



3018 Eastpoint Parkway, Louisville, KY 40223. 502-333-0510, www.ArcWear.com

Evaluation of Melting and Ignition of a Hard Hat SunShade

Date: January 13, 2015

Report #: 1411F12-SP-R01

Client: Protective Industries Pty Ltd
34 Dalgety St
East Fremantle, Western Australia
+61 8 93311944

At request of: Ian Scott

Sample Identified By Client As:

Protective Industries Pty Ltd, Snap Brim, 100% Polycarbonate FR, with MSA V-gard Hardhat, ArcWear# 1411F12

Test Procedure:

The results of testing to ASTM F2178 have been documented in Kinectrics Report Number K-418712-1411F12-R01.

50% Probability of Melting (Melt50) = 33 cal/cm².

ASTM F2178 is designed to evaluate hoods, faceshields and head protection. This device does not cover the face and could only be evaluated for melting. This is NOT a protective device but was evaluated for a limiting level at which this device would not harm a worker by igniting or melting. The Melt50 is not part of the ASTM standard but has been used for hardhats and faceshields as a threshold of failure point. Some safety factor should be used since this is the beginning of melting failure of this device. The fabric is arc rated and will not increase injury. The plastic ring is the failure point. There was NO ignition failure on this device in the exposures from 27.7 cal/cm² to 44 cal/cm².

Signed for the Company by:

Hugh Hoagland
President

Date:
DEC 17, 2014

Report #
K-418712-1411F12-R01

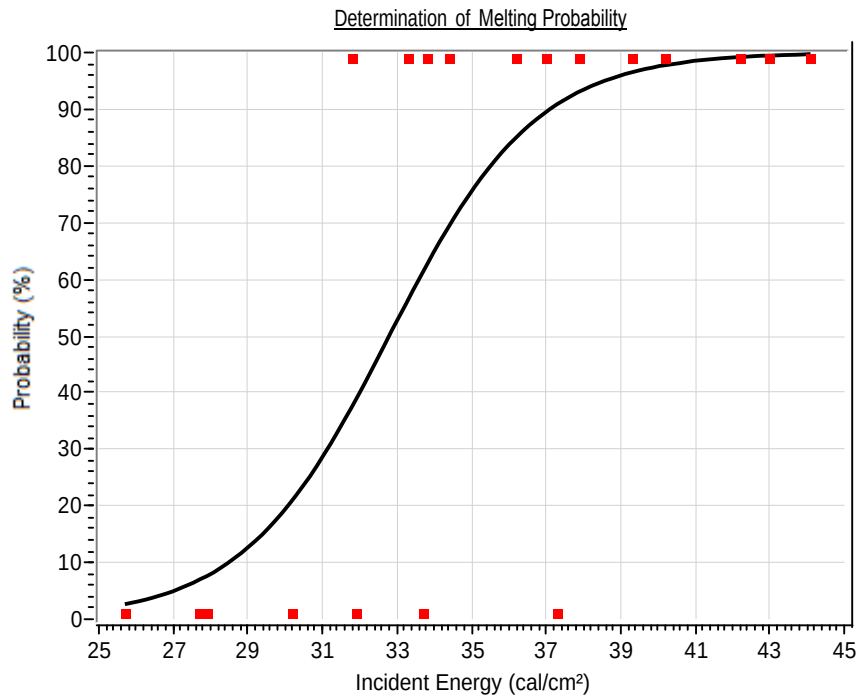
Determination of Melting by performing logistic regression on the mannequin
energy exposure as indicated in Summary Table
Test Performed using test set up: ASTM F2178-12



Fabric Description:

Protective Industries Pty Ltd,
Snap Brim,
100% Polycarbonate FR,
with MSA V-gard Hardhat,
ArcWear# 1411F12

50% Probability of Melting (Melt50) = 33 cal/cm²



Probability Ei

Probability	Ei
5%	27.0
10%	28.5
20%	30.1
30%	31.1
40%	32.0
50%	32.8
60%	33.6
70%	34.5
80%	35.5
90%	37.1

(Note: ATPV is reported to nearest integer
for ratings above 10 cal/cm²)

Total points analyzed = 20
Points above Stoll = 13
Points above mix zone = 6
Points below mix zone = 4
Pts within 20% = 15
Pts in mix zone = 10

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Summary of Measured Energy and Observations

Test Performed using test set up: ASTM F2178-12



Fabric Description:

Protective Industries Pty Ltd,
Snap Brim,
100% Polycarbonate FR,
with MSA V-gard Hardhat,
ArcWear# 1411F12

	Test #	Panel	Test Current A	Cycles of 60Hz	Ei Cal/cm²	SCD Cal/cm²	HAF %	>Stoll Y/N	Break Open Y/N	Ablation Y/N	After Flame sec.	Omit Y/N	Comment
1	K-418712-8431	A	7910	36.3	27.9			No	-	-	-	No	Some charring and melting. Slight sagging, no dripping.
2	K-418712-8431	B	7910	36.3	25.7			No	-	-	-	No	Some charring and melting. Slight sagging, no dripping.
3	K-418712-8432	A	7880	40.3	30.2			No	-	-	-	No	Some charring and melting. Moderate sagging, no dripping.
4	K-418712-8432	B	7880	40.3	31.9			No	-	-	-	No	Some charring and melting. Moderate sagging, no dripping.
5	K-418712-8433	A	7878	45.3	27.7			No	-	-	-	No	Some charring and melting. Moderate sagging, no dripping.
6	K-418712-8433	B	7878	45.3	33.7			No	-	-	-	No	Some charring and melting. Moderate sagging, no dripping.
7	K-418712-8434	A	7887	50.2	37.3			No	-	-	-	No	Some charring and melting. Moderate sagging, no dripping.
8	K-418712-8434	B	7887	50.2	36.2			Yes	-	-	-	No	Melting and charring. Moderate sagging, no dripping.
9	K-418712-8435	A	7882	52.2	39.3			Yes	-	-	-	No	Melting and charring. Moderate sagging, no dripping.
10	K-418712-8435	B	7882	52.2	33.3			Yes	-	-	-	No	Melting and charring. Moderate sagging, no dripping.
11	K-418712-8436	A	7917	55.2	43.0			Yes	-	-	-	No	Melting and charring. Moderate sagging, no dripping.
12	K-418712-8436	B	7917	55.2	37.0			Yes	-	-	-	No	Melting and charring. Moderate sagging, no dripping.
13	K-418712-8437	A	7937	53.2	40.2			Yes	-	-	-	No	Melting and dripping. Severe charring and sagging.
14	K-418712-8437	B	7937	53.2	36.2			Yes	-	-	-	No	Melting and charring. Moderate sagging, no dripping.
15	K-418712-8438	A	7968	51.3	44.1			Yes	-	-	-	No	Melting and charring. Severe sagging and flowing, but no dripping.
16	K-418712-8438	B	7968	51.3	33.8			Yes	-	-	-	No	Melting and charring. Severe sagging and flowing, but no dripping.
17	K-418712-8439	A	7984	49.3	37.9			Yes	-	-	-	No	Melting and charring. Moderate sagging, no dripping.
18	K-418712-8439	B	7984	49.3	31.8			Yes	-	-	-	No	Melting and charring. Moderate sagging, no dripping.
19	K-418712-8440	A	7944	54.2	42.2			Yes	-	-	-	No	Melting and dripping. Severe charring and sagging.
20	K-418712-8440	B	7944	54.2	34.4			Yes	-	-	-	No	Melting and charring. Severe sagging and flowing, but no dripping.
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