



GOVERNMENT OF HARYANA / हरियाणा सरकार
TRANSPORT COMMISSIONER, HARYANA, CHANDIGARH
 परिवहन आयुक्त, हरियाणा, चंडीगढ़

To

M/S Avery Dennison (India) Pvt Ltd,
 Narsinghpur Industrial Area,
 Six Kilometer Stone,
 Delhi-Jaipur Highway, Gurugram- 122001

Memo No. 19398 /T-3/ST-II
Dated: 31/5/19

Subject:- Fitment of reflective tapes/rear marking plates/reflectors on transport vehicles.

This is with reference to your application dated 04.02.2019 on the above subject in response to this office letter no. 59501-523/T-3/ST-II dated 18.12.2018 addressed to all the Additional Deputy Commissioners-cum- Secretaries of Regional Transport Authorities in the State and expression of interest invited by the department as published in the newspapers i.e. Dainik Bhaskar, The Hindustan Times, Dainik Savera, The Times of India, Hari Bhoomi, The Business Standard, Dainik Jagran, Punjab Kesari, Navbharat Times, The Tribune, Amar Ujala & Indian Express on dated 20.12.2018, 22.12.2018, 23.12.2018, 25.12.2018, 27.12.2018 and 29.12.2018 respectively.

It is stated that the details submitted by you to this office for the fitment of reflective tapes/rear marking plates/reflectors on transport vehicles are as under:-

Sr. No.	Particulars	Details
1.	Name of the company.	M/S AVERY DENNISON (INDIA) PVT LTD, NARSINGHPUR INDUSTRIAL AREA, SIX KILOMETER STONE, DELHI-JAIPUR HIGHWAY, GURUGRAM- 122001 a subsidiary of AVERY DENNISON CORP, USA
2.	Name of the manufacturer.	1. AVERY DENNISON GRAPHICS AND REFLECTIVE PRODUCTS DIVISION, 902, FEEHANVILLE DRIVE, MOUNT PROSPECT-IL-60056 (REFLECTIVE-TAPE-RED/WHITE/YELLOW). 2. AVERY DENNISON REFLECTIVE, 6585, W HOWARD, ST. NILES, IL-60714, USA (REFLECTIVE-TAPE-RED/WHITE/YELLOW). 3. M/S AVERY DENNISON (INDIA) PVT LTD, NARSINGHPUR INDUSTRIAL AREA, SIX KILOMETER STONE, DELHI-JAIPUR HIGHWAY, GURUGRAM (REAR MARKING PLATE)
3.	Name of the authorized testing agency	The Automotive Research Association of India (ARAI), Pune
4.	Type Approval Certificate with number and date along with its date	1. NO.A95224,dated-13.11.2009 issued to M/S AVERY DENNISON (INDIA) PVT LTD, NARSINGHPUR INDUSTRIAL AREA, SIX KILOMETER STONE, DELHI-JAIPUR HIGHWAY, GURUGRAM manufactured by AVERY DENNISON GRAPHICS AND REFLECTIVE PRODUCTS DIVISION, 902,

Office: 30 Bays Building, 2nd Floor, Sector 17-B, Chandigarh - 160017 (India)

Telephone: 91(0172)-2784359, 2701290, 2700541 Fax: 91(0172)2700514 e-mail: stcharyana@hry.nic.in website: haryanatransport.gov.in

कार्यालय: 30 खण्ड बिल्डिंग, दूसरा तल, सेक्टर 17 बी, चंडीगढ़-160017 (भारत)



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परिवहन आयुक्त, हरियाणा, चंडीगढ़

	of validity.	<p>FEEHANVILLE DRIVE, MOUNT PROSPECT- IL-60056 (REFLECTIVE-TAPE-RED/WHITE/YELLOW)</p> <p>2. NO.AC0916,dated-29.06.2012 issued to M/S AVERY DENNISON (INDIA) PVT LTD, NARSINGHPUR INDUSTRIAL AREA, SIX KILOMETER STONE, DELHI-JAIPUR HIGHWAY, GURUGRAM manufactured by AVERY DENNISON REFLECTIVE, 6585, W HOWARD, ST. NILES, IL-60714, USA (REFLECTIVE-TAPE-RED/WHITE/YELLOW)</p> <p>3. COP.NO.SHL/16/2018/19/3000003916/COP/3208, dated 27.11.2018- issued to M/S AVERY DENNISON (INDIA) PVT LTD, NARSINGHPUR INDUSTRIAL AREA, SIX KILOMETER STONE, DELHI-JAIPUR HIGHWAY, GURUGRAM manufactured by AVERY DENNISON REFLECTIVE, 6585, W HOWARD, ST. NILES, IL-60714, USA (V-6300 SERIES REFLECTIVE-TAPE RED/WHITE/YELLOW) VALID UPTO 30.09.2020</p> <p>4. COP.NO.SHL/16/201718/3963/3059, dated 26.09.2017 issued to M/S AVERY DENNISON (INDIA) PVT LTD, NARSINGHPUR INDUSTRIAL AREA, SIX KILOMETER STONE, DELHI-JAIPUR HIGHWAY, GURUGRAM manufactured by AVERY DENNISON GRAPHICS AND REFLECTIVE PRODUCTS DIVISION, 902, FEEHANVILLE DRIVE, MOUNT PROSPECT- IL-60056 -(V-6700 SERIES REFLECTIVE-TAPE RED/WHITE/YELLOW) VALID UPTO 30.09.2019</p> <p>5. EXTENSION TEST REPORT NO SHL/16/2016-17/9203/1186, dated 11.04.2017 issued to M/S AVERY DENNISON (INDIA) PVT LTD, NARSINGHPUR INDUSTRIAL AREA, SIX KILOMETER STONE, DELHI-JAIPUR HIGHWAY, GURUGRAM manufactured by to M/S AVERY DENNISON (INDIA) PVT LTD, NARSINGHPUR INDUSTRIAL AREA, SIX KILOMETER STONE, DELHI-JAIPUR HIGHWAY, GURUGRAM (REAR MARKING PLATE)</p>
5.	Maximum rates per meter including fitment charges	<p>1. V-6700 CT WHITE @ 80/- PER METER</p> <p>2. V-6701 CT YELLOW @ 82/- PER METER</p> <p>3. V-6722 CT RED @ 85/- PER METER</p> <p>4. V-6300 WHITE @ 68/- PER METER</p> <p>5. V-6301 YELLOW @ 69.7/- PER METER</p> <p>6. V-6322 RED @ 72.25/- PER METER</p> <p>7. C-3 MARKING PLATE@ 1250/-</p> <p>8. C-4 MARKING PLATE@ 1650/-</p> <p>9. REFLECTOR20- 20 MM DIA @ 10/-</p> <p>10. REFLECTOR30- 30 MM DIA @ 15/-</p> <p>11. REFLECTOR40- 40 MM DIA @ 20/-</p> <p>12. REFLECTOR80- 80 MM DIA @ 35/-</p>

The aforementioned details have been uploaded on the website of the department (www.haryantransport.gov.in) for the information of transporters/general public. You are requested to affix the retro reflective tapes,

Office: 30 Bays Building, 2nd Floor, Sector 17-B, Chandigarh - 160017 (India)

Telephone: 91(0172)-2784359, 2701290, 2700541 Fax: 91(0172)2700514 e-mail: stcharyana@hry.nic.in website: haryantransport.gov.in

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परिवहन आयुक्त, हरियाणा, चंडीगढ़

rear marking plates/tapes and circular reflectors of prescribed specifications on Motor Vehicles as per the following procedure.

4. The details of the manufacturer having type approval from the approved testing agencies as mentioned above should be put up on the notice board of the offices of all the Secretaries of the Regional Transport Authorities in the State in a conspicuous place/manner for the information of all concerned.
5. Fitness certificate will be issued to the motor vehicles by the Board of Inspection after ensuring that the reflectors have been affixed in the prescribed manner and proper details have been given in the fitment certificate.
6. Board of Inspection will also ensure at the time of grant of fitness certificate that the reflective tapes of prescribed standards manufactured by the aforementioned firms only has been affixed on the transport vehicles.

You are requested to affix the retro reflective tapes, rear marking plates/tapes and circular reflectors of prescribed standards on the motor vehicles in the state of Haryana after following the procedure mentioned above in letter and spirit. A letter issued by **Avery Dennison Corp, USA** in support of your claim to be a subsidiary of the said Company should be furnished to this office within a period of 15 days from the issue of this letter.

-sd-
for Transport Commissioner,
Haryana, Chandigarh.

Endst. No. 19388-416/T-3/ST-II

Dated:- 31-5-2019

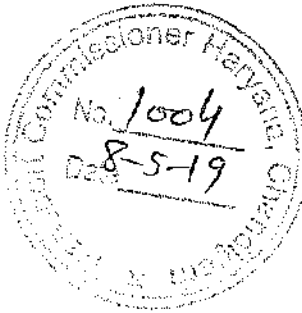
A copy of the above is forwarded to:-

- ✓ 1. All ADCs-cum-Secretaries of the Regional Transport Authorities in the State with the request to ensure strict compliance of the above directions.
2. Jr. Programmer (HQ) for uploading these instructions on the website of the Department.

for Transport Commissioner,
Haryana, Chandigarh.

**Avery Dennison (India) Pvt. Ltd.**

Narsinghpur Industrial Area,
Six Kilometer Stone,
Delhi Jaipur Highway,
District Gurgaon - 122001, Haryana
Tel: 0-124-2215581 / 582 / 583
Fax: 91-124-2215591 / 592



Date: 2nd May, 2019

The Hon'ble Transport Commissioner,
State Transport Department,
Government of Haryana
Chandigarh

AT-9

8/5/19
STP

Subject: Submission of Maximum Retail Price (MRP) of Avery Dennison make Conspicuity Tape, Rear Marking Plate & Reflector

Dear Sir,

Please find below Maximum Retail Price (MRP) of products to be offered by Avery Dennison for road safety purpose and implementation of installation of Rear Marking Tape and Reflector in the State of Haryana.

Maximum Retail Price of Avery Dennison Conspicuity Tape, Rear Marking Plate & Reflector					
S.No.	Product Code	Description	Rate per liner meter (Rs.)	Cost of 50 meter rolls (Rs.)	Amount in Each (Rs.)
1	RF 674000048255808	V-6700 CT WHITE 2"X55YDS BOB	80	4000	
2	RF 674010048255808	V-6701 CT YELLOW 2"X55YDS BOB	82	4100	
3	RF 674020048255808	V-6722 CT RED 2"X55YDS BOB	85	4250	
4	RF 630000048255	V-6300 WHITE 2"X55YDS	68	3400	
5	RF 630010048255	V-6301 YELLOW 2"X55YDS	69.7	3485	
6	RF 630220048255	V-6322 RED 2"X55YDS	72.25	3612.5	
7	C3 Rear Marking Plate (1130 mm x 140 mm)				1250
8	C4 Rear Marking Plate (1130 mm x 200 mm)				1650
9	Reflectors-20	20 mm dia			10
10	Reflectors-30	30 mm dia			15
11	Reflectors-40	40 mm dia			20
12	Reflectors-80	80 mm dia			35

Kindly acknowledge this and issue us the empanelment letter, so that we start working on this prestigious road safety project.

With Best Regards

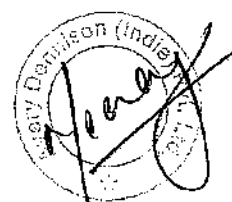
Raunak Kumath
National Sales Manager-India
Reflective Solution
Avery Dennison India Private Limited
Gurgaon, India
Cell No. +91-9971633855



Non-Transferable



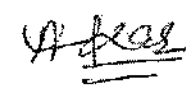
TYPE APPROVAL CERTIFICATE
(For compliance to AIS - 037)

TYPE APPROVAL CERTIFICATE No.		AC0916	DATE: 29.06.2012
(SHL NO.: SHL/16/2011-2012/6935/916)			
1.0	NAME AND ADDRESS OF APPLICANT	M/S. Avery Dennison (India) Pvt. Ltd. Narsinghpur Industrial Area Six Kilometer Stone Delhi-Jaipur Highway District Gurgaon 122 001	
	Contact Person	Mr. Abhijit Talpade	
	Tel No.	+91-124-2215581 / 2 +91-9833631661 (Mobile)	
	Fax No.	+91-14-2215591 / 2 / 3	
	Email Address	abhijit.talpade@ap.averydennison.com	
1.1	Details of component manufacturer	Avery Dennison Reflective Products 6565 W Howard St Niles IL 60714 (USA)	
2.0	Customer letter ref. and Declaration	Letter ref.: AD-DK-AM-at/19042012, Dated: 19.04.2012 Application as per annexure - A of AIS:037, dated: 19.04.2012.	
3.0	DETAILS OF THE COMPONENT UNDER TYPE APPROVAL:		
	Name and specification of the component	AVERY DENNISON V-6300 SERIES CONSPICUITY TAPE IN COLOURS - RED, WHITE AND YELLOW Size: 50mm width	
	Identification observed on the sample	C E13 104R-000003	
4.0	Applicable Notified Standard	AIS:090-2005	
5.0	Vehicle Manufacturers and models for which the component is intended	Vehicle type: Four Wheeler model : --- Manufacturer: ---	



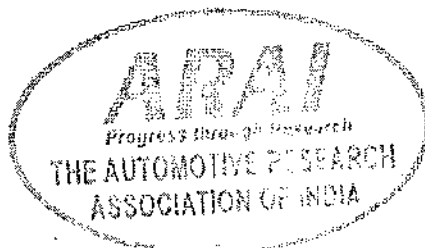
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TYPE APPROVAL CERTIFICATE No. (SHL NO.: SHL/16/2011-2012/6935/916)		AC0916
6.0	PREVIOUS CERTIFICATIONS	
6.1	Details of similar components certified by ISI/E/e/ marks, or have Undergone type approval / COP as per this procedure, if any	Approval No. E13*104R00*104R00*0003*00, dated:23.12.2011
7.0	Test report considered for Type Approval	SHL/16/2011-2012/6935/916 (enclosed as Annexure I)
8.0	Production Plan in numbers	Annual production: 60000 rolls of 50mm
9.0	Type of quality management system (QMS)	
10.0	Type Approval Granted / Refused GRANTED Based on <div style="margin-left: 20px;"> ➤ Annexure A submitted by M/S. Avery Dennison (India) Pvt. Ltd. ➤ "E" certificate referred in Cl. No. 5.1 above ➤ Test report no. Referred in Cl. No. 6.0 above. </div>	
11.0	Marking on the sample:	C E13 104R-000003 Or AC0916
First CoP to be established on / before: 30.09.2014		
PREPARED BY:	CHECKED BY:	APPROVED BY:
		
P.V. PARLIKAR PROJECT ENGINEER	Mrs. J. M. KIRVE ASSISTANT DIRECTOR	A.V. MANNIKAR DEPUTY DIRECTOR, HOD-SHL
Place of Issue: PUNE		Date of Issue: 29/06/2012











Disclaimer:

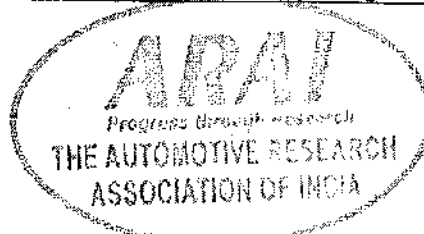
This test report pertains only to the components / parts / assemblies / vehicles etc. actually tested at ARAI in the presented condition based on the documents / information produced / submitted by the customer. The issuance of this test report alone does not indicate any measure of approval, certification, supervision, control of quality surveillance by ARAI of the product. No extract, abridgement or abstraction from this test report shall be published or used to advertise the product without the written consent of the Director, ARAI, who reserves the absolute right to agree or reject all or any of the details of any items of publicity for which consent may be sought. ARAI is in no way responsible for any misuse of copying of any design / type / system in connection with entire vehicle / components / parts and assemblies. Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the customer and ARAI shall not be liable for any claims or damages, made by the party, whatsoever, the customer shall alone be liable for the same, and undertakes to indemnify ARAI in this regard. Further, the ARAI has the right to initiate cancellation / withdrawal of the certificate issued, in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ARAI. The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this report.



ARAI
Progress through Research
TYPE APPROVAL CERTIFICATE NO - AC0916
Annexure I

Non-Transferable

TEST REPORT											
No. SHL/16/2011-2012/1643/2013		DATE: 29.06.2012									
1.0	NAME AND ADDRESS OF THE: CUSTOMER	M/S. Avery Dennison (India) Pvt. Ltd. Narsinghpur Industrial Area Six Kilometer Stone Delhi-Jaipur Highway District Gurgaon 122 001									
2.0	CUSTOMER LETTER REF.	Letter ref.: AD-DK-AM-at/19042012, Dated: 19.04.2012									
3.0	DESCRIPTION OF TEST COMPONENTS: AVERY DENNISON V-6300 SERIES CONSPICUITY TAPE IN COLOURS - RED, WHITE AND YELLOW Size: 50mm width Class "C" as declared by the manufacturer										
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Manufactured by</td> <td>Avery Dennison -Reflective Products 6565 W Howard St Niles IL 60714 (USA)</td> </tr> <tr> <td>Identification observed on the component</td> <td>C E13 104R-000003</td> </tr> </table>	Manufactured by	Avery Dennison -Reflective Products 6565 W Howard St Niles IL 60714 (USA)	Identification observed on the component	C E13 104R-000003	Photograph of samples 					
Manufactured by	Avery Dennison -Reflective Products 6565 W Howard St Niles IL 60714 (USA)										
Identification observed on the component	C E13 104R-000003										
4.0	OBJECTIVE, TEST PROCEDURE & TEST REQUIREMENTS: To carry out all tests as per AIS: 090 as published on December 2005.										
5.0	TEST RESULTS: Please refer Test Results in Sr. No. 7.0 of this report.										
6.0	CONCLUSION: RETRO-REFLECTIVE MARKING TAPE specified in 3.0 above, meets all the test requirements when tested as per the procedure given in AIS: 90 published on December 2005.										
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">PREPARED BY:</td> <td style="width: 33%;">CHECKED BY:</td> <td style="width: 33%;">AUTHORISED BY:</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;"></td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;">P.V. PARLIKAR PROJECT ENGINEER</td> <td style="text-align: center;">Mrs. J. M. KIRVE ASSISTANT DIRECTOR</td> <td style="text-align: center;">A.V. MANNIKAR DEPUTY DIRECTOR, HOD-SHL</td> </tr> </table>			PREPARED BY:	CHECKED BY:	AUTHORISED BY:				P.V. PARLIKAR PROJECT ENGINEER	Mrs. J. M. KIRVE ASSISTANT DIRECTOR	A.V. MANNIKAR DEPUTY DIRECTOR, HOD-SHL
PREPARED BY:	CHECKED BY:	AUTHORISED BY:									
											
P.V. PARLIKAR PROJECT ENGINEER	Mrs. J. M. KIRVE ASSISTANT DIRECTOR	A.V. MANNIKAR DEPUTY DIRECTOR, HOD-SHL									
Place of Issue: PUNE		Date of Issue: 29/06/2012									
Disclaimer: This test report pertains only to the components / parts / assemblies / vehicles etc. actually tested at ARAI in the presented condition based on the documents / information produced / submitted by the customer. The issuance of this test report alone does not indicate any measure of approval, certification, supervision, control of quality surveillance by ARAI of the product. No extract, abridgement or abstraction from this test report shall be published or used to advertise the product without the written consent of the Director, ARAI, who reserves the absolute right to agree or reject all or any of the details of any items of publicity for which consent may be sought. ARAI is in no way responsible for any misuse of copying of any design / type / system in connection with entire vehicle / components / parts and assemblies. Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the customer and ARAI shall not be liable for any claims or damages, made by the party, whatsoever, the customer shall alone be liable for the same, and undertakes to indemnify ARAI in this regard. Further, the ARAI has the right to initiate cancellation / withdrawal of the certificate issued, in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ARAI. The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this report.											



TYPE APPROVAL CERTIFICATE NO – AC0916

Annexure I

Test Report No SHL/18/2011-2012/6935/916

7.0 TEST RESULTS:

7.1 GENERAL SPECIFICATIONS (Cl. No. 7.0)

Cl. No.	Specifications	Remarks
6.1	Retro-reflective marking materials shall be that way constructed that they function satisfactorily and will continue to do so in normal use. In addition, they shall not have any defect in design or manufacture that is detrimental to their efficient operation or to their maintenance in good condition.	Complies.
6.2	Retro-reflective marking materials or parts thereof shall not be capable of being easily dismantled.	Complies.
6.3	The means of attachment of the marking materials shall be durable and stable.	Complies.
6.4	The outer surface of the retro-reflective marking materials shall be easy to be cleaned. The surface shall therefore not be rough and any protuberances they may exhibit shall not prevent easy cleaning.	Complies.

7.2 SPECIFICATION OF MARKING DIMENSIONS (Annex 5)

Sr. No.	Specifications	Remarks
1.2.1	Dimensions The width of a side and/or rear marking material shall be 50 mm +10/-0 mm.	50mm. Complies.
1.2.2	The minimum length of an element of a retro-reflective marking material shall be such that at least one approval mark is visible.	Complies.

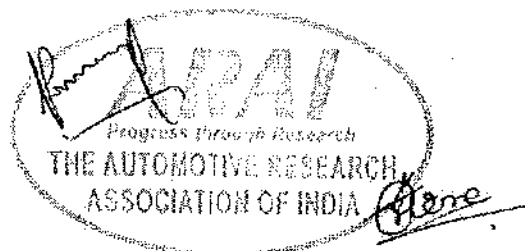
7.3 RESISTANCE TO HEAT (Annex 08, Cl. No. 04)

Test Requirements:

After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units, shall be evident.

Results/Remarks : After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units was observed.

Complies.



TYPE APPROVAL CERTIFICATE NO – A C 0916

Annexure I

Test Report No SHL/16/2011-2012/6935/916

7.4 COLOUR TEST

7.4.1 COLOUR TEST OF Retro-reflecting device by CIE standard illuminate D₆₅ (Annex 6, Cl. No. 2) :

Colour Co-ordinates	Specified Values (Colour - Red)	Measured Values	
		Sample no. 1	Sample no. 2
X Coordinate	0.560 to 0.690	0.6601	0.6398
Y Coordinate	0.310 to 0.350	0.3362	0.3321
Luminance factor	≥ 0.03	0.49	0.47

Colour Co-ordinates	Specified Values (Colour - White)	Measured Values	
		Sample no. 1	Sample no. 2
X Coordinate	0.260 to 0.385	0.3051	0.3045
Y Coordinate	0.270 to 0.395	0.3261	0.3256
Luminance factor	≥ 0.25	3.2	3.12

Colour Co-ordinates	Specified Values (Colour - Yellow)	Measured Values	
		Sample no. 1	Sample no. 2
X Coordinate	0.427 to 0.545	0.4958	0.4978
Y Coordinate	0.423 to 0.534	0.4893	0.4903
Luminance factor	≥ 0.16	1.92	1.80

7.4.2 Colour Test of Retro-reflecting device by CIE standard illuminate A: (Annex 6, Cl. No. 3)

Colour Co-ordinates	Specified Values (Colour - Red)	Measured Values	
		Sample no. 1	Sample no. 2
X Coordinate	0.643 to 0.735	0.6641	0.6627
Y Coordinate	0.258 to 0.335	0.3344	0.3320

Colour Co-ordinates	Specified Values (Colour - white)	Measured Values	
		Sample no. 1	Sample no. 2
X Coordinate	0.373 to 0.548	0.4427	0.4422
Y Coordinate	0.359 to 0.513	0.4056	0.4054

Colour Co-ordinates	Specified Values (Colour - yellow)	Measured Values	
		Sample no. 1	Sample no. 2
X Coordinate	0.505 to 0.601	0.5477	0.5485
Y Coordinate	0.385 to 0.480	0.4458	0.4458

TYPE APPROVAL CERTIFICATE NO – AC0916

Annexure I

Test Report No SHL/16/2011-2012/6935/916

7.5 PHOTOMETRIC SPECIFICATIONS (Annex 7)

7.5.1 Red colour

Observation angle (α) in degrees	Entrance angle (β) in degrees				
1/3°(20')	β_1	0	0	0	0
	β_2	5	20	30	40
Required values R (cd.m ⁻² .lx ⁻¹)		120	60	30	10
Results	Sample1	145.5	113.5	78.6	44.3
	Sample2	160.3	125.8	87.8	50.5
Remarks		Complies	Complies	Complies	Complies

7.5.2 White colour

Observation angle (α) in degrees	Entrance angle (β) in degrees				
1/3°(20')	β_1	0	0	0	0
	β_2	5	30	40	60
Required values R (cd.m ⁻² .lx ⁻¹)		450	200	90	16
Results	Sample1	545.6	315.3	184.6	33.3
	Sample2	552.9	319.7	187.4	32.7
Remarks		Complies	Complies	Complies	Complies

7.5.3 Yellow colour

Observation angle (α) in degrees	Entrance angle (β) in degrees				
1/3°(20')	β_1	0	0	0	0
	β_2	5	30	40	60
Required values R (cd.m ⁻² .lx ⁻¹)		300	130	75	10
Results	Sample1	406.267	227.8	130.2	22.9
	Sample2	403.3	228.2	131.1	23.5
Remarks		Complies	Complies	Complies	Complies

TYPE APPROVAL CERTIFICATE NO - AC0916

Annexure I

Test Report No SHL/16/2011-2012/6935/916

7.6 RESISTANCE TO EXTERNAL AGENTS (Annex 08, Cl. No. 01)

7.6.1 Resistance to weathering:

Test requirements:

a. Visual appearance:

No area of the exposed specimen shall show any evidence of cracking, sealing, pitting, blistering, delamination, distortion, chalking, staining or corrosion.

Results/Remarks:

No area of the exposed specimen shows any evidence of cracking, sealing, pitting, blistering, delamination, distortion, chalking, staining or corrosion after testing. There shall be no shrinkage was observed.

Complies.

b. Colour Test of Retro-reflecting device by CIE standard illuminate D₆₅ after Resistance to weathering test:

Colour Co-ordinates	Specified Values (Colour - Red)	Measured Values
X Coordinate	0.560 to 0.690	0.6488
Y Coordinate	0.310 to 0.350	0.3334
Luminance factor	≥ 0.03	0.40

Colour Co-ordinates	Specified Values (Colour - white)	Measured Values
X Coordinate	0.260 to 0.385	0.3058
Y Coordinate	0.270 to 0.395	0.3264
Luminance factor	≥ 0.25	2.8

Colour Co-ordinates	Specified Values (Colour - yellow)	Measured Values
X Coordinate	0.427 to 0.545	0.4956
Y Coordinate	0.423 to 0.534	0.4892
Luminance factor	≥ 0.16	1.97



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TYPE APPROVAL CERTIFICATE NO - AC0916

Annexure I

Test Report No SHL/16/2011-2012/6935/916

- c. Colour Test of Retro-reflecting device by CIE standard illuminate A after Resistance to weathering test:

Colour Co-ordinates	Specified Values (Colour - Red)	Measured Values
X Coordinate	0.643 to 0.735	0.6655
Y Coordinate	0.258 to 0.335	0.3311

Colour Co-ordinates	Specified Values (Colour - white)	Measured Values
X Coordinate	0.373 to 0.548	0.4429
Y Coordinate	0.359 to 0.513	0.4054

Colour Co-ordinates	Specified Values (Colour - yellow)	Measured Values
X Coordinate	0.505 to 0.601	0.5475
Y Coordinate	0.385 to 0.480	0.4458

- d. Photometric specifications after resistance to weathering test:

The coefficient of luminous intensity of the exposed specimen when dry shall be not less than 80 per cent of the initial value

The coefficient of luminous intensity after the test is more than 80 % of the initial value

Results/Remarks: Complies.

7.6.2 RESISTANCE TO CORROSION (Annex 08, Cl. No. 02)

- a. Visual appearance:

Test requirements:

Immediately after completion of the test, the sample shall show no sign of corrosion liable to impair the efficiency of the device.

Results/Remarks: No sign of corrosion was observed. Complies.

- b. Photometric specifications after corrosion test:

Observation angle (α) in degrees	Entrance angle (β) In degrees			
1/3°(20')	$\beta 1$	0	Required values (cd.m ⁻² .lx ⁻¹)	Measured values (cd.m ⁻² .lx ⁻¹)
	$\beta 2$	5		
Results	Red		120	129.4
	White		450	436.9
	Yellow		300	329.2
Remarks			Complies	



TYPE APPROVAL CERTIFICATE NO – AC0916

Annexure I

Test Report No SHL/16/2011-2012/6935/916

7.6.3 RESISTANCE TO FUELS (Annex 08, Cl. No. 03)

Test requirements:

After removal, the surface shall be wiped dry with a soft cloth and shall not show any visible change which would reduce its effective performance.

Results/Remarks: No Visible change was observed. **Complies.**

7.6.4 RESISTANCE TO HEAT (Annex 08, Cl. No. 04)

Test Requirements:

After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units, shall be evident.

Results/Remarks: After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units was observed. **Complies.**

7.6.5 CLEANING (Annex 08, Cl. No. 05)

Test requirements:

A test sample smeared with a mixture of detergent lubricating oil and graphite shall be easily cleaned without damage to the retro reflective or fluorescent surfaces when wiped with a mild aliphatic solvent such as n-heptane, followed by washing with a neutral detergent.

Remarks: Complies.

7.6.6 RESISTANCE TO PENETRATION OF WATER (Annex 08, Cl. No. 07)

Test requirements:

After completion of the test, No water must penetrate to the reflecting surface of the sample unit. If visual inspection clearly reveals the presence of water, the retro-reflective marking shall not be considered to have passed the test.

Results/Remarks: No evidence of deterioration was observed. **Complies.**

L:\S&HS & H\data\Testreports\12-13\1\Type Approval\JMK\Photometry\Avery Dennis\on\AC0916_6935_2011_12_RR_Tape_AIS_80_Avery.doc



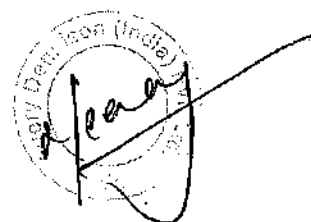
Page 9 of 9

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CONFORMITY OF PRODUCTION CERTIFICATE AS PER AIS – 037

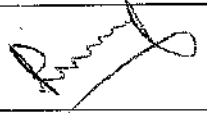
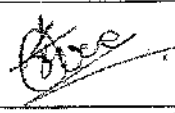
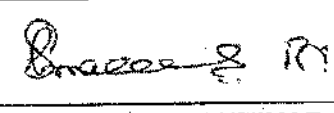
CONFORMITY OF PRODUCTION CERTIFICATE NO – 03

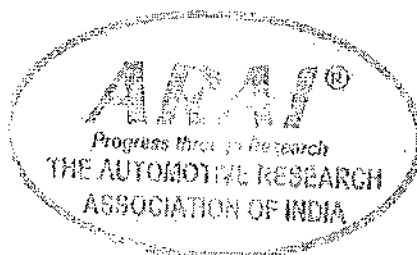
SHL NO.: SHL/16/2018-2019/3000003916/COP/3208		DATE: 27.11.2018
1.0	Name and Address of Applicant	M/s. Avery Dennison (India) Pvt. Ltd. Narsinghpur Industrial Area, Six Kilometer Stone, Delhi Jaipur Highway, District Gurgaon 122 001, Haryana
2.0	Customer Letter Ref.	Email dated: 23.09.2018
3.0	Name and Address of Component Manufacturer	Avery Dennison Reflective Products 6565 W Howard St Niles IL 60714 (USA)
4.0	Name and specification of the component	AVERY DENNISON V-6300 SERIES CONSPICUITY TAPE Colors: Red, White and Yellow Size: 20mm width & 50 mm width
5.0	Applicable Notified Standard	AIS:090
6.0	Base Type Approval No.	AC0916
7.0	TAC MARK / E-Mark	AC0916 (on 20 mm width samples) E13 104R 000003 (on 50 mm width samples)
8.0	Conformity of Production serial no.	3 rd CoP
9.0	Conformity of Production Granted / Refused	GRANTED
<p>Based on-</p> <ol style="list-style-type: none"> 1. Successful completion of Conformity of Production tests on randomly selected samples. Samples are randomly selected and submitted by M/s. Avery Dennison (India) Pvt. Ltd. 2. Test results are enclosed in Annexure-I. 		



CONFORMITY OF PRODUCTION CERTIFICATE NO – 03

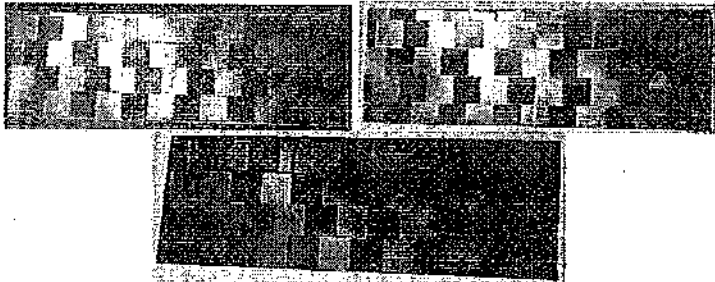
SHL No. : SHL/16/2018-2019/3000003916/COP/3208

9.0	Next continued compliance to be completed on and before: 30.09.2020
<p>Disclaimer:</p> <ol style="list-style-type: none"> 1. ARAI issues 'Conformity of Production (CoP) Certificates' for vehicles/ components/ parts/ assemblies etc. based on the documents produced and/or testing carried out on the selected sample(s) as per the provisions of specific rules. 2. Sample selection procedure is in compliance to Motor Vehicle Act/ Central Motor Vehicles Rules and their provisions as amended from time to time or any other statutory orders under which ARAI is authorized. Other Rules/ Acts are outside the purview/ scope of CoP. 3. Test/s on selected sample(s) is/ are carried out only on the parameters as covered under the specific procedures/ rules. Results of such tests are the property of bearer of CoP Certificate. These results cannot be disclosed unless specifically so ordered by Government, Court, etc. 4. Other parameters of the vehicles/ components/ parts/ assemblies etc. are outside the purview/ scope of CoP. 5. The bearer of the CoP certificate is under obligation to ensure production strictly as per the provisions of the specific certificate. 6. ARAI is not responsible for ensuring manufacturing quality of the approved vehicles/ components/ parts/ assemblies etc. 7. ARAI is in no way responsible for any misuse or copying of any design/ type/ system in connection with entire vehicle/ components/ parts and assemblies covered under the CoP certificate. 8. Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the bearer of CoP certificate and ARAI shall not be liable for any claims or damages. The bearer shall alone be liable for the same, and shall undertake to indemnify ARAI in this regard. 9. ARAI has the right, but not under obligation, to initiate cancellation/ withdrawal of the certificate issued, in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ARAI. <p>The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this certificate/ Report.</p>	
PREPARED BY:	CHECKED BY:
 P.V. PARLIKAR MANAGER	 Mrs. J. M. KIRVE GENERAL MANAGER
APPROVED BY:	
 A.V. MANNIKAR SR. DEPUTY DIRECTOR, HOD-SHL	
Place of Issue: PUNE	Date of Issue: 27.11.2018



CONFORMITY OF PRODUCTION CERTIFICATE NO – 03

SHL No. : SHL/16/2018-2019/3000003916/COP/3208

Annexure – I			
1.0	Name and Address of Applicant	M/s. Avery Dennison (India) Pvt. Ltd. Narsinghpur Industrial Area, Six Kilometer Stone, Delhi Jaipur Highway, District Gurgaon 122 001, Haryana	
2.0	Description of Component	AVERY DENNISON V-6300 SERIES CONSPICUITY TAPE Colors: Red, White and Yellow Size: 20mm width & 50 mm width.	
	Marking on the sample	AC0916 (on 20 mm width samples) E13 104R 000003 (on 50 mm width samples)	
	Photograph of Sample		
3.0	Objective: To conduct the COP tests as defined in AIS 037 as per AIS: 090.		
4.0	Test Results:		
4.1	Test Duration:	Start Date: 13.11.2018	End Date: 16.11.2018



CONFORMITY OF PRODUCTION CERTIFICATE NO – 03

SHL No. : SHL/16/2018-2019/3000003916/COP/3208

Annexure – II

4.2	Resistance to heat (Annex 6 Cl. No.4.0)				
	TEST REQUIREMENTS	OBSERVATIONS / RESULTS			
	After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units, shall be evident.	After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units was observed. Satisfactory.			
4.3	Colour Test of Retro-reflecting device by CIE standard illuminate D ₆₅ (Annex 4, Cl. No. 2)				
	Colour Co-ordinates	Specified Values (Colour – Red)	Measured Values		
			Sample No. 01	Sample No. 02	
	X Coordinate	0.560 to 0.690	0.6400	0.6415	
	Y Coordinate	0.310 to 0.350	0.3210	0.3228	
	Luminance factor	≥ 0.03	0.07	0.07	
	Colour Co-ordinates	Specified Values (Colour – White)	Measured Values		
			Sample No. 01	Sample No. 02	
	X Coordinate	0.260 to 0.385	0.3074	0.3074	
	Y Coordinate	0.270 to 0.395	0.3290	0.3289	
	Luminance factor	≥ 0.25	0.27	0.27	
	Colour Co-ordinates	Specified Values (Colour – Yellow)	Measured Values		
			Sample No. 01	Sample No. 02	
	X Coordinate	0.427 to 0.545	0.4357	0.4360	
	Y Coordinate	0.423 to 0.534	0.4238	0.4249	
	Luminance factor	≥ 0.16	0.20	0.20	
	4.4	Colour Test of Retro-reflecting device by CIE standard illuminate A: (Annex 4, Cl. No. 3)			
		Colour Co-ordinates	Specified Values (Colour – Red)	Measured Values	
				Sample No. 01	Sample No. 02
X Coordinate		0.643 to 0.735	0.6676	0.6677	
Y Coordinate		0.258 to 0.335	0.3259	0.3266	
Colour Co-ordinates		Specified Values (Colour – White)	Measured Values		
			Sample No. 01	Sample No. 02	
X Coordinate		0.373 to 0.548	0.4441	0.4451	
Y Coordinate		0.359 to 0.513	0.4063	0.4061	
Colour Co-ordinates		Specified Values (Colour – Yellow)	Measured Values		
			Sample No. 01	Sample No. 02	
X Coordinate		0.505 to 0.601	0.5268	0.5267	
Y Coordinate		0.385 to 0.480	0.4298	0.4295	

CONFORMITY OF PRODUCTION CERTIFICATE NO - 03
SHL No. : SHL/16/2018-2019/3000003916/COP/3208
Annexure - II

4.5	PHOTOMETRIC SPECIFICATIONS (Annex 5)						
Red colour (Retro reflective) Area considered = 150mmX50mm							
Sr. No.	Observation angle (α) in degrees	Entrance Angle		Required values (cd. m ² .lx ⁻¹)	Measured Values (cd. m ² .lx ⁻¹)		
		β_1	β_2		Sample No. 01	Sample No. 02	
1.	1/3°(20')	0	5	120	162.000	145.733	
2.		0	20	60	121.600	110.800	
3.		0	30	30	82.133	75.200	
4.		0	40	10	47.333	42.400	
White colour (Retro reflective) Area considered = 150mmX50mm							
Sr. No.	Observation angle (α) in degrees	Entrance Angle		Required values (cd. m ² .lx ⁻¹)	Measured Values (cd. m ² .lx ⁻¹)		
		β_1	β_2		Sample No. 01	Sample No. 02	
1.	1/3°(20')	0	5	450	534.667	454.667	
2.		0	30	200	289.333	256.400	
3.		0	40	90	169.200	147.067	
4.		0	60	16	30.400	27.200	
Yellow colour (Retro reflective) Area considered = 150mmX50mm							
Sr. No.	Observation angle (α) in degrees	Entrance Angle		Required values (cd. m ² .lx ⁻¹)	Measured Values (cd. m ² .lx ⁻¹)		
		β_1	β_2		Sample No. 01	Sample No. 02	
1.	1/3°(20')	0	5	300	348.333	312.000	
2.		0	30	130	203.733	188.533	
3.		0	40	75	116.400	107.067	
4.		0	60	10	20.733	19.573	

Non-Transferable

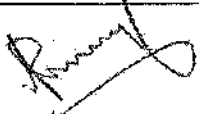
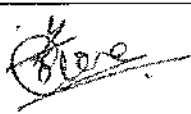
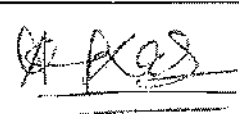
CONFORMITY OF PRODUCTION CERTIFICATE AS PER AIS – 037
CONFORMITY OF PRODUCTION CERTIFICATE NO.04

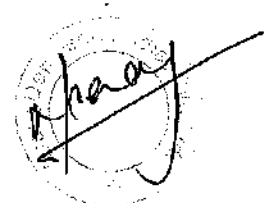
(SHL NO.: SHL/16/2017-2018/3963/3059)		DATE: 26.09.2017
1.0	NAME AND ADDRESS OF APPLICANT	M/s. Avery Dennison (India) Pvt. Ltd. Narsinghpur Industrial Area, Six Kilometer Stone, Delhi-Jaipur Highway, District Gurgaon 122 001
2.0	Customer Letter Ref.	Email dated: 20.07.2017
3.0	Name and Address of Component Manufacturer	M/s. Avery Dennison Graphics and Reflective Products Division 902 Feehanville Drive, Mount Prospect, IL 60056.
4.0	Name and specification of the component	AVERY DENNISON V-6700 SERIES CONSPICUITY TAPE IN COLOURS – RED, WHITE AND YELLOW Size: 20mm width & 50 mm width
5.0	Applicable Notified Standard	AIS: 090
6.0	Base Type Approval No.	A95224 & A95224 Addendum no.1
7.0	Marking on the sample	A95224 (on 20mm width samples) E13 104R 000001(on 50mm width samples)
8.0	Conformity of Production serial no.	4 th COP
9.0	Conformity of Production Granted / Refused	GRANTED
<p>Based on-</p> <ol style="list-style-type: none"> Successful completion of Conformity of Production tests on randomly selected samples. Samples are randomly selected and submitted by M/s. Avery Dennison (India) Pvt. Ltd. Test results are enclosed in Annexure-I. 		



CONFORMITY OF PRODUCTION CERTIFICATE NO.04

SHL No. : SHL/16/2017-2018/3963/3059

10.0	Next continued compliance to be completed on and before: 30.09.2019
<p>Disclaimer:</p> <ol style="list-style-type: none"> 1. ARAI issues 'Conformity of Production (CoP) Certificates' for vehicles/ components/ parts/ assemblies etc. based on the documents produced and /or testing carried out on the selected sample(s) as per the provisions of specific rules. 2. Sample selection procedure is in compliance to Motor Vehicle Act/ Central Motor Vehicles Rules and their provisions as amended from time to time or any other statutory orders under which ARAI is authorized. Other Rules/ Acts, are outside the purview/ scope of CoP. 3. Test/s on selected sample(s) is/ are carried out only on the parameters as covered under the specific procedures/ rules. Results of such tests are the property of bearer of CoP Certificate. These results cannot be disclosed unless specifically so ordered by Government, Court, etc. 4. Other parameters of the vehicles/ components/ parts/ assemblies etc. are outside the purview/ scope of CoP. 5. The bearer of the CoP certificate is under obligation to ensure production strictly as per the provisions of the specific certificate. 6. ARAI is not responsible for ensuring manufacturing quality of the approved vehicles/ components/ parts/ assemblies etc. 7. ARAI is in no way responsible for any misuse or copying of any design/ type/ system in connection with entire vehicle/ components/ parts and assemblies covered under the CoP certificate. 8. Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the bearer of CoP certificate and ARAI shall not be liable for any claims or damages. The bearer shall alone be liable for the same, and shall undertake to indemnify ARAI in this regard. 9. ARAI has the right, but not under obligation, to initiate cancellation/ withdrawal of the certificate issued, in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ARAI. <p>The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this certificate / Report.</p>	
PREPARED BY:	CHECKED BY:
	
P.V. PARLIKAR MANAGER	Mrs. J. M. KIRVE GENERAL MANAGER
Place of Issue: PUNE	APPROVED BY:
	
	A.V. MANNIKAR SR. DEPUTY DIRECTOR, HOD-SHL
	Date of Issue: 26/09/2017



CONFORMITY OF PRODUCTION CERTIFICATE NO.04

SHL No. : SHL/16/2017-2018/3963/3059

Annexure – I				
1.0	Name and Address of Applicant	Avery Dennison (India) Pvt. Ltd. Narsinghpur Industrial Area, Six Kilometer Stone Delhi-Jaipur Highway, District Gurgaon 122 001		
2.0	Description of Component	AVERY DENNISON V-6700 SERIES CONSPICUITY TAPE IN COLOURS – RED, WHITE AND YELLOW Size: 20mm width & 50 mm width		
	Marking on the sample	A95224 (on 20mm width samples) E13 104R 000001(on 50mm width samples)		
3.0	Objective: To conduct the COP tests as defined in AIS: 037 as per AIS: 090.			
4.0	Test Results:			
4.1	Test Duration:	Start Date: 13.09.2017	End Date: 20.09.2017	
4.2	Resistance to heat (Annex 6 Cl. No.4.0)			
	TEST REQUIREMENTS		OBSERVATIONS / RESULTS	
	After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units, shall be evident.		After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units was observed. Satisfactory.	
4.3	COLOUR TEST			
4.3.1	COLOUR TEST OF Retro-reflecting device by CIE standard illuminate D ₆₅ :			
4.3.1.1	For Red colour			
	Colour Co-ordinates	Specified Values (Colour - Red)	Measured Values	
			Sample no. 1	Sample no. 2
	X Coordinate	0.560 to 0.690	0.6584	0.6494
	Y Coordinate	0.310 to 0.350	0.3208	0.3216
	Luminance factor	≥ 0.03	0.08	0.08
4.3.1.2	For White colour			
	Colour Co-ordinates	Specified Values (Colour – White)	Measured Values	
			Sample no. 1	Sample no. 2
	X Coordinate	0.260 to 0.385	0.3115	0.3108
	Y Coordinate	0.270 to 0.395	0.3024	0.3028
	Luminance factor	≥ 0.25	0.28	0.28
4.2.1.3	For Yellow colour			
	Colour Co-ordinates	Specified Values (Colour - Yellow)	Measured Values	
			Sample no. 1	Sample no. 2
	X Coordinate	0.427 to 0.545	0.4898	0.4852
	Y Coordinate	0.423 to 0.534	0.4407	0.4411
	Luminance factor	≥ 0.16	0.32	0.31

CONFORMITY OF PRODUCTION CERTIFICATE NO.04

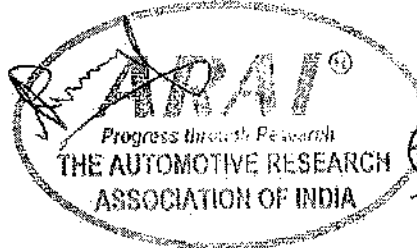
SHL No. : SHL/16/2017-2018/3963/3059

Annexure – I

4.3.2	COLOUR TEST OF Retro-reflecting device by CIE standard illuminate A:			
4.3.2.1	For Red colour			
	Colour Co-ordinates	Specified Values (Colour - Red)	Measured Values	
			Sample no. 1	Sample no. 2
	X Coordinate	0.643 to 0.735	0.6718	0.6751
	Y Coordinate	0.258 to 0.335	0.3294	0.3298
4.3.2.2	For White colour			
	Colour Co-ordinates	Specified Values (Colour - White)	Measured Values	
			Sample no. 1	Sample no. 2
	X Coordinate	0.373 to 0.548	0.4501	0.4519
	Y Coordinate	0.359 to 0.513	0.4101	0.4114
4.3.2.3	For Yellow colour			
	Colour Co-ordinates	Specified Values (Colour - Yellow)	Measured Values	
			Sample no. 1	Sample no. 2
	X Coordinate	0.505 to 0.601	0.5608	0.5614
	Y Coordinate	0.385 to 0.480	0.4139	0.4118

4.4	Photometric Specifications:
4.4.1	For Red colour (Area: 150mm × 50 mm)

Observation angle (α) in degrees	Entrance angle (β) in degrees				
1/3°(20')	β1	0	0	0	0
	β2	5	20	30	40
Required values R (cd. m².lx⁻¹)		120	60	30	10
Sample No. 01		152.533	115.333	79.200	46.267
Sample No. 02		159.067	119.733	81.733	47.467
Remarks		Satisfactory	Satisfactory	Satisfactory	Satisfactory



[Signature]

CONFORMITY OF PRODUCTION CERTIFICATE NO.04

SHL No. : SHL/16/2017-2018/3963/3059

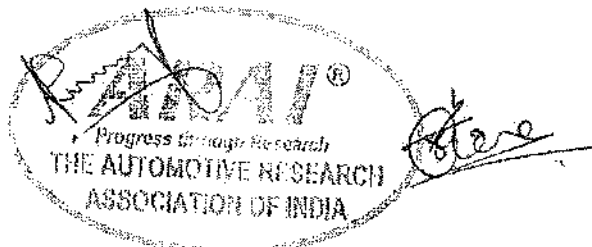
Annexure – I

4.4.2	For White colour (Area: 150mm x 50 mm)
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Observation angle (α) in degrees	Entrance angle (β) in degrees				
1/3°(20')	β1	0	0	0	0
	β2	5	30	40	60
Required values R (cd. m ² .1x ⁻¹)		450	200	90	16
Sample No. 01		454.667	253.200	151.467	29.733
Sample No. 02		466.667	259.200	154.133	28.400
Remarks		Satisfactory	Satisfactory	Satisfactory	Satisfactory

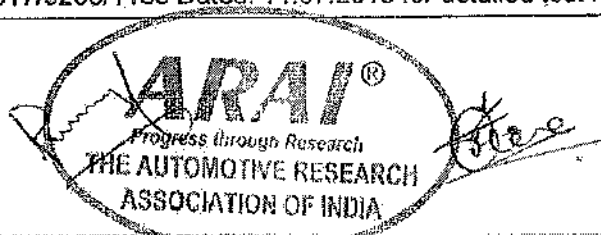
4.4.3	For Yellow colour (Area: 150mm x 50 mm)
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Observation angle (α) in degrees	Entrance angle (β) in degrees				
1/3°(20')	β1	0	0	0	0
	β2	5	30	40	60
Required values R (cd. m ² .1x ⁻¹)		300	130	75	10
Sample No. 01		401.333	216.667	128.800	23.640
Sample No. 02		404.000	223.867	135.600	27.600
Remarks		Satisfactory	Satisfactory	Satisfactory	Satisfactory



Non-Transferable



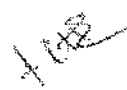
EXTENSION TEST REPORT	
(Earlier test report: SHL/16/2014-2015/6171/337 Dated: 10.02.2015 & SHL/16/2015-2016/252/1442 Dated: 14.07.2015)	
No. SHL/16/2016-2017/9203/1186	DATE: 11.04.2017
1.0 NAME AND ADDRESS OF THE CUSTOMER	M/S. Avery Dennison (India) Pvt. Ltd. Narsinghpur Industrial Area, Six Kilometer Stone Delhi-Jaipur Highway, District Gurgaon 122 001
2.0 CUSTOMER LETTER REF.	Email Dated : 19.01.2017
3.0 DESCRIPTION OF TEST COMPONENTS:	
	Rear Marking Plates (Class 3 & 4): Substrate used (Grade of Material) – Aluminum Alloy 5052, temper H32, Thickness: 2 mm
	Rear Marking Plates (Class 3 & 4): Substrate used (Grade of Material) – MS: Steel Grade Material (D-513), Thickness: 1.5 mm, 1.22 mm thick. & 1.6 mm
	Rear Marking Plates (Class 3 & 4): Substrate used (Grade of Material) - Steel Grade Material (ST 52.3), Thickness: 4 mm
Manufactured by	M/S. Avery Dennison (India) Pvt. Ltd. Narsinghpur Industrial Area, Six Kilometer Stone Delhi-Jaipur Highway, District Gurgaon 122 001
Unique Identification	AD_AT300854
Drawing No. of the component	AD_AT300854 as enclosed at page no. 4 & 5
Identification observed on the component	E13 104R 00 0001 AD_AT_300854
4.0 CONSIDERATION FOR EXTENSION:	
	i) Declaration letter submitted by customer regarding the change in part number.
	ii) Customer's declaration stating that material used, manufacturing process, controls, etc. are identical and not changed expect change in material of plate & Thickness of the plate (specified in 3.0 above).
	iii) Additional test of Rigidity of Plates & Corrosion test are conducted as per AIS: 089 on new material of Steel Grade D-513 with thickness of the plate (1.22 mm & 1.6 mm) and Steel Grade ST-52.3 with thickness of the plate (4.00 mm). Refer Sr. No. 6.0 for test results.
	iv) This Extension Test report is to be read along with earlier test report: SHL/16/2014-2015/6171/337 Dated: 10.02.2015 & SHL/16/2016-2017/9203/1186 Dated: 14.07.2015 for detailed test results.

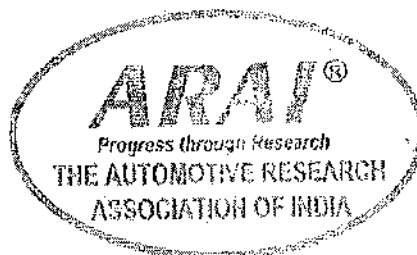


Page 1 of 5

An ISO 9001, ISO 14001, OHSAS 18001 Certified and ISO/IEC 17025 Accredited Organization

TEST REPORT No SHL/16/2016-2017/9203/1186

5.0	<p>CONCLUSION: Rear Marking Plates specified in 3.0 above, met the requirements of all the tests related to Rear Making Plates as above in 3.0 when tested as per AIS: 089. <i>An installation requirement has to be verified along with vehicle.</i></p>	
<p>Disclaimer:</p> <ol style="list-style-type: none"> 1. ARAI issues Test Reports / Extension Reports / Developmental Test Reports for vehicles/ components/ parts/ assemblies etc. based on the documents produced and/or prototype/ vehicle(s) or sample(s) submitted by the applicant and testing thereof. 2. ARAI issues Test Reports / Extension Reports / Developmental Test Reports in compliance to Motor Vehicle Act / Central Motor Vehicles Rules and their provisions as amended from time to time or any other statutory orders under which ARAI is authorised. Other Rules/ Acts are outside the purview/ scope of Test Reports / Extension Reports / Developmental Test Reports. 3. Test(s) on prototype/ vehicle(s) or sample(s) is/are carried out on the basis of standard procedures as notified under specific rules / requested by the applicant. Results of such tests are the property of bearer of Test Reports / Extension Reports / Developmental Test Reports. These results cannot be disclosed unless specifically so ordered by Government, Court, etc. 4. Unless otherwise supported by a separate Certificate, this Test Reports / Extension Reports / Developmental Test Reports shall not be considered in isolation as valid Type Approval for any vehicle. 5. ARAI is not responsible for testing each vehicles/ components/ parts/ assemblies etc. for which Test Reports / Extension Reports / Developmental Test Reports is issued. Further, ARAI is not responsible for ensuring manufacturing quality of the vehicles/ components/ parts/ assemblies etc. for which the Test Reports / Extension Reports / Developmental Test Reports is/are issued. 6. ARAI is in no way responsible for any misuse or copying of any design/ type/ system in connection with entire vehicle/ components/ parts and assemblies covered under the Test Reports / Extension Reports / Developmental Test Reports is/are issued. 7. Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the bearer of Test Reports / Extension Reports / Developmental Test Reports is/are issued and ARAI shall not be liable for any claims or damages. The bearer shall alone be liable for the same, and shall undertake to indemnify ARAI in this regard. 8. ARAI has the right, but not under obligation, to initiate cancellation/ withdrawal of the Test Reports / Extension Reports / Developmental Test Reports is/are issued in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ARAI. <p>The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this certificate / Report.</p>		
PREPARED BY:	CHECKED BY:	AUTHORISED BY:
		
P.V. PARLIKAR MANAGER	Mrs. J. M. KIRVE GENERAL MANAGER	A.V. MANNIKAR SR. DEPUTY DIRECTOR, HOD-SHL
Place of Issue: PUNE		Date of Issue: 18/11/17



TEST REPORT No SHL/16/2016-2017/9203/1186

6.0 Test Results:

6.1 MS: Steel Grade Material (D-513) with thickness 1.22 mm thick. & 1.6 mm

6.1.1 Resistance to Corrosion (Annex 6, 2)

Test Requirements:

Immediately after completion of the test, the sample shall show no sign of corrosion liable to impair the efficiency of the device.

Results/Remark:

No sign of corrosion was observed. **Complies**

6.1.2 Rigidity of the Plates (Annex 8)

Test Requirements:

The maximum deflection of the plate under the test load shall not exceed one twentieth of the distance between the supports and the residual deflection after removal of the load shall not exceed one fifth of the measured deflection under load.

Results/Remarks:

The maximum deflection of the plate is not exceeding one twentieth of the measured deflection under load. **Complies**

6.2 Steel Grade Material (ST 52.3) with thickness 4 mm

6.2.1 Resistance to Corrosion (Annex 6, 2)

Test Requirements:

Immediately after completion of the test, the sample shall show no sign of corrosion liable to impair the efficiency of the device.

Results/Remark:

No sign of corrosion was observed. **Complies**

6.2.2 Rigidity of the Plates (Annex 8)

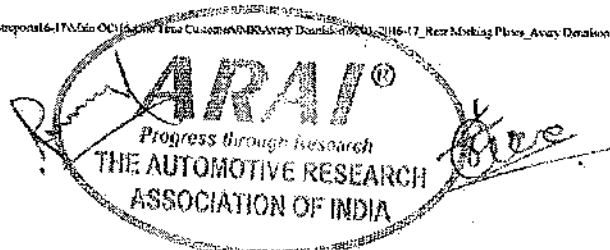
Test Requirements:

The maximum deflection of the plate under the test load shall not exceed one twentieth of the distance between the supports and the residual deflection after removal of the load shall not exceed one fifth of the measured deflection under load.

Results/Remarks:

The maximum deflection of the plate is not exceeding one twentieth of the measured deflection under load. **Complies**

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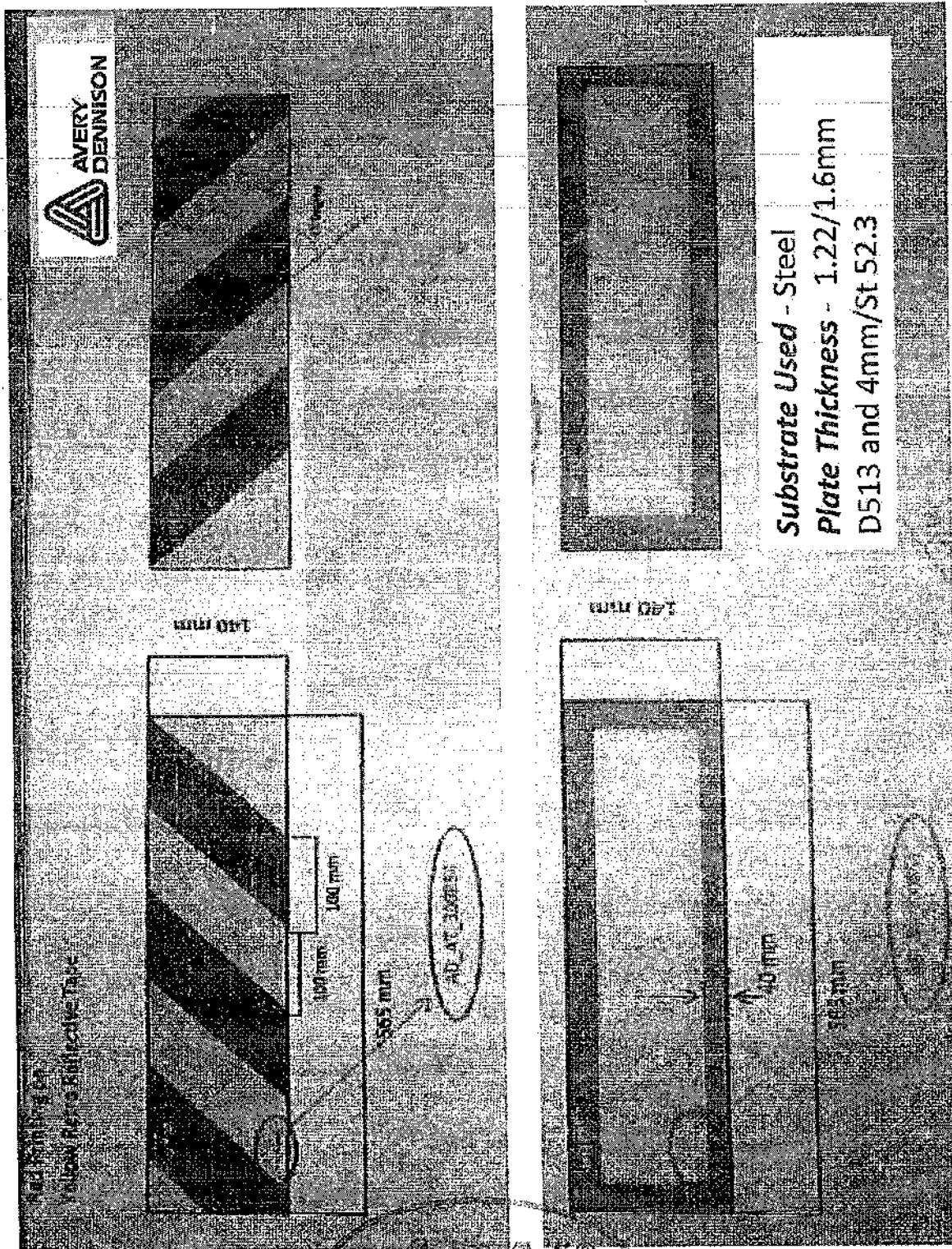


TEST REPORT NO.:

SHL/16/2016-2017/9203/1186

FAC NO.

[Signature]

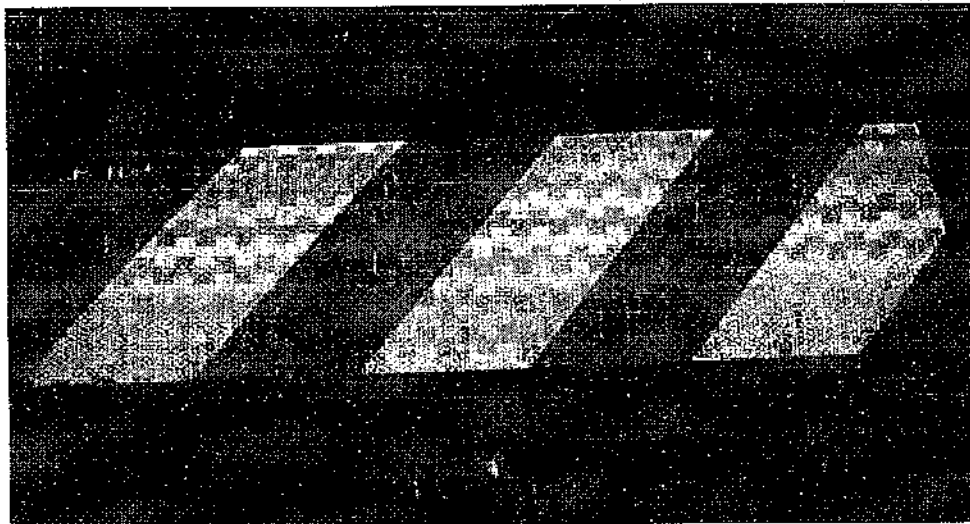


TEST REPORT No.:

SHL/16/2016-2017/9203/1186



Rear Marking Plate - Actual Photo



Non-Transferable

EXTENSION TEST REPORT

No. SHL/16/2007-2008/2772/846

DATE: 12.09.2008

1.0 NAME AND ADDRESS OF THE CUSTOMER

Avery Dennison (India) Pvt. Ltd.
Narsinghpur Industrial Area
Six Kilometer Stone
Delhi-Jaipur Highway
District Gurgaon 122 001

2.0 CUSTOMER LETTER REF.

Letter Ref.: AD-DK-at/030906, dated:
03.09.2008

3.0 DESCRIPTION OF TEST COMPONENTS:

AVERY DENNISON V-6700 SERIES CONSPICUITY TAPE IN COLOURS - RED, WHITE AND YELLOW

Manufactured by M/s. Avery Dennison, Reflective Products, 6565 W Howard St. Niles, IL 60714, and USA.

4.0 OBJECTIVE:

The above said customer has approached ARAI vide their above-cited letter for extension of validity of following Test Report for AIS: 090 in conjunction with change in dimension from 50 mm to 20 mm in width.

Earlier Test Report No. SHL/16/2007-2008/1717/563, dated:07.08.2007

5.0 CONSIDERATION FOR EXTENSION:

The following parameters are considered for extending the validity of the earlier test report:

- i) Customer's declaration stating that design, material used, manufacturing process, controls, etc. are identical and not changed, except change in dimension from 50 mm width to 20 mm width.
- ii) Earlier Test Report No. SHL/16/2007-2008/1717/563, dated:07.08.2007



Page 1 of 2



Non-Transferable

EXTENSION TEST REPORT (Earlier test report: SHL/16/2014-2015/6171/337 Dated: 10.02.2015)	
No. SHL/16/2015-2016/252/1442	DATE: 14.07.2015
1.0 NAME AND ADDRESS OF THE CUSTOMER	M/S. Avery Dennison (India) Pvt. Ltd. Narsinghpur Industrial Area, Six Kilometer Stone Delhi-Jaipur Highway, District Gurgaon 122 001
2.0 CUSTOMER LETTER REF.	Email Dated : 10.11.2014
3.0 DESCRIPTION OF TEST COMPONENTS:	
Rear Marking Plates (Class 3 & 4): Rear marking plates for heavy motor vehicles. Substrate used – MS: Steel Grade Material (D-513), 1.5 mm thick. ✓	
Manufactured by	M/S. Avery Dennison (India) Pvt. Ltd. Narsinghpur Industrial Area, Six Kilometer Stone Delhi-Jaipur Highway, District Gurgaon 122 001
Unique Identification	AD_AT300854
Drawing No. of the component	Rear Marking Plate, Dated: 05.02.2015 enclosed at page no. 4
Identification observed on the component	E13 104R 00 0001 AD_AT_300854
4.0 CONSIDERATION FOR EXTENSION:	
<p>i) Declaration letter submitted by customer regarding the change in part number.</p> <p>ii) Customer's declaration stating that material used, manufacturing process, controls, etc. are identical and not changed expect change in material of plate & Thickness of the plate (specified in 3.0 above).</p> <p>iii) Additional test of Rigidity of Plates & Corrosion test are conducted as per AIS: 089 on new material of MS: Steel Grade Material (D-513) with thickness of the plate (1.5 mm). Refer Sr. No. 6.0 for test results.</p> <p>iv) This Extension Test report is to be read along with earlier test report: SHL/16/2014-2015/6171/337 Dated: 10.02.2015 for detailed test results.</p>	

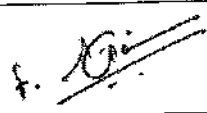
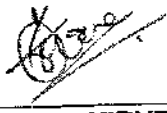
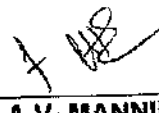


[Signature]

Page 1 of 4



TEST REPORT No SHL/16/2015-2016/252/1442

5.0	CONCLUSION: Rear Marking Plates specified in 3.0 above, met the requirements of all the tests related to Rear Making Plates as above in 3.0 when tested as per AIS: 089. An installation requirement has to be verified along with vehicle.	
Disclaimer: 1. ARAI Issues Test Reports / Extension Reports / Developmental Test Reports for vehicles/ components/ parts/ assemblies etc. based on the documents produced and/or prototype/ vehicle(s) or sample(s) submitted by the applicant and testing thereof. 2. ARAI issues Test Reports / Extension Reports / Developmental Test Reports in compliance to Motor Vehicle Act / Central Motor Vehicles Rules and their provisions as amended from time to time or any other statutory orders under which ARAI is authorised. Other Rules/ Acts are outside the purview/ scope of Test Reports / Extension Reports / Developmental Test Reports. 3. Test(s) on prototype/ vehicle(s) or sample(s) is/are carried out on the basis of standard procedures as notified under specific rules / requested by the applicant. Results of such tests are the property of bearer of Test Reports / Extension Reports / Developmental Test Reports. These results cannot be disclosed unless specifically so ordered by Government, Court, etc. 4. Unless otherwise supported by a separate Certificate, this Test Reports / Extension Reports / Developmental Test Reports shall not be considered in isolation as valid Type Approval for any vehicle. 5. ARAI is not responsible for testing each vehicles/ components/ parts/ assemblies etc. for which Test Reports / Extension Reports / Developmental Test Reports is issued. Further, ARAI is not responsible for ensuring manufacturing quality of the vehicles/ components/ parts/ assemblies etc. for which the Test Reports / Extension Reports / Developmental Test Reports is/are issued. 6. ARAI is in no way responsible for any misuse or copying of any design/ type/ system in connection with entire vehicle/ components/ parts and assemblies covered under the Test Reports / Extension Reports / Developmental Test Reports is/are issued. 7. Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the bearer of Test Reports / Extension Reports / Developmental Test Reports is/are issued and ARAI shall not be liable for any claims or damages. The bearer shall alone be liable for the same, and shall undertake to indemnify ARAI in this regard. 8. ARAI has the right, but not under obligation, to initiate cancellation/ withdrawal of the Test Reports / Extension Reports / Developmental Test Reports is/are issued in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ARAI. The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this certificate / Report.		
PREPARED BY:	CHECKED BY:	AUTHORISED BY:
		
P.V. PARLIKAR MANAGER	Mrs. J. M. KIRVE DEPUTY GENERAL MANAGER	A.V. MANNIKAR SR. DEPUTY DIRECTOR, HOD-SHL
Place of Issue: PUNE		Date of Issue: 16/7





TEST REPORT No SHL/16/2015-2016/252/1442

6.0 Test Results

6.1 Resistance to Corrosion (Annex 6, 2)

6.1.1 Test Requirements:

6.1.2 Visual Appearance (Annex 6, 2.2)

Immediately after completion of the test, the sample shall show no sign of corrosion liable to impair the efficiency of the device.

Results/Remark: No sign of corrosion was observed. **Complies**

6.2 Rigidity of the Plates (Annex 8)

6.2.1 Test Requirements:

The maximum deflection of the plate under the test load shall not exceed one **twentieth** of the distance between the supports and the residual deflection after removal of the load shall not exceed one fifth of the measured deflection under load.

Results/Remarks: The maximum deflection of the plate is not exceeding one twentieth of the measured deflection under load. **Complies.**

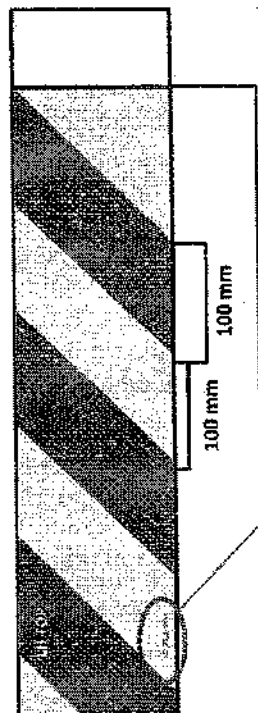
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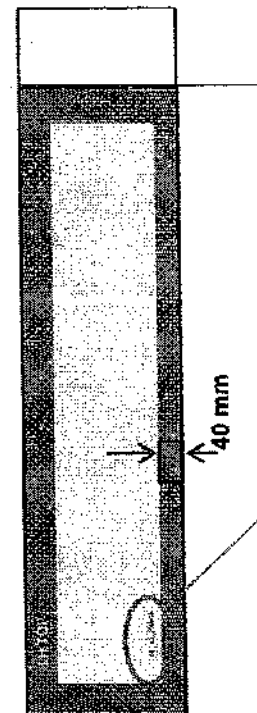
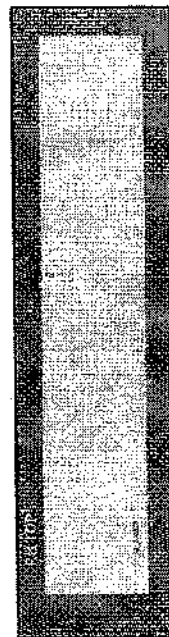
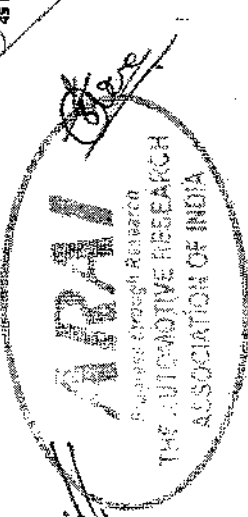
Test Report No. - SHL/16/2015-2016/252/1442



Red Printing on
Yellow Retro Reflective Tape

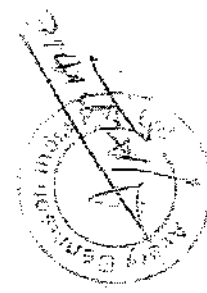


AD_AT_300854

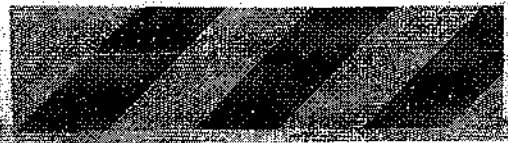
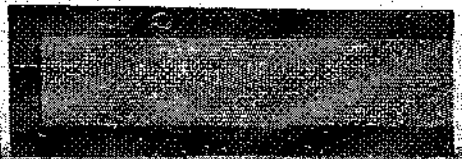


AD_AT_300854

Part Name : Rear Marking Plate
Material : Red Printing (SG429B)
on Yellow Retroreflective Tape,
Pasted on MS : Steel Grade
Material (D-513), 1.5 mm thick
Dated : 05.02.2015



Non-Transferable

TEST REPORT						
No. SHL/16/2014-2015/6171/337		DATE: 10.02.2015				
1.0	NAME AND ADDRESS OF THE CUSTOMER	M/S. Avery Dennison (India) Pvt. Ltd. Narsinghpur Industrial Area, Six Kilometer Stone Delhi-Jaipur Highway, District Gurgaon 122 001				
2.0	CUSTOMER LETTER REF.	Ref. Letter: AD-AS-AM-at/28112014 Dated :28.11.2014				
3.0	DESCRIPTION OF TEST COMPONENTS:					
	Rear Marking Plates (Class 3 & 4): Rear marking plates for heavy motor vehicles. Substrate used – Aluminum Alloy 5052, temper H32, 2 mm thick					
	Class 3 : Red retro-reflective and yellow retro-reflective alternative strips	Class 4 : Red retro-reflective Border and yellow retro-reflective center				
						
	Manufactured by	M/S. Avery Dennison (India) Pvt Ltd. G-5, MIDC, Ranjangaon Industrial Area, Taluka - Shirur, District - Pune, Maharashtra - 412220				
	Unique Identification No.	<table border="1"> <thead> <tr> <th>Class 3</th> <th>Class 4</th> </tr> </thead> <tbody> <tr> <td>AD_AT_300854</td> <td>AD_AT_300854</td> </tr> </tbody> </table>	Class 3	Class 4	AD_AT_300854	AD_AT_300854
Class 3	Class 4					
AD_AT_300854	AD_AT_300854					
	Drawing No. of the component	AD_AT_300854 (dated 07.11.2014) enclosed at page no. 11				
	Identification observed on the component as per drawing	<table border="1"> <thead> <tr> <th>Class 3</th> <th>Class 4</th> </tr> </thead> <tbody> <tr> <td>AD_AT_300854</td> <td>AD_AT_300854</td> </tr> </tbody> </table>	Class 3	Class 4	AD_AT_300854	AD_AT_300854
Class 3	Class 4					
AD_AT_300854	AD_AT_300854					
4.0	OBJECTIVE, TEST PROCEDURE & TEST REQUIREMENTS: To carry out all tests as per AIS: 089					
5.0	TEST RESULTS: Please refer test Results in Sr. No. 7.0 and Sr. No. 8.					
5.1	TEST DURATION:	<table border="1"> <tr> <td>Start Date: 09.12.2014</td> <td>End Date: 15.01.2015</td> </tr> </table>	Start Date: 09.12.2014	End Date: 15.01.2015		
Start Date: 09.12.2014	End Date: 15.01.2015					



Page 1 of 11


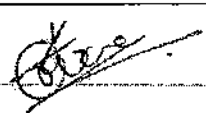
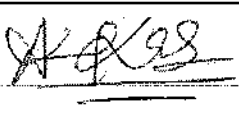


TEST REPORT No SHL/16/2014-2015/6171/337

6.0	CONCLUSION: Rear Marking Plates specified in 3.0 above, met the requirements of all the tests related to Rear Making Plates as above in 3.0 when tested as per AIS: 089. An installation requirement has to be verified along with vehicle.
------------	--

Disclaimer:	
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The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this certificate / Report.

PREPARED BY:	CHECKED BY:	AUTHORISED BY:
		
P.V. PARLIKAR MANAGER	Mrs. J. M. KIRVE DEPUTY GENERAL MANAGER	A.V. MANNIKAR SR. DEPUTY DIRECTOR, HOD-SHL
Place of Issue: PUNE		Date of Issue: 12/02/2015



TEST REPORT No SHL/16/2014-2015/6171/337

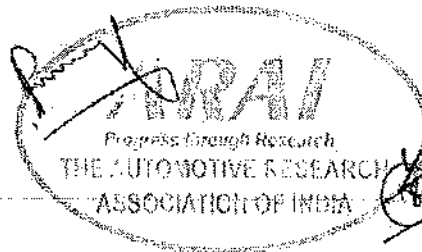
7.0 TEST RESULTS:

7.1 SPECIFICATION OF MARKING (Cl. No. 5)

Cl. No.	Specifications	Remarks
5.1.1	The trade name of the applicant and unique mark of type	"AD" is to be marked as shown in attached drawing
5.2	The marking shall be applied on either the retro reflective or the fluorescent area of the plate, or on the edge, and must be visible from the outside when the marking plate is fitted on the vehicle	As shown in attached drawing. Complies
5.3	The markings shall be clearly legible and shall be indelible.	As shown in attached drawing. Complies

7.2 GENERAL SPECIFICATIONS (Cl. No. 7.0)

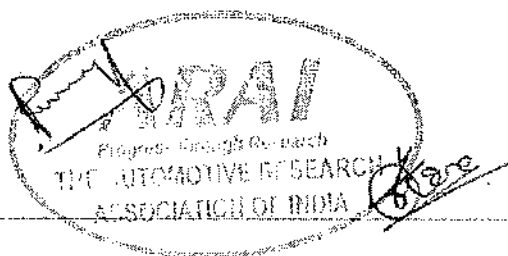
Cl. No.	Specifications	Remarks
7.1	Retro-reflective/fluorescent or retro-reflective only marking plates shall be so constructed that they function satisfactorily and will continue to do so in normal use. In addition, they shall not have any defect in design or manufacture that is detrimental to their efficient operation or to their maintenance in good condition.	Complies
7.4	The outer surface of the retro-reflective marking materials shall be easy to be cleaned. The surface shall therefore not be rough and any protuberances they may exhibit shall not prevent easy cleaning.	Complies



TEST REPORT No SHL/16/2014-2015/6171/337

7.3 SPECIFICATION OF SHAPE AND DIMENSIONS OF RETRO REFLECTIVE / FLUORESCENT REAR MARKING PLATES (Annex-3)

Cl. No.	Specifications	Remarks
1	Shape: The plate shall be rectangular in shape for mounting at the rear of vehicles.	Complies
3	Dimensions The minimum total summarized length of a set of rear marking plates consisting only of one, two or four marking plates with retro reflective and fluorescent materials shall be 1,130 mm, and the maximum total length shall be 2,300 mm.	Class 3 & 4 Length of 2 plate = 1130 mm
3.1	The width of a rear marking plate shall be: For trucks and tractors: 140 ± 10 mm. For trailers and semi-trailers: 200 ± 30 mm.	Class 3 Width = 140 mm Class 4 Width = 200 mm
3.3	The width of the red fluorescent border of the rear marking plates for trailers and semi-trailers shall be 40 mm ± 1 mm.	Class 4 Width = 40 mm
3.4	The slope of the oblique stripes of the chevron band shall be 45° ± 5°. The width of the stripes shall be 100 mm ± 2.5 mm.	Class 3 Slope = 45° & strip width = 100 mm
3.5	Rear marking plates supplied in sets shall form matching pairs	Complies



[Signature]

TEST REPORT No SHL/16/2014-2015/6171/337

7.4 RESISTANCE TO HEAT TEST (Annex 7)

Cl. No.	TEST REQUIREMENTS	OBSERVATIONS / RESULTS
2	The sample shall be examined after a recovery time of 4 hours under normal laboratory conditions. After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units, shall be evident.	After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units was observed. Complies.

7.5 COLOURIMETRIC SPECIFICATIONS (Annex 4)

7.5.1 Colour Test of Retro-reflecting device by CIE standard illuminate D₆₅ (Annex 4, Cl. No. 2.1):

Colour Co-ordinates	Specified Values (Colour – Yellow retro-reflective)	Measured Values
X Coordinate	0.427 to 0.545	0.4861
Y Coordinate	0.423 to 0.534	0.4925
Luminance factor	≥ 0.16	0.21

Colour Co-ordinates	Specified Values (Colour – Red retro-reflective)	Measured Values
X Coordinate	0.569 to 0.690	0.6280
Y Coordinate	0.310 to 0.345	0.3176
Luminance factor	≥ 0.03	0.07

7.5.2 Colour Test of Retro-reflecting device by CIE standard illuminate A: (Annex 4, Cl. No. 2.2):

Colour Co-ordinates	Specified Values (Colour – Yellow retro-reflective)	Measured Values
X Coordinate	0.505 to 0.610	0.5420
Y Coordinate	0.385 to 0.480	0.4495

Colour Co-ordinates	Specified Values (Colour – Red retro-reflective)	Measured Values
X Coordinate	0.643 to 0.690	0.6676
Y Coordinate	0.258 to 0.335	0.3221

TEST REPORT No SHL/16/2014-2015/6171/337

7.6 PHOTOMETRIC SPECIFICATIONS (Annex 5)

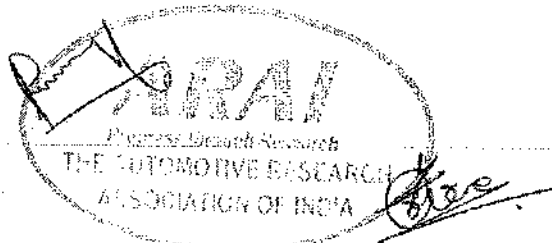
7.6.1 Yellow colour (Retro reflective area)

Observation angle (α) in degrees	Entrance angle (β) in degrees				
1/3°(20')	$\beta 1$	0	0	0	0
	$\beta 2$	5	30	40	60
Required values R (cd. m ⁻² .lx ⁻¹)		300	180	75	10
Sample No. 1		371.429	190.714	110.143	17.357
Sample No. 2		379.286	205.000	121.143	20.786
Remarks		Complies	Complies	Complies	Complies

7.7 PHOTOMETRIC SPECIFICATIONS (Annex 5)

7.7.1 Red colour (Retro reflective area)

Observation angle (α) in degrees	Entrance angle (β) in degrees			
1/3°(20')	$\beta 1$	0	0	0
	$\beta 2$	5	30	40
Required values R (cd. m ⁻² .lx ⁻¹)		10	7	4
Sample No. 1		29.643	15.571	8.986
Sample No. 2		34.286	16.929	9.500
Remarks		Complies	Complies	Complies



TEST REPORT No SHL/16/2014-2015/6171/337

8.0 Resistance to External Agents (Annex 6)

8.1 Resistance to weathering (Annex 6, 1)

8.1.1 Test Requirements:

8.1.1.1 Visual Appearance (Annex 6, 1.2)

No area of the exposed specimen shall show any evidence of cracking, scaling, pitting, blistering, delamination, distortion, chalking, staining or corrosion.

There shall be no shrinkage in excess of 0.5 per cent in any linear direction and no evidence of adhesion failure such as edge lifting from the substrate.

Result/Remarks: Complies

8.1.1.2 Colour fastness (Annex 6, 1.3)

The colours of the exposed specimens shall still meet the requirements.

By CIE standard illuminate D₆₅:

Colour Co-ordinates	Specified Values (Colour – Yellow retro-reflective)	Measured Values		Remark
		Before	After	
X Coordinate	0.427 to 0.545	0.4826	0.4869	Complies
Y Coordinate	0.423 to 0.534	0.4957	0.4931	
Luminance factor	≥ 0.16	0.22	0.21	

Colour Co-ordinates	Specified Values (Colour – Red retro-reflective)	Measured Values		Remark
		Before	After	
X Coordinate	0.569 to 0.690	0.6130	0.6088	Complies
Y Coordinate	0.310 to 0.345	0.3210	0.3288	
Luminance factor	≥ 0.03	0.07	0.07	

By CIE standard illuminate A:

Colour Co-ordinates	Specified Values (Colour – Yellow retro-reflective)	Measured Values		Remark
		Before	After	
X Coordinate	0.505 to 0.610	0.5390	0.5426	Complies
Y Coordinate	0.385 to 0.480	0.4507	0.4489	

Colour Co-ordinates	Specified Values (Colour – Red retro-reflective)	Measured Values		Remark
		Before	After	
X Coordinate	0.643 to 0.690	0.6609	0.6573	Complies
Y Coordinate	0.258 to 0.335	0.3257	0.3293	



[Signature]

TEST REPORT No SHL/16/2014-2015/6171/337

8.1.1.3 Photometric specifications (Annex 6, 1.4)

Measurement shall be made only at an observation angle of 20' and an entrance angle of 5°. The coefficient of retro reflection of the exposed specimen when dry shall be not less than 80 per cent of the value.

Observation angle	Entrance angle	Color	Required Values (Minimum)	Before test	After test	Required value not less than 80% of previous value
1/3°(20')	5°	Yellow Reflective	300 cd.lx ⁻¹ .m ⁻²	313.846	326.154	-3.9% Complies
		Red Reflective	10 cd.lx ⁻¹ .m ⁻²	32.000	32.154	-0.5% Complies

The specimen shall then be subjected to simulated rainfall and its coefficient of retro reflection under this condition shall be not less than 90 per cent of the value obtained when measured in dry condition.

Results/Remarks: Complies.

8.2 Resistance to Corrosion (Annex 6, 2)

8.2.1 Test Requirements:

8.2.1.1 Visual Appearance (Annex 6, 2.2)

Immediately after completion of the test, the sample shall show no sign of corrosion liable to impair the efficiency of the device.

Results/Remark: No sign of corrosion was observed. Complies

8.2.1.2 Photometric specifications (Annex 6, 2.2.1)

The coefficient of 'Retro reflection R' of the retro reflective areas, when measured after a recovery period of 48 hours, at an entrance angle of 5° and an observation angle of 20', shall be not less than the value 300 cd.lx⁻¹.m⁻². Before measuring, the surface shall be cleaned to remove salt deposits from the saline mist.

Observation angle	Entrance angle	Color	Required Values (Minimum)	Before test	After test	Remark
1/3°(20')	5°	Yellow Reflective	300 cd.lx ⁻¹ .m ⁻²	352.857	375.714	-6.5% Complies
		Red Reflective	10 cd.lx ⁻¹ .m ⁻²	25.571	26.957	-5.4% Complies

TEST REPORT No SHL/16/2014-2015/6171/337

8.3 Resistance to Fuels (Annex 6, 3)

8.3.1 Test Requirements:

After removal, the surface shall be wiped dry with a soft cloth and shall not show any visible change, which would reduce its effective performance.

Results/Remark: No Visible change was observed. **Complies**

8.4 Bonding Strength (Annex 6, 4)

8.4.1 Test Requirements:

The coated material is not removable without tools or without damaging the material.

The laminated materials (adhesive films) shall need a force of at least 10 N per 25 mm width, at a speed of 300 mm per minute, to be removed from the substrate.

Result / Remark: Complies.

8.5 Resistance to Water (Annex 6, 5)

8.5.1 Test Requirements:

After completion of the test, the section shall be examined. No part inside 10 mm from the cut edge shall show evidence of deterioration, which would reduce the effectiveness of the plate.

Results/Remarks: No evidence of deterioration was observed. **Complies.**

8.6 Resistance to Impact (Annex 6, 6)

8.6.1 Test Requirements:

The material shall show no cracking or separation from the substrate at a distance of more than 5 mm from the impacted area.

Results/Remark: No evidence of cracking or separation was observed. **Complies.**



TEST REPORT No SHL/16/2014-2015/6171/337

8.7 Cleaning (Annex 6, 7)

8.7.1 Test Requirements:

A test example smeared with a mixture of detergent lubricating oil and graphite shall be easily cleaned without damage to the retro reflective or fluorescent surfaces when wiped with a mild aliphatic solvent such as n-heptane, followed by washing with a neutral detergent.

Results/Remarks: No evidence of damage was observed. **Complies.**

8.8 Rigidity of the Plates (Annex 8)

8.8.1 Test Requirements:

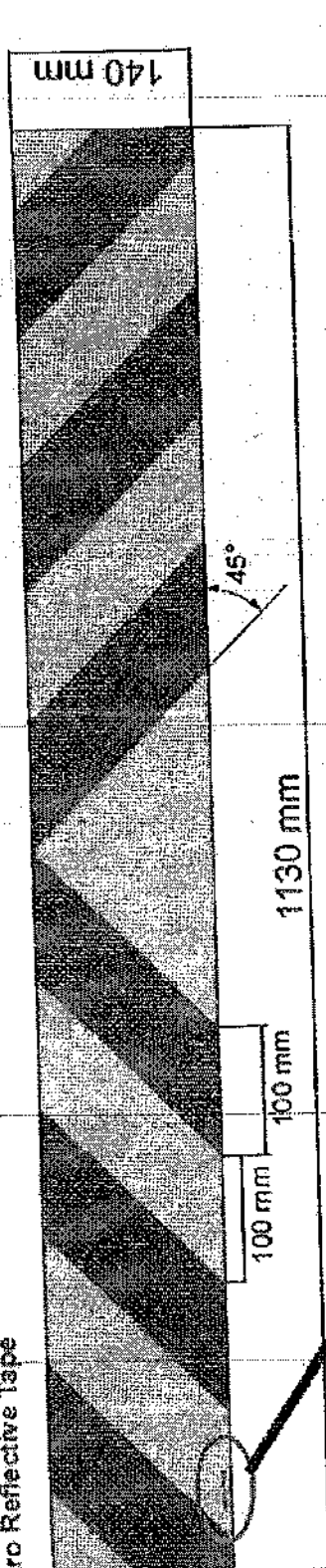
The maximum deflection of the plate under the test load shall not exceed one **twentieth** of the distance between the supports and the residual deflection after removal of the load shall not exceed one fifth of the measured deflection under load.

Results/Remarks: The maximum deflection of the plate is not exceeding one twentieth of the measured deflection under load. **Complies.**

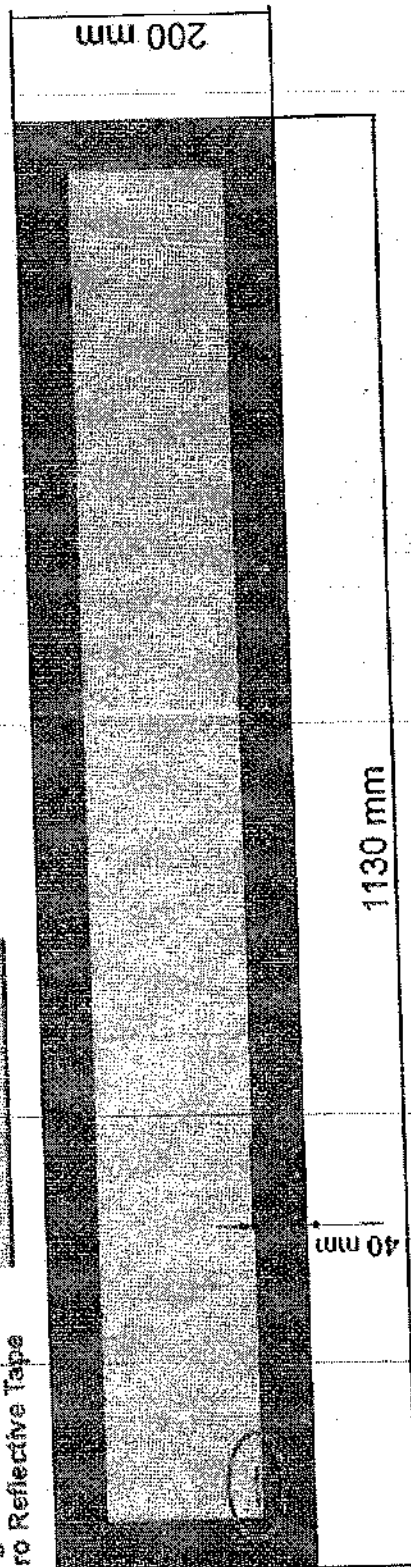
L:\S&H\5 & H\data\Testreports\14-15\Main-OC\16-One Time Customer\NMK\Photometry\Avery Dennison\6171_2014-2015_Rear Marking Plates_Avery Dennison.doc



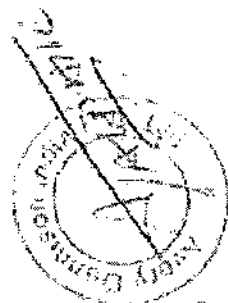
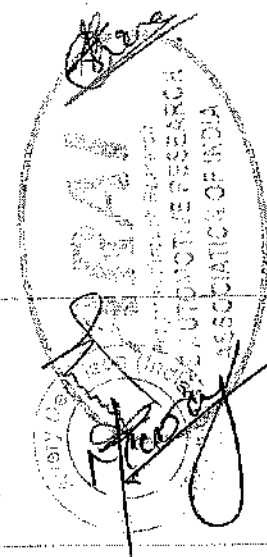
No: 01
Red Printing on
Yellow Retro Reflective Tape



No: 02
Red Printing on
Yellow Retro Reflective Tape



Part Name : Rear Marking Plates
Material : Red Printing (SG4288) on Yellow Retro Reflective Tape, Pasted on Aluminum, Material: AL Alloy 5052, Temper H32
Date : 07.10.2014



Non-Transferable

TYPE APPROVAL CERTIFICATE

(For compliance to AIS - 037)

TYPE APPROVAL CERTIFICATE No.		A95224	DATE: 13.11.2009
(SHL NO.: SHL/16/2009-2010/2649/5224)			
1.0	NAME AND ADDRESS OF APPLICANT	Avery Dennison (India) Pvt. Ltd. Narsinghpur Industrial Area Six Kilometer Stone Delhi-Jaipur Highway District Gurgaon 122 001	
	Contact Person:	Mr. Abhijit Talpade	
	Tel No.	+91-124-2215581 / 2 +91-9833631661 (Mobile)	
	Fax No.	+91-14-2215591 / 2 / 3	
	Email Address	abhijit.talpade@ap.averydennison.com	
	Details of component manufacturer (Plant address)	Avery Dennison Graphics and Reflective Products Division 902 Feehanville Drive, Mount Prospect, IL 60056.	
2.0	Customer letter ref. and Declaration	AD-DK-AM-at/0290909, Dt: 1.07.2009	
3.0	DETAILS OF THE COMPONENT UNDER TYPE APPROVAL:		
	Name and specification of the component	AVERY DENNISON V-6700 SERIES CONSPICUITY TAPE IN COLOURS - RED, WHITE AND YELLOW	
	Identification observed on the component	" E13 104R 000001 "	
4.0	Applicable Notified Standard	AIS:90	
5.0	Vehicle Manufacturers and models for which the component is intended	Vehicle type: Four Wheeler model : --- Manufacturer: ---	

(Signature)
Director

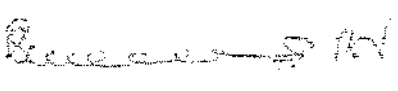

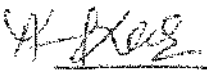
(Signature)
Manager

TYPE APPROVAL CERTIFICATE No. (SHL NO.: SHL/16/2009-2010/2649/5224)	A95224
--	---------------

6.0	PREVIOUS CERTIFICATIONS	
6.1	Details of similar components certified by IS/E/ei marks, or have Undergone type approval / COP as per this procedure, if any	Approval No. E13*104R00*104R00*0001*00, dated:06.09.2006
7.0	Test report considered for Type Approval	1. SHL/16/2007-08/1717/563, dt:07.08.07 2. SHL/16/2008-09/2772/840, dt:12.09.08
8.0	Production Plan in numbers	Annual production: 60000 rolls of 50mm & 30000 rolls of 20mm for India market
9.0	Type of quality management system (QMS)	ISO 9001: 2000 valid up to 31.12.2011

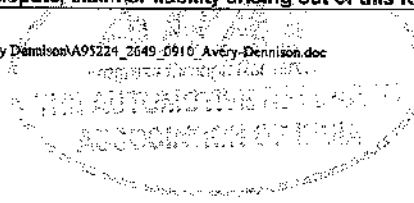
10.0	Type Approval Granted / Refused GRANTED Based on <ul style="list-style-type: none"> ➤ Annexure-A submitted by M/S. Avery Dennison. ➤ E report referred in Cl. No. 6.1 ➤ Test reports referred in Cl. No. 7.0 above. ➤ Declaration regarding the change in plant address. 	
11.0	Marking on the sample	E mark: C - E13- 104 R – 00 0001 Or A95224

First CoP to be established on / before: 12.11.2011

REPORT PREPARED BY:	CHECKED BY:	APPROVED BY:
		
B. V. SHAMASUNDARA ASSISTANT DIRECTOR	M.G.R.PILLAI ASSISTANT DIRECTOR	A.V. MANNIKAR DEPUTY DIRECTOR
Place of Issue: PUNE		Date of Issue: 18/11/09

Disclaimer:

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THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA

(Research Institution of the Automotive Industry with the Ministry of Heavy Industries & Public Enterprises, Govt. of India)

Non-Transferable

EXTENSION TEST REPORT

No. SHL/16/2007-2008/1717/563

DATE: 07.08.2007

01 NAME AND ADDRESS OF THE CUSTOMER

Avery Dennison (India) Pvt. Ltd.
Narsinghpur Industrial Area
Six Kilometer Stone
Delhi-Jaipur Highway
District Gurgaon 122 001
Dated: 13.07.2007

02 CUSTOMER LETTER REF

03 DESCRIPTION OF TEST COMPONENTS:

EVERY DENNISON V-6700 SERIES CONSPICUITY TAPE IN COLOURS - RED, WHITE AND YELLOW

Manufactured by M/s. Avery Dennison, Reflective Products, 6565 W Howard St. Niles, IL 60714, and USA.

Identification observed on the Retro Reflective marking surface;

White: E13 104R 000001

Red and Yellow: E1 104R 000001

04 OBJECTIVE, TEST PROCEDURE & TEST REQUIREMENTS:

To carry out the all the tests as per AIS:090.

05 TEST RESULTS:

5.1 Since there is no change in the requirements in ECE R 104 and AIS:090 for the said component, all the test results are considered from the earlier test report No. SHL/016/4181/1363, dated: 12.03.2007 tested for ECE R 104 for the validation of this report.

5.2 Please Ref. Test results at Sr. No. 7.0 of this report in page no. 2 to 7 (06 pages)

06 CONCLUSION:

EVERY DENNISON V-6700 SERIES CONSPICUITY TAPE IN COLOURS - RED, WHITE AND YELLOW specified in 3.0 above, meets the all the test requirements when tested as per the procedure given in AIS:090.

REPORT PREPARED BY

CHECKED BY:

DEPARTMENT HEAD:

P. V. PARLIKAR

TEST ENGINEER

Place of Issue: PUNE

B. V. SUNDAR
SR. PROJECT ENGINEER
THE AUTOMOTIVE RESEARCH
ASSOCIATION OF INDIA

S. M. HARAGAPURKAR

DEPUTY DIRECTOR

Date of Issue: 7/8/07

This test report pertains only to the components / parts / assemblies / vehicles etc. actually tested at ARAI in the presented condition based on the documents / information provided / submitted to the customer. The issuance of this test report alone does not indicate any measure of approval, certification, supervision, control of quality surveillance by ARAI or the product. No extract, abridgement or abstraction from this test report shall be published or used to advertise the product without the written consent of the Director, ARAI, who reserves the absolute right to agree or reject all or any of the details or any terms of publicity for which consent may be sought. ARAI is in no way responsible for any misuse of copying of any design / type / system in connection with entire vehicle / components / parts and assemblies. Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the customer and ARAI shall not be liable for any claims or damages, made by the party, whatsoever, the customer shall alone be liable for the same, and undertakes to indemnify ARAI in this regard. Further, the ARAI has the right to initiate cancellation / withdrawal of the certificate issued, in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ARAI. The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this report.

Page 1 of 7

Progress through Research

Regd. Office : S. No. 102, Vetal Hill, Off Paud Road, Kothrud, Pune - 411 038. (India)
Postal Address : P. B. No. 832, Pune - 411 004 (India) Tel. : +91-20-3023 1111 Fax : + 91-20-2543 4190
Email : director@araindia.com Website : http : // www.araindia.com

7.0 TEST RESULTS:

7.1 GENERAL SPECIFICATIONS

Cl. No.	Specifications	Remarks
6.1	Retro-reflective marking materials shall be that way constructed that they function satisfactorily and will continue to do so in normal use. In addition, they shall not have any defect in design or manufacture that is detrimental to their efficient operation or to their maintenance in good condition.	Satisfactory.
6.2	Retro-reflective marking materials or parts thereof shall not be capable of being easily dismantled.	Satisfactory.
6.3	The means of attachment of the marking materials shall be durable and stable.	Satisfactory.
6.4	The outer surface of the retro-reflective marking materials shall be easy to be cleaned. The surface shall therefore not be rough and any protuberances they may exhibit shall not prevent easy cleaning.	Satisfactory.

7.2 SPECIFICATION OF MARKING DIMENSIONS

Sr. No.	Specifications	Remarks
1.2.1	Dimensions The width of a side and/or rear marking material shall be 50 mm +10/-0 mm.	Satisfactory.
1.2.2	The minimum length of an element of a retro-reflective marking material shall be such that at least one approval mark is visible.	Satisfactory.

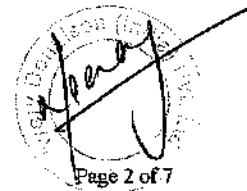
7.3 RESISTANCE TO HEAT

Test Requirements:

After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units, shall be evident.

Results/Remarks: After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units was observed.

Satisfactory.



7.4 COLOUR TEST

7.4.1 COLOUR TEST OF Retro-reflecting device by CIE standard Illuminate D₆₅

Colour Co-ordinates	Specified Values (Colour - Red)	Measured Values (The mean values of five samples)
X Coordinate	0.580 to 0.690	0.595
Y Coordinate	0.310 to 0.350	0.318
Luminance factor	≥ 0.03	0.084

Colour Co-ordinates	Specified Values (Colour - White)	Measured Values (The mean values of five samples)
X Coordinate	0.280 to 0.385	0.308
Y Coordinate	0.270 to 0.395	0.302
Luminance factor	≥ 0.25	0.490

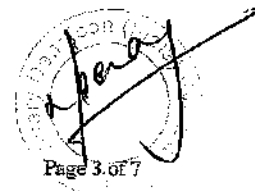
Colour Co-ordinates	Specified Values (Colour - Yellow)	Measured Values (The mean values of five samples)
X Coordinate	0.427 to 0.545	0.494
Y Coordinate	0.423 to 0.534	0.449
Luminance factor	≥ 0.16	0.311

7.4.2 Colour Test of Retro-reflecting device by CIE standard Illuminate A:

Colour Co-ordinates	Specified Values (Colour - Red)	Measured Values (The mean values of five samples)
X Coordinate	0.643 to 0.735	0.658
Y Coordinate	0.258 to 0.335	0.334

Colour Co-ordinates	Specified Values (Colour - white)	Measured Values (The mean values of five samples)
X Coordinate	0.373 to 0.548	0.471
Y Coordinate	0.359 to 0.513	0.418

Colour Co-ordinates	Specified Values (Colour - yellow)	Measured Values (The mean values of five samples)
X Coordinate	0.505 to 0.601	0.527
Y Coordinate	0.385 to 0.480	0.461



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7.6 PHOTOMETRIC SPECIFICATIONS

7.6.1 Red colour

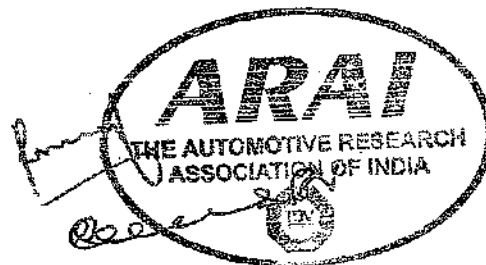
Observation angle (α) in degrees	Entrance angle (β) in degrees				
1/3°(20')	β_1	0	0	0	0
	β_2	5	30	40	60
Required values R (cd. m ² .lx ⁻¹)		120	80	30	10
Results (The mean values of five samples)		205	169	79.4	38.6
Remarks		Satisfactory	Satisfactory	Satisfactory	Satisfactory

7.5.2 White colour

Observation angle (α) in degrees	Entrance angle (β) in degrees				
1/3°(20')	β_1	0	0	0	0
	β_2	5	30	40	60
Required values R (cd. m ² .lx ⁻¹)		450	200	90	16
Results (The mean values of five samples)		527	287	157	27
Remarks		Satisfactory	Satisfactory	Satisfactory	Satisfactory

7.5.3 Yellow colour

Observation angle (α) in degrees	Entrance angle (β) in degrees				
1/3°(20')	β_1	0	0	0	0
	β_2	5	30	40	60
Required values R (cd. m ² .lx ⁻¹)		300	130	75	10
Results (The mean values of five samples)		491	196	112	13
Remarks		Satisfactory	Satisfactory	Satisfactory	Satisfactory



7.2 RESISTANCE TO EXTERNAL AGENTS

7.2.1 Resistance to weathering:

Test requirements:

a. Visual appearance:

No area of the exposed specimen shall show any evidence of cracking, sealing, pitting, blistering, delamination, distortion, chalking, staining or corrosion.

Results/Remarks:

No area of the exposed specimen shows any evidence of cracking, sealing, pitting, blistering, delamination, distortion, chalking, staining or corrosion after testing. There shall be no shrinkage was observed.

Satisfactory.

b. Colour Test of Retro-reflecting device by CIE standard illuminate D₆₅ after Resistance to weathering test:

Colour Co-ordinates	Specified Values (Colour - Red)	Measured Values
X Coordinate	0.560 to 0.690	0.596
Y Coordinate	0.310 to 0.350	0.312
Luminance factor	≥ 0.03	0.066

Colour Co-ordinates	Specified Values (Colour - white)	Measured Values
X Coordinate	0.260 to 0.385	0.321
Y Coordinate	0.270 to 0.395	0.311
Luminance factor	≥ 0.25	0.443

Colour Co-ordinates	Specified Values (Colour - yellow)	Measured Values
X Coordinate	0.427 to 0.545	0.496
Y Coordinate	0.423 to 0.534	0.451
Luminance factor	≥ 0.16	0.252



ARAI
TEST REPORT NO. SM/IT/2007-2008/1717/563

- c. Colour Test of Retro-reflecting device by by CIE standard illuminate A after Resistance to weathering test:

Colour Co-ordinates	Specified Values (Colour - Red)	Measured Values
X Coordinate	0.643 to 0.735	0.651
Y Coordinate	0.258 to 0.335	0.331

Colour Co-ordinates	Specified Values (Colour - white)	Measured Values
X Coordinate	0.373 to 0.548	0.472
Y Coordinate	0.359 to 0.513	0.411

Colour Co-ordinates	Specified Values (Colour - yellow)	Measured Values
X Coordinate	0.505 to 0.601	0.523
Y Coordinate	0.385 to 0.480	0.459

- d. Photometric specifications after resistance to weathering test:

The coefficient of luminous intensity of the exposed specimen when dry shall be not less than 80 per cent of the initial value

The coefficient of luminous intensity after the test is more than 80 % of the initial value

Results/Remarks: Satisfactory.

7.6.2 RESISTANCE TO CORROSION (Annex 08, Cl. No. 02)

- a. Visual appearance:

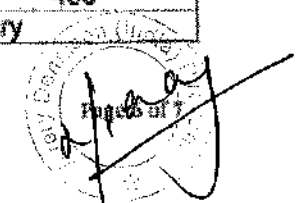
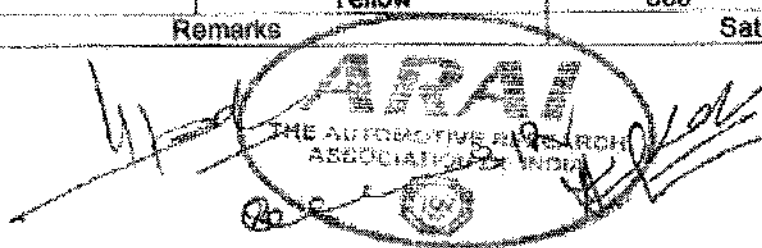
Test requirements:

Immediately after completion of the test, the sample shall show no sign of corrosion liable to impair the efficiency of the device.

Results/Remarks: No sign of corrosion was observed. Satisfactory.

- b. Photometric specifications after corrosion test:

Observation angle (α) in degrees	Entrance angle (β) in degrees			
1/3°(20')	β1	0	Required value (cd. m ² .1x ⁻¹)	Measured values (cd. m ² .1x ⁻¹)
	β2	5		
Results	Red		120	201
	White		450	505
	Yellow		300	466
Remarks			Satisfactory	



7.6.3 RESISTANCE TO FUELS

Test requirements:

After removal, the surface shall be wiped dry with a soft cloth and shall not show any visible change which would reduce its effective performance.

Results/Remarks: No Visible change was observed. Satisfactory.

7.6.4 RESISTANCE TO HEAT

Test Requirements:

After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units, shall be evident.

Results/Remarks: After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units was observed. Satisfactory.

7.6.5 CLEANING

Test requirements:

A test sample smeared with a mixture of detergent lubricating oil and graphite shall be easily cleaned without damage to the retro reflective or fluorescent surfaces when wiped with a mild aliphatic solvent such as n-heptane, followed by washing with a neutral detergent.

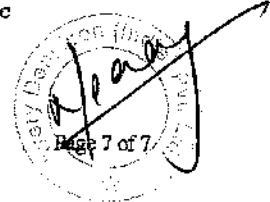
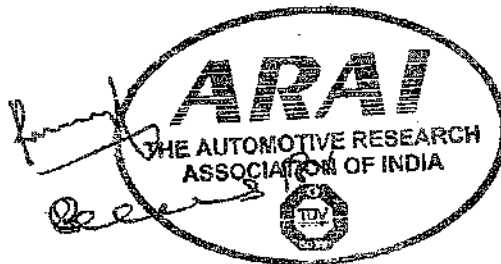
Remarks: Satisfactory.

7.6.6 RESISTANCE TO PENETRATION OF WATER

Test requirements:

After completion of the test, No water must penetrate to the reflecting surface of the sample unit. If visual inspection clearly reveals the presence of water, the retro-reflective marking shall not be considered to have passed the test.

Results/Remarks: No evidence of deterioration was observed. Satisfactory.





GOVERNMENT OF HARYANA / हरियाणा सरकार
TRANSPORT COMMISSIONER, HARYANA, CHANDIGARH
 परिवहन आयुक्त, हरियाणा, चंडीगढ़

To

M/s 3M India Ltd, Plot No. 48-51,
 Electronics City, Hosur Road,
 Bangalore-560100.

Memo No. 19417 /T-3/ST-II

Dated: 31-5-2019

Subject:- Fitment of reflective tapes/rear marking plates/reflectors on transport vehicles.

This is with reference to your application dated 14.03.2019 on the above subject in response to this office letter no. 59501-523/T-3/ST-II dated 18.12.2018 addressed to all the Additional Deputy Commissioners-cum- Secretaries of Regional Transport Authorities in the State and expression of interest invited by the department as published in the newspapers i.e. Dainik Bhaskar, The Hindustan Times, Dainik Savera, The Times of India, Hari Bhoomi, The Business Standard, Dainik Jagran, Punjab Kesari, Navbharat Times, The Tribune, Amar Ujala & Indian Express on dated 20.12.2018, 22.12.2018, 23.12.2018, 25.12.2018, 27.12.2018 and 29.12.2018 respectively.

It is stated that the details submitted by you to this office for the fitment of reflective tapes/rear marking plates/reflectors on transport vehicles are as under:-

Sr. No.	Particulars	Details
1.	Name of the manufacturer	1. 3M COMPANY, 3M ELECTRICITY PLANT, PLOT NO. 48-51, ELECTRONIC CITY, BANGLORE (rear marking plate). 2. 3M COMPANY, 3M BROWNWOOD PLANT-4501, HIGHWAY 377, SOUTH BROWNWOOD, TEXAS, USA. (REFLECTIVE-TAPE-RED/WHITE/YELLOW) 3M INNOVATION SINGAPORE PTE LTD, 2 TUAS LINK,4, SINGAPORE. (REFLECTIVE-TAPE-RED/WHITE/ YELLOW)
2.	Name of the company	M/S 3M INDIA LTD, PLOT NO. 48-51, ELECTRONICS CITY, HOSUR ROAD, BANGLORE-560100 a subsidiary of 3M LOCATED AT CORPORATE HEAD QUATERS, 3M CENTRE, ST.PAUL MINNESOTA-55144 and in UNITED STATES.
3.	Name of the authorized testing agency,	The Automotive Research Association of India(ARAI), Pune
4.	Type Approval Certificate with number and date along with its date of validity.	1. NO.SHL/16/20132014/9149/2783, dated 17.12.2014- (REAR MARKING PLATE)- issued to M/S 3M INDIA LTD, PLOT NO. 48-51, ELECTRONICS CITY, HOSUR ROAD, BANGLORE manufactured by 3M ELECTRICITY PLANT, PLOT NO. 48-51, ELECTRONIC CITY, BANGLORE. 2. EXTENSION NO. SHL/16/2014-2015/5897/2817, dated 30.12.2014-(REAR MARKING PLATE) issued to M/S 3M

Office: 30 Bays Building, 2nd Floor, Sector 17-B, Chandigarh - 160017 (India)

Telephone: 91(0172)-2784359, 2701290, 2700541 Fax: 91(0172)2700514 e-mail: stcharyana@hry.nic.in website: haryanatransport.gov.in

कार्यालय: 30 खण्ड बिल्डिंग, दूसरा तल, सेक्टर 17 बी, चंडीगढ़-160017 (भारत)



GOVERNMENT OF HARYANA / हरियाणा सरकार
TRANSPORT COMMISSIONER, HARYANA, CHANDIGARH
 परिवहन आयुक्त, हरियाणा, चंडीगढ़

		INDIA LTD, PLOT NO. 48-51, ELECTRONICS CITY, HOSUR ROAD, BANGLORE manufactured by 3M ELECTRICITY PLANT, PLOT NO. 48-51, ELECTRONIC CITY, BANGLORE. 3. COP.NO.SHL/16/201819/3000002951/COP/2711, dated 20.09.2018-(REFLECTIVE-TAPE-RED/WHITE/YELLOW) VALID UPTO 30.09.2020- issued to M/S 3M INDIA LTD, PLOT NO. 48-51, ELECTRONICS CITY, HOSUR ROAD, BANGLORE manufactured by 3M COMPANY, 3M BROWNWOOD PLANT-4501, HIGHWAY 377, SOUTH BROWNWOOD, TEXAS, USA & 3M INNOVATION SINGAPORE PTE LTD, 2 TUAS LINK,4, SINGAPORE. 4. NO.A94495, dated 27.03.2013 (REFLECTIVE-TAPE-RED/WHITE/YELLOW) issued to M/S 3M INDIA LTD, PLOT NO. 48-51, ELECTRONICS CITY, HOSUR ROAD, BANGLORE manufactured by 3M INNOVATION SINGAPORE PTE LTD, 2 TUAS LINK,4, SINGAPORE
5.	Maximum rates per meter including fitment charges	1. 983-71 YELLOW CONSP 50.8MMX50M 50 meter @ 7334/- (Rs.146.68 PER METER). 2. 983-10 WHT CONSP 50.8MMX50M 50 meter @ 7334/- (Rs 146.68 PER METER). 3. 983-72 RED CONSP 50.8MMX50M 50 meter @ 7334/- (Rs 146.68 PER METER). 4. 983-72 WHT CONSP 20MMX50M 50 meter @ 3892/- (Rs 77.84 PER METER). 5. 983-10 WHT CONSP 20MMX50M 50 meter @ 3892/- (Rs 77.84 PER METER). 6. 983-10 RMT C3-130X565MM-LH @ 600 EACH 7. 983-10 RMT C3-130X565MM-RH @ 600 EACH 8. 983-10 RMT C3-150X565MM-LH @ 700 EACH 9. 983-10 RMT C3-150X565MM-RH @ 700 EACH 10. 983 RMT C4 195X565MM @ 800 EACH

The aforementioned details have been uploaded on the website of the department (www.haryantransport.gov.in) for the information of transporters/general public. You are requested to affix the retro reflective tapes, rear marking plates/tapes and circular reflectors of prescribed specifications on Motor Vehicles as per the following procedure.

1. The details of the manufacturer having type approval from the approved testing agencies as mentioned above should be put up on the notice board of the offices of all the Secretaries of the Regional Transport Authorities in the State in a conspicuous place/manner for the information of all concerned.
2. Fitness certificate will be issued to the motor vehicles by the Board of Inspection after ensuring that the reflectors have been affixed in the prescribed manner and proper details have been given in the fitment certificate.

Office: 30 Bays Building, 2nd Floor, Sector 17-B, Chandigarh - 160017 (India)

Telephone: 91(0172)-2784359, 2701290, 2700541 Fax: 91(0172)2700514 e-mail: stcharyana@hry.nic.in website: haryantransport.gov.in

कार्यालय: 30 खण्ड बिल्डिंग, दूसरा तल, सेक्टर 17 बी, चंडीगढ़-160017 (भारत)



GOVERNMENT OF HARYANA / हरियाणा सरकार
TRANSPORT COMMISSIONER, HARYANA, CHANDIGARH
परिवहन आयुक्त, हरियाणा, चंडीगढ़

3. Board of Inspection will also ensure at the time of grant of fitness certificate that the reflective tapes of prescribed standards manufactured by the aforementioned firms only has been affixed on the transport vehicles.

You are requested to affix the retro reflective tapes, rear marking plates/tapes and circular reflectors of prescribed standards on the motor vehicles in the state of Haryana after following the procedure mentioned above in letter and spirit. A letter issued by 3M Company, USA in support of your claim to be a subsidiary of the said Company should be furnished to this office within a period of 15 days from the issue of this letter.

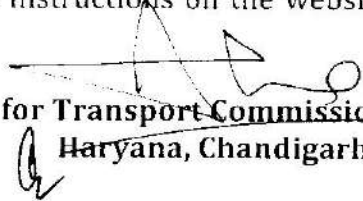
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for Transport Commissioner,
Haryana, Chandigarh.

Endst. No. 19415-440/T-3/ST-II

Dated:- 31-5-2019

A copy of the above is forwarded to:-

- ✓ 1. All ADCs-cum-Secretaries of the Regional Transport Authorities in the State with the request to ensure strict compliance of the above directions.
2. Jr. Programmer (HQ) for uploading these instructions on the website of the Department.


for Transport Commissioner,
Haryana, Chandigarh.



M/PL/CSP/001

01/04/2019

3M India Limited
Concorde Block, UB City,
24, Vittal Mallya Road,
Bengaluru - 560 001
India
Telephone : + 91 80 2223 1414
CIN No. : + L31300KA1987PLC013543

3M Transportation Safety Division
Conspicuity Tape Price List (w.e.f April 1st, 2019)

Commodity	SKU #	SKU DES	UOM	MRP (INR)
5330	IA510100927	983-71 Ylw Consp 50.8MMX50M	50MTR	7334
5330	IA510100885	983-10 Wht Consp 50.8MMX50M	50MTR	7334
5330	IA510100919	983-72 Red Consp 50.8MMX50M	50MTR	7334
5330	XA010014018	983-72 Red Consp 20mmX50mtr	50MTR	3892
5330	XA010013978	983-10Wht consp 20MMX50MTR	50MTR	3892
5330	IA510100141	983 RMT C3-130x565mm-LH	1NOS	600
5330	IA510100158	983 RMT C3-130x565mm-RH	1NOS	600
5330	IA510100166	983 RMT C3-150x565mm-LH	1NOS	700
5330	IA510100174	983 RMT C3-150x565mm-RH	1NOS	700
5330	IA510100232	983 RMT C4-195x565mm	1NOS	800

Terms & Conditions:

- Tax: Inclusive of applicable GST
- Freight: Shall be charged extra
- Delivery: Ex-stock
- Payment terms: 100% advance
- Warranty: Standard warranty as per 3M standard warranty terms & conditions

For 3M India Ltd.

Kaoot


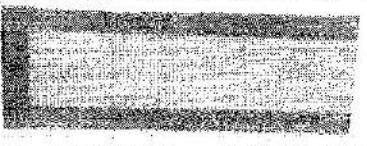

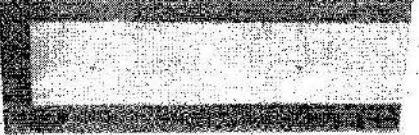
(Authorized Signatory)



Annexure




SKU	DES	Product
IA510100927	983-71 Ylw Consp 50.8MMX50M	Retro-reflective tape
IA510100885	983-10 Wht Consp 50.8MMX50M	Retro-reflective tape
IA510100919	983-72 Red Consp 50.8MMX50M	Retro-reflective tape
IA510100174	983 RMT C3-150x565mm-RH	Rear-marking plates
IA510100158	983 RMT C3-130x565mm-RH	Rear-marking plates
IA510100166	983 RMT C3-150x565mm-LH	Rear-marking plates
IA510100232	983 RMT C4-195x565mm	Rear-marking plates
IA510100141	983 RMT C3-130x565mm-LH	Rear-marking plates

Non-Transferable

No. SHL/16/2013-2014/9149/2783		DATE: 17.12.2014	
NAME AND ADDRESS OF THE CUSTOMER		M/s. 3M India Limited Plot Nos. 48-51, Electronics City, Hosur Road, Bangalore - 560 100, India	
CUSTOMER LETTER REF.		Email Dated : 18.03.2014	
3.0 DESCRIPTION OF TEST COMPONENTS:			
Rear Marking Plates (Class 1, 2, 3 & 4): Rear marking plates for heavy motor vehicles. Substrate used - Aluminium, Industrial grade (60820), 3 mm thick			
Class 1 : Red Fluorescent and yellow retro-reflective alternative strips		Class 2 : Red Fluorescent Border and yellow retro-reflective centre	
			
Class 3 : Red retro-reflective and yellow retro-reflective alternative strips		Class 4 : Red retro-reflective Border and yellow retro-reflective centre	
			
Manufactured by M/s. 3M Company 3M Electronic City Plant, Plot No. 48-51, Electronic City, Phase 1, Bangalore (Karnataka) - 560100.			
Unique Identification No.		Drawing No. of the component	
Class 1	C1	RMP/3M/1	enclosed at page no. 11
Class 2	C2	Class 1	Class 2
Class 3	C3	Class 3	Class 4
Class 4	C4	Class 3	Class 4
Identification observed on the component as per drawing		3M 983 C1	
Class 1		3M 983 C2	
Class 2		3M 983 C3	
Class 3		3M 983 C4	
4.0 OBJECTIVE, TEST PROCEDURE & TEST REQUIREMENTS:			
To carry out all tests as per AIS: 089			
5.0 TEST RESULTS:			
Please refer test Results in Sr. No. 7.0 and Sr. No. 8.			
TEST DURATION:		Start Date: 23.06.2014 End Date: 21.11.2014	

Handwritten signature and stamp.



6.0	CONCLUSION: Rear Marking Plates specified in 3.0 above, met the requirements of all the tests related to Rear Making Plates as above in 3.0 when tested as per AIS: 089. An installation requirement has to be verified along with vehicle.	Disclaimer:
<p>1. ARAI issues Test Reports / Extension Reports / Developmental Test Reports for vehicles/ parts/ assemblies etc. based on the documents produced and/or prototype/ vehicle(s) or sample(s) submitted by the applicant and testing thereof.</p> <p>2. ARAI issues Test Reports / Extension Reports / Developmental Test Reports in compliance to Motor Vehicle Act / Central Motor Vehicles Rules and their provisions as amended from time to time or any other statutory orders under which ARAI is authorised. Other Rules/ Acts are outside the purview/ scope of Test Reports / Extension Reports / Developmental Test Reports.</p> <p>3. Test(s) on prototype/ vehicle(s) or sample(s) is/are carried out on the basis of standard procedures as notified under specific rules/ requested by the applicant. Results of such tests are the property of bearer of Test Reports / Extension Reports / Developmental Test Reports. These results cannot be disclosed unless specifically so ordered by Government, Court, etc.</p> <p>4. Unless otherwise supported by a separate Certificate, this Test Reports / Extension Reports / Developmental Test Reports shall not be considered in isolation as valid Type Approval for any vehicle.</p> <p>5. ARAI is not responsible for testing each vehicles/ components/ parts/ assemblies etc. for which Test Reports / Extension Reports / Developmental Test Reports is issued. Further, ARAI is not responsible for ensuring manufacturing quality of the vehicles/ components/ parts/ assemblies etc. for which the Test Reports / Extension Reports / Developmental Test Reports is/are issued.</p> <p>6. ARAI is in no way responsible for any misuse or copying of any design/ type/ system in connection with entire vehicle/ components/ parts and assemblies covered under the Test Reports / Extension Reports / Developmental Test Reports is/are issued.</p> <p>7. Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the bearer of Test Reports / Extension Reports / Developmental Test Reports is/are issued and ARAI shall not be liable for any claims or damages. The bearer shall alone be liable for the same, and shall undertake to indemnify ARAI in this regard.</p> <p>8. ARAI has the right, but not under obligation, to initiate cancellation/ withdrawal of the Test Reports / Extension Reports / Developmental Test Reports is/are issued in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ARAI.</p> <p>The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this certificate / Report.</p>		
PREPARED BY:		CHECKED BY:
		
P.V. PARLIKAR MANAGER		Mrs. J. M. KIRVE DEPUTY GENERAL MANAGER
Date of Issue: 16/12/2014		A.V. MANNIKAR SR. DEPUTY DIRECTOR, HOD-SHL
AUTHORISED BY:		

TEST REPORT No SHL/16/2013-2014/9149/2783

7.0 TEST RESULTS:

7.1 SPECIFICATION OF MARKING (Cl. No. 5)

Cl. No.	Specifications	Remarks
5.1.1	The trade name of the applicant and unique mark of type	"3M" is to be marked as shown in attached drawing
5.2	The marking shall be applied on either the retro reflective or the fluorescent area of the plate, or on the edge, and must be visible from the outside when the marking plate is fitted on the vehicle	As shown in attached drawing. Complies
5.3	The markings shall be clearly legible and shall be indelible.	As shown in attached drawing. Complies

7.2 GENERAL SPECIFICATIONS (Cl. No. 7.0)

Cl. No.	Specifications	Remarks
7.1	Retro-reflective/fluorescent or retro-reflective only marking plates shall be so constructed that they function satisfactorily and will continue to do so in normal use. In addition, they shall not have any defect in design or manufacture that is detrimental to their efficient operation or to their maintenance in good condition.	Complies
7.4	The outer surface of the retro-reflective marking materials shall be easy to be cleaned. The surface shall therefore not be rough and any protruberances they may exhibit shall not prevent easy cleaning.	Complies

Signature: _____
Date: _____
Stamp: _____

7.3 SPECIFICATION OF SHAPE AND DIMENSIONS OF RETRO REFLECTIVE / FLUORESCENT REAR MARKING PLATES (Annex-3)

Cl. No.	Specifications	Remarks
1	Shape: The plate shall be rectangular in shape for mounting at the rear of vehicles.	Complies
3	<p>Dimensions</p> <p>The minimum total summarized length of a set of rear marking plates consisting only of one, two or four marking plates with retro reflective and fluorescent materials shall be 1,130 mm, and the maximum total length shall be 2,300 mm.</p> <p>Class 1 & 3 Length of 2 plate = 1132 mm Class 2 & 4 Length of 2 plate = 1130 mm</p>	Class 1 & 3 Width=130 mm Class 2 & 4 Width=195 mm
3.1	<p>The width of a rear marking plate shall be:</p> <p>For trucks and tractors: 140 ± 10 mm. For trailers and semi-trailers: 200 ± 30 mm.</p>	Class 1 & 3 Width=130 mm Class 2 & 4 Width=195 mm
3.3	<p>The width of the red fluorescent border of the rear marking plates for trailers and semi-trailers shall be 40 mm ± 1 mm.</p>	Class 2 & 4 Width= 39 mm
3.4	<p>The slope of the oblique stripes of the chevron band shall be 45° ± 5°. The width of the stripes shall be 100 mm ± 2.5 mm.</p>	Class 1 & 3 Slope = 45° & strip width = 100 mm
3.5	Rear marking plates supplied in sets shall form matching pairs	Complies

7.4 RESISTANCE TO HEAT TEST (Annex 7)

CI. No.	TEST REQUIREMENTS	OBSERVATIONS / RESULTS
2	The sample shall be examined after a recovery time of 4 hours under normal laboratory conditions. After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units shall be evident.	After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units was observed. Complies.

7.5 COLOURIMETRIC SPECIFICATIONS (Annex 4)

7.5.1 Colour Test of Retro-reflecting device by CIE standard illuminant D₆₅ (Annex 4, CI. No. 2.1):

Colour Co-ordinates	Specified Values (Colour – Yellow retro-reflective)	Measured Values
X Coordinate	0.427 to 0.545	0.4913
Y Coordinate	0.423 to 0.534	0.4417
Luminance factor	≥ 0.16	0.34

Colour Co-ordinates	Specified Values (Colour – Red retro-reflective)	Measured Values
X Coordinate	0.569 to 0.690	0.6291
Y Coordinate	0.310 to 0.345	0.3412
Luminance factor	≥ 0.03	0.09

7.5.2 Colour Test of Retro-reflecting device by CIE standard illuminant A: (Annex 4, CI. No. 2.2):

Colour Co-ordinates	Specified Values (Colour – Yellow retro-reflective)	Measured Values
X Coordinate	0.505 to 0.610	0.5548
Y Coordinate	0.385 to 0.480	0.4264

Colour Co-ordinates	Specified Values (Colour – Red retro-reflective)	Measured Values
X Coordinate	0.643 to 0.690	0.6586
Y Coordinate	0.258 to 0.335	0.3284

TEST REPORT No SHL/16/2013-2014/9149/2783

7.5.3 Colour Test of Red fluorescent material by CIE standard Illuminate D₆₅
(Annex 4, Cl. No. 3.1):

Colour Co-ordinates	Specified Values (Colour – Red fluorescent)	Measured Values
X Coordinate	0.569 to 0.690	0.6212
Y Coordinate	0.310 to 0.345	0.3409
Luminance factor	≥ 0.30	0.47

7.6 PHOTOMETRIC SPECIFICATIONS (Annex 5)

7.6.1 Yellow colour (Retro reflective area)

Observation angle (α) in degrees		Entrance angle (β) in degrees			
1/3°(20°)		β1	β2	5	30
		0	0	0	0
		0	0	40	60
Required values R (cd. m ⁻² .lx ⁻¹)		75			
		10			
Sample No. 1		547.692			
Sample No. 2		659.231			
		320.769			
		204.615			
		22.692			
		22.154			
Remarks		Complies			

7.7 PHOTOMETRIC SPECIFICATIONS (Annex 5)

7.7.1 Red colour (Retro reflective area)

Observation angle (α) in degrees		Entrance angle (β) in degrees			
1/3°(20°)		β1	β2	5	30
		0	0	0	0
		0	0	40	60
Required values R (cd. m ⁻² .lx ⁻¹)		7			
		4			
		54.000			
		73.231			
		116.539			
		203.846			
Sample No. 1		160.769			
Sample No. 2		203.846			
Remarks		Complies			



8.0 Resistance to External Agents (Annex 6)

8.1 Resistance to weathering (Annex 6, 1)

8.1.1 Test Requirements:

8.1.1.1 Visual Appearance (Annex 6, 1.2)

No area of the exposed specimen shall show any evidence of cracking, scaling, pilling, blistering, delamination, distortion, chalking, staining or corrosion.

There shall be no shrinkage in excess of 0.5 per cent in any linear direction and no evidence of adhesion failure such as edge lifting from the substrate.

Result/Remarks: Complies

8.1.1.2 Colour fastness (Annex 6, 1.3)

The colours of the exposed specimens shall still meet the requirements.

By CIE standard Illuminant D₆₅:

Colour Co-ordinates	Specified Values (Colour – Red Fluorescent)	Measured Values	
		Before	After
X Coordinate	0.569 to 0.690	0.5812	0.5792
Y Coordinate	0.310 to 0.345	0.3409	0.3386
Luminance factor	≥ 0.03	0.25	0.26
Complies			

Colour Co-ordinates	Specified Values (Colour – Yellow retro-reflective)	Measured Values	
		Before	After
X Coordinate	0.427 to 0.545	0.4933	0.5011
Y Coordinate	0.423 to 0.534	0.4408	0.4416
Luminance factor	≥ 0.16	0.32	0.31
Complies			

Colour Co-ordinates	Specified Values (Colour – Red retro-reflective)	Measured Values	
		Before	After
X Coordinate	0.569 to 0.690	0.6284	0.6279
Y Coordinate	0.310 to 0.345	0.3402	0.3407
Luminance factor	≥ 0.03	0.08	0.09
Complies			

By CIE standard Illuminant A:

Colour Co-ordinates	Specified Values (Colour – Yellow retro-reflective)	Measured Values	
		Before	After
X Coordinate	0.505 to 0.610	0.5561	0.5563
Y Coordinate	0.385 to 0.480	0.4256	0.4250
Complies			

Colour Co-ordinates	Specified Values (Colour – Red retro-reflective)	Measured Values	
		Before	After
X Coordinate	0.643 to 0.690	0.6594	0.6582
Y Coordinate	0.258 to 0.335	0.3279	0.3274
Complies			

8.1.1.3 Photometric specifications (Annex 6, 1.4)

Measurement shall be made only at an observation angle of 20° and an entrance angle of 5°. The coefficient of retro reflection of the exposed specimen when dry shall be not less than 80 per cent of the value.

Observati on angle	Entrance angle	Color	Required Values (Minimum)	Before test	After test	Required value not less than 80% of previous value
1/3°(20°)	5°	Yellow Reflective	300 cd.lx ⁻¹ .m ⁻²	402.311	391.464	Complies 2.7%
		Red Reflective	10 cd.lx ⁻¹ .m ⁻²	112.329	103.121	Complies 8.2%

The specimen shall then be subjected to simulated rainfall and its coefficient of retro reflection under this condition shall be not less than 90 per cent of the value obtained when measured in dry condition.

Results/Remarks: Complies.

8.2 Resistance to Corrosion (Annex 6, 2)

8.2.1 Test Requirements:

8.2.1.1 Visual Appearance (Annex 6, 2.2)

Immediately after completion of the test, the sample shall show no sign of corrosion liable to impair the efficiency of the device.

Results/Remark: No sign of corrosion was observed. Complies

8.2.1.2 Photometric specifications (Annex 6, 2.2.1)

The coefficient of 'Retro reflection R' of the retro reflective areas, when measured after a recovery period of 48 hours, at an entrance angle of 5° and an observation angle of 20°, shall be not less than the value 300 cd.lx⁻¹.m⁻². Before measuring, the surface shall be cleaned to remove salt deposits from the saline mist.

Observati on angle	Entrance e angle	Color	Required Values (Minimum)	Before test	After test	Remark
1/3°(20°)	5°	Yellow Reflective	300 cd.lx ⁻¹ .m ⁻²	391.464	383.729	Complies 2.0%
		Red Reflective	10 cd.lx ⁻¹ .m ⁻²	96.320	91.592	Complies 4.9%

8.3 Resistance to Fuels (Annex 6, 3)
8.3.1 Test Requirements:
After removal, the surface shall be wiped dry with a soft cloth and shall not show any visible change, which would reduce its effective performance.

Results/Remark: No Visible change was observed. Complies

8.4 Bonding Strength (Annex 6, 4)

8.4.1 Test Requirements:

The coated material is not removable without tools or without damaging the material.

The laminated materials (adhesive films) shall need a force of at least 10 N per 25 mm width, at a speed of 300 mm per minute, to be removed from the substrate.

Result / Remark: Complies.

8.5 Resistance to Water (Annex 6, 5)

8.5.1

Test Requirements:

After completion of the test, the section shall be examined. No part inside 10 mm from the cut edge shall show evidence of deterioration, which would reduce the effectiveness of the plate.

Results/Remarks: No evidence of deterioration was observed. Complies.

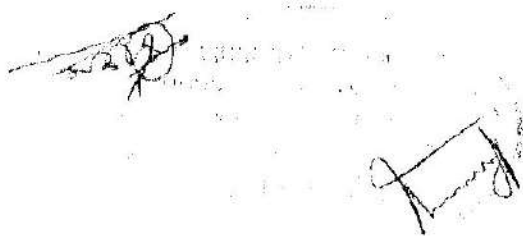
8.6 Resistance to Impact (Annex 6, 6)

8.6.1

Test Requirements:

The material shall show no cracking or separation from the substrate at a distance of more than 5 mm from the impacted area.

Results/Remark: No evidence of cracking or separation was observed. Complies.



A test example smeared with a mixture of detergent lubricating oil and graphite shall be easily cleaned without damage to the retro reflective or fluorescent surfaces when wiped with a mild aliphatic solvent such as n-heptane, followed by washing with a neutral detergent.

Cleaning (Annex 6, 7)

8.7.1

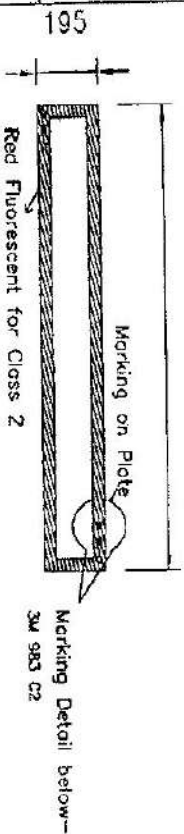
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8.7

ARAI
Progress through Research

Rear Marking Plates detailed Dimensions

1130

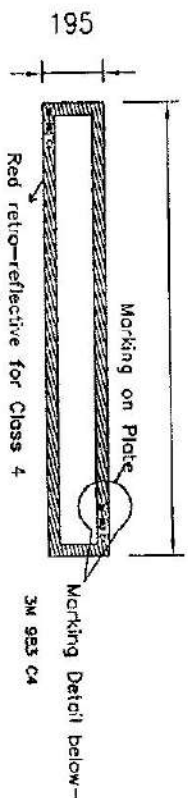


Class 2

Trailers and Semi-Trailers

Unique Identification No = C2

1130

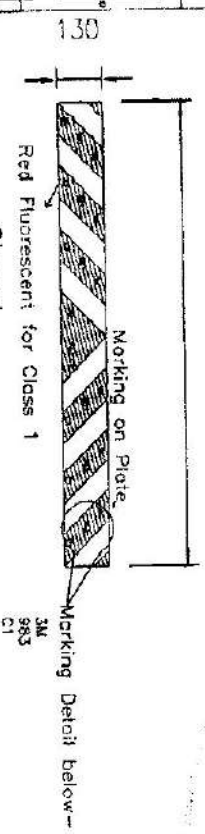


Class 4

Trailers and Semi-Trailers

Unique Identification No = C4

1130

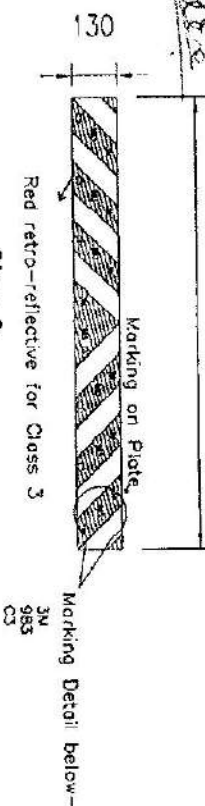


Class 1

Trucks and Tractors

Unique Identification No = C1

1130



Class 3

Trucks and Tractors

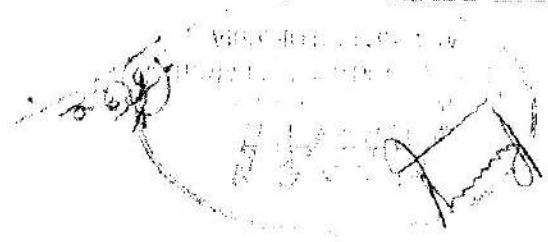
Unique Identification No = C3

Substrate used - Aluminum, Industrial Grade (6082), 3 mm thick
6082 Grade Aluminum Used

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Client				Project: Rear Marking Plates for Trailers, Trucks, and Tractors			
Material: Industrial Grade 6082 Aluminum				Title: 3M 983 C1, C2, C3, C4			
By	Date	Drawn	Checked	By	Date	Drawn	Checked
3M	01/12/2014	01/12/2014	01/12/2014	3M	01/12/2014	01/12/2014	01/12/2014
Approved: 3M				Approved: 3M			
Scale: 1:1				Scale: 1:1			

TEST REPORT NO. SHY16/2013-2014/9149/2783



1.0 NAME AND ADDRESS OF THE CUSTOMER		2.0 CUSTOMER LETTER REF.		3.0 DESCRIPTION OF TEST COMPONENTS:	
M/s. 3M India Limited Plot Nos. 48-51, Electronics City, Hosur Road, Bangalore - 560 100, India		Email Dated: 10.11.2014			
No. SHL/16/2014-2016/5897/2817		DATE: 30.12.2014			
EXTENSION TEST REPORT (Earlier test report: SHL/16/2013-2014/9149/2783 Dated: 17.12.2014)					
Non-Transferable					
1. Rear Marking Plates (Class 1, 2, 3 & 4): Rear marking plates for heavy motor vehicles. Substrate used - Steel Grade Material (D-513), 1.22 mm thick. 2. Rear Marking Plates (Class 1, 2, 3 & 4): Rear marking plates for heavy motor vehicles. Substrate used - Steel Grade Material (D-513), 1.6 mm thick. 3. Rear Marking Plates (Class 1, 2, 3 & 4): Rear marking plates for heavy motor vehicles. Substrate used - Steel Grade Material (ST 52.3), 4 mm thick					
Manufactured by M/s. 3M Company 3M Electronic City Plant, Plot No. 48-51, Electronic City, Phase 1, Bangalore (Karnataka) - 560100.		Unique Identification		Drawing No. of the component	
Class 1		SB C1		RMP/3M/2 (dated 29.12.2014)	
Class 2		SB C2		enclosed at page no. 4	
Class 3		SB C3			
Class 4		SB C4			
Identification observed on the component		3M 983 SB C1		3M 983 SB C2	
3M 983 SB C3		3M 983 SB C4			
4.0 CONSIDERATION FOR EXTENSION:					
i) Declaration letter submitted by customer regarding the change in part number. etc. are identical and not changed expect change in material of plate & Thickness of the plate (specified in 3.0 above). ii) Customer's declaration stating that material used, manufacturing process, controls new material of Steel Grade D-513 with thickness of the plate (1.22 mm) and Steel Grade ST-52.3 with thickness of the plate (4.00 mm). Refer Sr. No. 6.0 for test results. iii) Additional test of Rigidity of Plates & Corrosion test are conducted as per AIS: 089 on 2014/9149/2783 Dated: 17.12.2014 for detailed test results. iv) This Extension Test report is to be read along with earlier test report: SHL/16/2013-					



TEST REPORT No SHL/16/2013-2014/9149/2783

5.0	CONCLUSION: Rear Marking Plates specified in 3.0 above, met the requirements of all the tests related to Rear Making Plates as above in 3.0 when tested as per AIS- 089. An installation requirement has to be verified along with vehicle.	Disclaimer:	
<p>1. ARAI issues Test Reports / Extension Reports / Developmental Test Reports for vehicles/ components/ parts/ assemblies etc based on the documents produced and/or prototype/ vehicle(s) or sample(s) submitted by the applicant and testing thereof.</p> <p>2. ARAI issues Test Reports / Extension Reports / Developmental Test Reports in compliance to Motor Vehicle Act / Central Motor Vehicles Rules and their provisions as amended from time to time or any other statutory orders under which ARAI is authorised.</p> <p>3. Other Rules/ Acts are outside the purview/ scope of Test Reports / Extension Reports / Developmental Test Reports.</p> <p>Test(s) on prototype/ vehicle(s) or sample(s) is/are carried out on the basis of standard procedures as notified under specific rules / requested by the applicant. Results of such tests are the property of bearer of Test Reports / Extension Reports / Developmental Test Reports. These results cannot be disclosed unless specifically so ordered by Government, Court, etc</p> <p>4. Unless otherwise supported by a separate Certificate, this Test Reports / Extension Reports / Developmental Test Reports shall not be considered in isolation as valid Type Approval for any vehicle.</p> <p>5. ARAI is not responsible for testing each vehicle/ components/ parts/ assemblies etc. for which Test Reports / Extension Reports / Developmental Test Reports is issued. Further, ARAI is not responsible for ensuring manufacturing quality of the vehicles/ components/ parts/ assemblies etc. for which the Test Reports / Extension Reports / Developmental Test Reports is/are issued.</p> <p>6. ARAI is in no way responsible for any misuse or copying of any design/ type/ system in connection with entire vehicle/ components/ parts and assemblies covered under the Test Reports / Extension Reports / Developmental Test Reports is/are issued.</p> <p>7. Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the bearer of Test Reports / Extension Reports / Developmental Test Reports is/are issued and ARAI shall not be liable for any claims or damages.</p> <p>8. The bearer shall alone be liable for the same, and shall undertake to indemnify ARAI in this regard.</p> <p>9. ARAI has the right, but not under obligation, to initiate cancellation/ withdrawal of the Test Reports / Extension Reports / Developmental Test Reports is/are issued in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ARAI.</p> <p>The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this certificate / Report.</p>			
PREPARED BY:		CHECKED BY:	
P.V. PARLIKAR MANAGER		Mrs. J. M. KIRVE DEPUTY GENERAL MANAGER	
Place of Issue: PUNE		Date of Issue:	
		A.V. MANNIKAR SR. DEPUTY DIRECTOR, HOD-SHL	
AUTHORISED BY:			

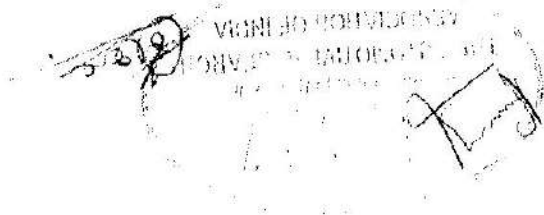
TEST REPORT No SHL/16/2014-2015/5897/2817

6.0	Test Results	
6.1	Resistance to Corrosion (Annex 6, 2)	
6.1.1	Test Requirements:	
6.1.2	Visual Appearance (Annex 6, 2.2)	
Immediately after completion of the test, the sample shall show no sign of corrosion liable to impair the efficiency of the device.		
Results/Remark: No sign of corrosion was observed.		Complies
6.2	Rigidity of the Plates (Annex 8)	
6.2.1	Test Requirements:	

The maximum deflection of the plate under the test load shall not exceed one twentieth of the distance between the supports and the residual deflection after removal of the load shall not exceed one fifth of the measured deflection under load.

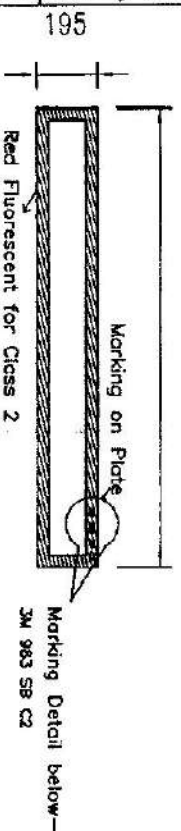
Results/Remarks: The maximum deflection of the plate is not exceeding one twentieth of the measured deflection under load. **Complies.**

I, SATHI A. H. Head of Test Department, 15/5897, 2014-2015, New Marling Place, JNT India, Pvt. Ltd.



Rear Marking Plates AIS 089 - Steel Substrate

1130

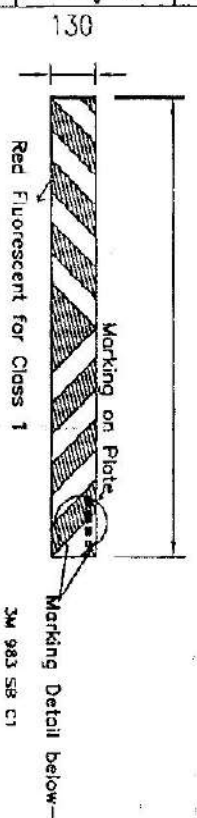


Class 2

Trailers and Semi-Trailers

Unique Identification No = SB C2

1130

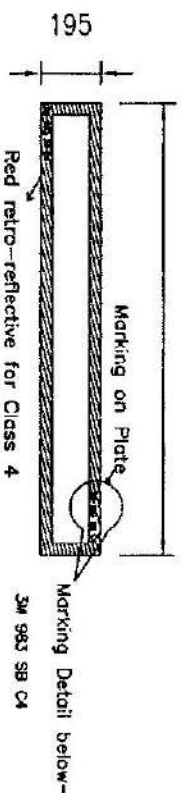


Class 1

Trucks and Tractors

Unique Identification No = SB C1

1130

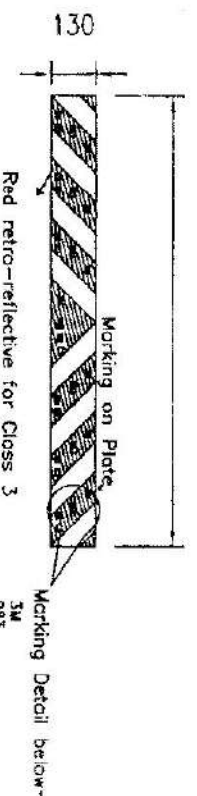


Class 4

Trailers and Semi-Trailers

Unique Identification No = SB C4

1130



Class 3

Trucks and Tractors

Unique Identification No = SB C3

Substrate used-Steel grade-D513, ST 52.3 and ~~and equivalent higher grades.~~
Thickness - 1.22 mm (Minimum) for D513 & 4.00 mm for ST 52.3
Surface Coat - It will have surface treatment of Primer with top coat paint

** 3M 983 material used for making Rear Marking Plate as per AIS 089 is applicable for curved surfaces with high radius in Horizontal and Vertical both and passes the flexibility mandrel test (0.125 inch) as per ASTM D 4956 @ 32 F

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Client				Project			
VA SANITARY MARKING SYSTEM				Rear Marking Plates			
3M				3M			
3M				3M			
3M				3M			
3M				3M			
3M				3M			
3M				3M			
3M				3M			
3M				3M			

EXTENSION TEST REPORT No. SHL/16/2016-2015/5897/2817

Non-Transferable

CONFORMITY OF PRODUCTION CERTIFICATE AS PER AIS - 037
CONFORMITY OF PRODUCTION CERTIFICATE NO - 04

SHL NO : SHL/16/2018-2019/3000002951/COP/2711		DATE: 20.09.2018	
1.0 Name and Address of Applicant			
3M India Ltd. Plot Nos, 48-51, Electronics City Hosur Road, Bangalore - 560 100		3M Company, 3M Center, St. Paul, Minnesota 55144-1000, USA	
Details of component manufacturer (Registered Office)		Plant address	
3M Company 3M Brownwood Plant 4501 Highway 377 South Brownwood, Texas, 76801, USA		3M Innovation Singapore Pte Ltd. 2 Tuas Link A Singapore 637321	
Customer Letter Ref.		Email dated 18.07.2018	
3.0 Name and specification of the component		3M Scotchlite Reflective Sheeting 983 COLOURS - RED, WHITE AND YELLOW Size: 50 mm width & 20 mm width	
4.0 Applicable Notified Standard		AIS:090	
5.0 Base Type Approval No.		A94495 Dt: 08.09.2009 A94495 Addendum no. 1, Dt: 27.03.2013 (Singapore plant - 50mm) A94495 Addendum no. 2, Dt: 12.08.2013 (Singapore plant - 20 mm)	
6.0 TAG MARK / E-Mark		3M A94495 C-E1-104R-00821	
7.0 Conformity of Production serial no.		4th COP	
8.0 Conformity of Production Granted / Refused		GRANTED	
Based on:- Successful completion of Production tests on randomly selected samples. Samples are randomly selected and submitted by M/s. 3M India Ltd. Test results are enclosed in Annexure-I			



CONFORMITY OF PRODUCTION CERTIFICATE NO - 04
SHL No. : SHL/16/2018-2019/3000002951/COP/2711

9.0	Next continued compliance to be completed on and before: 30.09.2020
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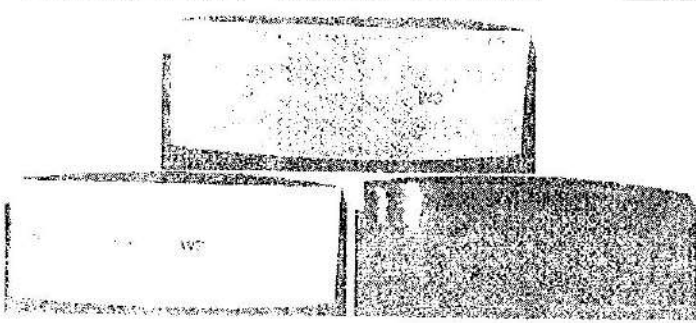
Disclaimer:

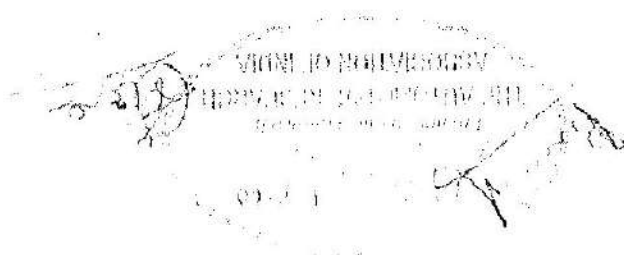
1. ARAI issues 'Conformity of Production (COP) Certificates' for vehicles/ components/ parts/ assemblies etc. based on the documents produced and for testing carried out on the selected sample(s) as per the provisions of specific rules.
2. Sample selection procedure is in compliance to Motor Vehicle Act/ Central Motor Vehicles Rules and their provisions as amended from time to time or any other statutory orders under which ARAI is authorized. Other Rules/ Acts are outside the purview/ scope of COP.
3. Tests on selected sample(s) is/ are carried out only on the parameters as covered under the specific procedures/ rules. Results of such tests are the property of bearer of COP Certificate. These results cannot be disclosed unless specifically so ordered by Government, Court, etc.
4. Other parameters of the vehicles/ components/ parts/ assemblies etc. are outside the purview/ scope of COP.
5. The bearer of the COP certificate is under obligation to ensure production strictly as per the provisions of the specific certificate.
6. ARAI is not responsible for ensuring manufacturing quality of the approved vehicles/ components/ parts/ assemblies etc.
7. ARAI is in no way responsible for any misuse or copying of any design/ type/ system in connection with entire vehicle/ components/ parts and assemblies covered under the COP certificate.
8. Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the bearer of COP certificate and ARAI shall not be liable for any claims or damages. The bearer shall alone be liable for the same, and shall undertake to indemnify ARAI in this regard.
9. ARAI has the right, but not under obligation, to initiate cancellation/ withdrawal of the certificate issued, in case of any fraud/ misrepresentation, when it surfaces and comes in the knowledge of ARAI.
- The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this certificate / Report.

PREPARED BY:	CHECKED BY:	APPROVED BY:
P.V. PARLIKAR MANAGER	Mrs. J. M. KIRVE GENERAL MANAGER	A.V. MANNIKAR SR. DEPUTY DIRECTOR, HOD-SHL
Place of issue: PUNE		Date of issue: 30-09-2018

CONFORMITY OF PRODUCTION CERTIFICATE NO - 04
SHL No. : SHL/16/2018-2019/3000002951/COP/2711

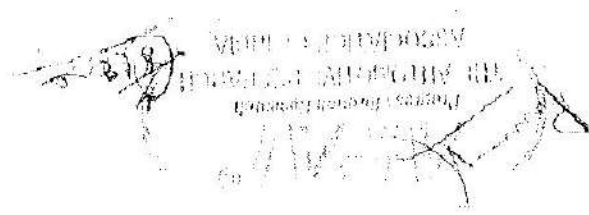
Annexure - I

1.0	Name and Address of Applicant	3M India Ltd. Plot Nos., 48-51, Electronics City Hosur Road, Bangalore - 560 100
2.0	Description of Component	3M Scotchlite Reflective Sheeting 983 COLOURS - RED WHITE AND YELLOW Size: 50 mm width
	Plant address	3M Innovation Singapore Pte Ltd. 2 Tuas Link 4 Singapore 637321
	Marking on the sample	3M A94495 C-E1-104R-00821
	Photograph of Sample	
3.0	Objective:	To conduct the COP tests as defined in AIS 037 as per AIS: 090.
4.0	Test Results:	
4.1	Test Duration:	Start Date: 10.09.2018 End Date: 17.09.2018



4.2	Resistance to heat (Annex 6 Cl No.4.0)	TEST REQUIREMENTS	OBSERVATIONS / RESULTS		After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units, shall be evident.		the optical units, shall be evident.	
4.3	Colour Test of Retro-reflecting device by CIE standard Illuminate D ₆₅ (Annex 4, Cl. No. 2)	Colour	Co-ordinates	Specified Values	Sample No. 01	Sample No. 02	Measured Values	
		X Coordinate		0.560 to 0.690	0.5954	0.6117		
		Y Coordinate		0.310 to 0.350	0.3210	0.3199		
		Luminance factor		≥ 0.03	0.11	0.15		
		Colour	Co-ordinates	Specified Values	Sample No. 01	Sample No. 02	Measured Values	
		X Coordinate		0.260 to 0.385	0.3084	0.3089		
		Y Coordinate		0.270 to 0.395	0.3284	0.3271		
		Luminance factor		≥ 0.25	0.49	0.48		
		Colour	Co-ordinates	Specified Values	Sample No. 01	Sample No. 02	Measured Values	
		X Coordinate		0.427 to 0.545	0.4979	0.4976		
		Y Coordinate		0.423 to 0.534	0.4361	0.4353		
		Luminance factor		≥ 0.16	0.30	0.30		
4.4	Colour Test of Retro-reflecting device by CIE standard Illuminate A; (Annex 4, Cl. No. 3)	Colour	Co-ordinates	Specified Values	Sample No. 01	Sample No. 02	Measured Values	
		X Coordinate		0.643 to 0.735	0.6488	0.6549		
		Y Coordinate		0.258 to 0.335	0.3253	0.232		
		Colour	Co-ordinates	Specified Values	Sample No. 01	Sample No. 02	Measured Values	
		X Coordinate		0.373 to 0.548	0.4458	0.4470		
		Y Coordinate		0.359 to 0.513	0.4055	0.4042		
		Colour	Co-ordinates	Specified Values	Sample No. 01	Sample No. 02	Measured Values	
		X Coordinate		0.505 to 0.601	0.5599	0.5600		
		Y Coordinate		0.385 to 0.480	0.4220	0.4216		

PHOTOMETRIC SPECIFICATIONS (Annex 5)													4.5
Red colour (Retro reflective) Area considered = 150mmX50mm													
Sr. No.	Observation angle (α) in degrees	β1	β2	Entrance Angle	Required values (cd. m ² .lx ⁻¹)	Sample No. 01		Sample No. 02		Measured Values (cd. m ² .lx ⁻¹)			
1		0	5		120	181.200		192.000		133.867	101.467	60.133	
2		0	20		60	126.533							
3		0	30		30	94.800							
4		0	40		10	54.133							
White colour (Retro reflective) Area considered = 150mmX50mm													
Sr. No.	Observation angle (α) in degrees	β1	β2	Entrance Angle	Required values (cd. m ² .lx ⁻¹)	Sample No. 01		Sample No. 02		Measured Values (cd. m ² .lx ⁻¹)			
1		0	5		450	844.000		877.333		436.000	259.200	36.267	
2		0	30		200	414.667							
3		0	40		90	265.333							
4		0	60		16	34.667							
Yellow colour (Retro reflective) Area considered = 150mmX50mm													
Sr. No.	Observation angle (α) in degrees	β1	β2	Entrance Angle	Required values (cd. m ² .lx ⁻¹)	Sample No. 01		Sample No. 02		Measured Values (cd. m ² .lx ⁻¹)			
1		0	5		300	686.667		662.667		338.667	208.267	25.547	
2		0	30		130	350.667							
3		0	40		75	217.867							
4		0	60		10	26.667							





[Handwritten signatures and stamps]

(SHL NO.: SHL/16/2016-2017/11780/2189)		DATE: 24.08.2016	
1.0	Name and Address of Applicant	3M India Ltd. Plot Nos., 48-51, Electronics City Hosur Road, Bangalore - 560 100 3M Company, 3M Center, St Paul, Minnesota 55144-1000, USA	
	Details of component manufacturer (Registered Office)		
	Plant address	3M Company 4501 Highway 377 South Brownwood, Texas, 76801, USA	3M Innovation Singapore Pte Ltd. 2 Tuas Link 4 Singapore 637321
2.0	Customer Letter Ref.	Letter ref. 90574/SHL/2016-2017/11780, dated 25.07.2016 & Email dated: 23.05.2016.	
3.0	Name and specification of the component	3M Scotchlite Reflective Sheeting 983 COLOURS - RED, WHITE AND YELLOW Size: 50 mm width & 20 mm width	
4.0	Applicable Notified Standard	AIS-090	
5.0	Base Type Approval No.	A94495 Dt. 08.09.2009 A94495 Addendum no. 1, Dt. 27.03.2013 (Singapore plant - 50mm) A94495 Addendum no. 2, Dt. 12.08.2013 (Singapore plant - 20 mm)	
6.0	TAC MARK / E-Mark	3M A94495 C-E1-104R-00821	
7.0	Conformity of Production serial no.	3 rd Cop	
8.0	Conformity of Production Granted / Refused	GRANTED	
Based on- Successful completion of Conformity of Production tests on randomly selected samples. Samples are randomly selected and submitted by M/s. 3M India Ltd. Test results are enclosed in Annexure-I.			

CONFORMITY OF PRODUCTION CERTIFICATE AS PER AIS - 037

CONFORMITY OF PRODUCTION CERTIFICATE NO - 03

Non-Transferable

CONFORMITY OF PRODUCTION CERTIFICATE NO - 03
SHL No. : SHL/16/2016-2017/1780/2189



9.0	Next continued compliance to be completed on and before: 30.09.2018	Disclaimer:	
<p>1. ARAI issues 'Conformity of Production (CoP) Certificates' for vehicles/ components/ parts/ assemblies etc. based on the documents produced and for testing carried out on the selected sample(s) as per the provisions of specific rules.</p> <p>2. Sample selection procedure is in compliance to Motor Vehicle Act/ Central Motor Vehicles Rules and their provisions as amended from time to time or any other statutory orders under which ARAI is authorized. Other Rules/ Acts are outside the purview/ scope of CoP.</p> <p>3. Tests on selected sample(s) is/ are carried out only on the parameters as covered under the specific procedures/ rules. Results of such tests are the property of bearer of CoP Certificate. These results cannot be disclosed unless specifically so ordered by Government/ Court, etc.</p> <p>4. Other parameters of the vehicles/ components/ parts/ assemblies etc. are outside the purview/ scope of CoP.</p> <p>5. The bearer of the CoP certificate is under obligation to ensure production strictly as per the provisions of the specific certificate.</p> <p>6. ARAI is not responsible for ensuring manufacturing quality of the approved vehicles/ components/ parts/ assemblies etc.</p> <p>7. ARAI is in no way responsible for any misuse or copying of any design/ type/ system in connection with entire vehicle/ components/ parts and assemblies covered under the CoP certificate.</p> <p>8. Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the bearer of CoP certificate and ARAI shall not be liable for any claims or damages. The bearer shall alone be liable for the same, and shall undertake to indemnify ARAI in this regard.</p> <p>9. ARAI has the right, but not under obligation, to initiate cancellation/ withdrawal of the certificate issued, in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ARAI.</p> <p>The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this certificate/ Report.</p>			
PREPARED BY:	CHECKED BY:	APPROVED BY:	Date of Issue:
P.V. PARLIKAR MANAGER	Mrs. J. M. KIRVE GENERAL MANAGER	A.V. MANNIKAR SR. DEPUTY DIRECTOR, HOD-SHL	Place of Issue: PUNE

CONFORMITY OF PRODUCTION CERTIFICATE NO - 03
SHL No. : SHL/16/2016-2017/1780/2189

ARAI

1.0	Name and Address of Applicant	3M India Ltd. Plot Nos. 48-51, Electronics City Hosur Road, Bangalore - 560 100
2.0	Description of Component	3M Scotchlite Reflective Sheeting 983 COLOURS - RED, WHITE AND YELLOW Size: 50 mm width
	Plant address	3M Innovation Singapore Pte Ltd. 2 Tuas Link 4 Singapore 637321
	Marking on the sample	3M A94495 C-E1-104R-00821
3.0	Objective:	To conduct the COP tests as defined in AIS 037 as per AIS: 090.
4.0	Test Results:	
4.1	Resistance to heat (Annex 6 Cl. No.4.0)	
TEST REQUIREMENTS		
After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units, shall be evident.		
OBSERVATIONS / RESULTS		
After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units was observed.		
Satisfactory.		
4.2	COLOUR TEST	
4.2.1	COLOUR TEST OF Retro-reflecting device by CIE standard illuminate Des :	
4.2.1.1	For Red colour	Colour Co-ordinates (Colour - Red) Specified Values X Coordinate 0.660 to 0.690 Y Coordinate 0.310 to 0.350 Luminance factor ≥ 0.03
	Measured Values	Sample no. 1 0.6439 Sample no. 2 0.6420
4.2.1.2	For White colour	Colour Co-ordinates (Colour - White) Specified Values X Coordinate 0.260 to 0.385 Y Coordinate 0.270 to 0.395 Luminance factor ≥ 0.25
	Measured Values	Sample no. 1 0.3154 Sample no. 2 0.3166
4.2.1.3	For Yellow colour	Colour Co-ordinates (Colour - Yellow) Specified Values X Coordinate 0.427 to 0.545 Y Coordinate 0.423 to 0.534 Luminance factor ≥ 0.16
	Measured Values	Sample no. 1 0.4587 Sample no. 2 0.4583
		0.4329
		0.22



CONFORMITY OF PRODUCTION CERTIFICATE NO - 03
SHL No. : SHL/16/2016-2017/1780/2189

Annexure - I

4.2.2	COLOUR TEST OF Retro-reflecting device by CIE standard illuminate A:			
	4.2.2.1	For Red colour		
4.2.2.2	For White colour	Colour	Specified Values	Measured Values
		Co-ordinates	(Colour - Red)	Sample no. 1 Sample no. 2
		X Coordinate	0.643 to 0.735	0.6597 0.6601
		Y Coordinate	0.268 to 0.335	0.3278 0.3266
4.2.2.3	For Yellow colour	Colour	Specified Values	Measured Values
		Co-ordinates	(Colour - White)	Sample no. 1 Sample no. 2
		X Coordinate	0.373 to 0.548	0.4527 0.4530
		Y Coordinate	0.369 to 0.513	0.4075 0.4077
4.2.2.3	For Yellow colour	Colour	Specified Values	Measured Values
		Co-ordinates	(Colour - Yellow)	Sample no. 1 Sample no. 2
		X Coordinate	0.505 to 0.601	0.5447 0.5398
		Y Coordinate	0.385 to 0.480	0.4281 0.4280

4.3	Photometric Specifications:	
4.3.1	For Red colour (Area: 150mm x 50 mm)	

Observation angle (α) in degrees		Entrance angle (β) in degrees			
1/3°(20)	β1	0	0	0	0
	β2	5	20	30	40
Required values R (cd.m ² .lx ⁻¹)		120	60	30	10
Sample No. 01		140.000	112.400	91.733	52.800
Sample No. 02		143.867	116.800	95.467	56.667
Remarks		Satisfactory	Satisfactory	Satisfactory	Satisfactory

ARAI

CONFORMITY OF PRODUCTION CERTIFICATE NO - 03
SHL No. : SHL/16/2016-2017/11780/2189

Annexure - I

4.3.2 For White colour (Area: 150mm x 50 mm)

Observation angle (α) in degrees		Entrance angle (β) in degrees				Remarks	
1/3°(20')	β_1	β_2	5	30	90	Sample No. 01	Sample No. 02
	Required values R (cd. m ² . lx ⁻¹)	450	200	40	26.800	801.333	409.333
						239.067	229.600
						Satisfactory	Satisfactory
						Satisfactory	Satisfactory

4.3.3 For Yellow colour (Area: 150mm x 50 mm)

Observation angle (α) in degrees		Entrance angle (β) in degrees				Remarks	
1/3°(20')	β_1	β_2	5	30	75	Sample No. 01	Sample No. 02
	Required values R (cd. m ² . lx ⁻¹)	300	130	40	24.440	473.333	322.667
						178.533	199.067
						Satisfactory	Satisfactory
						Satisfactory	Satisfactory

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Non-Transferable

CONFORMITY OF PRODUCTION CERTIFICATE AS PER AIS - 037

CONFORMITY OF PRODUCTION CERTIFICATE NO - 02

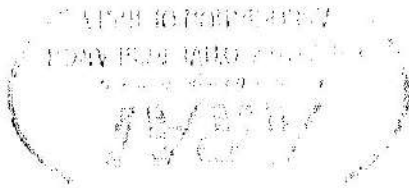
(SHL NO.: SHL/16/2014-2015/2158/2006)		DATE: 01.09.2014	
1.0	Name and Address of Applicant	3M India Ltd. Plot Nos. 48-51, Electronics City Hosur Road, Bangalore - 560 100	
	Details of component manufacturer (Registered Office)	3M Company, 3M Center, St. Paul, Minnesota 55144-1000, USA	
Plant address		3M Company 3M Brownwood Plant 4501 Highway 377 South Brownwood, Texas, 76801, USA Email dated: 12.06.2014,	
2.0	Customer Letter Ref.		
3.0	Name and specification of the component	3M Scotchlite Reflective Sheeting 983 COLOURS - RED, WHITE AND YELLOW Size: 50 mm width & 20mm width AIS-090	
4.0	Applicable Notified Standard	Base Type Approval No. A94495 Dt: 08.09.2009 A94495 Addendum no. 1, Dt: 27.03.2013 (Singapore plant - 50mm) A94495 Addendum no. 2, Dt: 12.08.2013 (Singapore plant - 20mm)	
6.0	TAC MARK / E-Mark		
7.0	Conformity of Production serial no.	3M A94495 C 2 nd COP	
8.0	Conformity of Production Granted / Refused	GRANTED	

Based on-
Successful completion of Conformity of Production tests on randomly selected samples.
Samples are randomly selected and submitted by M/s. 3M India Ltd.
Test results are enclosed in Annexure-I.



CONFORMITY OF PRODUCTION CERTIFICATE NO - 02
SHL No. : SHL/16/2014-2015/2158/2006

9.0	Next continued compliance to be completed on and before: 30.09.2016	Disclaimer:
1	ARAI issues 'Conformity of Production (CoP) Certificates' for vehicles/ components/ parts/ assemblies etc. based on the documents produced and/or testing carried out on the selected sample(s) as per the provisions of specific rules.	
2	Sample selection procedure is in compliance to Motor Vehicle Act/ Central Motor Vehicles Rules and their provisions as amended from time to time or any other statutory orders under which ARAI is authorized. Other Rules/ Acts are outside the purview/ scope of CoP.	
3	Tests on selected sample(s) is/ are carried out only on the parameters as covered under the specific procedures/ rules. Results of such tests are the property of bearer of CoP Certificate. These results cannot be disclosed unless specifically so ordered by Government, Court, etc.	
4	Other parameters of the vehicles/ components/ parts/ assemblies etc. are outside the purview/ scope of CoP.	
5	The bearer of the CoP certificate is under obligation to ensure production strictly as per the provisions of the specific certificate.	
6	ARAI is not responsible for ensuring manufacturing quality of the approved vehicles/ components/ parts/ assemblies etc.	
7	ARAI is in no way responsible for any misuse or copying of any design/ type/ system in connection with entire vehicle/ components/ parts and assemblies covered under the CoP certificate.	
8	Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the bearer of CoP certificate and ARAI shall not be liable for any claims or damages. The bearer shall alone be liable for the same, and shall undertake to indemnify ARAI in this regard.	
9	ARAI has the right, but not under obligation, to initiate cancellation/ withdrawal of the certificate issued, in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ARAI.	
The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this certificate / Report.		
PREPARED BY:	CHECKED BY:	APPROVED BY:
P.V. PARLIKAR MANAGER	Mrs. J. M. KIRVE DEPUTY GENERAL MANAGER	A.V. MANNIKAR SR. DEPUTY DIRECTOR, HOD-SHL
Place of issue: PUNE		Date of issue: 09/09/2016



CONFORMITY OF PRODUCTION CERTIFICATE NO - 02
SHL No. : SHL/16/2014-2015/2158/2006

1.0	Name and Address of Applicant	3M India Ltd. Plot Nos. 48-51, Electronics City Hosur Road, Bangalore - 560 100
2.0	Description of Component	3M Scotchlite Reflective Sheeting 983 COLOURS - RED, WHITE AND YELLOW Size: 50 mm width
	Plant address	3M Innovation Singapore Pte Ltd. 2 Tuas Link 4 Singapore 637321
	Marking on the sample	3M A94495 C
3.0	Objective:	
4.0	To conduct the COP tests as defined in AIS 037 as per AIS: 090.	
4.0	Test Results:	
4.1	Resistance to heat (Annex 6 Cl. No.4.0)	
4.2	COLOUR TEST	After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units, shall be evident.
	TEST REQUIREMENTS	After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units was observed.
	OBSERVATIONS / RESULTS	Satisfactory.
4.2.1	COLOUR TEST OF Retro-reflecting device by CIE standard Illuminate D ₆₅ :	
4.2.1.1	For Red colour	Colour Co-ordinates (Colour - Red) Specified Values 0.560 to 0.690 Sample no. 1 0.6294 Sample no. 2 0.6383 Measured Values
4.2.1.2	For White colour	Colour Co-ordinates (Colour - White) Specified Values 0.260 to 0.385 Sample no. 1 0.3093 Sample no. 2 0.3095 Measured Values
4.2.1.3	For Yellow colour	Colour Co-ordinates (Colour - Yellow) Specified Values 0.427 to 0.545 Sample no. 1 0.4978 Sample no. 2 0.4977 Measured Values
	Colour Co-ordinates	X Coordinate 0.423 to 0.534 Y Coordinate 0.4365 Luminance factor 0.30
	Colour Co-ordinates	X Coordinate 0.427 to 0.545 Y Coordinate 0.4365 Luminance factor 0.30

CONFORMITY OF PRODUCTION CERTIFICATE NO - 02
SHL No. : SHL/16/2014-2015/2158/2006

Annexure - I

COLOUR TEST OF Retro-reflecting device by CIE standard illuminate A:						
4.2.2	4.2.2.1	For Red colour				
		For White colour	Colour Co-ordinates	X Coordinate	Y Coordinate	Specified Values (Colour - Red)
			Colour Co-ordinates	X Coordinate	Y Coordinate	Specified Values (Colour - White)
	4.2.2.2		For Yellow colour	Colour Co-ordinates	X Coordinate	Y Coordinate
	4.2.2.3			Colour Co-ordinates	X Coordinate	Y Coordinate
			Specified Values	Sample no. 1	Sample no. 2	Measured Values
			Specified Values	Sample no. 1	Sample no. 2	Measured Values
			Specified Values	Sample no. 1	Sample no. 2	Measured Values
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			Specified Values	Sample no. 1	Sample no. 2	Measured Values
			Specified Values	Sample no. 1	Sample no. 2	Measured Values
			Specified			

4.3	Photometric Specifications:	
4.3.1	For Red colour (Area: 150mm x 50 mm)	

Observation angle (α) in degrees		Entrance angle (β) in degrees			
1/3°(20')	β1	β2	Required values R (cd. m ⁻² . lx ⁻¹)		
	0	5	120	60	30
Sample No. 01		228.800	161.467	126.800	71.067
Sample No. 02		230.000	162.000	126.533	74.000
Remarks		Satisfactory	Satisfactory	Satisfactory	Satisfactory



CONFORMITY OF PRODUCTION CERTIFICATE NO - 02
SHL No. : SHL/16/2014-2015/2158/2006

Annexure - I

4.3.2 For White colour (Area: 150mm x 50 mm)

Observation angle (α) in degrees		Entrance angle (β) in degrees			
1/3°(20')	β1	β2	5	30	90
	0	0	450	200	228.267
Required values R (cd. m ⁻² . lx ⁻¹)		Satisfactory			
Sample No. 01		733.333			
Sample No. 02		828.000			
Remarks		Satisfactory			

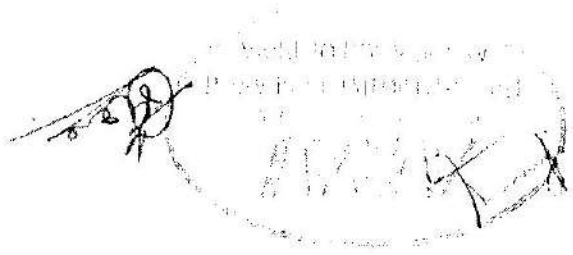
Satisfactory		Satisfactory			
24.687		246.133			
16		28.400			

4.3.3 For Yellow colour (Area: 150mm x 50 mm)

Observation angle (α) in degrees		Entrance angle (β) in degrees			
1/3°(20')	β1	β2	5	30	40
	0	0	300	130	75
Required values R (cd. m ⁻² . lx ⁻¹)		Satisfactory			
Sample No. 01		653.333			
Sample No. 02		641.333			
Remarks		Satisfactory			

Satisfactory		Satisfactory			
14.187		145.200			
10		13.293			

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TYPE APPROVAL CERTIFICATE No - A94495
ADDENDUM No - 01

Annexure III

Non-Transferable

No. SHL/16/2012-2013/8096/750		TEST REPORT	
1.0 NAME AND ADDRESS OF THE:		3M India Ltd.	
2.0 CUSTOMER		Plot Nos. 48-51, Electronics City Hosur Road, Bangalore - 560 100	
3.0 CUSTOMER LETTER REF.		Letter dated 08.02.2013	
4.0 OBJECTIVE, TEST PROCEDURE & TEST REQUIREMENTS:		To carry out all tests as per AIS: 090 as published on December 2005.	
5.0 TEST RESULTS:		Please refer Test Results in Sr. No. 7.0 of this report.	
6.0 CONCLUSION:		Retro Reflective Marking Tape- specified in 3.0 above, meets all the test requirements when tested as per the procedure given in AIS: 90 published on December 2005.	
7.0 PREPARED BY:		CHECKED BY:	
P.V. PARLIKAR		Mrs. J. M. KIRVE	
DEPUTY MANAGER		DEPUTY GENERAL MANAGER	
Place of Issue: PUNE		Date of Issue: 27/03/2013	
8.0 DISCLAIMER:		A.V. MANNIKAR	
This test report pertains only to the components / parts / assemblies / vehicles etc. actually tested at ARAI in the presented condition based on the documents / information produced / submitted by the customer. The issuance of this test report alone does not indicate any measure of approval, certification, supervision, control or quality surveillance by ARAI of the product. No extract, abridgement or abstraction from this test report shall be published or used to advertise the product without the written consent of the Director, ARAI, who reserves the absolute right to agree or reject all or any of the details of any claims of publicity for which consent may be sought. ARAI is in no way responsible for any misuse or copying of any design / type / system in connection with entire vehicle / components / parts and assemblies. Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the customer and ARAI shall not be liable for any claims or damages, made by the party, whatsoever, the customer shall alone be liable for the same, and undertakes to indemnify ARAI in this regard. Further, the ARAI has the right to initiate cancellation / withdrawal of the certificate issued, in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ARAI. The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this report.		DEPUTY DIRECTOR, HOD-SHL	





TYPE APPROVAL CERTIFICATE No - A94495
ADDENDUM No - 01

Annexure III
Test Report No. SHL/16/2012-2013/8096/750

7.0 TEST RESULTS:

7.1 GENERAL SPECIFICATIONS (CI. No. 7.0)

CI. No.	Specifications	Remarks
6.1	Retro-reflective marking materials shall be that way constructed that they function satisfactorily and will continue to do so in normal use. In addition, they shall not have any defect in design or manufacture that is detrimental to their efficient operation or to their maintenance in good condition.	Complies.
6.2	Retro-reflective marking materials or parts thereof shall not be capable of being easily dismantled.	Complies.
6.3	The means of attachment of the marking materials shall be durable and stable.	Complies.
6.4	The outer surface of the retro-reflective marking materials shall be easy to be cleaned. The surface shall therefore not be rough and any protruberances they may exhibit shall not prevent easy cleaning.	Complies.

7.2 SPECIFICATION OF MARKING DIMENSIONS (Annex 5)

CI. No.	Specifications	Remarks
1.2.1	Dimensions The width of a side and/or rear marking material shall be 50 mm +10/-0 mm.	50 mm. Complies.
1.2.2	The minimum length of an element of a retro-reflective marking material shall be such that at least one approval mark is visible.	Complies.

7.3 RESISTANCE TO HEAT (Annex 08, CI. No. 04)

Test Requirements:

After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units, shall be evident.

Results/Remarks :

After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units was observed.

Complies.



TYPE APPROVAL CERTIFICATE No - A94496

ADDENDUM No - 01

Annexure III

Test Report No. SHL/16/2012-2013/8095/750

7.4 COLOUR TEST

7.4.1 COLOUR TEST OF Retro-reflecting device by CIE standard illuminant D₆₅ (Annex 6, CI. No. 2) :

Colour Co-ordinates	Specified Values (Colour - Yellow)	Measured Values	
		Sample no. 1	Sample no. 2
X Coordinate	0.427 to 0.545	0.4972	0.4971
Y Coordinate	0.423 to 0.534	0.4380	0.4372
Luminance factor	≥ 0.16	0.30	0.30

7.4.2 Colour Test of Retro-reflecting device by CIE standard illuminant A: (Annex 6, CI. No. 3)

Colour Co-ordinates	Specified Values (Colour - Yellow)	Measured Values	
		Sample no. 1	Sample no. 2
X Coordinate	0.505 to 0.601	0.5589	0.5591
Y Coordinate	0.385 to 0.480	0.4233	0.4229

7.5 PHOTOMETRIC SPECIFICATIONS (Annex 7)

7.5.1 Yellow colour

Observation angle (α) in degrees	β ₁	β ₂	Required values R (cd.m ⁻² .lx ⁻¹)		Remarks		
			β ₂	β ₁	Sample 1	Sample 2	Results
1/3°(20°)	0	5	30	130	284.350	288.933	Complies
	0	40	75	10	151.067	155.833	Complies
Entrance angle (β) in degrees			0	60	18.993	19.268	Complies

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Progress through Research

7.6 RESISTANCE TO EXTERNAL AGENTS (Annex 08, Cl. No. 01)

7.6.1 Resistance to weathering:

Test requirements:
Visual appearance:

No area of the exposed specimen shall show any evidence of cracking, staining or corrosion.
blistering, delamination, distortion, chalking, staining or corrosion.

Results/Remarks:

No area of the exposed specimen shows any evidence of cracking, staining, pitting, blistering, delamination, distortion, chalking, staining or corrosion after testing. There shall be no shrinkage was observed.

Complies.

b. Colour Test of Retro-reflecting device by CIE standard illuminate D₆₅ after Resistance to weathering test:

Colour	Co-ordinates	Specified Values (Colour - Yellow)	Measured Values
X Coordinate	0.427 to 0.545	0.4973	
Y Coordinate	0.423 to 0.534	0.4374	
Luminance factor	≥ 0.16	0.30	

c. Colour Test of Retro-reflecting device by CIE standard illuminate A after Resistance to weathering test:

Colour	Co-ordinates	Specified Values (Colour - Yellow)	Measured Values
X Coordinate	0.505 to 0.601	0.5590	
Y Coordinate	0.385 to 0.480	0.4230	

f. Photometric specifications after resistance to weathering test:

The coefficient of luminous intensity of the exposed specimen when dry shall be not less than 80 per cent of the initial value

The coefficient of luminous intensity after the test is more than 80 % of the initial value
Results/Remarks: Complies.



7.6.2 RESISTANCE TO CORROSION (Annex 08, Cl. No. 02)

a. Visual appearance:
Test requirements:
Immediately after completion of the test, the sample shall show no sign of corrosion liable to impair the efficiency of the device.

Results/Remarks: No sign of corrosion was observed. Complies.

b. Photometric specifications after corrosion test:

Observation angle (α) in degrees	Results		Remarks	
	β1	β2	Yellow	
Entrance angle (β) in degrees	0	5	Required values (cd.m ⁻² .lx ⁻¹)	300
			Measured values (cd.m ⁻² .lx ⁻¹)	513.112

7.6.3 RESISTANCE TO FUELS (Annex 08, Cl. No. 03)

Test requirements:

After removal, the surface shall be wiped dry with a soft cloth and shall not show any visible change which would reduce its effective performance.

Results/Remarks: No Visible change was observed. Complies.

7.6.4 RESISTANCE TO HEAT (Annex 08, Cl. No. 04)

Test Requirements:

After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units, shall be evident.

Results/Remarks: After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units was observed. Complies.

7.6.5 CLEANING (Annex 08, Cl. No. 05)

Test requirements:

A test sample smeared with a mixture of detergent lubricating oil and graphite shall be easily cleaned without damage to the retro reflective or fluorescent surfaces when wiped with a mild aliphatic solvent such as n-heptane, followed by washing with a neutral detergent.

Remarks: Complies.

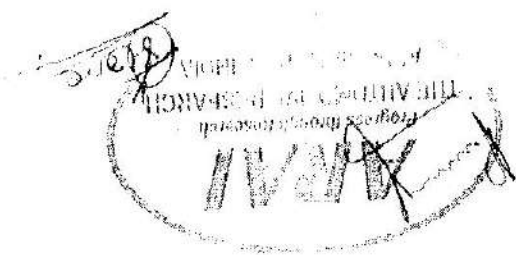


TYPE APPROVAL CERTIFICATE No - A 9 4 4 9 5
ADDENDUM No - 01
Annexure III
Test Report No. SHL/16/2012-2013/8095/750
7.6.6 RESISTANCE TO PENETRATION OF WATER (Annex 08, Cl. No. 07)

Test requirements:

After completion of the test, No water must penetrate to the reflecting surface of the sample unit. If visual inspection clearly reveals the presence of water, the retro-reflective marking shall not be considered to have passed the test.

Results/Remarks: No evidence of deterioration was observed. Complies.



TYPE APPROVAL CERTIFICATE

(For compliance to AIS - 037)

ADDENDUM No - 01	Dated: 27.03.2013
TYPE APPROVAL CERTIFICATE No.	A 94495
Dated: 08.09.2009	

(EXTENSION OF TYPE APPROVAL AS PER REFERENCE STANDARD AIS - 037)

3M India Ltd.

Plot Nos. 48-51, Electronics City

Hosur Road, Bangalore - 560 100

Mr. Ashish Agrawal

+91-80-2852 0203 / 6659 5999

+91-80-2852 0157

atagrawal@mm.com

3M Innovation Singapore Pte Ltd.

2 Tuas Link 4

Singapore 637321

Letter dated 08.02.2013

DETAILS OF THE COMPONENT UNDER TYPE APPROVAL:

3M Diamond Grade™ Conspicuity Markings -

Series 983 Reflective Sheeting in colours -

White, Red & Yellow

(50 mm width)

3M, C - E1- 104 R - 00821

Identification observed on the component

Applicable Notified Standard and CMV

Rule

AIS: 090

Vehicle Manufacturers and models for

which the component is intended



ADDENDUM No - 01

Dated 27.03.2013

No. A94495

Dated: 08.09.2009

(EXTENSION OF TYPE APPROVAL AS PER REFERENCE STANDARD AIS - 037)

Extension to Earlier Type Approval

Granted / Refused

6.0

Based on

1. Type Approval Certificate A94495 dated 08.09.2009

2. Declaration letter submitted by customer regarding the addition of new manufacturing plant in Singapore

3. Test reports of samples from new manufacturing plant in Singapore.

a. SHL/16/2012-2013/8095/748 for Reflective Sheeting White (enclosed as Annexure-I)

b. SHL/16/2012-2013/8095/749 for Reflective Sheeting Red (enclosed as Annexure-II)

c. SHL/16/2012-2013/8095/750 for Reflective Sheeting Yellow (enclosed as Annexure-III)

4. Letter from KBA dated 22.03.2013 regarding use of "E" mark E1 00821 issued to M/s. 3M for USA plant to M/s. 3M for Singapore plant also.

This addendum No. 01 dated 27.03.2013 is to be read along with Type Approval Certificate No. A94495 dated 08.09.2009.

7.0

Marking on the sample:

C - E1-104 R - 00821

Or

A94495

First CoP to be established on / before: 30.09.2014

PREPARED BY:

CHECKED BY:

AUTHORISED BY:

P.V. PARLIKAR
DEPUTY MANAGER

Mrs. J. M. KIRVE
DEPUTY GENERAL MANAGER

A.V. MANNIKAR
DEPUTY DIRECTOR, HOD-SHL

Place of issue: PUNE

Date of issue: 27/03/2013

Disclaimer:

This test report pertains only to the components / parts / assemblies / vehicles etc. actually tested at ARAI in the presented condition based on the documents / information produced / submitted by the customer. The issuance of this test report alone does not indicate any measure of approval, certification, supervision, control of quality surveillance by ARAI of the product. No extract abridgement or abridgement from this test report shall be published or used to advertise the product without the written consent of the Director, ARAI, who reserves the absolute right to agree or reject all or any of the details of any items of publicity for which consent may be sought. ARAI is in no way responsible for any misuse of copying of any design / type / system in connection with entire vehicle / components / parts and assemblies. Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the customer and ARAI shall not be liable for any claims or damages, made by the party, whatsoever, the customer shall alone be liable for the same, and undertakes to indemnify ARAI in this regard. Further, the ARAI has the right to initiate cancellation / withdrawal of the certificate issued in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ARAI. The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this report.

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TYPE APPROVAL CERTIFICATE No - A94495
ADDENDUM No - 01
Annexure I

ARAI
Progress through Research

Non-Transferable

No. SHL/16/2012-2013/6261/96		TEST REPORT	
1.0 NAME AND ADDRESS OF THE:		3M India Ltd. Plot Nos. 48-51, Electronics City Hosur Road, Bangalore - 560 100	
2.0 CUSTOMER LETTER REF.		Letter dated 08.02.2013	
3.0 DESCRIPTION OF TEST COMPONENTS		Retro Reflective Marking Tape - White colour	
Identification observed on the component:		3M, C-E1-104 R - 00821	
4.0 OBJECTIVE, TEST PROCEDURE & TEST REQUIREMENTS:		To carry out all tests as per AIS: 090 as published on December 2005.	
5.0 TEST RESULTS:		Please refer Test Results in Sr. No. 7.0 of this report.	
6.0 CONCLUSION:		Retro Reflective Marking Tape- specified in 3.0 above, meets all the test requirements when tested as per the procedure given in AIS: 90 published on December 2005.	
PREPARED BY:		CHECKED BY:	
P.V. PARLIKAR		Mrs. J. M. KIRVE	
DEPUTY MANAGER		DEPUTY GENERAL MANAGER	
Place of Issue: PUNE		Date of Issue: 27/03/2013	
A.V. MANNIKAR		DEPUTY DIRECTOR, HOD-SHL	
AUTHORISED BY:		A.V. MANNIKAR	
This test report pertains only to the components / parts / assemblies / vehicles etc. actually tested at ARAI in the presented condition based on the documents / information produced / submitted by the customer. The issuance of this test report alone does not indicate any measure of approval, certification, supervision, control or quality surveillance by ARAI of the product. No extract, abridgement or abstraction from this test report shall be published or used to advertise the product without the written consent of the Director, ARAI, who reserves the absolute right to agree or reject all or any of the details of any items of publicity for which consent may be sought. ARAI is in no way responsible for any misuse or copying of any design / type / system in connection with entire vehicle / components / parts and assemblies. Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the customer and ARAI shall not be liable for any claims or damages, made by the party, whatsoever, the customer shall alone be liable for the same, and undertakes to indemnify ARAI in this regard. Further, the ARAI has the right to initiate cancellation / withdrawal of the certificate issued, in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ARAI. The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this report.			

7.0 TEST RESULTS:

7.1 GENERAL SPECIFICATIONS (CI. No. 7.0)

CI. No.	Specifications	Remarks
6.1	Retro-reflective marking materials shall be that way constructed that they function satisfactorily and will continue to do so in normal use. In addition, they shall not have any defect in design or manufacture that is detrimental to their efficient operation or to their maintenance in good condition.	Complies.
6.2	Retro-reflective marking materials or parts thereof shall not be capable of being easily dismantled.	Complies.
6.3	The means of attachment of the marking materials shall be durable and stable.	Complies.
6.4	The outer surface of the retro-reflective marking materials shall be easy to be cleaned. The surface shall therefore not be rough and any protruberances they may exhibit shall not prevent easy cleaning.	Complies.

7.2 SPECIFICATION OF MARKING DIMENSIONS (Annex 5)

CI. No.	Specifications	Remarks
1.2.1	Dimensions The width of a side and/or rear marking material shall be 50 mm $\pm 10/-0$ mm.	50 mm. Complies.
1.2.2	The minimum length of an element of a retro-reflective marking material shall be such that at least one approval mark is visible.	Complies.

7.3 RESISTANCE TO HEAT (Annex 08, CI. No. 04)

Test Requirements:

After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units, shall be evident.

Results/Remarks : After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units was observed.

Complies.



TYPE APPROVAL CERTIFICATE No - A 9 4 4 9 5

ADDENDUM No - 01

Annexure I

Test Report No. SHL/16/2012-2013/8095/748

7.4 COLOUR TEST

7.4.1 COLOUR TEST OF Retro-reflecting device by CIE standard illuminate D₆₅ (Annex 6, Cl. No. 2) :

Colour Co-ordinates	Specified Values (Colour - White)	Measured Values	
		Sample no. 1	Sample no. 2
X Coordinate	0.260 to 0.385	0.3085	0.3079
Y Coordinate	0.270 to 0.395	0.3286	0.3280
Luminance factor	≥ 0.25	0.49	0.49

7.4.2 Colour Test of Retro-reflecting device by CIE standard illuminate A: (Annex 6, Cl. No. 3)

Colour Co-ordinates	Specified Values (Colour - White)	Measured Values	
		Sample no. 1	Sample no. 2
X Coordinate	0.373 to 0.548	0.4478	0.4453
Y Coordinate	0.359 to 0.513	0.4056	0.4054

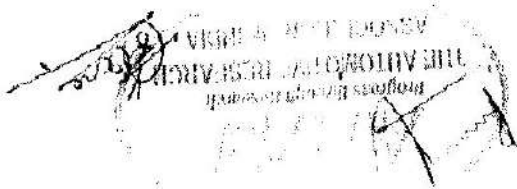
7.5 PHOTOMETRIC SPECIFICATIONS (Annex 7)

7.5.1 White colour

Observation angle (α) in degrees	1/3°(20')	β1	β2	Required values R (cd.m ⁻² .lx ⁻¹)		Entrance angle (β) in degrees		
				0	5	30	40	90
Results	Sample1	682.000	368.500	197.083	26.583	Complies		
	Sample2	682.000	370.333	200.383	26.125	Complies		
Remarks		Complies		Complies		Complies		Complies

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Progress through research



TYPE APPROVAL CERTIFICATE No - A 94495
ADDENDUM No - 01

Annexure I
Test Report No. SHL/16/2012-2013/8095/748

7.6 RESISTANCE TO EXTERNAL AGENTS (Annex 08, CI, No. 01)

7.6.1 Resistance to weathering:

a. Test requirements:
Visual appearance:

No area of the exposed specimen shall show any evidence of cracking, sealing, pitting, blistering, delamination, distortion, chalking, staining or corrosion.

Results/Remarks:

No area of the exposed specimen shows any evidence of cracking, sealing, pitting, blistering, delamination, distortion, chalking, staining or corrosion after testing. There shall be no shrinkage was observed.

Complies.

b. Colour Test of Retro-reflecting device by CIE standard illuminate D₆₅ after Resistance to weathering test:

Colour	Co-ordinates	Specified Values (Colour - White)	Measured Values
X Coordinate	0.260 to 0.385	0.3082	
Y Coordinate	0.270 to 0.395	0.3278	
Luminance factor	≥ 0.25	0.48	

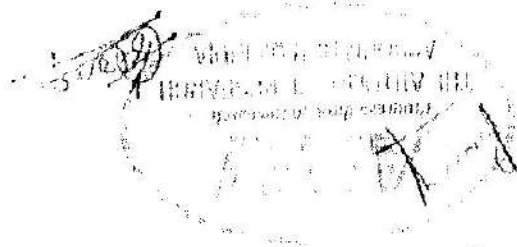
c. Colour Test of Retro-reflecting device by CIE standard illuminate A after Resistance to weathering test:

Colour	Co-ordinates	Specified Values (Colour - White)	Measured Values
X Coordinate	0.373 to 0.548	0.4456	
Y Coordinate	0.359 to 0.513	0.4052	

d. Photometric specifications after resistance to weathering test:

The coefficient of luminous intensity of the exposed specimen when dry shall be not less than 80 per cent of the initial value

The coefficient of luminous intensity after the test is more than 80 % of the initial value
Results/Remarks: Complies.



TYPE APPROVAL CERTIFICATE No - A 9 4 4 9 5
APPENDUM No - 01

Annexure I
Test Report No. SHL/16/2012-2013/8095/748

7.6.2 RESISTANCE TO CORROSION (Annex 08, Cl. No. 02)

- a. Visual appearance:
Test requirements:
Immediately after completion of the test, the sample shall show no sign of corrosion liable to impair the efficiency of the device.

Results/Remarks: No sign of corrosion was observed. Complies.

b. Photometric specifications after corrosion test:

Observation angle (α) in degrees	Entrance angle (β) in degrees		Remarks		Complies	
	1/3°(20°)	β_1	0	5	White	450
						609.292

7.6.3 RESISTANCE TO FUELS (Annex 08, Cl. No. 03)

Test requirements:

After removal, the surface shall be wiped dry with a soft cloth and shall not show any visible change which would reduce its effective performance.

Results/Remarks: No visible change was observed. Complies.

7.6.4 RESISTANCE TO HEAT (Annex 08, Cl. No. 04)

Test Requirements:

After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units, shall be evident.

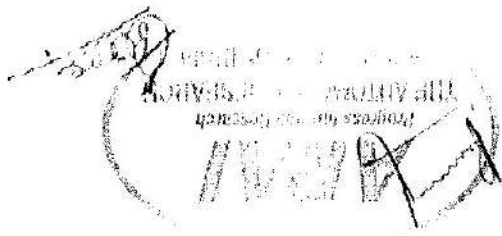
Results/Remarks: After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units was observed. Complies.

7.6.5 CLEANING (Annex 08, Cl. No. 05)

Test requirements:

A test sample smeared with a mixture of detergent lubricating oil and graphite shall be easily cleaned without damage to the retro reflective or fluorescent surfaces when wiped with a mild aliphatic solvent such as n-heptane, followed by washing with a neutral detergent.

Remarks: Complies.

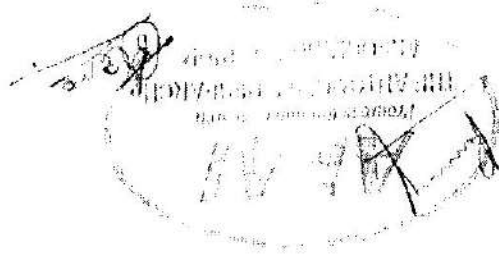


TYPE APPROVAL CERTIFICATE No - A94495
ADDENDUM No - 01
Annexure I
Test Report No. SHL/16/2012-2013/8095/748
7.6.6 RESISTANCE TO PENETRATION OF WATER (Annex 08, Cl. No. 07)

Test requirements:

After completion of the test, No water must penetrate to the reflecting surface of the sample unit. If visual inspection clearly reveals the presence of water, the retro-reflective marking shall not be considered to have passed the test.

Results/Remarks: No evidence of deterioration was observed. **Complies.**



ARAI

TYPE APPROVAL CERTIFICATE No - A94495
ADDENDUM No - 01
Annexure II

No. SHL/16/2012-2013/8096/749		TEST REPORT		Non-Transferable	
1.0 NAME AND ADDRESS OF THE:		3M India Ltd. Plot Nos. 48-51, Electronics City Hosur Road, Bangalore - 560 100			
2.0 CUSTOMER LETTER REF.		Letter dated 08.02.2013			
3.0 DESCRIPTION OF TEST COMPONENTS:		Retro Reflective Marking Tape - Red colour			
Identification observed on the component:		3M, C-E1-104 R - 00821			
4.0 OBJECTIVE, TEST PROCEDURE & TEST REQUIREMENTS:		To carry out all tests as per AIS: 090 as published on December 2005.			
5.0 TEST RESULTS:		Please refer Test Results in Sr. No. 7.0 of this report.			
6.0 CONCLUSION:		Retro Reflective Marking Tape- specified in 3.0 above, meets all the test requirements when tested as per the procedure given in AIS: 90 published on December 2005.			
PREPARED BY:		CHECKED BY:		AUTHORISED BY:	
P.V. PARLIKAR		Mrs. J. M. KIRVE		A.V. MANNIKAR	
DEPUTY MANAGER		DEPUTY GENERAL MANAGER		DEPUTY DIRECTOR, HOD-SHL	
Place of Issue: PUNE		Date of Issue: 27.03.2013			
Disclaimer: This test report pertains only to the components / parts / assemblies / vehicles etc. actually tested at ARAI in the presented condition based on the documents / information produced / submitted by the customer. The issuance of this test report alone does not indicate any measure of approval, certification, supervision, control or quality surveillance by ARAI of the product. No extract, abridgement or abstraction from this test report shall be published or used to advertise the product without the written consent of the Director, ARAI, who reserves the absolute right to agree or reject all or any of the details of any items of publicity for which consent may be sought. ARAI is in no way responsible for any misuse or copying of any design / type / system in connection with entire vehicle / components / parts and assemblies. Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the customer and ARAI shall not be liable for any claims or damages, made by the party, whatsoever, the customer shall alone be liable for the same, and undertakes to indemnify ARAI in this regard. Further, the ARAI has the right to initiate cancellation / withdrawal of the certificate issued, in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ARAI. The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this report.					

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7.0 TEST RESULTS:

7.1 GENERAL SPECIFICATIONS (CL No. 7.0)

CL No.	Specifications	Remarks
6.1	Retro-reflective marking materials shall be that way constructed that they function satisfactorily and will continue to do so in normal use. In addition, they shall not have any defect in design or manufacture that is detrimental to their efficient operation or to their maintenance in good condition.	Complies
6.2	Retro-reflective marking materials or parts thereof shall not be capable of being easily dismantled.	Complies
6.3	The means of attachment of the marking materials shall be durable and stable.	Complies
6.4	The outer surface of the retro-reflective marking materials shall be easy to be cleaned. The surface shall therefore not be rough and any protruberances they may exhibit shall not prevent easy cleaning.	Complies

7.2 SPECIFICATION OF MARKING DIMENSIONS (Annex 5)

CL No.	Specifications	Remarks
1.2.1	Dimensions The width of a side and/or rear marking material shall be 50 mm +10/-0 mm.	50 mm. Complies
1.2.2	The minimum length of an element of a retro-reflective marking material shall be such that at least one approval mark is visible.	Complies

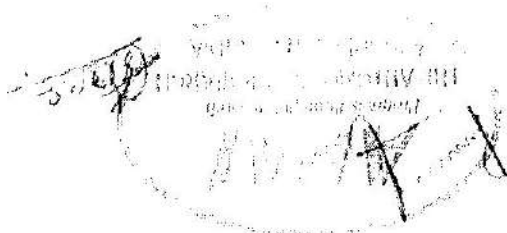
7.3 RESISTANCE TO HEAT (Annex 08, CL No. 04)

Test Requirements:

After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units, shall be evident.

Results/Remarks : After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units was observed.

Complies.



TYPE APPROVAL CERTIFICATE No – A 9 4 4 9 5
ADDENDUM No – 01

Annexure II
Test Report No. SHL/16/2012-2013/8095/749

7.4 COLOUR TEST

7.4.1 COLOUR TEST OF Retro-reflecting device by CIE standard illuminate D₆₅
(Annex 6, Cl. No. 2) :

Colour Co-ordinates	Specified Values (Colour - Red)	Measured Values	
		Sample no. 1	Sample no. 2
X Coordinate	0.560 to 0.690	0.6416	0.6483
Y Coordinate	0.310 to 0.350	0.3250	0.3285
Luminance factor	≥ 0.03	0.076	0.079

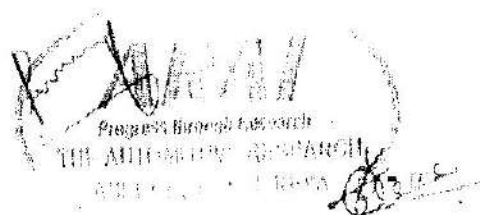
7.4.2 Colour Test of Retro-reflecting device by CIE standard illuminate A:
(Annex 6, Cl. No. 3)

Colour Co-ordinates	Specified Values (Colour - Red)	Measured Values	
		Sample no. 1	Sample no. 2
X Coordinate	0.643 to 0.735	0.6661	0.6671
Y Coordinate	0.258 to 0.335	0.3281	0.3293

7.5 PHOTOMETRIC SPECIFICATIONS (Annex 7)

7.5.1 Red colour

Observation angle (α) in degrees	Entrance angle (β) in degrees				
	β1	0	0	0	0
1/3°(20')	β2	5	20	30	40
Required values R (cd.m ⁻² .lx ⁻¹)		120	60	30	10
Results	Sample1	195.800	137.500	100.650	56.650
	Sample2	195.617	136.950	102.483	58.300
Remarks		Complies	Complies	Complies	Complies





TYPE APPROVAL CERTIFICATE No – A 9 4 4 9 5

ADDENDUM No – 01

Annexure II

Test Report No. SHL/16/2012-2013/8095/749

7.6 RESISTANCE TO EXTERNAL AGENTS (Annex 08, Cl. No. 01)

7.6.1 Resistance to weathering:

Test requirements:

b. Visual appearance:

No area of the exposed specimen shall show any evidence of cracking, sealing, pitting, blistering, delamination, distortion, chalking, staining or corrosion.

Results/Remarks:

No area of the exposed specimen shows any evidence of cracking, sealing, pitting, blistering, delamination, distortion, chalking, staining or corrosion after testing. There shall be no shrinkage was observed.

Complies.

b. Colour Test of Retro-reflecting device by CIE standard illuminate D₆₅ after Resistance to weathering test:

Colour Co-ordinates	Specified Values (Colour - Red)	Measured Values
X Coordinate	0.560 to 0.690	0.6459
Y Coordinate	0.310 to 0.350	0.3311
Luminance factor	≥ 0.03	0.044

c. Colour Test of Retro-reflecting device by CIE standard illuminate A after Resistance to weathering test:

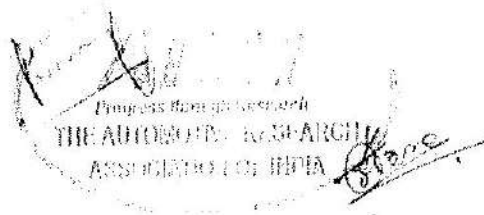
Colour Co-ordinates	Specified Values (Colour - Red)	Measured Values
X Coordinate	0.643 to 0.735	0.6652
Y Coordinate	0.258 to 0.335	0.3311

e. Photometric specifications after resistance to weathering test:

The coefficient of luminous intensity of the exposed specimen when dry shall be not less than 80 per cent of the initial value

The coefficient of luminous intensity after the test is more than 80 % of the initial value

Results/Remarks: Complies.





TYPE APPROVAL CERTIFICATE No – A 94495

ADDENDUM No – 01

Annexure II

Test Report No. SHL/16/2012-2013/8095/749

7.6.2 RESISTANCE TO CORROSION (Annex 08, Cl. No. 02)

a. Visual appearance:

Test requirements:

Immediately after completion of the test, the sample shall show no sign of corrosion liable to impair the efficiency of the device.

Results/Remarks: No sign of corrosion was observed. **Complies.**

b. Photometric specifications after corrosion test:

Observation angle (α) in degrees	Entrance angle (β) in degrees			
1/3°(20')	β_1	0	Required values (cd.m ⁻² .lx ⁻¹)	Measured values (cd.m ⁻² .lx ⁻¹)
	β_2	5		
Results	Red		120	185.511
Remarks			Complies	

7.6.3 RESISTANCE TO FUELS (Annex 08, Cl. No. 03)

Test requirements:

After removal, the surface shall be wiped dry with a soft cloth and shall not show any visible change which would reduce its effective performance.

Results/Remarks: No Visible change was observed. **Complies.**

7.6.4 RESISTANCE TO HEAT (Annex 08, Cl. No. 04)

Test Requirements:

After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units, shall be evident.

Results/Remarks: After this test, no cracking or appreciable distortion of the surfaces, particularly of the optical units was observed. **Complies.**

7.6.5 CLEANING (Annex 08, Cl. No. 05)

Test requirements:

A test sample smeared with a mixture of detergent lubricating oil and graphite shall be easily cleaned without damage to the retro reflective or fluorescent surfaces when wiped with a mild aliphatic solvent such as n-heptane, followed by washing with a neutral detergent.

Remarks: Complies.





TYPE APPROVAL CERTIFICATE No - A 9 4 4 9 5
ADDENDUM No - 01

Annexure II

Test Report No. SHL/16/2012-2013/8095/749

7.6.6 RESISTANCE TO PENETRATION OF WATER (Annex 08, Cl. No. 07)

Test requirements:

After completion of the test, No water must penetrate to the reflecting surface of the sample unit. If visual inspection clearly reveals the presence of water, the retro-reflective marking shall not be considered to have passed the test.

Results/Remarks: No evidence of deterioration was observed. **Complies.**

