

# Study on the flame-proof Clothing

## -Thermal Characteristics of the Protective Clothing Exposed to the Radiation Heat-

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### I . Introduction

Protective clothing's outer-fabric and inner-liner should be made of fabric that is more heat-resistant, flame-resistant and chemical resistant. This study shows the thermal characteristics of the protective clothing exposed to the radiation heat. This study presents experimental results as well as ways to improve current standards.

### II . Experiment

#### 1. Experiment method

#### 2. Sample

Table 1. Experimental condition

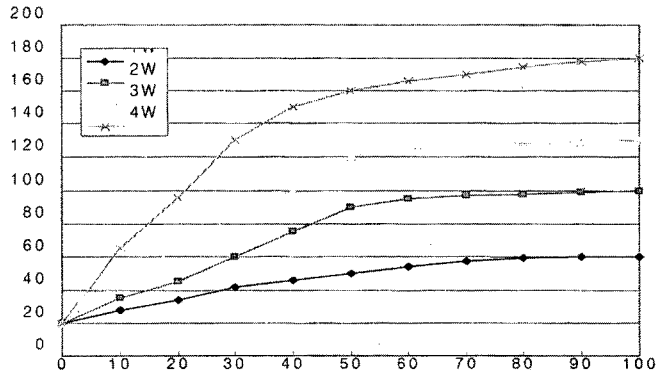
Heat flux of Radiation Heater(W/cm <sup>2</sup> )	1, 2, 3, 4
Exposed Distance(cm)	5, 10, 15, 20, 25, 30
Relative Temperature/Humidity	22±1°C/65±5% RH

Table 2. Physical characteristics of sample

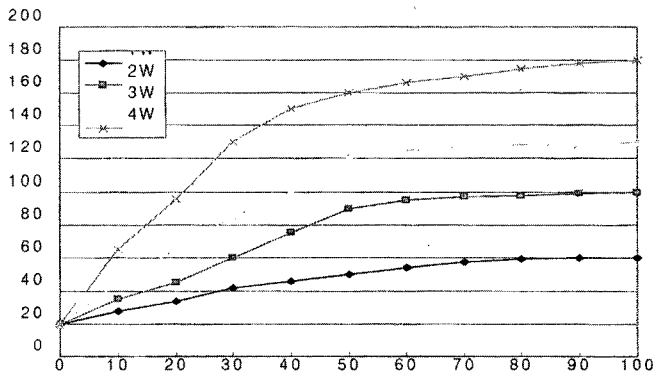
	Fabric	Weight(g/m <sup>2</sup> )	Content	Weave
Outer	Flame proofing	200±10%	Vinylon 70% Polynosic 30%	Plain
Inner	Rubber	140		

### III . Results and Conclusions

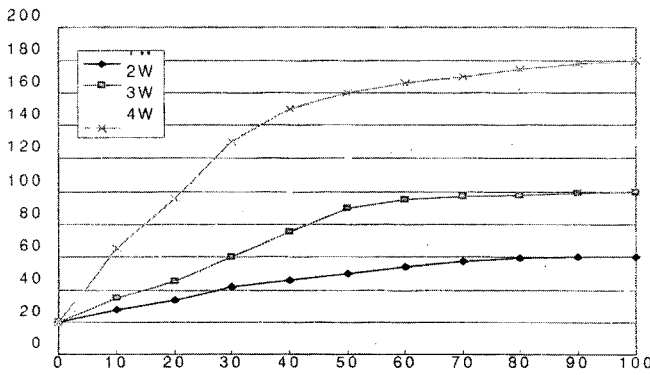
This study shows the thermal characteristics of the protective clothing exposed to the radiation heat. The surface temperature of the protective clothing exposed to the radiation with the passage of time sharply increased as the exposed-distance became closer. Also as the radiant heat flux increased, the surface temperature is higher and the time reaching steady state in sharply shorter. As the exposed-distance become more distant, the surface temperature of the protective clothing decreased and difference of temperature between the front side and the back side of the clothing decreased as well. Besides, the radiant heat flux increased, the safety exposed-distance increased. Therefore it is necessary that the worker have to work keeping a fixed safe distance from the radiant heat source.



1W : 1W/cm2, 2W : 2W/cm2, 3W : 3W/cm2, 4W : 4W/cm2, distance : 5cm



1W : 1W/cm2, 2W : 2W/cm2, 3W : 3W/cm2, 4W : 4W/cm2,  $\infty \approx \Gamma/AE$  : 5cm



1W : 1W/cm2, 2W : 2W/cm2, 3W : 3W/cm2, 4W : 4W/cm2,  $\infty \approx \Gamma/AE$  : 5-30cm

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