

Thermal Resistance of Special Garments Exposed to a Radiant Heat

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Abstract : Protective clothing is designed to keep a wearer safe in hazardous conditions or enable perform short time working operation without being injured or feeling discomfort. Firefighters or other related workers are exposed to abnormal heat which can be conductive, convective or radiant type. Their garment is proposed to resist this conditions and prevent burn injuries or death of human. However thermal comfort of firefighter exposed to high heat source have not been studied yet. Thermal resistance is the best representative parameter of thermal comfort. In this study a new method of testing of thermal resistance of special clothing exposed to high radiation heat source was designed. This method simulates human body wearing single or multi-layered garment which is exposed to radiative heat. Setup of this method enables measuring of radiative heat flow in time without effect of convection. The new testing method is verified on chosen group of textiles for firefighters.

Keywords : protective clothing, radiative heat, thermal comfort of firefighters, thermal resistance of special garments

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