

E-37015/FIRE DTE./VETT/ PROXIMITY SUIT /2016-E
SPECIFICATIONS OF FIRE PROXIMITY SUIT

1. Scope:

This specification covers the general design of Fire Proximity Suit with protection level 2, the minimum performance levels of the materials used and the methods of test for determining the performance levels. Fire Proximity Suits are used by the fire fighters for tackling incidents of fire. The intended purpose of this type of suit is to provide maximum coverage to the wearer from heat and flash fire while fighting fire from a safe distance. It shall be worn over normal working clothes. Entire Set should consist of 6 essential PPE items for complete Head to Toe protection.

- (a). **Fire Fighter Coat-**
As per EN 469 :2005 level 2 or latest, CE marked & approved with article 11 certification as per the European Union council Directive on Personal Protective Equipment (PPE) 89/686/EEC.
- (b). **Fire Fighter Trouser-**
As per EN 469 :2005 level 2 or latest, CE marked & approved with article 11 certification as per the European Union council Directive on Personal Protective Equipment (PPE) 89/686/EEC.
- (c). **Fire Fighter Glove-**
As per EN 659 :2008 or latest, CE marked & approved with article 11 certification as per the European Union council Directive on Personal Protective Equipment (PPE) 89/686/EEC.
- (d). **Fire Fighter Helmet-**
As per EN 443:2008 or latest, CE marked & approved with article 11 certification as per the European Union council Directive on Personal Protective Equipment (PPE) 89/686/EEC.
- (e). **Fire Fighter Boot-**
As per EN 15090 :2012, Type 2 or latest, CE marked & approved with article 11 certification as per the European Union council Directive on Personal Protective Equipment (PPE) 89/686/EEC.
- (f). **Fire Fighter Hood-**
As per EN 13911: 2004 or latest, CE marked & approved with article 11 certification as per the European Union council Directive on Personal Protective Equipment (PPE) 89/686/EEC.

2. General Features:

- (a). The Structural Fire Suit shall be new, unused and of recent manufacture. Manufacturing date of Fire Suit shall not be more than one year old at the time of delivery
- (b). Manufacturer shall have ISO 9001: 2008 (QMS) or internationally recognized accreditation/ certification for Quality. In case the bidder is not a manufacturer, then he should submit accreditation/ certification from the OEM.

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3. Additional testing report - Mannequin Test:

- (a). Burn Mannequin Testing. Report to be provided for the offered model of Fire Suit. The report should be as per International practices and guidelines as per ISO : 13506 :2008 to ascertain the heat transfer performance of clothing system and burn injury prediction analysis as per acceptable norms.
- (b). Burn Injury prediction test report showing consolidated 2nd and 3rd degree burns results not exceeding 33.3% should be submitted along with the offer



Technical parameters:

- (a). The Structural Fire fighting Suit shall be designed so as to provide maximum protection to the wearer upper and lower torso, neck, arms, legs and head and shall meet all the requirement of EN - 469: 2005 for Level - 2 suit or Latest version as applicable.
- (b). The Structural Fire fighting Suit shall be easy to wear over the normal clothing within 2 minutes without any help from others.
- (c). The complete Fire suit shall be water proof type and the design of the ensemble shall provide protection from ingress of water.
- (d). The weight of the complete Structural Fire fighting Suit including Coat, Trouser, Helmet, Gloves and Boots shall not be more than 8.5 Kg for an extra large size.
- (e). **Constructional Features:** The Structural Fire fighting Suit shall be designed to minimize restriction of movement. It shall be compatible with other equipment normally worn/ carried by the fire fighter e.g. boots, helmet, gloves, belt for carrying fireman's axe and other equipment etc.

5. General requirements:

The Structural Fire fighting Suit set should be supplied in HDPE suitcase/ box containing following 6 components:

1. Coat/Jacket
2. Trousers
3. Gloves pair
4. Boots pair
5. Helmet with visor
6. Anti-flash Hood

1 & 2. Coat & Trousers- Governing standard for the main Fire Fighter Assembly comprising of Coat and Trouser Standard EN 469:2005/ A1:2006/ AC:2006 or latest with Level 2 performance X2 Y2 Z2.

Certification:

Coat and Trouser certified to EN 469:2005 level 2 or latest with following certifications-

- (i). EN 469:2005 Certificate level 2 (EC Type Examination Certificate)
- (ii). CE certificate with Article 11 A or B certificate for ensuring EC Quality of Production

Design of Coat and Trouser:

- (i) The minimum overlap of the coat with the trouser shall be 30 cm for all sizes.
- (ii) The efforts shall be made to reduce the weight to barest minimum possible without sacrificing its utility & protection.
- (iii) Two cargo pockets are required to be provided to the coat at the bottom in front portion with closure flaps fastened with fire retardant Velcro.
- (iv) The coat shall have a radio pocket of suitable size with a fire retardant Velcro flap on the left chest. The radio pocket shall also be provided with small sized drainage holes for drainage of accumulated water and capable of housing Walkie talkie (e.g. Motorola Make GP 328 or as advised at time of PO).
- (v) The coat shall be zip fastened with a heavy-duty corrosion resistant zipper extending from throat tab till the bottom of the coat. The zip shall be overlapped with a protective flap made from the same fabric used for outer layer of the coat.
- (vi) The height of the coat collar shall be minimum 80 mm and will also have a closure strap (fire retardant Velcro) at the front to ensure complete protection to the neck.
- (vii) The suit shall incorporate heat reflective & retro-reflective tape for better visibility of bearer being seen by others in smoke filled/dimly lit spaces. The width of the heat reflective & retro-reflective tape shall not be less than 5 cm with triple reflective trim of fluorescent yellow/silver/yellow colour. The quality of reflective tape to be used in the coat & trousers should comply with the relevant EN standards requirements.
- (viii) Hardware such as buttons clips should be fixed only on the fabric layers and should not be any direct contact with the wearer body when the coat or trouser worn with closures fastened.
- (ix) The trouser shall be made from the similar three layers of construction as used in the coat. Further the trouser should be provided with flexible & extendable suspender system which can be worn securely over the shoulder of the wearer.
- (x) The seams of the trouser and coat shall be stitched from inherent flame retardant sewing thread in such a manner that the seams are not exposed from outside flame. Further, the seams should be sealed from inside with suitable moisture barrier tape to ensure no ingress of water.
- (xi) An integral wristlet with thumb loop is required to be provided at the end of the coat sleeves and shall be designed primarily to prevent entry of burning debris and shall also provide limited thermal protection to the wrist. The wristlet shall not hinder donning of the coat and shall be compatible with wearing of protective gloves.
- (xii) The coat and Trousers are to be following sizes which should conform to the below mentioned requirements applicable for corresponding Indian sizes:-

Medium Size	- Person of height 158-164 cm
Large Size	- Person of height 164-176 cm
Extra Large Size	- Person of height 176-182 cm

However, exact size shall be intimated after placement of Purchase Order.

3. Gloves:

The gloves shall be made of materials in multilayer offering good protection and designed to provide protection to the hands with elastic closure mechanism at the wrist. The gloves of fire proximity suit shall be of five fingers. The gloves shall have a Kevlar/ Aramid/ Nomex knitted wristlet. The Gloves shall be provided with Reflective tape. The Glove shall offer resistant against heat, water and abrasion and it shall also ensure maximum sensitivity and comfort for work.

The Gloves should carry the requisite label showing model name, EN 659:2008 with Test House No., CE logo, OEM information and size offered

4. Boots:

The length and the circumferential gap of the boot at the ankle shall be adequate for tucking in the trouser bottom. The boots shall be provided with carrying arrangements loop on top.

Boots should carry the requisite marking / printing showing EN 15090: 2012, CE logo, model name and Size offered

The exact size of the Boots to be ordered will be intimated after placement of Purchase Order

5. Helmet:

a. Helmet shall be of smart modular design supplied complete with Visor

b. Helmet shall be compact & modular in design with colour pigment or similar FR impregnation. The helmet shall be compatible for use with BA gas face mask. The helmet shall be rugged in design and sustain adequate impact resistance. It shall have oval shape and smooth exterior surface.

c. The helmet shall incorporate a retractable minimum 2mm thick anti scratch FR visor like treated polycarbonate/ PES visor. It shall be designed to have possible adjustment of the head size and shape from 52 to 63 cm, High shock absorbing quality and Lining of special material, which prevents skin irritation. The Visor should also be certified to EN 14458:2004

d. Helmet should carry the requisite marking/ label showing model name, EN 443:2008, CE logo and OEM information

6. Anti Flash Hood:

a. A universal size, knitted, elasticized, 'balaclava' type anti flash hood shall be made from knitted inherently flame retardant aramid of high performance material.

b. The Hoods shall be constructed in double layer configuration for added protection.

c. The Hoods should carry the requisite label showing model name, EN 13911:2004 with Test House No. CE logo and OEM information.

6. Material of Fire Suit:

a. Manufacturer to ensure that material of construction offered for different components of Fire Proximity Suit shall be conform to relevant codes.

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- b. Use of asbestos, carbon or its blends or chemically treated raw material for construction of suit is not acceptable. The thread used for stitching shall be of the fire resistant material.
- c. The Proximity Suit shall be designed and constructed with suitable materials with following minimum 3 layers construction.
- iii. (Outer Layer: For flameover protection, the outer layer shall be made of blend of inherently FR fabric with following parameters

Colour	-	Navy Blue
Composition	-	Outer fabric should be inherently flame retardant and woven with a blend of 93% metaramide, 5% Para aramide & 2% Anti static fabric.
Weight	-	Less than 220 GSM
Weave	-	Twill weave or Rip Stop weave

- iii. Middle Layer: This layer shall act as a moisture barrier for facilitating perspiration and heat to escape to the outside atmosphere, thus reducing the heat stress to the wearer and protecting water ingress to the wearer. The moisture Barrier should be breathable in nature having a micro porous layer incorporating an oleo phobic polymer treatment laminated to the carrier fabric like EPFTE or similar breathable lining combination. The weight of the middle layer shall not be more than 135 GSM.

- iii. Inner Layer: This layer should act as a thermal barrier. It shall be made of inherent non - woven aramid fibres like metaramide (Nomex)/pararamide (Kevlar) (OR) air lock lining made from sewn aramid /embedded FR silicon material duly quilted with fire retardant lining fabric. The weight of the inner layer complete with lining fabrics shall not be more than 350 GSM.

- d. The boots shall be made of flame retardant rubber with a metal insert at the toe for protection against falling debris onto the wearer foot. The bottom of the boots shall have antiskid sole, oil resistant and also have electrical insulation protection.

The Boots should have marking showing Heat insulation rating of level 3 (H13) or higher. Also, Boot should have Electric Shock Resistance (ESR) of 15kV or better as per relevant CSA/ ASTM guidelines.

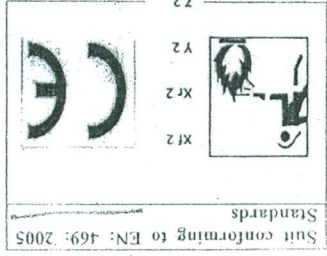
- c. The Gloves material shall be made of such material composition that the glove offers complete protection in the most demanding conditions. The gloves of fire approach suit shall be made of soft leather(or) Similar textile material providing good feel to the fire fighter. The gloves shall also have breathable waterproof lining and fire retardant thermal barrier.

- f. Helmet shall be manufactured from composite fiber glass, flame resistant material with colour pigment or FR impregnation. Colour of the helmet shall be yellow. The helmet shall be of modular design providing full protection including upper neck and face as per relevant standards. The helmet shall be Type B as per EN 443: 2008 Standards

- g. The Structural Fire Fighting Suit shall be supplied in Navy Blue Colour .

7. MARKING:

The fire protective suit (Coat and Trousers) shall have marking indicating the standard it meets viz. EN 469 and also the details of manufacture such as Date of Manufacture, Batch/Lot No. etc. Marking would be as under:-



8. DOCUMENTATION:

Along with Bid:

1. The bidder should produce all the relevant and valid EN Approval certificates i.e EEC Type Examination Certificates as per Article 10 for all the quoted products viz.

- Fire Coat & Fire Trousers,
- Fireman Gloves,
- Antiflash Hood,
- Fire Helmet and
- Firefighter Boots

2.

The bidder should produce all the relevant and valid Article 11 certificates i.e EEC Quality Article 11 Certificates for all the quoted products viz.

- Fire Coat & Fire Trousers,
- Fireman Gloves,
- Antiflash Hood,
- Fire Helmet and
- Firefighter Boots

In order to ascertain the continuity of the CE Certificates as per EU directive 89/686 EEC, the bidder should also provide OEM of Fire Suit should strictly produce the Article 11 A (or) 11B certificates which should have the address of place of manufacturing as well as Expiry/ Validity date

3. In case the bidder is not the original manufacturer of the offered item specific Authorization letter against the Tender need to be produced from the OEM for each of the Offered Products and also the relevant EN certificates from the Manufacturer as per Article 10 and as per Article 11 A (or) 11B
- The address of Manufacturing should be provided in the Article 11 EC Type Certification to determine the Country of Origin of Fire Suit offered

4. The OEM Vendor should also provide declaration/ affidavit for the factual status whether the Type Examination Certificate as well as EC Quality certificate (Article 11) for Fire Suits being offered by them has been issued to them in the capacity of Real Manufacturer or under Cross Licencing/ Third party licence use arrangement.
5. Size chart for all the fire suits as well as Fire Boots offered should be submitted.
6. Certificate of assurance from the fabric/ fibre /raw material manufacturer the Brand owner of outer shell fabric as well as Moisture Barrier lining should also be submitted regarding genuinity of the raw material used by the Vendor/ OEM for the manufacture of offered Fire Suit model
7. Mannequin Burn Test Report for the offered model of Fire Coat and Trouser showing less than 33% burn injury for extreme flame testing process.
9. **PACKING:**
Each complete suit including Coat, Trousers, Gloves, Helmet, Boots shall be packed in a good quality aesthetically designed bag with zipper.
10. **WARRANTY:**
(i). The suit shall carry warranty for a period of 03 year from the date of acceptance of the material.
11. **MARKING:**
The suit shall be marked for manufacturer's name, month/ year of manufacturing, other technical details etc.
12. **AUTHORISATION:**
If the supplier is not a manufacturer of item, they shall submit valid authorisation letter from the original manufacturer of their Indian corporate office along with offer. The manufacturer or their Indian corporate office shall have confirmed in writing for availability of all spares and after sales service support for the entire life of the equipment from the date of supply of the above system. Without which the offer shall be rejected.
13. **PRE-DISPATCH INSPECTION:**
Pre-dispatch inspection shall be carried out by the representative of management and CISF (detailed by FHQ).

FIRE RETARDANT OVERALL (DANGRI)

Scope:

Fire Retardant Overall (Dangri) for firefighting purpose, single piece, dangri style, made from inherently flame resistant fabric suitable for use by fire fighters, exposed to challenging atmosphere of Fire & Heat. Protective suit should be breathable with smart fitting and capable of providing comfort of movement to the user during the fighting and similar operation keeping in consideration Indian hot tropical climates.

Construction:

The Protective FR Overall (Dangri) shall be made from inherently flame retardant fabric having following features-

- (i). The fabric used for the fabrication of the protective FR suit shall be of Nomex or Kevlar, inherently flame retardant having permanent heat and flame protection that cannot be removed or washed out throughout the life of the garment.
- (ii). The fabric shall be made from a blend of meta aramid and para aramid yarn with 2-3% anti static yarn. The presence of Cotton, Wool, Carbon and non aramid fibres in the blended fabric shall not be acceptable.
- (iii). The fabric shall be comfortable, breathable for reduced heat stress and ability to wick away moisture (anti sweating). The weight of the fabric should be 220 GSM (Gram per Sqm) with max tolerance of +/- 5 %.
- (iv). The fabric of the FR Overall (Dangri) shall be of soft comfortable finish, durable and capable of washing as well be colour fast.

3. Colour:

The Protective FR Overall (Dangri) shall be made in Royal Blue Colour.

4. Stitching:

Stitching of the FR Overall (Dangri) shall be stitched with FR aramid sewing thread to ensure that the seams have high strength, elasticity, durability, stability, finish and colour fastness.

5. Features:

The Protective FR Overall (Dangri) shall be designed as per the following features-

- (i). The Garment shall have high protective collar with throat guard of height 10 cm

- (ii). Overall shall be of front opening type having one central concealed heavy duty metal zipper with brass stud.
- (iii). The overall should have full sleeves with single stud cuff fastening and provision of cut zipper to facilitate rolling.
- (iv). FR Overall (Dangri) shall be fabricated to provide five pockets as following- 1st Pocket - Radio pocket on left chest with metal button and Velcro flap closure.

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- 2nd Pocket - Right Chest, flap style with metal button and Velcro closure
 - 3rd Pocket - Open Pen Pocket on shoulder
 - 4th & 5th Pocket - Trousers cargo pocket at outer side of knee level (each side) with flap secured with metal button and Velcro closure
- Elasticated Waistband additionally with loop and button shall be provided for smart fitting.

Additional Customization:

- 2" (50mm) wide reflective FR trim shall be positioned around arms, waist and legs. The reflective tape shall be fire retardant, triple trip design (Yellow-silver-yellow) and certified to EN 471 for high visibility.

- (vi). Printing of letter wording i.e. "FIRE" etc to be printed in silver colour at the back of the FR Overall (Dangri). The height of the letters shall be 5 inches wording of the letters to be provided at the time of Order finalization.

6. Size:

The Sizes to range from Small to XXXL size chart to be provided by Vendor along with the Bid offer. Exact sizes shall be intimated at the time of placing order.

7. Markings/Stamping:

Labelling shall be provided on the garment showing Manufacturer Name, Size, Washing Instruction and EC Type Examination/CE certification for EN ISO 11612 and EN ISO 11611 standards etc.

8. Certification:

The finished FR Overall (Dangri) shall be certified to the following International governing standards-

- (i). EN ISO 11611:2007
- (ii). EN ISO 11612:2008

Manufacturer shall provide EC TYPE Examination Certificate from the Government (national & international) body for the offered garment in support of compliance to the above standard.

Testing:

Successful vendor shall also submit a sample drawn from the fabric of the FR garment used for fabrication of FR Protective suit. This sample length of 5 mtrs shall be tested at NABL accredited textile labs in India for compliance and passing the following test parameters-

- (i). Limited Flame spread as per ISO 15025
 - (ii). Convection heat as per ISO 9151
 - (iii). Radiant Heat as per ISO 6942
 - (iv). Tensile strength as per ISO 13934-1
 - (v). Tear strength as per ISO 13937-2
 - (vi). Limited Flame spread as per ISO 15025
 - (vii). Electrical resistance as per EN 1149-2
 - (viii). Impact of Spatter drop as per ISO 9150
- level A1 / A2
level B1
level C1
400 Newton
20 Newton
Pass class 2
Pass class 2

10. Packing:

Each complete suit shall be packed in a good quality aesthetically designed bag with zipper.

11. After Sale Support:

The manufacturer shall be an ISO 9001 QA firm with after sale service support and manufacturing facility in India for repair and wash care servicing for the offered FR Overall (Dangri).

12. Warranty:

- (i). The suit shall carry warranty for a period of 02 year from the date of acceptance of the material.

13. Authorisation:

If the supplier is not a manufacturer of item, they shall submit valid authorisation letter from the original manufacturer of their Indian corporate office along with offer. The manufacturer or their Indian corporate office shall have confirmed in writing for availability of all spares and after sales service support for the entire life of the equipment from the date of supply of the above system. Without which the offer shall be rejected.

14. Pre-Dispatch Inspection:

Pre-dispatch inspection shall be carried out by the representative of management and CISF (detailed by FHQ).

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PORTABLE WATER/FOAM MIST FIRE FIGHTING SYSTEM
(BACK PACK TYPE)

Scope:

The Water Mist based firefighting system that utilizes very fine water spray to extinguish fire. It is considered as most efficient firefighting agent with exceptionally high heat absorbing capacity and latent heat of vaporization. Water droplets with size of 1 to less than 1000 micron (μ) are referred to as mist (Mist = 1000 micron). It creates a blanket thus making the atmosphere inert around the fire and extinguished the fire efficiently and promptly.

2. General requirements:

- (i). Back Pack system shall be suitable for Class A, Class B & live electrical fires up to 1000V/1m distance.
 - (ii). The equipment shall be capable to form water droplet of size above 250 microns and delivered to the fire with Kinetic Force strong enough to overcome the convection currents of fire.
 - (iii). The Water Mist system shall be capable of carrying 10 liters of water which can discharge in the form of fine mist through a discharge gun using compressed air.
 - (iv). The system shall also be capable to operate in a combination of water with foam for fighting petrol/ diesel fires as well as for solid fire of class A, B and electrically generated fire.
 - (v). The material of the vessel shall be light weight and corrosive alloy aluminium or composite alloy. The filling port with cap shall be on the top of the vessel.
 - (vi). Compressed air cylinder shall be of 02 litres (Water Capacity) charged at 200 bar. The cylinder and valve shall have approval of CCB Nagpur.
 - (vii). Extinguishing gun- Weight of gun and nozzle shall not be more than 1000 gm. Single gun shall be useful for A, B & Electrical fire.
 - (viii). Lancing distance- Approx. 12m or more, Electrical Fires - up to 1000 V/ 1 m distance as per EN 3 standard, Operating time- 20 to 25 sec. Flow rate - 24 litres/min
 - (ix). Rating: Class A - 55 A Class B - 233 B Electrical fire up to 1000V
 - (x). Length of hose shall be more than 1.2 m.
 - (xi). Back pack shall be ergonomically shaped and harnesses shall be of fire resistant type material.
 - (xii). Operating temperature- $T_{min} +5^{\circ}C$; $T_{max} +60^{\circ}C$.
 - (xiii). Overall weight of the charged system shall not be more than 30 kg.
 - (xiv). Working pressure - above 30 bar.
- ✓(1). Certification standards: CCE Nagpur, DIN EN 3, CE etc.
- (ii). The system shall have built in safety valve for adjusting pressure.

3. Certification/ Approvals:

1. E-37015/FIRE DTE./VETT / WATER/FOAM MIST /2016-E
- (iii). The complete system shall be tested by an internationally approved laboratory/CBRU Fire Lab, Roorkee for compliance to DIN EN 1866-1:2007-10 and EN 3-7:2004+A1:2007 (E), CCE Nagpur etc. and other national/international standards as applicable for all clauses mentioned in the standard.
4. Accessories: One spare cylinder of same type shall be supplied.
5. Warranty: The unit shall carry warranty for a period of 01 year from the date of acceptance of the material.
- (i). After sales service and availability of spare parts shall be available for entire life of the material.
6. Training: The supplier shall demonstrate the system after delivery at the consignee's premises. Operational and general maintenance training of the above system shall be given to operational staff at user site immediately after supply.
7. Marking: The equipment and its accessories shall be marked for capacity, manufacturer's name, month/ year of manufacturing etc.
8. Authorisation: If the supplier is not a manufacturer of system, they shall submit valid authorisation letter from the original manufacturer of their Indian corporate office along with offer. The manufacturer of all spares and after sales service support for the entire life of the equipment from the date of supply of the above system. Without which the offer shall be rejected.
9. Pre-dispatch inspection: Pre-dispatch inspection shall be carried out by the representative of management and CISP (detailed by FHO).