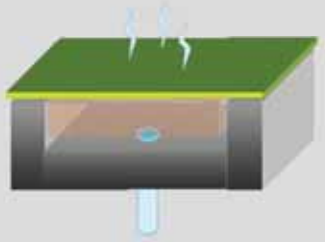
Physiological properties RET - EN 31092

Textiles - Determination of physiological properties - Measurement of thermal and water-vapour resistance under steady-state conditions (sweating guarded - hotplate test) (ISO 11092)



- Hotplate test
- Specimen size 270 x 270 mm
- 2 specimen
- Resistance of watervapour through the textile material
- Classification according to the relevant standard e.g. EN 469, EN 471

FOREMOST

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Governing Specifications and Testing details

EN STANDARDS

Complete Head to Toe protection for firemen Gear covered under 5 standards

EN 469 : 2005
Protective clothing for fire fighters -
Performance requirements for protective clothing for fire fighting

EN 659 : 2008
Protective Gloves for Fire Fighters

EN 13911 : 2004
Protective clothing for fire fighters -
Requirements and Test Method for fire hoods for fire fighters

EN 443 : 2008
Helmets for Fire Fighting in Buildings and other structures

EN 15090 : 2008
Footwear for Fire Fighters

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EN 469:2005

NO COMPROMISE ON SAFETY

Five Items will constitute Fire Set / TOG Gear

- Fire Coat with Trouser
- Fire fighter Helmet
- Antiflash Hood
- Fire fighter Glove
- Fire Fighter Boot

2 certificates for each item to be obtained

- EC TYPE Examination Certificate &
- Article 11 – EC Quality Certificate

TOTAL CERTIFICATES / APPROVALS - 10

Contact us for guidance related to checking the Authenticity of submitted EN certificates

Email : firemansuit@gmail.com

www.firesuitindia.com

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