GM	WORLDWIDE ENGINEERING STANDARDS	General Specification	GMW15356

Sheet Metal Rating Scale

1 Introduction

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. The purpose of the rating scale is to allow comparison between vehicles and consistency between personnel. It is important to recognize that rating corrosion involves perception of an objectionable surface and much of the judgment is subjective. In developing the corrosion scales, some objective measure that guides subjective judgement is provided.

1.2 Applicability. The Corrosion Rating Scale Guidelines (see Appendix A), contain corrosion rating scales, rating guidelines and photographs for the determination of corrosion severity on all vehicular parts, including body and sheet metal, underbody and underhood components, and fasteners. It is intended that the scales are used for both corporate corrosion inspections and field surveys.

1.3 Remarks. This Sheet Metal Guideline contains body panels, hem flanges and door hinges.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW3059 GMW15357 GMW15358 GMW15359

3 Requirements

3.1 Using the Rating Scales. When rating parts on a vehicle, one needs to consider the type of part being rated. To a customer, what is objectionable corrosion on a panel, differs from that on a component or fastener as far as the total corroded area is concerned. A panel is more likely to perforate, or suffer significant metal loss, long before 100% of its area becomes corroded. Consequently, when rating a panel, one should locate and rate the worst area on the panel. For components and fasteners, rating by estimating the percentage of visible corroded area is meaningful. If the proper rating actually falls between two rating values, the **lower** of the two rating values shall be used.

3.1.1 Guideline Arrangement. The guidelines are arranged in four stand-alone documents. The first three guidelines consist of the cosmetic corrosion rating scale and photographs pertaining to red rust. The fourth guideline provides the same type of rating scale and photographs for white corrosion. The red rust guidelines consist of Sheet Metal (GMW15356), Components (GMW15357), and Fasteners (GMW15358). The White Corrosion Guideline (GMW15359) contains plated components. Use of the white corrosion rating scale is not limited to this material and can be used on any plating or material that exhibits white corrosion. When rating a part, decide what type of part is being rated and use the appropriate section of the guideline. In all cases, use of a pictorial reference ensures consistent ratings and is easier to use than a strict written definition. The rating guidelines may be helpful in determining the range of photographs to use for comparison.

Note: For further information, contact GM Corrosion Engineering.

3.2 Generic Rating Scale. The corrosion rating scale reflects the various degrees of corrosion and ranks them as shown in the rating guidelines (Table A1 in Appendix A). On a scale of One (1) to 10, One (1) represents perforation, two (2) obvious metal loss, and 10 no visible corrosion. Ratings from nine (9) to three (3) reflect

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varying degrees of corrosion from very little to extensive. The photograph guidelines associated with this scale will focus on showing examples of ratings 10 through three (3). These ratings are associated with levels of corrosion cosmetic in nature. Ratings of two (2) and one (1) relate to significant metal loss or actual substrate perforation, respectively, and are not included.

3.2.1 Sheet Metal.

3.2.1.1 Body Panels Rating Scale. Use this section to rate red rust corrosion on body panels. Locate the worst area of the panel or panel section being evaluated. When rating corrosion on panels, try to assess a customer's perception of the corrosion rather than a specific size of the corroded area. Compare the area to the panel series of photographs (Figure B1 through Figure B8) in Appendix B and select the comparable level for the rating.

3.2.1.2 Hem Flange Rating Scale. Only corrosion attributable to hemmed over regions of the panel should be rated. Locate the worst area of the hem flange (approximately 15 cm (6 in)) where corrosion exists. Try to assess the severity of the corrosive attack rather than a specific size of corroded area. Compare the area to the hem flange series of photographs (Figure C1) in Appendix C and select the comparable level for the rating.

3.2.1.3 Door Hinge Rating Scale. Compare the area of the hinge to the door hinge series of photographs (Figure D1 through Figure D5) in Appendix D and select the comparable level for the rating.

4 Validation

4.1 General. This rating scale along with the three additional rating scales defined in 3.1.1; Guideline Arrangement, support the corrosion evaluation of all GM laboratory and road corrosion related test procedures in addition to material specifications.

4.2 Validation Cross Reference Index. Not applicable.

4.3 Supporting Paragraphs. Not applicable.

5 Provisions for Shipping

Not applicable.

6 Notes

6.1 Glossary. Not applicable.

6.2 Acronyms, Abbreviations, and Symbols.

GSSLT Global Subsystem Leadership Team

IMDS International Material Data System

7 Additional Paragraphs

7.1 All materials supplied to this standard must comply with GMW3059, **Restricted and Reportable Substances**, including the requirement to submit a full material composition disclosure to GM via the International Material Data System (IMDS).

7.2 Safety. User of this standard to follow all local safety instructions, including the use of proper personal protective equipment (e.g., safety glasses) and garage/lab equipment.

8 Coding System

This standard shall be referenced in other documents, drawings, etc., as follows:

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9 Release and Revisions

This standard was originated in May 2006. It was first approved by the Global Laboratory Corrosion Testing Harmonization Team in June 2006. It was first published in November 2006.

Issue	Publication Date	Description (Organization)
1	NOV 2006	Initial publication.
2	APR 2009	Updated Section 3.1 to clarify how rating scale is to be used. (Material and Corrosion Engineering)
3	JUN 2009	No change to content of document. Republished to revise distribution requirements from internal only to external. (Material and Corrosion Engineering)
4	OCT 2014	5 Year Refresh. Added 7.1.2 on safety. (Materials - General Corrosion Global Subsystem Leadership Team)
5	SEP 2019	Combined Table A1 and Table A2 (Appendix A). Updated 4.1 to be common across all rating scale documents. (Materials – Corrosion GSSLT)

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Appendix A: Rating Scale and Guidelines

Table A1: Rating Scale and Guidelines

Rating	Corrosion Rating Scale Description	Panels	Components/Fasteners
10	No Visible Corrosion	No Visible Corrosion	No Corrosion
9	Trace of Corrosion	One or Two Small Red Rust Spots	One or Two Small Red Rust Spots
8	Slight Corrosion	Some Small Red Rust Spots	< 10% Red Rust
7	Light Corrosion	Many Small Red Rust Spots	~10% Red Rust
6	Moderate Corrosion	Medium Sized Red Rust Spots	25% ± 15% Red Rust
5	Medium Corrosion	Many Medium Sized Red Rust Spots	50% ± 10% Red Rust
4	Mostly Corroded	Large Red Rust Spot	75% ± 15% Red Rust
3	Totally Corroded	Large Corroded Area or Very Large Red Rust Spots	100% Red Rust
2	Severe Corrosion [Note 1]	Metal Loss	--
1	Perforation	Perforation	--

Note 1: Corrosion resulting in obvious metal loss.

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