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INDUSTRIAL REFLECTIONS
Date: December 14, 2010
P.O. No.: Ch#122781

Report No.: 100279347GRR-001
Reference No.: 10-1130-264089
Page 1 of 6

Test Report For:

INDUSTRIAL REFLECTIONS

**SAE J964, FEB2009, Reflectance and Haze
Measurements**

**Mirrors: Highly Polish Chrome Plated
Carbon Steel (3" x 3"), Stainless Steel (3" x
3") and Glass Mirror (7"x 7")**

Gary Liu
Project Manager

Tom Pearson
Department Manager/Reviewer

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Attention: Vern Sorenson
INDUSTRIAL REFLECTIONS
26601 W Huron River Dr.
Flat Rock, MI 48134
Phone: 734-782-4454
E-Mail: verns@frm.com

DATE RECEIVED: 12/01/10
DATES TESTED: 12/07/10

DESCRIPTION OF SAMPLES:

Part Description: Mirrors: Highly Polish Chrome Plated Carbon Steel (3" x 3"), Stainless Steel (3" x 3") and Glass Mirror (7"x 7")
Material Submitted: Mirrors: Highly Polish Chrome Plated Carbon Steel (3" x 3"), Stainless Steel (3" x 3") and Glass Mirror (7"x 7")
Material Specification: None Specified
Condition of Test Sample: Production

WORK REQUESTED / APPLICABLE DOCUMENTS:

Reflectance: SAE J964, FEB2009
Haze: SAE J964, FEB2009

CONCLUSIONS:

Reflectance: Report
Haze: Report

Disposition of Test Specimens/Samples:

At the completion of the testing the test specimens/samples were returned to INDUSTRIAL REFLECTIONS.

REFLECTANCE:

Date Received: 12/01/10

Date Tested: 12/07/10

Description of Samples:

Part Description: Mirrors: Highly Polish Chrome Plated Carbon Steel (3" x 3"),
Stainless Steel (3" x 3") and Glass Mirror (7"x 7")

Material Submitted: Mirrors: Highly Polish Chrome Plated Carbon Steel (3" x 3"),
Stainless Steel (3" x 3") and Glass Mirror (7"x 7")

Material Specification: None Specified

Condition of Test Sample: Production

Test Procedure:

Test Method: SAE J964, FEB2009

Reflectance: Hunter, CIE XYZ, report the Y, Illuminate A, 10°, RSIN –
Reflectance Specular Included.

Side: Side with client written ID was away from spectrophotometer:

Carbon Steel: Remove the single layer of protective film just
prior to testing. Protective side to spectrophotometer.

Stainless Steel: Remove the double layer of protective film just
prior to testing. Protective side to spectrophotometer.

Glass Mirror: No protective film, reflective coated side to
spectrophotometer and the glass is away.

Cleaning: If required, use soft lint free cotton cloth with isopropyl alcohol.

Number of Specimens Tested: Two (2) each

Acceptance Criteria:

None Specified

Results:

Sample	Cleaned	Total Reflectance, %*	Comment	Pass / Fail
Carbon Steel				
1	None	61.49	---	Report
2	None	62.60	---	
Mean		62.05		
Stainless Steel				
1	None	63.03	---	Report
2	None	63.06	---	
Mean		63.05		
Mirror				
1	Yes	60.14	---	Report
2	Yes	61.15	---	
Mean		60.65		

* Mean of 4 measurements.

Remarks:

Carbon steel and stainless steel protective film was removed just prior to testing.

HAZE:

Date Received: 12/01/10

Date Tested: 12/07/10

Description of Samples:

Part Description: Mirrors: Highly Polish Chrome Plated Carbon Steel (3" x 3"),
Stainless Steel (3" x 3") and Glass Mirror (7"x 7")

Material Submitted: Mirrors: Highly Polish Chrome Plated Carbon Steel (3" x 3"),
Stainless Steel (3" x 3") and Glass Mirror (7"x 7")

Material Specification: None Specified

Condition of Test Sample: Production

Test Procedure:

Test Method: SAE J964, FEB2009

Total Reflectance: Hunter, CIE XYZ, report the Y, Illuminate A, 10°, RSIN –
Reflectance Specular Included.

Diffuse Reflectance: Hunter, CIE XYZ, report the Y, Illuminate A, 10°, RSIN –
Reflectance Specular Excluded.

Side: Side with client written ID away from spectrophotometer:
Carbon Steel: Remove the single layer of protective film just
prior to testing. Protective side to spectrophotometer.
Stainless Steel: Remove the double layer of protective film just
prior to testing. Protective side to spectrophotometer.
Glass Mirror: No protective film, reflective coated side to
spectrophotometer and the glass is away

Cleaning: If required, use soft lint free cotton cloth with isopropyl alcohol
and note in table below.

Number of Specimens Tested: Two (2) each

Acceptance Criteria:

None Specified

Results:

Sample	Cleaned	Total Reflectance, %*	Diffuse Reflectance, %*	% Haze	Pass / Fail
Carbon Steel					
1	None	61.49	0.18	0.29	Report
2	None	62.60	0.26	0.42	
Mean		62.05	0.22	0.35	
Stainless Steel					
1	None	63.03	0.14	0.22	Report
2	None	63.06	0.13	0.21	
Mean		63.05	0.14	0.21	
Mirror					
1	Yes	60.14	0.13	0.22	Report
2	Yes	61.15	0.13	0.21	
Mean		60.65	0.13	0.21	

* Mean of 4 measurements.

Percent Haze = $R_{\text{diffuse}}/R_{\text{total}} \times 100$

Remarks:

Carbon steel and stainless steel protective film was removed just prior to testing.

Disposition of Test Specimens/Samples:

At the completion of the testing the test specimens/samples were returned to Industrial Reflections.