



Global Performance Requirements for Labels

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. This standard defines the requirements and strategy for labels on GM vehicles sold worldwide. Labels required in this standard are intended to convey information as well as to comply with legal requirements, product liability requirements, or information necessary for the handling of the vehicle throughout the entire vehicle lifecycle.

A label is a message applied to a vehicle or component that warns, informs, or instructs. Any message other than specifications, bar codes, or identification marks is classified as a label. Wherever possible, label messages should be directly marked/integrated into the component; e.g., embossed, debossed, pad printed, laser etched, scribed, silk screened; to eliminate the need for a unique label part number and assembly operation.

1.2 Applicability. This standard addresses the performance requirements for pressure sensitive adhesive labels, integrated labels (e.g., in-mold, heat applied, hot ink, fused) and sewn on labels. Labels that are installed solely as manufacturing aids are not covered by this document, but could use appropriate tests, identified herein, to assist in ensuring labels will perform as needed. Direct marked solutions referenced in 1.1 are not within the scope of this specification.

1.3 Remarks. All labels are categorized by a label classification system that relates to the specific position of a label. The label classification system defines different sets of functional requirements specified in this standard (refer to 3.2.1). Main parameters are label location, exposure to Ultraviolet (UV) rays, and exposure to fluids.

1.3.1 Additionally, special label characteristics may be defined as follows:

1.3.1.1 Characteristic: Self Destruct (SD).

- a. If an attempt is made to remove the label from the substrate, the label shall break into pieces or tear, or the information thereon shall be rendered illegible at debonding, such that the label cannot be reused without modification.

1.3.1.2 Characteristic: Integrated (INT).

- a. The label cannot be removed without destroying or defacing the substrate (e.g., heat applied labels, fused, in-mold labels, etc.)

1.3.1.3 Characteristic: Tamper Evident on Part/Substrate (TE-1).

- a. The label shall delaminate and leave an adhesive footprint on the substrate material upon removal.

1.3.1.4 Characteristic: Tamper Evident on Label (TE-2).

- a. Alteration of the information on the label must leave traces of the original information or otherwise visibly alter the appearance of the label material.

1.3.1.5 Characteristic: Anti-Counterfeiting/Anti-Faking (AC/AF).

- a. Label shall contain a unique feature that is difficult to copy or is easily recognized as authentic.

1.3.1.6 Characteristic: No Special Characteristics.

- a. Label is not required to meet any special label characteristics (e.g., SD, INT, TE-1, TE-2, AC/AF).

1.3.2 Label validation testing shall be performed with production intent labels located on production intent components, installed using the production process, and tested for adhesion (including after humidity exposure and temperature cycle tests) in the production vehicle orientation. During validation testing labels with secondary

printing must be tested using GM specified printer and ribbon combinations identified on the drawings. Questions regarding this should be directed to the GM release engineer.

1.3.3 The responsible GM release engineer is solely responsible to determine which label classification is valid. The label classification will be part of the Release Drawing.

2 References

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

2.1 External Standards/Specifications.

BS EN590	ISO 105-X12	ISO 8510-2	SAE J2527
ISO 105-A02	ISO 5084	ISO/IEC 15415	

2.2 GM Standards/Specifications.

9981285	GMW3356	GMW14445	GMW15891
9984168	GMW14089	GMW14729	GMW16331
9985074	GMW14125	GMW14797	GMW16444
B 040 1990	GMW14141	GMW14829	GMW16745
GMW3010	GMW14162	GMW14872	GMW16955
GMW3059	GMW14333	GMW15010	
GMW3208	GMW14444	GMW15548	

2.3 Additional References.

- GM-Specified Printer and Ribbon Combinations Identified on the Drawings
- Interface Drawings
- International Material Data System (IMDS) at www.mdsystem.com
- Label Drawing
- Release Artwork/Drawings
- Release Drawing
- Sonax (www.sonax.com)
- Specific Vehicle Assembly Structure (VAS) or Installation Drawings

3 Requirements

3.1 Functional Requirements. The functional requirements define the quality of the label when delivered to the customer.

3.1.1 The Release Artwork/Drawings are created in Adobe Illustrator. The supplier shall be able to read the following formats: Adobe Illustrator file (.ai), Portable Document Format (PDF), Encapsulated PostScript (EPS) or Computer Graphics Metafile (CGM). The supplier shall contact the responsible GM release engineer for artwork/drawing.

3.1.2 The label shall fulfill the specific layout shown on the artwork/drawing released by the responsible GM engineer (release drawing). The responsible GM engineer assesses the quality, colors, symbols, and verbiage of the label. In case of any conflict, the file (.ai) is the master file that will be used to assess the quality of the part. The supplier shall obtain approval by the responsible GM engineer, using the Production Part Approval Process (PPAP) prior to shipment of labels for use on GM products.

3.1.3 Colors are defined in GMW14089 and must be measured using a spectrodensitometer or spectrophotometer, with results provided on the Appearance Approval Report as part of PPAP submission. The responsible GM release engineer is the final arbiter to approve label color.

3.1.4 Prior to the supplier making any changes to material or processing of a released label, the supplier shall inform and get approval from the responsible GM release engineer and shall wait for their approval. All changes must follow the PPAP process.

3.1.5 The supplier is responsible to conduct Design Failure Mode Effects Analysis (DFMEA) for label construction, and Process Failure Mode Effects Analysis (PFMEA) for each label sourced. In case of a critical item, the supplier is responsible to contact and inform the responsible GM release engineer. Furthermore, on

© Copyright 2017 General Motors Company All Rights Reserved

request of the responsible GM release engineer, the supplier shall provide the complete Failure Mode Effects Analysis (FMEA) documentation.

3.1.6 The supplier shall identify opportunities for cost reduction. The supplier shall support all activities to reduce product cost and total system cost.

3.1.7 Supplier Technical Representative.

3.1.7.1 The supplier shall nominate a technical representative responsible to coordinate all project items and be able to support findings of technical solution.

3.1.7.2 The technical representative must be located in the country where the part will be designed or engineered or released. Upon request by the responsible GM release engineer, the technical representative must be present, within one (1) day, in project meetings at the location where the part is released.

3.1.7.3 The representative shall support express shipment of samples and materials. The GM release engineer will provide production intent parts of the substrate (if available) for product validation testing upon request by the supplier. In the event that production intent substrate is not available, the GM release engineer will provide detailed material specifications to the supplier. The GM release engineer will arrange to have parts available for the supplier representative.

3.1.8 Other Requirements.

3.1.8.1 Label Quality. The requirements to ensure label quality throughout the useful life of the vehicle are defined in 3.5 of this document. Exceptions may apply to temporary labels (Classification F and Classification H).

3.1.8.2 Material Requirements. Functional requirements are independent of materials. Specific material requirements are defined in 3.9 of this document. The supplier is responsible to choose the appropriate materials, adhesive and if printed by the supplier, the printing process.

3.2 System/Subsystem/Component/Part Definition.

3.2.1 Label Classification.

3.2.1.1 Classification A: Engine Compartment Labels (A).

3.2.1.1.1 Labels are inside the engine compartment.

3.2.1.1.2 Labels of this type shall not be mounted on the engine block. (See Classification G for engine block labels.)

3.2.1.1.3 Examples include labels on painted sheet metal, plastic covers, batteries, or fluid containers.

3.2.1.2 Classification B: Exposed Exterior Labels (B).

3.2.1.2.1 The position of the label is visible, outside of the body.

3.2.1.2.2 Examples include trailer hitch label, pick-up bed liner label, and portable battery charge label.

3.2.1.3 Classification C: Intermittently Exposed Exterior Labels (C).

3.2.1.3.1 Labels are positioned outside of the rubber seals, only visible with a door opened.

3.2.1.3.2 Examples include labels on the door pillars and labels inside the fuel filler door.

3.2.1.4 Classification D: Exposed Interior Labels (D).

3.2.1.4.1 Labels are positioned inside the vehicle and exposed to sunlight, positioned inside the rubber seals.

3.2.1.4.2 This classification of labels includes exposed labels and labels on the outside surface (show side) of the sun visor.

3.2.1.4.3 Examples include wireless charging labels, utility vehicle handling labels and Vehicle Identification Number (VIN) label.

3.2.1.4.4 Other permanent labels exposed on the interior are sewn on labels. These labels may be made from polyester, polyolefin, polyethylene or other approved materials.

3.2.1.4.4.1 Tensile strength of label fabrics when tested to GMW3010 must exceed 21 N/100 cm when tested in machine direction.

3.2.1.4.4.2 Sewn on labels must have a thickness of 0.17 mm ± 0.2 mm when measured per ISO 5084.

3.2.1.4.4.3 Color crocking for sewn on labels when tested to ISO 105-X12 shall be greater than four (4) when compared against the International Organization for Standardization (ISO) grey scale after ten (10) strokes both wet and dry.

3.2.1.4.4.4 Dye migration of sewn on labels shall be four (4) or greater when compared to the grey scale after testing to GMW14141.

3.2.1.4.4.5 Adhesion tests, temperature cycling, humidity and repositionability testing may be omitted for sewn on labels. All other requirements for exposed interior labels (D) must be met.

3.2.1.5 Classification E: Non-Exposed Interior Labels (E).

3.2.1.5.1 Labels are inside the vehicle but not regularly exposed to sunlight, positioned inside the rubber seals.

3.2.1.5.2 This classification of labels includes non-exposed labels and sun visor labels exposed only by folding down the sun visor or opening the door.

3.2.1.5.3 Examples include seat belt labels and labels inside stowage compartments.

3.2.1.6 Classification F: Exposed Interior Labels – Temporary (F).

3.2.1.6.1 Labels are positioned inside the vehicle and exposed to sunlight, positioned inside the rubber seals.

3.2.1.6.2 Removable adhesives or other temporary attachment methods are used.

3.2.1.6.3 Examples include price labels, consumer information label (OnStar®) and airbag hang tags.

3.2.1.7 Classification G: Engine/Transmission Labels (G).

3.2.1.7.1 Labels are adhered directly to the engine block or transmission.

3.2.1.7.2 Examples include engine identification labels and transmission identification labels.

3.2.1.8 Classification H: Exposed Exterior Labels – Temporary (H).

3.2.1.8.1 Labels are positioned outside the vehicle and exposed to sunlight. Labels may be adhered directly to Class A painted surfaces.

3.2.1.8.2 Examples include fuel door instruction labels and do not open labels.

3.2.1.9 Classification J: Traceability (TRA) or Error Proofing (EP1) Labels (J).

3.2.1.9.1 This category applies to labels which only contain traceability (Key Product Characteristics (KPC) = TRA) or Error Proofing (KPC = EP1) bar code and human readable data. Labels with other information or messages must meet the performance requirements of Classifications A thru Classification H, as defined by their location and life.

3.2.1.9.2 Labels have reduced requirements because once scanned as part of the assembly process, usefulness of label and information is limited.

3.2.1.9.3 Fluid resistance test requirements will be unique for each application and are the final decision of the GM release engineer.

3.2.2 Interfaces.

3.2.2.1 Mounting Surface.

3.2.2.1.1 The label material and adhesive must be selected to adhere to the specified mounting surface or substrate taking into consideration material composition, graining and surface geometry, including production vehicle orientation. The label supplier must be notified by the GM release engineer any time the mounting surface composition changes. This includes fabric or graining changes.

3.2.2.1.2 The surface to which label is to be applied should be cleaned with an isopropyl alcohol or a 1:1 solution of deionized water and isopropyl alcohol.

3.2.2.1.3 The label and adhesive must be compatible with the surface to which it is applied. The adhesive layer must not bleed after application.

3.2.2.2 Physical Interfaces.

3.2.2.2.1 Substrate. The intended substrate material is provided by the responsible GM release engineer. The supplier can request additional details about the mounting surface or substrate from the responsible GM engineer. All production validation testing shall be performed with production intent labels located on production intent components, installed using the production process. Relocation of label on a different substrate warrants revalidation.

3.2.2.2.2 Location. Labels shall not be located in areas where label surface will interfere with any type of seal or where constant contact with an abrasive source may be encountered.

3.2.2.2.3 Dimensions, Dimensional Fits. The position and the mounting requirements for the labels are defined by the specific Vehicle Assembly Structure (VAS) or Installation Drawings (covers also Interface Drawings), created in Unigraphics/NX format.

© Copyright 2017 General Motors Company All Rights Reserved

3.3 Adhesion Requirements. Label material approved to this specification, which contain pressure sensitive adhesives, must meet adhesion requirements for given classification, as specified in 4.4, when tested over polypropylene substrates per GMW15548 (for development only).

3.4 Integration Requirements.

3.4.1 Harmony/Human Factors (Styling). The graphic design (styling) is defined on the release drawing/.ai file.

3.4.2 Recycling/Recovery. Refer to 3.9.5.

3.4.2.1 Design of Recyclable/Recoverable Systems. The label material should be chosen for recyclability.

3.5 Dependability. Dependability, as it relates to Quality, Reliability, and Durability (QRD), is the ability of the subsystem to function during its target life within the performance levels specified in this standard.

3.5.1 Target Life.

3.5.1.1 The target life of the labels shall be minimum 15 years for all permanent labels.

3.5.1.2 The target life of temporary labels shall be one (1) year.

3.5.1.3 The target life requirement of the vehicle shall cover all usual environmental conditions and all common usage by the customer.

3.5.1.4 The target life requirement for the label shall also cover normal deterioration of the mounting surface and its material.

3.5.2 Supplier Responsibility.

3.5.2.1 The supplier is responsible to choose the material and adhesive, so that the labels meet the specified performance requirements, taking into account the substrate's orientation on the vehicle. (Example: Labels placed on B Pillar must be tested in vertical position.)

3.5.2.2 The supplier shall demonstrate through testing and analysis that the labels fulfill the minimum requirements of the target life.

3.5.2.3 The supplier shall fulfill all legal requirements, standards, norms, GM specifications related to the specific label and consumer organization recommendations regarding all special tests therein.

3.5.2.4 The labels shall pass all Product Validation (PV) tests specified in the GM Label Product Validation Test Matrix (refer to Appendix A, Table A1). The supplier shall submit complete documentation with approved results for all product validation tests at PPAP submission. Complete documentation includes, but is not limited to, all test results (pass/fail), and pictures of control samples versus tested samples. Physical samples may need to be supplied to the GM engineer. Additionally, the responsible GM release engineer may decide to perform production validation tests internally.

3.5.2.5 The responsible GM release engineer has the authority to decide if a production validation test can be modified or eliminated, or if surrogate data can be used for a specific label release. Surrogate data greater than three years old will not be accepted. The responsible GM release engineer is the final arbiter regarding the assessment and interpretation of test results.

3.5.2.6 Parts in continuous production must undergo validation testing every three years, at a minimum. Resubmitting PPAP documentation is not required if there are no material changes. However, tests results must be available upon request.

3.5.3 Wearout Items.

3.5.3.1 The labels shall withstand and show no deterioration by normal cleaning procedures by consumers, dealers or rental vehicle companies.

3.5.3.2 Any bar code on the label shall be able to be scanned during the target life unless otherwise specified.

3.6 Reliability/Durability.

3.6.1 Ambient Operation Requirements. The label shall withstand and show no deterioration under all climate conditions and in all countries where the vehicle will be sold.

3.6.2 Ambient Transport and Storage Requirements. The labels shall not be adversely affected by storage, especially when:

3.6.2.1 Unattached up to one (1) year in a temperature range between 15 °C to 23 °C.

3.6.2.2 Label sheets or label rolls are stacked up.

3.6.2.3 Labels are transported by air or sea.

3.6.3 Reliability/Durability Requirements. The labels shall not be negatively affected by any of the environmental exposures identified in all applicable test procedures. That is, the labels shall show no evidence of delaminating, loss of adhesive, loss of printing or any other effect that would render them illegible for the life of the vehicle.

3.6.4 Damage Resistance. The label shall be designed to avoid damage in case of certain misuse cases during transportation and assembly. The responsible GM release engineer determines during the development process if specific misuse tests have to be fulfilled.

3.7 Serviceability. See GMW15010.

3.7.1 Service Parts. The supplier may be required to provide labels for service replacement for up to 15 years after end of production.

3.8 Manufacturability.

3.8.1 Handling and Installation Requirements.

3.8.1.1 The supplier is responsible to ensure that there are no installation related issues at the assembly plant, i.e., labels must be easy to install, and should not be crumpled, folded or destroyed in any other way during handling.

3.8.1.2 The label must be designed to be easily released from the protective release liner or paper, whether the operator wears gloves or not. The supplier shall contact the plant responsible to gather any special conditions under which the label will be handled. The responsible GM release engineer and the plant responsible engineer will be the final arbiters for acceptance of the label material.

3.8.1.3 The label and its adhesive shall be adequate for mounting on normally processed vehicles without a special cleaning process of the mounting surfaces. It shall be designed to be applied within a temperature range from 15 °C to 40 °C. After application, the vehicle can be stored in a temperature range from -25 °C to +45 °C with the associated sun loading and humidity without detriment to the label.

3.8.1.4 The label shall be designed to be repositionable within 20 s after installation. The responsible GM release engineer may decide not to apply the repositioning requirement for a specific label.

3.8.1.5 In the event that splicing of label rolls is required, the material used to join the two ends of the spliced rolls shall not interfere with label quality or print quality, including secondary print operations.

3.8.2 Supplier Requirements.

3.8.2.1 Direct Supply Labels.

3.8.2.1.1 The labels shall be provided on rolls unless otherwise specified on the drawing. **Note:** The responsible GM release engineer defines on the drawing if the labels shall be delivered on sheets, including family sets, individually cut, or rolls.

3.8.2.1.2 The format of the rolls shall fit to the specific production equipment (distribution equipment), if applicable.

3.8.2.1.3 The responsible GM release engineer may require perforation between each label supplied on rolls and family sets.

3.8.2.2 In-Plant Labels. Suppliers of labels that are printed in the GM plant or labels that have additional verbiage and graphics added at the GM plant (in-plant labels) must fulfill the additional requirements described in 3.8.2.2.1 thru 3.8.2.2.5.

3.8.2.2.1 The label supplier shall supply the label material.

3.8.2.2.2 The label supplier shall ensure that the label material is compatible with the implemented equipment, including, but not limited to: printer ribbon, toner, programming parameters, in order to produce optimal results.

3.8.2.2.3 The label supplier shall support all changes of the hardware and software of the implemented equipment as far as the label material is concerned.

3.8.2.2.4 The label supplier shall support manufacturing personnel.

3.8.2.2.5 The supplier shall be responsible to complete PPAP/PV requirements on finished labels using GM-Specified Printer and Ribbon combinations identified on the drawings or after being processed in the GM plant. This applies for the release of new label material, all changes of label material, and for all changes in production equipment.

3.8.2.2.6 Plants that perform secondary printing on labels must ensure they are using approved Information Technology (IT) Bill of Material (BOM) printers. Ribbons, toner, and other printer material required to ensure the