Thermal Mannequin Testing has been conducted to indicate the likely body burn injury as a result of flash fire when wearing different FR garments. The mannequin is covered by heat sensors to create a body map of predicted body burn injury. The flame exposure time is 3.5 seconds at a heat flux of 2.0 cal/cm².

**Test 1**

**Nomex IIIA (6oz) (No undergarments)**

This shows the total body burn prediction when wearing a Nomex IIIA suit only is 49%.

**Test 2**

Disposable Type 5/6 coverall worn over Nomex IIIA

This shows the effect of the standard disposable protective garment, when worn over the TPG, is to reduce the overall thermal protection, increasing total body burn to 53%.

**Test 3**

Microgard® FR worn over Nomex IIIA

This shows that wearing the Microgard® FR coverall over the TPG instead of the traditional disposable protective coverall, actually improves the overall thermal protection, reducing the total body burn prediction to only 16%.

**Test 4**

Microgard® CFR worn over Nomex IIIA

Because the CFR provides a higher level of chemical protection sufficient for Type 3 and 4 by the addition of a special film coating, the overall thermal protection is not as good as with the Microgard® FR. However, with a reduction in total body burn to 44%, it is still an improvement on the Nomex IIIA only.

The thermal mannequin tests show that:

1. Wearing a standard disposable protective garment over a TPG can actually reduce the overall thermal protection. In these tests the body burn injury is increased from 49% to 53%. A heavier disposable protective garment such as may be used for Type 4 protection, is likely to increase this further.

2. Wearing Microgard® FR over Nomex IIIA for Type 5 & 6 protection will not reduce the overall thermal protection and may substantially improve it. In these tests the predicted body burn injury is reduced from 53% to 16% a considerable improvement in thermal protection.

3. Wearing Microgard® CFR over Nomex IIIA for Type 4 protection will not reduce the overall thermal protection and may improve it. In these tests, the predicted body burn reduced from 53% to 44%.

Please note that these tests are conducted under laboratory conditions and are not intended to give definitive information on fire protective properties on any garment but are to serve as a guide only. The final determination of garment suitability for an application is the responsibility of the user.