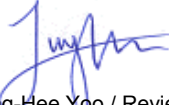


Prüfbericht - Nr.: <i>Test Report No.:</i>	50042022 001	Auftrags-Nr.: <i>Order No.:</i>	133046112	Seite 1 von 4 <i>Page 1 of 4</i>	
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	27.05.2016		
Auftraggeber: <i>Client:</i>	Reflomax Co.,Ltd 76, Pureundeulpan-ro 1010 beon-gil, Paltan-myeon, Hwaseong-si, Gyeonggi-do, 445-949 Rep.of Korea				
Prüfgegenstand: <i>Test Item:</i>	Retroreflective Material GLODIAN				
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	#1. AGT-GB Tape (Color : Grey)				
Auftrags-Inhalt: <i>Order content:</i>	Product Testing				
Prüfgrundlage: <i>Test Specification:</i>	Selected testing parameter by customer – EN ISO 20471:2013 High Visibility Clothing				
Wareneingangsdatum: <i>Date of receipt:</i>	31.05.2016				
Prüfmuster-Nr.: <i>Test sample No.:</i>	21253617_LGA				
Prüfzeitraum: <i>Testing period:</i>	06.06.2016 – 14.06.2016				
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland LGA Products GmbH				
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland LGA Products GmbH				
Prüfergebnis*: <i>Test result*:</i>	Pass				
zusammengestellt von / compiled by:					
 20.06.2016 SeungYeop Lee / Project Engineer			 20.06.2016 Jung-Hee Yoo / Reviewer		
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>
Sonstiges / Other.					
The test result is based on test report no.21253617_001 issued by TUV Rheinland LGA product GmbH.					
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>			Details im vorherigen Abschnitt <i>Details in the previous section</i>		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass)=entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet * Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m.test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested					
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark</i>					

Prüfbericht - Nr.: 50042022 001
Test Report No.:

Seite 2 von 4
Page 2 of 4

Product Description

1	Product Name / No.	#1. AGT-GB Tape (Color : Grey)
2	Size	-
3	Fluorescent Material	-
4	Reflective Material	#1. AGT-GB Tape (Color : Grey)
5	Risk level / Class	
6	Other	Foreseeable use was considered. Currently neither a safeguard clause procedure has been invoked nor is an increase in accidents known for this / these product (s).

Prüfbericht - Nr.: 50042022 001
Test Report No.:

Seite 3 von 4
Page 3 of 4

Clause	EN ISO 20471:2013	Messergebnisse - Bemerkungen	Evaluation
	Requirements – Tests	Measuring result - Remark	

6	Photometric performance requirements for retroreflective material and combined performance material after physical exposure				
6.1	Retroreflective performance requirements of new material				
Table 4	Minimum coefficient of retroreflection in $\text{cd}/[\text{lx} \cdot \text{m}^2]$ for separate performance retroreflective material				
	Observation angle	Entrance angle β_1 [$\beta_2 = 0$]			
		5°	20°	30°	40°
	12'	330	290	180	65
	20'	250	200	170	60
	1°	25	15	12	10
	1° 30'	10	7	5	4
Table 5	Minimum coefficient of retroreflection in $\text{cd}/[\text{lx} \cdot \text{m}^2]$ for combined performance retroreflective material				
	Observation angle	Entrance angle β_1 [$\beta_2 = 0$]			
		5°	20°	30°	40°
	12'	65	50	20	5
	20'	25	20	5	1,75
	1°	5	4	3	1
	1° 30'	1,5	1	1	0,5
	According to table 4,5, When measured at the two rotation angles $\epsilon_1 = 0^\circ$ and $\epsilon_2 = 90^\circ$, materials having coefficients of retroreflection that differ by more than 15% are defined as orientation sensitive. *Note Orientation-sensitive material shall comply with the minimum requirements for the coefficient of retroreflective stated in Table.4 or Table.5, as appropriate, at one of the two rotation angles described in 7.3; the coefficient of retroreflection shall be not less than 75% of the value stated in Table.4 or Table 5, as appropriate, at the other rotation angle.			-	

Prüfbericht - Nr.: **50042022 001**
Test Report No.:

Seite 4 von 4
Page 4 of 4

6.2	Retroreflective performance requirements after test exposure																												
6.2.1	General																												
Table 6	<table border="1" data-bbox="336 566 1428 958"> <thead> <tr> <th data-bbox="336 566 740 640">Exposure</th> <th data-bbox="740 566 1082 640">Separate performance retroreflective material</th> <th data-bbox="1082 566 1428 640">Combined performance material</th> </tr> </thead> <tbody> <tr> <td data-bbox="336 640 740 685">Abrasion</td> <td data-bbox="740 640 1082 685">-</td> <td data-bbox="1082 640 1428 685">-</td> </tr> <tr> <td data-bbox="336 685 740 730">Flexing</td> <td data-bbox="740 685 1082 730">-</td> <td data-bbox="1082 685 1428 730">-</td> </tr> <tr> <td data-bbox="336 730 740 775">Folding at cold temperature</td> <td data-bbox="740 730 1082 775">-</td> <td data-bbox="1082 730 1428 775">-</td> </tr> <tr> <td data-bbox="336 775 740 819">Temperature variation</td> <td data-bbox="740 775 1082 819">-</td> <td data-bbox="1082 775 1428 819">-</td> </tr> <tr> <td data-bbox="336 819 740 864">Rainfall</td> <td data-bbox="740 819 1082 864">X</td> <td data-bbox="1082 819 1428 864">-</td> </tr> <tr> <td data-bbox="336 864 740 909">Washing</td> <td data-bbox="740 864 1082 909">-</td> <td data-bbox="1082 864 1428 909">-</td> </tr> <tr> <td data-bbox="336 909 740 954">Dry cleaning</td> <td data-bbox="740 909 1082 954">-</td> <td data-bbox="1082 909 1428 954">-</td> </tr> </tbody> </table>			Exposure	Separate performance retroreflective material	Combined performance material	Abrasion	-	-	Flexing	-	-	Folding at cold temperature	-	-	Temperature variation	-	-	Rainfall	X	-	Washing	-	-	Dry cleaning	-	-		
Exposure	Separate performance retroreflective material	Combined performance material																											
Abrasion	-	-																											
Flexing	-	-																											
Folding at cold temperature	-	-																											
Temperature variation	-	-																											
Rainfall	X	-																											
Washing	-	-																											
Dry cleaning	-	-																											
6.2.2	Separate performance retroreflective material																												
	<p>The coefficient of retroreflection, R', for separate performance retroreflective material shall exceed 100 cd/(lx· m²) at observation angle 12' and entrance angle 5°</p> <p style="text-align: center;">R' > 100 cd/(lx· m²)</p>	<p>AGT-GB Tape (Color : Grey)</p> <table border="1" data-bbox="890 1144 1369 1480"> <thead> <tr> <th data-bbox="890 1144 1059 1189" rowspan="2">Exposure</th> <th colspan="2" data-bbox="1059 1144 1369 1189">R' [cd/(lx m²)]</th> </tr> <tr> <th data-bbox="1059 1189 1214 1234">0°</th> <th data-bbox="1214 1189 1369 1234">90°</th> </tr> </thead> <tbody> <tr> <td data-bbox="890 1234 1059 1279">Abrasion</td> <td data-bbox="1059 1234 1214 1279">-</td> <td data-bbox="1214 1234 1369 1279">-</td> </tr> <tr> <td data-bbox="890 1279 1059 1323">Flexing</td> <td data-bbox="1059 1279 1214 1323">-</td> <td data-bbox="1214 1279 1369 1323">-</td> </tr> <tr> <td data-bbox="890 1323 1059 1368">Folding at Cold temperature</td> <td data-bbox="1059 1323 1214 1368">-</td> <td data-bbox="1214 1323 1369 1368">-</td> </tr> <tr> <td data-bbox="890 1368 1059 1413">Temperature variation</td> <td data-bbox="1059 1368 1214 1413">-</td> <td data-bbox="1214 1368 1369 1413">-</td> </tr> <tr> <td data-bbox="890 1413 1059 1458">Influence of Rain</td> <td data-bbox="1059 1413 1214 1458">567</td> <td data-bbox="1214 1413 1369 1458">505</td> </tr> <tr> <td data-bbox="890 1458 1059 1503">Washing</td> <td data-bbox="1059 1458 1214 1503">-</td> <td data-bbox="1214 1458 1369 1503">-</td> </tr> <tr> <td data-bbox="890 1503 1059 1547">Dry Cleaning</td> <td data-bbox="1059 1503 1214 1547">-</td> <td data-bbox="1214 1503 1369 1547">-</td> </tr> </tbody> </table> <p>Observation angle : 12' , Entrance angle : 5°</p>	Exposure	R' [cd/(lx m ²)]		0°	90°	Abrasion	-	-	Flexing	-	-	Folding at Cold temperature	-	-	Temperature variation	-	-	Influence of Rain	567	505	Washing	-	-	Dry Cleaning	-	-	<input checked="" type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> N/A
Exposure	R' [cd/(lx m ²)]																												
	0°	90°																											
Abrasion	-	-																											
Flexing	-	-																											
Folding at Cold temperature	-	-																											
Temperature variation	-	-																											
Influence of Rain	567	505																											
Washing	-	-																											
Dry Cleaning	-	-																											
6.2.3	Combined performance material																												
	<p>The coefficient of retroreflection, R', for separate performance retroreflective material shall exceed 30 cd/(lx· m²) at observation angle 12' and entrance angle 5°. When the determining the influence of rainfall in accordance with 7.4.5, the coefficient of retroreflection shall exceed 15 cd/(lx· m²)</p> <p style="text-align: center;">R' > 100 cd/(lx· m²) R' > 15 cd/(lx· m²) at influence of rain</p>	-	<input checked="" type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> N/A																										