METALSTAR

Molten Metal Splash Protection

Protection YOU Deserve

Why METALSTAR?

The process of combining metals with pressure, heat, flame or electric arc is called welding. Welding work is a safe occupation if adequate measures are taken against potential hazards. If these measures are ignored, welders may be exposed to sparks, molten metal splashes, radiation, heat, hot metal, smoke, gas and even electric shock.

Welders should wear a garment that protects them from injury, such as firemen or many other occupational groups. The most common of all injuries is burns which are formed by bare spattering of sparks. Severe burns occur when the very intense arc of contact touches the skin for a short period of time.

Molten metal splash like in an iron & steel company may be very dangerous. Molten metal may stick on the outer fabric of the workwear and burn the skin of the person which may held to severe injuries. Traditional fabrics like cotton or polyester start burning, melting or dripping during welding or molten metal splashes which increases the body burn.

METALSTAR protective clothing provides permanent flame resistance; does not melt, ignite and continue burning; insulates the wearer from heat and decreased/avoid heat burns; provide time to escape; increases the chance of survival.

Application Areas

- Iron & Steel Industry
- Automotive Industry
- Engineering Projects
- Foundries
- Railways
- Shipbuilding
- Welding

ISO 11612 Heat & Flame Protection:

The purpose of this standard is to provide minimum performance requirements for clothing to protect against heat and flame. Within many of hazards listed in this standard there are three performance levels (except Radiant Heat where there are 4 Levels). Level 1 indicates exposure to perceived low risk, Level 2 indicates exposure to perceived medium risk and Level 3 indicates exposure to perceived high risk.

- Code A: Limited Flame Spread (A1, A2)
- Code B: Convective Heat (B1, B2, B3)
- Code C: Radiant Heat (C1, C2, C3, C4)
- Code D: Molten Aluminum (D1, D2, D3)
- Code E: Molten Iron (E1, E2, E3)
- Code F: Contact Heat (F1, F2, F3)

ISO 11611 Heat & Flame Protection:

ISO 11611 specifies minimum basic safety requirements and test methods for protective clothing including hoods, aprons, sleeves and gaiters that are designed to protect the wearer's body including head (hoods) and feet (gaiters) and that are to be worn during welding and allied processes with comparable risks.

ISO 11611 specifies two classes with specific performance requirements, i.e. Class 1 being the lower level and Class 2 the higher level.

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

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

METALSTAR



www.kivancgroup.com



KELVIN | Jacket & Trousers

Model Details

JACKET

- » Overlapped seam to allow the molten metal splash to flow from the fabric surface
- » Comfort-enhancing back bellows 1
- Additional piece of fabric on armpit for comfortable movement
- » Inclined chest pockets with flaps closed by means of Velcro tape
- » Jacket closed by means of a front zipper and Velcro tapes
- » Additional flap under zipper 😢
- » Cuff adjustment by means of snap buttons 3
- » Interior design with grey lines 4
- » Silver reflective tapes on sleeves and jacket hem

TROUSERS

- » Slash pockets
- » Elastic belt system 6
- » Trotter adjustment by means of snap buttons 6
- » Front closure with a zipper and button
- » Silver reflective tapes on both legs

















AXIS | Jacket & Trousers

Model Details

JACKET

- » Overlapped seams to allow molten metal splash to flow from the fabric surface
- » Comfort-enhancing back bellows
- » Chest pockets with flaps closed by means of Velcro tapes
- » Front flap closed by means of a snap buttons
- » Cuff adjustment by means of snap buttons

TROUSERS

- » Slash pockets
- » Elastic belt system
- » Adjustable trotters by means of snap buttons
- » Front closure with a zipper and a button

TRAVIS | Jacket & Trousers

Model Details

JACKET

- » Overlapped seam to allow the molten metal splash to flow from the fabric surface
- » Comfort-enhancing back bellows
- » Chest pockets with flaps closed by means of snap buttons
- » Radio, flashlight and gas detector loops above the chest pockets
- » Velcro tape on right chest pocket flap for name tag
- » Pen pockets on both sleeves
- » Jacket closed by means of a front zipper and snap buttons
- » Cuff and hem adjustment by means of snap buttons
- 5 cm wide red-silver-red reflective tapes on back >>

TROUSERS

- » Slash pockets
- » Elastic belt system
- » Front closure with a zipper and button
- » Side cargo pockets with flaps closed by means of snap buttons
- » Cargo pockets on the back with flaps closed by snap buttons

Outershell Material

363 Heavy Metal 330 g/m² Double Face 54% Viscose FR, 20% Wool, 20% Polyamide 5% Aramid , 1% Antistatic

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EN ISO 11611 Class 2

DARK

CASE | Coverall

Model Details

- » Overlapped seams to allow molten metal splash to flow from the fabric surface
- » Comfort-enhancing back bellows
- » Chest pocket with flap closed by means of snap buttons
- » Slash pockets
- » Side pocket with flap closed by snap buttons
- » Back pocket with flap
- » Front flap closed by means of zipper and snap buttons for quick removal
- » Elastic waist adjustment by means of a button
- » Cuff adjustment by means of snap buttons

LEROY | Hood

Model Details

- » Overlapped seams to allow the molten metal splash to flow from the hood surface
- » Hood closed by means of Velcro tape

» Hood protects the head, face and neck against fire and harmful effects of heat and molten metal splashes

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PROTEK[®] I Welding Curtain

Model Details

- » Welding blanket made of hybride composite material reinforced with heat resistant glass fiber fabric needle punched to a molten metal splash protective carbon felt from both sides.
- » More durable, lighter and easier to use compared to other welding curtains
- » Standard sizes are 200 x 200 cm, 300 x 300 cm (Different sizes are available upon request)

911C I Helmet

Model Details

- » The Bullard Model 911C is a cap-style hard hat designed specifically for high heat applications.
- » It is offered with the option of either a pinlock or ratchet suspension featuring a replaceable, padded cotton brow pad.
- » The suspension system has six points of attachment with six separate keys for a secure fit and 1" wide crown straps for comfort.
- » Weight (with suspension): 425g
- » ANSI/ISEA Classification: Z89.1-2014, Type I, Class E and G
- » Thermoplastic shell has higher heat resistance than polyethylene.

STANDARDS FOR INDUSTRIAL SOLUTIONS

There are several standards regarding personal Class 1 is protection against less hazardous welprotective clothing:

- EN ISO 11612 Heat, Flame & Molten Metal Splash
- EN ISO 11611 Welding Protection
- EN ISO 14116 Heat & Flame Protection, Limited Flame Spread
- EN 1149-5 Electrostatic Properties
- EN 61482-1-2 Electric Arc Protection (Box Test)
- EN 61482-1-1 Electric Arc Protection (Open Arc)
- EN 20471 High Visibility
- EN 343 Protection against Rain
- EN 381 Chainsaw Protection

Check the label of your garment in order to learn the protection level.

EN ISO 11612 **Heat& Flame Protection**

The purpose of this standard is to provide minimum performance requirements for clothing to protect

against heat and flame. Within many of the hazards listed in this standard there are three performance levels, Level 1 to indicate exposure to perceived low risk, Level 2 to indicate exposure to perceived medium risk and Level 3 to indicate exposure to perceived high risk. For protection against radiant heat, there is a fourth performance level, to take into account high performance materials such as aluminized and similar materials. The level of personal protection to be provided should be based on the outcome of the risk assessment. For complete protection against exposure to heat and/or flame, it is probable that it will be necessary to protect the head, face, hands and/ or feet with suitable PPE and in some cases, appropriate respiratory protection may also be considered as necessity.

- Code A: Limited Flame Spread (A1 or A2)
- Code B: Protection against Convective Heat (B1, B2 or B3)
- Code C: Protection against Radiant Heat (C1, C2, C3 or C4)
- Code D: Protection against Molten Aluminium (D1, D2 or D3)
- Code E: Protection against Molten Iron Splash (E1, E2 or E3)
- Code F: Protection against Contact Heat (F1, F2 or F3)

EN ISO 11611 Welding Protection

EN ISO 11611 specifies

minimum basic safety requirements and test methods for protective

clothing including hoods, aprons, sleeves and gaiters that are designed to protect the wearer's body including head (hoods) and feet (gaiters) and that are to be worn during welding and allied processes with comparable risks. For the protection of the wearer's head and feet, EN ISO 11611 is only applicable for hoods and gaiters. EN ISO 11611 does not cover requirements for hand protection. This type of protective clothing is intended to protect the wearer against spatter (small splashes of molten metal), short contact time with flame, radiant heat from the arc, and minimizes the possibility of electrical shock by short term, accidental contact with live electrical conductors at voltages up to approximately 100 V d.c. in normal conditions of welding. Sweat, soiling or other contaminants can affect the level of protection provided against short term accidental contact with live electric conductors at these voltages.EN ISO11611 specifies two classes with specific performance requirements, i.e. Class 1; the lower level and Class 2; the higher level.

ding techniques and situations, causing lower levels of spatter and radiant heat.

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

For adequate overall protection against the risks to which welders are likely to be exposed, personal protective equipment (PPE) covered by other standards should additionally be worn to protect the head, face, hands and feet.

EN ISO 14116 Heat& Flame Protection, Limited Flame Spread

EN 1149-5

ISO 14116 specifies the performance EN ISO 14116 requirements for the limited flame

spread properties of materials, material assemblies and protective clothing in order to reduce the possibility of the clothing burning and there by itself constituting a hazard. Additional requirements for clothing are also specified.

Protective clothing complying with this International Standard is intended to protect workers against occasional and brief contact with small igniting flames, in circumstances where there is no significant heat hazard and without the presence of another type of heat. When protection against heat hazards is necessary in addition to protection against limited spread flammability, then standards, such as EN ISO 11612, are more appropriate. A classification system (index 1, index 2, index 3) is given for materials, material assemblies and garments which are tested according to EN ISO 15025, Procedure Α.

EN 1149-5 **Electrostatic Properties**

This European Standard specifies material and design requirements for electrostatic dissipative protective

clothing, used as part of a total earthed system, to avoid incendiary discharges. The requirements may not be sufficient in oxygen enriched flammable atmospheres. This European Standard is not applicable for protection against mains voltages.

The standard specifies 3 areas:

1- Material performance requirements

- 2- Design requirements
- 3- Marking & guidance

Ad 1)Performance tests should be made after pretreatment for protective clothing produced from woven fabrics

Electrostatic requirements

Materials with conduction threads in stripe or grid pattern, the maximum space shall not exceed 10 mm in one direction

Surface Resistance & Induction Charging

| EN 1149-1 | ≥ 2.5 x 10 ⁹ Ω |
|---------------|---------------------------|
| EN 1149-3 - 2 | Half decay time > 4 s |
| | Shielding factor > 0.2 |

IEC 61482 **Electric Arc Protection**

This standard regulates heat and flame resistant clothing for workers exposed

IEC 61482-2:2018 to electric arcs. A direct and constrained

electric arc in a low voltage circuit is used to classify material / garments in defined arc protection classes.

EN 61482-1-2

- APC 1: Fabrics that pass 4kA current, burning time less than 5 seconds.
- APC 2: Fabrics that pass 7kA current, burning time less than 5 seconds.

Garment test must be done along with material tests. Both tests are necessary for certification. Garment class will be defined according to the results of tests. Garment protection level should be clearly written on the label.

If a garment consists of different layers this should be written on the user manual. Never use synthetic and flammable fabrics inside these garments. You can wear these garments with the other fire retardant suits to increase the safety performance.

EN 61482-1-1 **Open Arc Test**

ATPV: Arc Thermal Performance Value (cal/cm²) EBT: Energy to Break Open Value HAF: Heat Attenuation Factor

EN 61482-1-1 specifies test methods to measure the arc thermal performance value of materials intended for use in heat- and flame-resistant clothing for workers exposed to the thermal effects of electric arcs and the function of garments using these materials.

EN 20471 **High Visibility**

EN ISO 20471 is the harmonized European standard for high visibility clothing. It specifies the requirements

for signaling the users presence day or night. It intends to make users in hazardous situations conspicuous under any light conditions. The standard provides for two performance parameters:

- X: Surface of fluorescent and retroreflective material (3 levels)
- Y: Quality of the retro-reflecting materials (2 levels)

EN 343 **Protection Against Rain**

EN 343 is the harmonised European standard that applies to garments worn in adverse weather

conditions. It specifies the characteristics of protective clothing against the influence of foul weather, wind and cool above -5°C. The standard provides for two performance parameters:

X: Waterproofness (3 levels) Y: Breathability properties (3 levels)

EN ISO 11611

Established in 1980, Kıvanç Group continues its activities in 4 divisions; Safety, Engineering, Mining and Technical Textile.

In Safety Division, personal protective clothing against heat and flame, static discharges, arc flashes, molten metals, welding spatters is produced.

Our company has established the first heat laboratory for personal protective garments in Turkey. Following the second investment that we have made, our physical test laboratory has commenced to provide services. In our heat and physical test laboratory, raw materials (fabrics, accessories etc.,) and finished products (protective garments) are tested in accordance with EN and ISO standards. In our laboratory, which serves for R&D purposes also, new products are developed and all controls are performed before CE certification. These controls enhance product reliability and expedite required processes.

Thanks to the barcode system which have been integrated to our ERP (Enterprise Resource Planning) software that we have been using since 2009, the traceability has been made available and all product processes can be monitored. Depending upon work order number on the label of garments produced by our company, date of production; materials used in that production; date, lot number and supplier of the raw materials could be traced back.We also offer Product Liability Insurance for protective garments we produce. The cost of damages that may arise from the incidents to be encountered by the people using our garments due to material and faulty workmanship have been guaranteed within this insurance.

In Engineering Division, thermal insulation applications to reduce the heat loss are done by using high temperatureresistant glass fiber based materials. We manufacture removable insulation pads for turbines, plastic injection molding machines, textile dying machines, exhaust parts of vehicles, valves etc. Correct materials are used by calculating the heat loss, minimum thickness of insulation, surface temperature etc. Thermal imaging cameras are used to find the heat loss areas.

In Mining Division, Silica (Quartz) Sand and Musselstone are extracted.

• Silica (Quartz) Sand is used in potable and waste water filtration, in construction chemicals, in railroads as a skid preventing sand, in hippodromes, in pitch and sports fields and in many other fie ds.

• Musselstone is a compact stone that consists of limestone, silica and fossil sediment (such as clams and mussels). It is in light beige color, highly or partly porous with fossil according to its formation. Musselstone has been used frequently in artistic works that require aesthetic, elegance and art such as interior spaces, coves, columns, jambs, exedras, wall copings, fire places, landscaping, reliefs, crown gates, portal, altars, minibars, birdhouses, benevolence stones. Nowadays, it is used for restoration of historical buildings, and in new buildings, kiosks, villas waterfront residences, garden walls, walking trails, and in similar places.

In Technical Textile Division, we start from fiber and produce our own technical yarns and fabrics.

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