



Aluminized Sheet Steel

1 Scope

This standard covers the requirements for hot dip aluminum coating to a sheet steel substrate utilizing a continuous hot dip process. The substrate may be cold or hot rolled sheet steel. Additional requirements or agreements shall be specified by the local business units.

1.1 Material Description. The type of coating and its mass and finish are specified by the suffixes added to the basic steel substrate specification number. The first two letters, AL, will designate a continuous hot dip Aluminum coating. The Coating Type is identified by a letter-number combination. T1M is a Type 1 aluminum-silicon alloy. T2M is Type 2 commercially pure aluminum. The coating mass for each side is designated by a minimum value in g/m². The coating designations for steels supplied under this standard shall reflect coatings weights in metric units. The "M" suffix was added to T1 and T2 for clarification.

1.2 Symbols. Not applicable.

1.3 Applicability. Aluminum coated sheet metal parts consisting of steel substrates described by GMW2, GMW3032 or GMW3399 that are aluminum coated as described herein. Type 1 Coatings are generally specified for heat shields and fuel tanks.

1.4 Remarks. Section A1 in Appendix A lists replaced specification conversions.

2 References

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

2.1 External Standards/Specifications.

ASTM A428 ISO 7438

2.2 GM Standards/Specifications.

GMW2 GMW3059 GMW14019
GMW3032 GMW3399

3 Requirements

3.1 Coating Type. Type 1 coating is a hot dip aluminum-silicon alloy containing 5% to 11% silicon to promote adhesion. Type 1 coatings are generally specified for heat and corrosion resisting applications.

Type 2 coating is a commercially pure aluminum hot dip coating generally specified for applications which require corrosion resistance.

3.2 Coating Mass. The coating mass (weight) is described in Table 1. Coating mass shall be determined by ASTM A428. Coating thickness is listed for reference only in Appendix A, Table A2.

Table 1: Coating Mass (Weight)

Coating Designation	Triple-Spot Test, Total Both Sides, Minimum g/m ²	Single-Spot Test, Total Both Sides, Minimum g/m ²
T1M-60	60	45
T1M-80	80	65
T1M-100	100	80
T1M-120	120	90
T1M-300	300	270
T2M-60	60	45
T2M-80	80	65
T2M-100	100	80
T2M-120	120	90
T2M-200	200	180
T2M-300	300	270

3.3 Base Metal. The sheet steel base metal chemical composition shall conform to the requirements specified in GMW2, GMW3032 or GMW3399.

3.4 Surface Treatment. Products coated with a designated lubricant (e.g., mill oil or prelube) shall comply with GMW14019.

3.5 Coating Bend Test. All bend tests shall be conducted in accordance with ISO 7438. For all steels supplied according to GMW2 and GMW3032 (with 0.2% offset yield strength < 500 MPa), a 0T (Zero T) bend test shall be performed. Test specimens of coated metal shall be capable of being bent through 180 degrees in any direction without flaking of the coating on the outside of the bend only. For steels supplied to GMW3032 with 0.2% offset yield strength > 500 MPa and all GMW3399 grades, the steel must be capable of a 90 degree test in any direction at a minimum bend radius (r) related to the steel thickness (t) without flaking on the outside of the bend. Refer to Appendix B, Table B1 for minimum bend radii for each grade and Figure B1 for a diagram of the test setup. For testing of all steels, flaking of the coating within 6 mm of the edge of the bend test shall not be cause for rejection. The specimens shall not be cut < 25 mm from the coil edges of the test sheet.

4 Manufacturing Process

4.1 Welding. The steel substrates supplied to this standard shall be suitable for welding by the accepted local welding methods. When the steel is used in welded applications, welding procedures shall be suitable for the steel chemistry and intended service.

5 Rules and Regulations

5.1 Legal Regulations. All materials must satisfy applicable laws, rules, regulations and recommendations valid in the country of usage.

5.2 Language. In the event of conflict between the English and domestic language, the English language shall take precedence.

5.3 Inspection and Rejection. Samples of components or materials released to a GM material specification shall be tested for conformity with the requirements of this material specification and approved by the responsible Engineering department prior to commencement of delivery of bulk supplies.

A new approval must be received for any changes, e.g., properties, manufacturing process, location of manufacture, etc. If not otherwise agreed, all testing and documentation normally required for initial release must be completed.

It is the responsibility of the supplier to inform the customer in a timely manner, without solicitation, and to include documentation of all modifications of materials and/or processes and to apply for a new release.

5.4 Material Safety Data Sheets/Safety Data Sheets (MSDS/SDS). For new product submissions, or when a change in chemical composition of an existing product has occurred, a complete copy of the Material Safety Data Sheet/Safety Data Sheet must be submitted in compliance with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) requirements or other country-specific MSDS/SDS requirements.

5.5 All materials supplied to this standard must comply with the requirements of the International Material Data System (IMDS) and GMW3059, **Restricted and Reportable Substances**.

6 Approved Sources

Materials supplied to this specification must be approved by General Motors.

The appropriate GM Materials Engineering department(s) must confirm material as meeting the requirements of this specification. Any test data sheets of material submitted to General Motors for such confirmation (e.g., during Production Part Approval Process (PPAP)) under this material specification must list all properties and must apply corresponding test methods of this material specification.

7 Notes

7.1 Glossary.

T1: Type 1 Aluminum-Silicon Alloy.

T2: Type 2 Commercially Pure Aluminum.

7.2 Acronyms, Abbreviations, and Symbols.

0T	Zero T Bend Test
AL	Aluminum
ASTM	ASTM International
CR	Cold Rolled
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
GPSC	Global Purchasing and Supply Chain
GSSLT	Global Subsystem Leadership Team
HR	Hot Rolled
IMDS	International Material Data System
ISO	International Organization for Standardization
MPS	Manufacturing Engineering Metal Parts Specification
MSDS	Material Safety Data Sheet
PPAP	Production Part Approval Process
SDS	Safety Data Sheet
U	Unexposed
VTs	Vehicle Technical Specification

8 Coding System

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

Material per GMW16066

The coding system for GMW sheet steel specifications on engineering part drawings shall use a nomenclature consisting of material, grade and coating designation. The coding system for GMW sheet steel specifications on manufacturing engineering documents (i.e., GMNA Manufacturing Engineering Metal Parts Specification (MPS) Sheets) shall also consist of material, grade and coating designation, but with additional designations for type of sheet steel and formability grade for low carbon steel base metals, or type of sheet steel and minimum yield strength for high strength steel base metals. The designation for type of sheet metal used for base metal (i.e., CR for cold rolled, HR for hot rolled), formability grade for low carbon steel base metal or minimum yield strength

© Copyright 2016 General Motors Company All Rights Reserved

October 2016

Page 3 of 7