

# Certificate of Test

We hereby declare that the item described below has been tested by the Merchandise Testing Laboratories (U.K.) Ltd. And complies with the requirements of

EN471:1994 Clause 6.1 Retroreflective performance requirements of new separate performance material, Class 2 and Clause 6.2 Retroreflective performance requirements after exposure to abrasion, flexing, folding at cold temperatures, temperature variation, washing (25 cycles), and influence of rainfall

The full details of the tests and the results are given in our reports

TR2204/55557B

Dated: 18/06/03

Description of item tested:

Reflective Tape model No. 2220

Submitted by:

Shanghai Nitestar Industry Co., Ltd, Floor 23, Bldg # 2 Tian Shan Building, 789 Tian Shan Road, Shanghai, China.

Certificate authorised by:

moore

Title: Textile Technologist

Date: 18th June 2003



This declaration applies to the particular sample tested and to the specific tests carried out as dated and detailed in the report referenced above. It does not signify any measure of approval, certification, supervision, control or surveillance by M.T.L. (UK) Ltd to this or any related product.

#### **Test Report**



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Report reference

TR2204/55557B

Submitted by

Shanghai Nitestar Industry Co., Ltd, Floor 23, Bldg # 2 Tian Shan Building, 789 Tian Shan Road, Shanghai, China.

Customer Reference

26th May 2003 Date

29th May 2003 Sample Received

Items tested Reflective Tape model No. 2220

Specifications High visibility warning clothing - BS EN 471: 1994

> Photometric & physical performance requirements for retroreflective material.

- BS EN 471: 1994 clause 6.0

Test results As detailed in this report

Prepared by J.Moore(Miss)

Authorised by S. Welden

18th June 2003 Date

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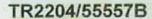
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Samples submitted for testing are accepted on the understanding that the report issued shall not form the basis of, or instrument for, any legal liability against M.T.L. (UK) Ltd and applies specifically to the sample(s) tested and not necessarily to the bulk.

## **Test Report**



**Details of Sample:** 

Reflective Tape model No. 2220

Date of Receipt:

29th May 2003

Date of Test:

16th June 2003

**Test Specification:** 

Photometric performance of retroreflective material - BS EN471:1994 clause 6.1

LABORATORIES Merchandise Testing

Laboratories (UK) Ltd 57 Soborer Red 0x6y 3022-355

Deviations/Exclusions: None

**Test Results:** 

Retroreflective performance of new material.

The coefficient of reflection R' shall be determined in accordance with the procedure defined in CIE publication No. 54:1982. The measured focal length of photometer = 1016 mm.

When measured at the two rotation angles  $E_1 = 0^{\circ}$  and  $E_2 = 90^{\circ}$ , the coefficient of retroreflection of this material did not differ by more than 15%. Therefore, this materials is defined as not orientation sensitive.

	Coefficients of retroreflective luminous intensity R' cd/(lx . m <sup>2</sup> )  Angle of illumination											
		5°			20°			30°			40°	
Observation angle	result	spec. class 1 min.	spec. class 2 min.		spec. class 1 min.	spec. class 2 min.	result	spec. class 1 min.	spec. class 2 min.	result	spec. class 1 min.	spec. class 2 min
12'	444	250	330	441	220	290	444	135	180	400	50	65
20'	307	120	250	297	100	200	283	75	170	298	30	60
10	37.7	25	25	36.4	15	15	34.4	12	12	27.7	10	10
1°30'	22.1	10	10	20.3	7	7	21.8	5	5	17.3	4	4

Compliance:

This material MEETS the requirements of BS EN 471:1994 Clause 6 (Harmonised European Standard) for Minimum coefficient of retroreflection for separate performance material, Class 2.

J.Moore(Miss)

S. Welden

Report Auditor

anolder

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## **Test Report**

#### TR2204/55557B

Details of Sample:

Reflective Tape model No. 2220

Date of Receipt:

29th May 2003

Date of Test:

16th June 2003

**Test Specification:** 

Photometric performance of retroreflective material - BS EN471:1994 clause 6.2

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Merchandise lesting Laboratories (UK) Urd Dishart faces 57 Admining Rose \$122.315 DIGUNO

Deviations/Exclusions: None

Test Results:

Retroreflective performance after test exposure.

Exposure	Result cd/(lx . m <sup>2</sup> )	spec. min		
After abrasion	268	100		
After flexing	401	100		
After folding at cold temp.	432	100		
After temperature variation	437	100		
After washing (25 cycles)	413	100		
Influence of rainfall	188	100		

After Abrasion: BSEN 530:1991 Method 2 - 5000 rubs.

After Flexing: ISO 7854:1984 Method A - 7,500 cycles

After Folding at Cold Temperatures: ISO 4675:1990 (-20°C)

After Exposure to temperature variation: 12 hours @ 50+-2°C, 20 hours @ -30+-2 C. cond. >2 hrs.

After Washing: ISO 6330:1984 Method 2A; dried stress-free at 50 +- 5°C.- 25 cycles. Samples were prepared in accordance with BS EN471:1994 clause 7.4.5.1.

Compliance:

This material MEETS the requirements of BS EN 471:1994 (Harmonised European Standard) for Minimum coefficient of retroreflection for separate performance material after exposure to abrasion, flexing, folding at cold temperatures, temperature variation, washing (25 cycles) and influence of rainfall.

Technologist:

J.Moore(Miss)

S. Welden

gas dele Report Auditor

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