



Material Engineering Requirements

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 this specification is to clearly communicate the GM Materials Engineering requirements to the supplier during the quotation process. Each Statement of Requirement (SOR) for a part, component or subsystem, will reference specifications to ensure that the quotation is based on materials that are suitable for the application. Specifications can include materials specifications and/or performance specifications.

Additional input for appendices may be required in the SOR package which contain the Materials Engineering Requirements:

- Appendix F9: Use GMW14270, Material Engineering Requirements, which lists standard requirements and standard call-outs.
- Appendix B2: Material Engineering Requirements (from SOR) which lists program specific requirements for a given part or component.

Note 1: GM Global Propulsion Systems (GPS) does not use the same SOR process that other GM Engineering Centers do. GPS does not require an SOR, Appendix B2 document be issued. Instead, materials requirements are incorporated with the Product Engineering requirements in SOR, Appendix C. Other regions, have non-GPS employees specifying materials for GPS parts. Engineers releasing new GPS parts for new designs, must contact a General Motors GPS Materials Engineer to determine the preferred materials.

Note 2: SOR, Appendix B2 information may be placed with Appendix B, Appendix S, or Appendix T, for certain SOR packages.

Note 3: In the case of specification conflicts within the SOR Appendices, Appendix B2 shall be regarded as the authoritative source for materials selection and part performance. If questions arise regarding discrepancies between appendices, contact the GM Materials Engineer for the relevant part.

1.2 Applicability. This specification is applicable to all parts used within.

1.3 Remarks. The intent of this specification is to provide high level material guidance on any vehicle parts. The exact material specification shall be communicated in other SOR appendices and on math/drawings.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW3013	GMW14668	GMW14892	GMW16016
GMW3041	GMW14669	GMW15200	GMW16195
GMW3059	GMW14670	GMW15613	GMW16232
GMW3116	GMW14671	GMW15625	GMW16506
GMW14444	GMW14672	GMW15671	GMW16742
GMW14573	GMW14797	GMW15725	GMW16883
GMW14650	GMW14874	GMW15774	GMW17012
GMW14665	GMW14885	GMW15921	

2.3 Additional References.

- GM1927 Global Supplier Quality Manual.
- GM Engineering Standards: Available to GM suppliers through Information Handling Service (IHS) (www.ihs.com).
- GM SupplyPower (www.gmsupplypower.com).
- Safety and Industrial Hygiene (S&IH) TS 3.4-160-02 Material Safety Data Sheet (MSDS) guidance documents (available through S&IH Management System, Performance Standards).

2.3.1 The Following Appendices of the SOR:

- B2 electronic Bill of Materials (eBOM).
- F9 Use this document (GMW14270), Material Engineering Requirements, which lists standard requirements and standard call-outs.
- G1 Analysis, Development, and Validation (A/D/V) SOR – (Generic).
- G2 Supplier A/D/V Process Tasks and Deliverables (Commodity specific).

3 Requirements

3.1 The material requirements are separated into the following portions:

3.1.1 Standard Notes See 3.2. These requirements apply to all parts and must be called out on all part drawings or math data.

3.1.2 Specific Standard Notes. See 3.3. These requirements apply to a part dependent on the material from which it is made or dependent upon location used in vehicle. All applicable Specific Standard Notes shall be called out on the relevant part drawings or math data.

3.1.3 Material Callout Requirements. See 3.4.

3.2 Standard Notes. Standard Notes are requirements to which the delivered part must conform. Standard Notes must be placed on all drawings or math data. The Standard Notes are:

- Restricted and Reportable Substances for Parts per GMW3059.
- Recyclability/Recoverability per GMW3116.

3.3 Specific Standard Notes. Conformance to the Specific Standard Notes are required for the relevant part(s). The Specific Standard Notes shall be placed on the relevant drawing or math data. The Specific Standard Notes are organized by material-related characteristics and/or part location, e.g., plastic parts shall comply with specific plastic standard notes; metallic parts shall comply with specific metallic standard notes; interior parts shall comply with specific interior standard notes. If a part fits into more than one (1) of the listed categories, all Specific Standard Notes of all relevant categories apply. Examples of specific Material Related Part Performance Standard Notes are included in Table 1. Specific standard notes shall be communicated through SOR Appendix B2 or Appendix C (GPS only).

Table 1: Standard Notes for Material Related Part Performance Requirements

Category	Standard Notes
Performance Requirements for Interior Plastic Parts	Performance to GMW14444
Global Performance Requirements for Labels	Performance to GMW14573
Performance Requirements for Exterior Plastic Parts	Performance to GMW14650
Performance Requirements for Engine Compartment Plastic Parts	Performance to GMW15725 and/or GMW16883

Note: If applicable, additional coding must be added to the preceding specifications based on the classification of the part in the referenced GM Worldwide (GMW) Standard and location of the part in the vehicle.

3.4 Material Callout Requirements.

3.4.1 Material Callout Documentation Requirement. All materials used shall be noted on the part drawings or math data. Materials shall be called out on the part drawing or in the math data by a standard. To obtain a copy of a standard, go to www.ihs.com. Accepted standards are:

- GMW Standards.
- International Industry Standards.

In the Production Part Approval Process (PPAP) documentation, the material used shall be documented to its original manufacturer's name, trade name, product code, and manufacturing location as well as the GM material callout.

Note: Any material change (even within a material callout) requires GM notification to the Supplier Quality Engineer and may require a new PPAP.

3.4.1.1 Material Callout by External Standards. Use of internationally recognized standards, such as International Organization for Standardization is generally accepted. For several material categories, callouts by other international standards organizations, such as Society of Automotive Engineers (SAE), American Society for Testing and Materials (ASTM) International, European Norm (EN), Japanese Industrial Standards (JIS), Deutsches Institut für Normung (DIN), etc., are accepted. In these cases, always check with GM Materials Engineering for compliance. If an International Organization for Standardization Standard or a GM Standard exists for the material, it shall be used in preference to other organizational standards. The callout in the drawing or in the math data must conform to the coding described in the called out standard. If the standard describes more than one (1) material grade, the code for the grade must be noted on the drawing or in the math data.

Note: Only material specifications or standards which are available as official English versions can be used.

3.4.1.2 Material Callout by GM Standards. Material callouts by GMW Standards, are preferred when using a GM Specification.

The material callout on the drawing or in the math data must conform to the coding as described in the called out standard. If the standard describes more than one (1) material grade, the code for the required grade must be noted on the drawing or in the math data. Some material categories describe special requirements such as ultraviolet (UV) stability, high impact or heat stability with additional codes not identified in the material standard but other documentation. If such requirements apply to the part, it is the responsibility of the part supplier to contact GM in a timely manner for the applicable additional coding for the math model or drawing callout.