



SECUREFIRE SAFETY INDUSTRIES PVT.LTD.



TiFi

Fire Entry Suit

Proven Fire Surakshaa - Kavach, Even Against The
Deadly Fire

AN INNOVATIVE SOLUTION
EMPOWERING FIRE
FIGHTERS AGAINST BLAZE
FIRE

45%

More than 45% fire -fighters get
cardiac arrest during fire-fighting
and rest are badly injured during
fire-fighting & rescue Operations.



THE SOLUTION

TIFI

POWERED WITH TiFi
The patented material

84kw/m²

Tested at 84KW/M²
heat Flux

2X

More than 2 Time
Longer Protective

36%

36% Lighter in
Weight



Special Protection to
Eyes

100%

100% Flame Proof
Innovative Material

Supported under TDVC Program

Supported & Approved

Awarded by DRDO

Supported for R&D



NATIONAL
RESEARCH
DEVELOPMENT
CORPORATION



DSIR
DEPARTMENT OF SCIENTIFIC AND
INDUSTRIAL RESEARCH





DSIR

DEPARTMENT OF SCIENTIFIC AND
INDUSTRIAL RESEARCH

ADVANCED MATERIALS FOR THERMAL INSULATION AND FIRE PROTECTION

Technology Awarded by
DEFENCE MINISTER OF INDIA

For Winning NATIONAL OPEN CHALLENGE ORGANIZED BY
DRDO



AWARDED BY DRDO

#startupindia
DIPP2629/IMB



STARTUP
INCUBATION AND
INNOVATION
CENTRE
IIT KANPUR



NEXUS



PROBLEM STATEMENT-1

FIRE ENTRY PROXIMITY SUIT

PRESENT WORLD CLASS FIRE ENTRY SUIT

- Tested at 84kw/m² Heat flux and found supportive only for 150 Seconds (20°C temperature increase towards other side means 57°C towards inner side of the suit, while Human Hypothalamus can tolerate only up to 58°C Temp.)
- Highly compromised weight of the fire suit (26 kg), which would be more than 28 kg if we provide quality helmet inside the hood, provide quality boots and quality eyes protection solution.
- User can't move properly because of it's improper design structure & heavy weight.
- Life of user is at High Risk due to its very less protection duration, compromised eye protection, incapable shoe cover and difficulty in movement during operations due to its poor structure.
- Gold Plated Polycarbonate sheet can only protect up to 200°C to 250°C direct heat while actual fire threat could be up to 1200°C during Fire-Incidence.

WORLD CLASS FIRE ENTRY SUIT FROM **USA**

ACTUAL FIRE THREAT LEVELS:

- Blaze Fire / Flash Over temp 600°C to 1200°C
- 84kw/m² heat flux is a heat radiation, which is found just at 2-3 inches distance from the heat source of around 1100° - 1200°C, which is highly fatal.



PRESENTS

NANO TECHNOLOGY BASED INDIGENOUS PATENTED
ADVANCED MATERIAL

"TiFi"TM

The only Anti-Cancer & Anti-Microbial Material for Human Use

CAN SUPPORT FROM
SUB ZERO TO

800°C

TEMPERATURE FOR 2+
HOURS

ADDITIONAL BENEFITS

- NO BURNING
- NO HEAT CONDUCTION
- NO SHRINKAGE AT FLAME & HEAT

PATENT SEARCH REPORT OF INTERNATIONAL PCT DECLARED
OUR CLAIMS AS INNOVATIVE UNDER THE FOLLOWING HEADS:



NOVELTY



**INVENTIVE
STEP**



**INDUSTRIAL
APPLICABILITY**



SOLUTION OFFERED

"TiFi"

FIRE ENTRY SUIT

Tested as per as : **EN/BS/NFPA** Standards and got more than 3 Times
Longer Duration Support, in Flame & Heat Tolerance

APPROVED & SUPPORTED BY



DRDO & CFES



DSIR



GUJRAT STATE
GOVT.



MHRD-IMPRINT



NRDC

PATENT DETAILS

PATENT NO. PCT/IB2018/053294

INDIAN PATENT NO: 201711016521A

NATIONAL PATENT FILED WITH:



USA



CANADA



CHINA



UAE & SAUDI ARABIA



FIRE ENTRY PROXIMITY SUIT EHF SERIES

(Extreme Heat and Flame Series)

Test Certifications

ISO: EN 6942

ISO : EN 9151

(Other supportive Test Certification are available separately)

EHF Series (6 Layers)

Protective Duration

360 Seconds (6 Minutes)

Inner side temperature of the Suit

15°C increases towards the inner side of the Suit

Human Hypothalamus Temp. Tolerance Power (58°C)

Temperature inside suit may reach upto 52°C after 360 Seconds, which human hypothalamus can tolerate very easily. (SAFE)

Sustainability in Sub Zero Temperature

Tested and Certified at -50°C (Innovative Fabric)

Weight of Suit

19KG (Approx) (Very Light Weighted Suit) High Quality Shoe Cover, Visor and Helmet

OTHER EXCLUSIVE FEATURES

EYES PROTECTION

MATERIAL USED

Temp. Tolerance Power of the used material

Flame Protection

Gold plated polycarbonate + High Temp. protective Assembly

UPTO 1050°C

YES





OTHER EXCLUSIVE FEATURES

BIOLOGICAL HAZARDS & CARCINOGENIC SAFETY

MICROBIAL ACTIVITY TEST

Tested and Certified Innovative material : Safe for Human Beings

CARCINOGENIC ACTIVITY TEST

Tested and Certified Innovative material : Safe for Human Beings

HAND GLOVES : SPECIAL ADVANCED HAND GLOVES

PROTECTION TIME ON CONTACT HEAT OF 500°C (EN 702)

32 Seconds (2 Times more Protective compared to the time required to pass with level 4, the Highest one.

**TEST PASSED
WITH HIGHEST
LEVEL 4**





COMPARATIVE ANALYSIS

SECUREFIRE EHF SERIES

WORLD CLASS INTERNATIONAL BRANDS

SECUREFIRE EHF SERIES

PROTECTIVE DURATION

150 Seconds
(2.5 Minutes)

>360 Seconds
(6 Minutes)

INNER SIDE TEMP. OF THE SUIT

20°C Increases towards inner side of the Suit.

15°C Increases towards inner side of the Suit.

HUMAN HYPOTHALAMUS TEMP. TOLERANCE POWER (58°C)

Temp. inside the suit reaches up to 57°C, within 150 Secs, which is fatal & Challenging for Human Hypothalamus to tolerate.

(Highly Fatal)

Temp. inside the suit may reach up to 52°C, after 360 Secs, which Human Hypothalamus can tolerate very easily.

(Safe)

SUSTAINABILITY IN SUB-ZERO TEMP.

Not Available

Available

Tested & Certified at -50°C (Innovative Fabric)

WEIGHT OF THE SUIT

26 Kg

Around >36% Higher Weight compared to Securefire Entry Suit

19 Kg

Very light weighted Suit. High Quality Shoe Cover, Visor & Helmet

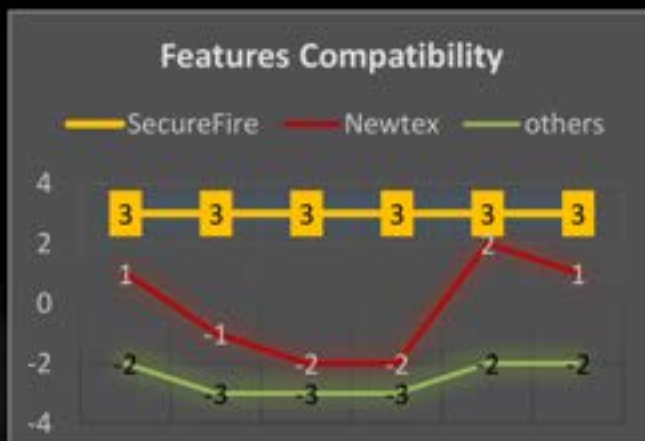


COMPETITIVE LANDSCAPE



SECUREFIRE VS COMPETITORS

BASED ON THE PRIMARY RESEARCH & FEEDBACK



Rating of the products is based on the user experience & feature of respective product of different brands:

+3 extremely bests

0: Neutral

-3: Extremely Poor



PRODUCTS
FEATURES
BENEFIT
VALUE



Light Weight



Longer Duration of
Protection



Certified & Tested as per
international Standards
EN/IS/NFPA



Patented
Internationally

FEATURE



PRODUCTS
&
FEATURES
BENEFIT
VALUE

BENEFIT



More than 2 times longer
protection during extreme
heat & fire engulfment



36% Lighter in
Weight



Longer Shelf Life
(Expiry 7 Years)



PRODUCTS
FEATURES
BENEFIT
VALUE

VALUE



By just paying 36% Extra, you
are securing yourself for more than
2 times longer Duration during Fire
Engulfment



Negligible life
Casualties of Fire
Fighters



Highly accurate and prompt
dozing of fire due to
increased confidence of
Fire Fighters



High Reduction in Overall
Loss and Life Casualties
due to Fire Incidents



PROBLEM STATEMENT-2

LACK OF FIRE & HEAT PROTECTIVE
ARMED FORCES DRESSES & FIRE FIGHTING SUIT

LIGHT WEIGHTED GEARS

Dress or Fire Suits Related Limitations:
The Danger Line

- Fire-Fighters - Present Suit Protech for very Less Duration & for Less Temperature
- Armed Forces Uniform made up of less heat tolerant & Non Fire Proof Fabrics.

CAUSE OF CURRENT PROBLEMS

- No proper solution available so far to protect or safeguard the user during Fire Accidents, hence either they die or get badly injured.
- Official millitary grade dress materials are made of 30% Nylon & 70% Cotton, which is lesser efficient to tolerate the extreme heat & cold. Also it is not Fire Repellent.





CONSEQUENCES

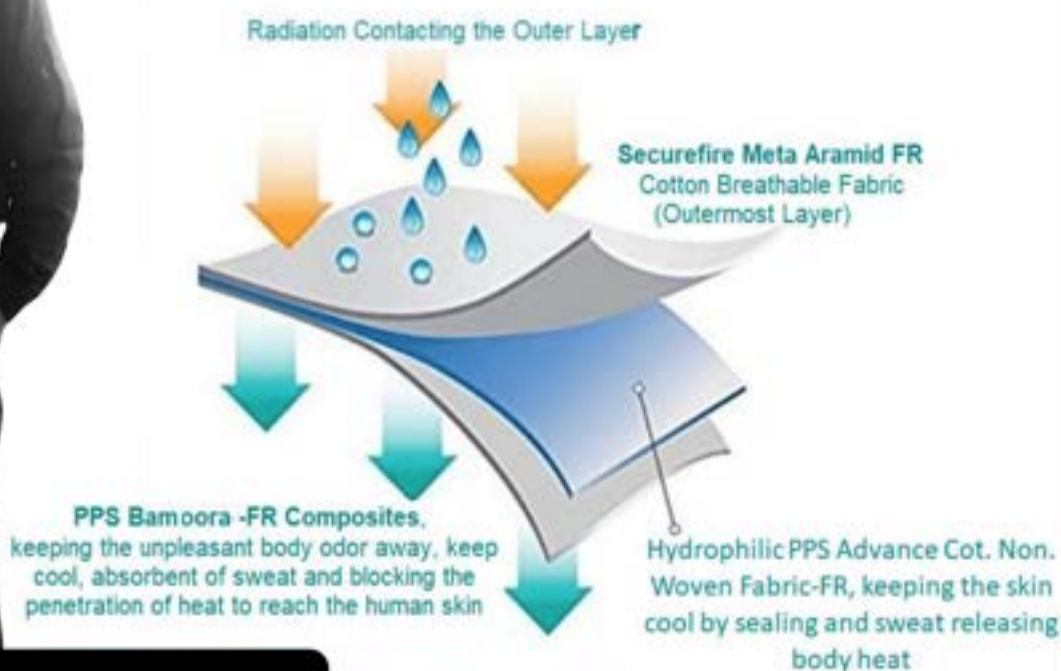
- Loss of Precious Lives
- Reduced efficiency of the users during extreme Cold / Hot Weather conditions.
- In-efficient to protect the user at the time of Fire - Incidence
- Loss of Confidence
- Heavy Business Losses





ARMED DANGUREE & FIRE FIGHTING SUIT

MECHANISM OF TECHNOLOGY
IMPLEMENTATION INTO HEAT PROTECTIVE
ARMED DANGUREE: FIRE PROTECTIVE



Weight of 4 Layered Danguree : 1.5 Kg

Armed Danguree Composite:
Special Designed Extreme Heat
Protective & Fire Retardent Composite



High Pressure flame through on Danguree



Danguree after High Pressure
Flame Interaction





COMPOSITION OF MATERIAL USED

OUTERMOST LAYER

Material Used

Securefire Meta Aramid
Breathable Fire Protective
Cotton

Heat Protection

YES

Flame Retardent

YES

MIDDLE LAYER

Material Used

Hydrophilic Advanced PPS
Non Woven Cot.
FR Fabric:
Double Layered

Microbial & Carcinogenic Activity

Testing is under Process

INNERMOST LAYER

Material Used

PPS BAMOORA FR FABRIC

Highly Hydrophilic sweat absorbent, bad
odour controller, body temperature
controller, Fire retardant Fabric.



PRODUCT FEATURES, BENEFIT & VALUE

FEATURE

- LIGHTER WEIGHT (1.5 KG ONLY)
- LONGER DURATION OF PROTECTION
- MULTIPLE TIME USE CASES

BENEFIT

- MORE THAN 2 TIMES LONGER PROTECTION DURING EXTREME HEAT AND FIRE ENGULFMENT, COMPARE TO GLOBALLY PRESENT AVAILABLE SOLUTIONS.
- LONGER SHELF LIFE



Shri. Shri
Sgt. Cdr

15 Casualty
s/o 56 JBP
REF: 9/2018

20 Sep 22

75371/AD/Pers



Premendra Singh
CEO
Securefire Safety Industries Pvt Ltd,
WZ/A-53, Mansa Ram Park,
Uttam Nagar
New Delhi-110059



Dear, CEO,

TRIALS : FR DANGUREE

1. First field trials for FR Danguree were conducted at Ahmedabad in presence of both user & manufacturer reps on 19th & 20 Sep 22.
2. Certain outcomes of the trials are brought out as under -
 - (a) Estimated Time for fire preservation 10 Sec
 - (b) Fire affecting the layers

(i) <u>First Layers</u>	22 Sec
(ii) <u>Four Layers</u>	90 Sec
(iii) <u>Six Layers</u>	125 Sec
 - (c) Comfort Level The Suit needs a 5 min break post the use of 60 mins. The cloth is comfortable until then.
3. The initial field trials are satisfactory and the product is being proposed to higher authorities for procurement.

For
Min
San Qdr
For Comdt

VALUE

BY PAYING A SMALL EXTRA PREMIUM
YOU ARE SECURING YOURSELF FOR
DOUBLE OF THE TIME DURING FIRE
ACCIDENT

NEGLIGIBLE LIFE CASUALTIES
OF THE SOLDIERS

HIGHLY ACCURATE & PROMPT DOZING OF
FIRE DUE TO INCREASED CONFIDENCE

HIGH REDUCTION IN OVERALL LOSS
AND LIFE CASUALTIES DUE TO FIRE INCIDENTS



THE TEAM



FOUNDER & CEO

(Innovator & Product Dev.)

PREMENDRA PRATAP SINGH

Experience in Fire & Safety Domain for around 10 Years, + IBS Graduate & IIM - A Certified

HEAD BUSINESS DEVELOPMENT

Capt. PARTH BHARGAVA (Retd.)

MBA with total work experience of 8 Years in the area of hardcore sales & Business Development. Key Person to decide about Business Development related strategies for the Company.



MENTOR

DR. KANTESH BALANI

Professor, Dept. of MSE-IIT Kanpur. Key person as a mentor in defining & drawing quality & testing parameters for the products developed & upgrading the material / products on regular basis



MENTOR

Dr. RAJEEV PRAKASH
DIRECTOR IIT BHILAI | Dean
R&D IIT-BHU

DIRECTOR

PROF. SANJEEV KR. JHA

Ex. Associate Professor - Textile Department, Karnavat University, Gandhinagar. Expert in Knitwear Design Technology & Textile Designing with 23+ Years of Experience





THE TEAM

ADVISORY BOARD

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ADVISORY BOARD

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ADVISORY BOARD

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GTU Ahmedabad





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& PUBLICATIONS



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Innovating in Defence - Dare to Dream

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Army Personnel

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[Click Here](#)



Government looks to boost project-based startups with
innovative ideas

[Click Here](#)



REFERENCES

SECUREFIRE ARMED
DANGUREE -FR

Composition of Material Used

Outermost Layer



Middle Layer



Innermost Layer



Award & Certification, Organized by
US EMBASSY-NEW DELHI (NEXUS-
ACIR USA)



TECHNOLOGY AWARDED BY
DEFENCE MINISTER OF INDIA &
APPROVED By CFEES for further
Development & Deployment



TiFi Fabric Sheet



Let's empower our brave Fire Fighters with
World's Best

TiFi Fire Entry Suits

WE WELCOME YOUR QUERIES

SECUREFIRE SAFETY INDUSTRIES PRIVATE LIMITED

(SECUREFIRE ENGINEERS PVT. LTD - SUSIDIARY COMPANY)

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