



# **Insulating Light Control Technology**



# PERFORMANCE DATA

TEST METHOD	PROPERTY	RESULT
ASTM D3776	<b>Weight</b> - gsm	298 +/- 10%
ASTM D1777	<b>Thickness</b> - mm	0.225mm +/- 0.01
ASTM D5034	<b>Tensile Strength</b> - N Warp Weft	42 20
ASTM D5035	<b>Tear Strength</b> - N Warp Weft	1,000 509
ASTM E408	<b>Emissivity</b>	0.1
ASTM D774	<b>Mullen Burst</b> - MPa	2.34
ATSM D4723 *Slight discolouration only	<b>Flame Resistance</b> Char Length - mm Flame Out - Sec Afterglow - Sec	0* Insantaneous None
ASTM D1876 30 Minute immersion at 23 +/- 1°C. Samples must meet minimum peel strength of aluminium of 0.1N/mm or adhesion shall exceed strength of aluminium foil (PASS) i.e. foil is torn	<b>Fluid Resistance</b> Water 3% NaCl/Water Soin Oil Agricultural Fertilizer Sterilizing Agents	Pass Pass Pass Pass Pass
Five samples aged for 30 minutes at 150°C. Samples must not delaminate, discolour, warp or shrink more than 3% in any direction	<b>Heat Ageing</b>	Pass

## WHAT IS FLIRMASK?

FLIRmask® is a groundbreaking material designed to offer unmatched thermal radiation reflection for use in the Hydroponics industry. With 2 sides to the sheet, the product can be used in 2 ways. One side is for Thermal reflection which maximizes efficiency by retaining all the heat and energy within an area lined with the FLIRmask. The other side acts as a heat deflector, which when lined on the outside of the building can keep the area cool or be maintained at a specific temperature.

Horticultural Insulation / Ground sheeting / Reflective sheeting / Heat shielding

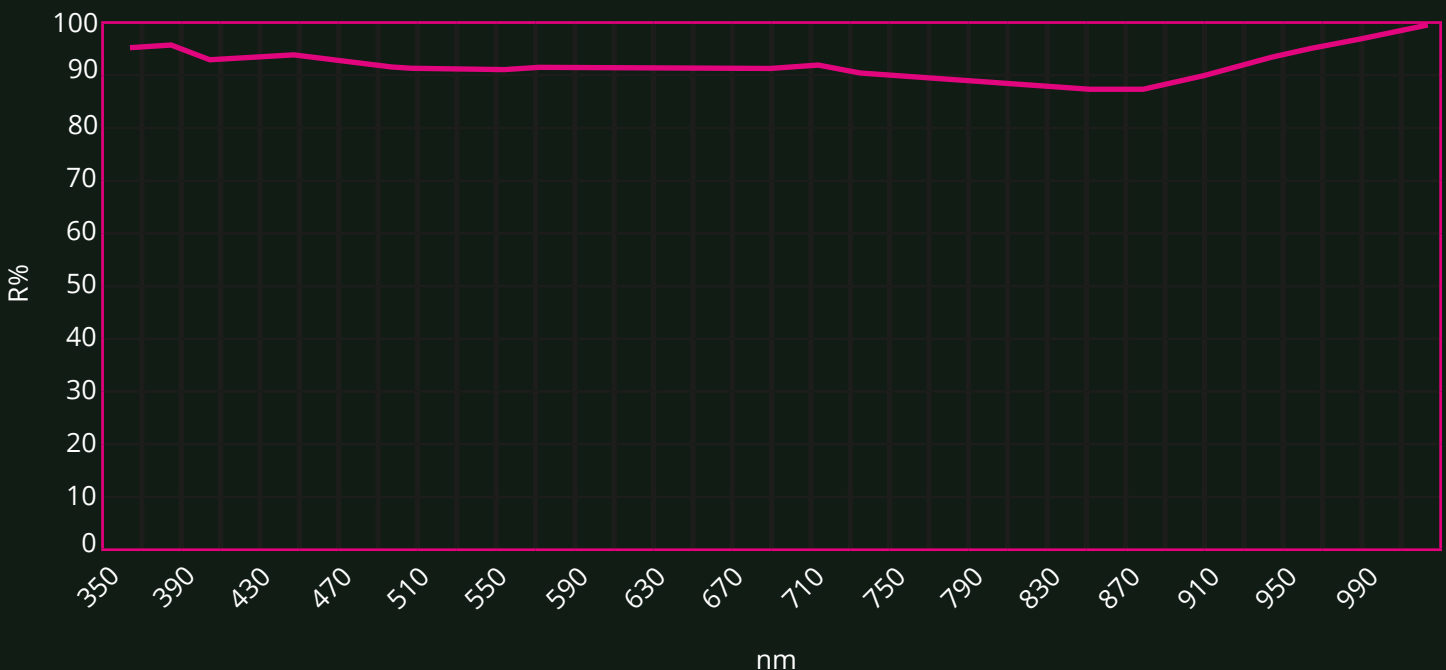


# TEST REPORT RESULTS



This results below are from a test report conducted by CLOTEFI S.A. Test Report No: 27647-54, Results 27653. For more information on this test report please contact us.

WAVE LENGTH (nm)	REFLECTANCE (%)	WAVE LENGTH (nm)	REFLECTANCE (%)
350	96.88	690	93.91
370	96.15	710	92.55
390	94.73	730	92.09
410	95.18	750	91.53
430	95.72	770	90.87
450	94.57	790	90.10
470	93.42	810	89.37
490	92.91	830	89.11
510	92.88	850	88.57
530	92.91	870	89.94
550	93.12	890	91.96
570	93.19	910	94.13
590	93.27	930	95.91
610	93.30	950	97.48
630	93.29	970	98.75
650	94.21	990	99.97
670	94.10	1000	100.49



# TM HEAT REFLECTIVE PERFORMANCE

Two individual tests were conducted, one using a 30mm steel mandrel positioned 80mm from the heat source at 635 degrees C and one with a 30mm steel mandrel protected/covered with FLIRmask clamped at 80mm from the heat source at 635 degrees C.

## Sample 1

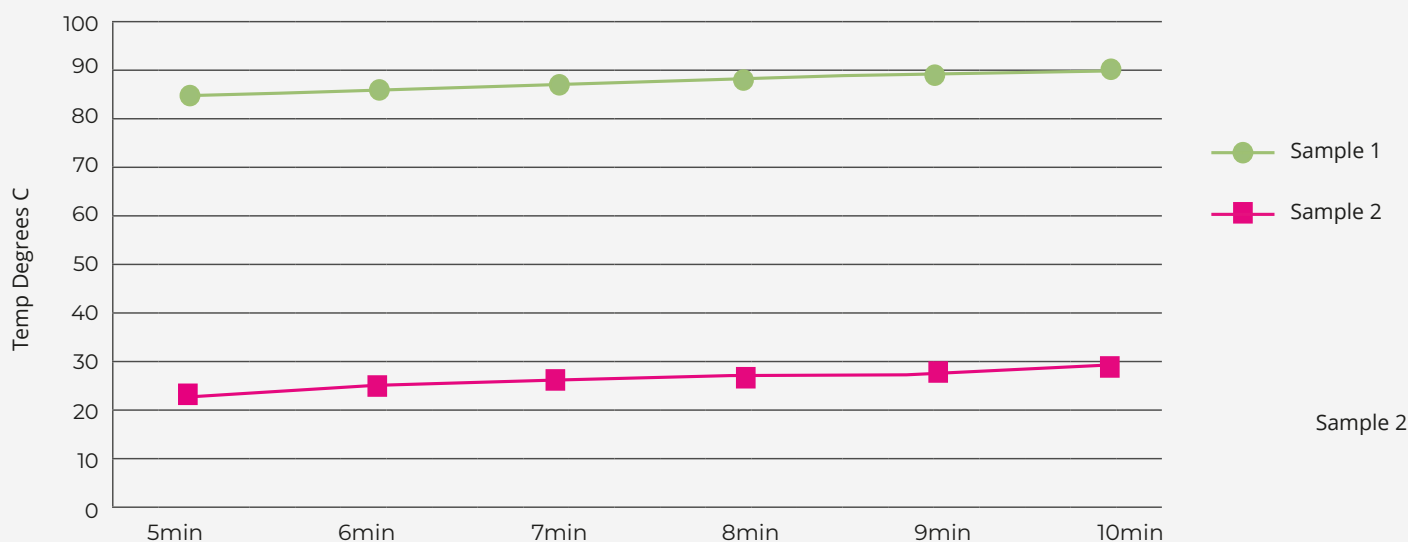
No Protection on 30mm Mandrel  
Heat Source 635 degrees C  
Distance from the Heat Source 80mm  
External Temp. Recorded at 89.7 degrees C after 10min

## Sample 2

FLIRmask Protection on 30mm Mandrel  
Heat Source 635 degrees C  
Distance from the Heat Source 80mm  
External Temp. Recorded at 89.7 degrees C after 10min

TIME (MIN)	5	6	7	8	9	10
Sample 1 - No Protection	84.3	85.4	86.6	87.5	88.6	89.7
Sample 2 - FLIRmask Protection	24.2	25.7	26.5	27.5	28.4	29.3
Different Deg C	60.1	59.7	60.1	60	60.2	60.4
Percentage of Heat Reflected	71%	70%	69%	69%	68%	67%

FLIRmask Tm Heat Reflective Data



All values stated are to be seen as typical values. We reserve the right to introduction changes within the framework or further technical development.

We do not accept any obligation or liabilities in respect of this information. Status: 01/01/2012

ATL Transformers Ltd - Hanson Close - Middleton - Manchester M24 2HD / Tel. +44 (0) 161 653 902 E-mail sales@atltransformers.co.uk

Horticultural Insulation / Ground sheeting / Reflective sheeting / Heat shielding



Registered & Trademarked / Patent Granted - Product of ATL Transformers

# HEAT INSULATION DATA

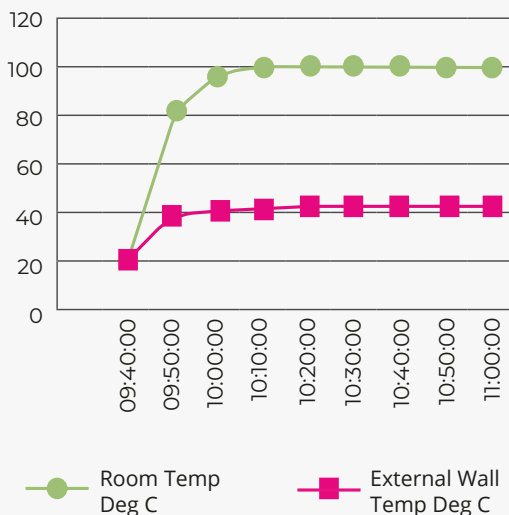
## With FLIRmask

Sealed Room with Insulated Lined Internally With Flirmask		
Time	Ambient Room Temp Deg C	External Wall Temp Deg C
09:40:00	21	21
09:50:00	83	40
10:00:00	98	42
10:10:00	100	43
10:20:00	102	44
10:30:00	102	44
10:40:00	102	44
10:50:00	102	44
11:00:00	102	44

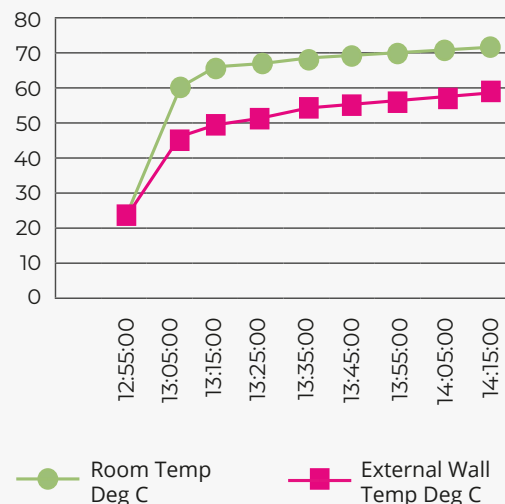
## Without FLIRmask

Sealed Room with Insulated Roof Without Flirmask		
Time	Ambient Room Temp Deg C	External Wall Temp Deg C
09:40:00	24	23
09:50:00	60	45
10:00:00	66	49
10:10:00	67	51
10:20:00	69	54
10:30:00	70	56
10:40:00	71	57
10:50:00	71	58
11:00:00	71	59

### With FLIRmask



### Without FLIRmask



Readings taken based on 60Watts/0.1 cubic meter of air  
 In a very small/sealed /enclosed environment FLIRmask reflected 30% of the thermally radiated heat from the protected surface back into the ambient environment ,this percentage increases as the watts/cubic mtr air reduces so in a normal application the percentage of heat reflection would be greater. In a large open environment FLIRmask will deflect 70-80% of any thermally radiated heat in close proximity away from the protected surface back into the ambient atmosphere.

+44 (0)7786 734 915

# INSPECTION REPORT

REPORT DATE	16/06/2011		
COMPANY	ATL TRANSFORMERS LTD	CUSTOMER	ATL TRANSFORMERS LTD
ADDRESS	MANCHESTER, UK	SITE ADDRESS	MANCHESTER, UK
THERMOGRAPHER	N.D.H.	CONTACT PERSON	N.D.H.

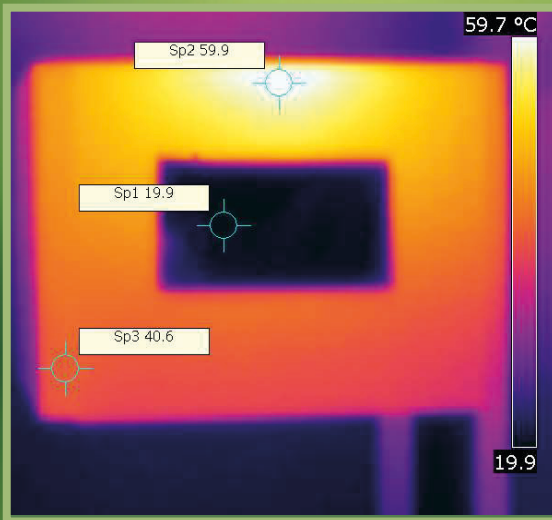


IMAGE AND OBJECT PARAMETERS		TEXT COMMENTS	
CAMERA MODEL	Z-CAMERA	1	FLIR MASK MATERIAL FITTED EXTERNAL CASING OF SODIUM LAMP.
IMAGE DATE	16/06/2011 12:12:14	2	FLIR SHIELDING POSITIVE
IMAGE NAME	IR_0075.JPG		
EMISSIVITY	0.80		
REFLECTED TEMPERATURE	20.0°C		
OBJECT DISTANCE	1.0 M		

# THE NEXT GENERATION

IN PROFESSIONAL HORTICULTURAL SHEETING.

**FIRST EVER** MULTIPURPOSE HORTICULTURE SHEETING LOADED WITH INNOVATIVE TECHNOLOGY & PROPERTIES UNMATCHED BY ANY OTHER PRODUCT ON THE MARKET TODAY

## FEATURES & DATA

- TEMPERATURE RESISTANCE UP TO 500°C / MELTING POINT >650°C
- FLUID AND CHEMICAL RESISTANT
- UN-MATCHABLE HIGH LEVEL OF THERMAL INSULATION AND LOW HEAT TRANSFER DYNAMICS
- EASY TO CUT AND FORM WITHOUT FRAYING OR DISTORTION
- MOULD AND ALGAE RESISTANT
- WASHABLE
- 100% LIGHT INSULATING
- DURABLE, PUNCTURE AND TEAR RESISTANT
- TEAR STRENGTH - N (WARP 1000) (WEFT 510)
- EMISSIVITY - 0.1
- WEIGHT -300+/-10% GSM
- THICKNESS - 0.22MM +/- 0.01
- MULLEN BURST MPA - 2.34
- HEAT AGING TEST - FIVE SAMPLES AGED FOR 30 MINUTES AT 150°C. SAMPLES DID NOT DELAMINATE, DISCOLOUR, WARP OR SHRINK MORE THAN 3% IN ANY DIRECTION

## THE BENEFITS

- FLIRMASK MAXIMIZES THE LIGHT SPREAD WITHIN A GROW ROOM ENVIRONMENT INCREASING PLANT AND CROP YIELDS BY REFLECTING CRITICAL LIGHT SPECTRUMS.
- FLIRMASK PROTECTS CROPS BY INSULATING HEAT WITHIN A ROOM.
- FLIRMASK HELPS PROTECTS GREENHOUSES AND GROW ROOMS WHEN OVERLOADED OR FAULTY ELECTRICAL EQUIPMENT COMBUSTS.
- FLIRMASK PROTECTS SURFACES, COMPONENTS AND STRUCTURAL ASSEMBLIES FROM THERMAL RADIATION.
- FLIRMASK IS TOUGH AND REUSABLE.
- FLIRMASK IS NOT ONLY LIGHT TIGHT BUT WATER TIGHT GIVING IT EXCELLENT PROPERTIES FOR HUMID ENVIRONMENTS AND WHERE WATER AND CHEMICAL SPILLAGES ARE POPULAR ACCURACIES
- FLIRMASK IS MOULD AND ALGAE RESISTANT AGAIN EXCELLENT FOR HUMID GROW ROOM ENVIRONMENTS.

+44 (0)7786 734 915



# Join the FLIRmask Revolution



## High Insulation

FLIRmask® when used with the insulating side in large areas, reflects 70-80% of the thermally radiated heat back into the ambient environment.



## Grow Film

With industry leading super high reflectance and thermal shielding properties FLIRmask® is an ideal hydroponic grow film.



## Thermal Shielding

FLIRmask® has a unique material compound which works as a heat shielding material offering truly superior insulation



## Super Reflective

FLIRmask® works as a reflective sheeting, the outer layer is 98% aluminium giving reflectance across the full spectrum.

Horticultural Insulation / Ground sheeting / Reflective sheeting / Heat shielding

Tel: +44 (0)7786 734 915