

AUTHORING GM STANDARDS

GM505S

1 SCOPE. This standard defines the requirements and options for various GM standards including test procedures, material specifications, performance standards (for materials and components), design guides, and selection guides. It follows the format and structure described herein.

NOTE: For standards of great complexity and length, the structure used for Vehicle Technical Specifications (VTS) may be more appropriate. See **Vehicle Technical Specification Outline User's Guide, SEC0019**, for details.

1.1 FORMAT AND STRUCTURE. Some items are common to all document structures, such as the inclusion of a title and standard number. Other sections vary, or the main heading will vary, depending on the type of information the standard is defining. Templates are available for most standard classifications, making the task of authoring easier. Many formatting issues, such as paragraph numbering, double columns, font, and font size have been defined and are taken care of automatically when the standard is loaded into Engineering Records Management's (ERM) standards publishing and distribution system. See 3.12.

NOTE: All standards are published either electronically or on paper through the ERM standards publishing and distribution system.

1.1.1 Many editorial issues, such as the abbreviations, units, or table formats, are addressed in 3.12.

1.2 REVISIONS. Standards needing revision should be reviewed for adherence to the formatting and structure requirements outlined in this document. The standards shall also be compared to the current applicable template for new requirements that must be included, such as the required addition of the GM1000M statement to all standards. Standards should be reviewed at a minimum of once every 5 years to ensure they are still accurate and current. For more details, see Appendix B.

1.3 APPROVAL PROCESS. The Corporate group of experts responsible for the content of a standard, whether a Center, Committee, or some other group, will have an approval process in place to ensure the standard meets the needs of the Corporation. See the appropriate Corporate expert group for more information.

NOTE: Prior to writing a new standard, check internal and external sources to determine if something may have already been written to use as is or with modifications.

2 REFERENCED STANDARDS.

GM179M	GM3653M	SAE J403
GM502M	GM9103P	SAE J1344
GM1000M	ASTM E380	

3 REQUIREMENTS - ALL STANDARD TYPES.

Standards and specifications may have three functions - (a) facilitate communication of requirements between purchasing and the supplier, (b) standardization of a product or procedure, and/or (c) provide guidelines and technical information. Depending on the function of an individual standard, some parts of the document are optional or required only for specific types, as noted in subsequent sections. Other parts of the standard are required regardless of function, such as those listed in this section.

3.1 STANDARD NUMBER. The numbering system is maintained by ERM. Numbers are assigned to the individual responsible through a Center, Corporate Committee, or Task Group of experts for a particular standard type (material, test method, or component). For example, all product material specification numbers within NAO are assigned through NAO Materials Engineering. Numbers are sequential.

NOTE: There are several numbering systems for standards, to be explained herein.

3.2 TITLE. A title is generated, often using a set format for the **TYPE**, and is established through the responsible Corporate expert group. The title should be descriptive, yet concise, preferably less than 60 characters. The title is written in increasing order of detail, preferably separated by commas. Do not use trade names, suppliers, or trademarks. The following are examples:

LABEL, INTERIOR, HEAT TRANSFER
SEALER - PUMPABLE, BODYSHOP
IMPACT TEST FOR ENERGY MANAGEMENT
PLASTIC FOAM
FUEL RESISTANCE TEST
WEATHERSTRIPS

3.3 DATE. The draft date is used on a standard before it is fully approved and submitted for publication, such as 15AU94. The distribution date (November 1994) replaces the draft date when the standard is approved for publication. The date also appears as part of the automatically generated copyright.

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3.4 TYPE, CATEGORY, SUBCATEGORY. This information is required on every standard for assigning numbers and loading standards into the ERM standards publishing and distribution system. **TYPE** indicates the book in which each standard will be published. The following indicates the **TYPES** at the time of publication of this document:

- Adhesives
- Design I
- Design II
- Dimensions
- Electrical
- Engineering
- Fuels & Lubricants
- General
- HVAC
- Manufacturing
- Manufacturing Lubricants
- Paints
- Plastics
- Procedures
- Safety
- Textiles

3.4.1 CATEGORIES vary within each **TYPE**. Contact ERM Department for a complete list of **TYPES, CATEGORIES, or SUBCATEGORIES**, or if new **TYPES, CATEGORIES, or SUBCATEGORIES** need to be added to the list. **SUBCATEGORIES** also vary and may be optional.

3.5 SCOPE. The **SCOPE** section amplifies the title, describing the purpose or function of the specification, the intended generic application(s), and any limitations of the standard. A typical limitation would be something excluded, such as a specific material, and then refer to the standard that does cover the material. See GM3653M for an example. The uses for various Types in a standard, such as Type I and Type II in GM179M, shall be listed here. It may also include a listing of major sections, such as in GM502M, or a Table of Contents, as in GM9103P.

3.5.1 Write or complete the first paragraph within the **SCOPE** section. Additional paragraphs may be added. The **SCOPE** shall be written to include as many **key words** as possible for the ability to electronically search for the standard. Do not use trade names, suppliers, or trademarks.

3.6 REFERENCED STANDARDS. All standards referenced in the document must be listed in this section. If no standards are referenced, the word **NONE** must be written in this space. Do not include in the **REFERENCED STANDARDS** section any references to the document itself. References to books or other documents that are not standards are to be listed at the end of the document in the **REFERENCES** section (3.9).

NOTE: **GM Confidential standards, such as GMUTS, or GM Secret standards are not to be referenced in publicly available standards.**

3.6.1 GM standards are listed in numeric order at the top of the list, followed by all others also in alphanumeric order. Do not include dates or revisions as it is always assumed that the most recent version of a standard is the correct one. Specific sections or information in a standard may be referenced in the text or in tables, but do not include that information here. Example:

- GM502M
- GM1000M
- GM3661P
- GM3804M
- GM10001C
- GMUTS L15-45
- NAO0028
- 9985511
- 12000001
- ASTM E380
- SAE J1739

NOTE: This listing of standards above is for example only and, therefore, is not included in this standard's **REFERENCED STANDARDS** section.

3.6.2 For standards with a dual organization designation, such as "ANSI/SAE J1525", use only one organization, generally the originator of the standard, "SAE J1525". Only list an actual standard document in this section. For example, SAE 1010 steel is not a designation for a document. Stating SAE 1010 is generally sufficient to indicate that particular material, depending upon how it is being used, but if the standard document is needed, that is SAE J403.

3.7 BODY. The body of the standard has several headings, depending on the content, such as, **REQUIREMENTS** or **TEST PROCEDURES**. This will be discussed in greater detail under the individual document type.

3.7.1 The following statement regarding restricted and reportable chemicals is required in all standards.

3.7.2 RESTRICTED AND REPORTABLE CHEMICALS (GM1000M). All materials supplied to this specification must comply with the requirements listed in GM1000M, **Restricted and Reportable Chemicals**.

3.8 APPROVED SOURCES. This section is **NOT** applicable to all standards. It must be deleted by the engineer when it is not appropriate for the standard.

3.9 REFERENCES. This section is optional, to be used only when there are references to documents or information that are not standards, such as reports, books, forms, etc. All standards are referenced in the Referenced Standards section (3.6). Include the minimum information needed to obtain the Reference. Include the title and any designation. For books, include specific pages as appropriate. Examples of possible references include:

- SEC0019, *Vehicle Technical Specification Outline User's Guide*
- RMA Handbook
- Serviceability Design Guidelines

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3.10 GENERAL INFORMATION. This section **MUST BE FILLED IN** and often consists of a short paragraph and a small table. It is used for tracking the history of a standard. The date of origin is the date the standard number was issued. Spell out the month, do not include a day and no comma. A typical statement is as follows:

This standard was originated by (name of information owner, such as a Committee or Center) in (month year) and approved in (month year).

3.10.1 Revisions are recorded in a table. Only the two most recent revisions are listed. New revisions are added to the bottom of the list, and the top listing is deleted. In the following example, a new revision would be **Revision D** and **Revision B** would be deleted. Keep descriptions concise.

Before:

Rev	Date	Description
B	MMYY	Added 3.2, Revised 4.6
C	AU94	Complete Revision

After:

Rev	Date	Description
C	AU93	Complete Revision
D	AU95	Added GM1000M

3.11 APPENDIX. Assign a title to the Appendix. Complete the body of the Appendix for any set of requirements, procedures, tables of data, forms, or whatever information is to be included. An Appendix is, of course, optional, and is not needed for most standards.

NOTE: Appendices and the paragraphs within them are automatically numbered by the ERM standards publishing and distribution system using an alphanumeric scheme.

3.12 GENERAL STYLE RULES. The following describe some required methods for presentation of the information in the standard. As mentioned in the scope, many of the format issues, including font, font size, justification, paragraph numbering are handled automatically by the system. Exceptions will be noted that the author must include.

3.12.1 Paragraph Numbering. All paragraphs are automatically numbered using the decimal numbering system when the standard is loaded into the ERM standards publishing and distribution system. The numbers should not exceed 4 places.

Example:

1 SCOPE.

2 REFERENCED STANDARDS.

3 REQUIREMENTS.

3.1 WEATHERING.

3.1.1 Colorfastness.

3.1.1.1 Colorfastness to Light.

3.12.2 Units. The SI version of the metric system is used for all measurements. SI symbols do not change in the plural and are never followed by a period. English units of measure may follow a metric measurement parenthetically, if necessary. Use numerals for all numbers in text, except when it is the first word of a sentence. Use a period as the decimal marker, and use spaces instead of commas to separate long Arabic numbers into easily readable groups of three.

RIGHT: 45 671.378 34

WRONG: 45,671.37834

3.12.3 When only four numbers appear on one side of the decimal, the space is omitted.

RIGHT: 4566.3422

WRONG: 4,566.3422

3.12.4 Symbols. Do not separate the symbol from the number with a space. The degree symbol is used with numbers for degrees of temperature and for degrees of an angle:

Example: 35°C, 45°

50% RH

\$1.00

3.12.5 Abbreviations. Lesser-known acronyms should be spelled out on the first reference, followed with the acronym in parentheses. Thereafter, only the acronym is necessary. Do not use abbreviations or symbols in text unless it is preceded by a number or in a table. A space is used to separate the abbreviation from the number. Never abbreviate the word minute; **min** is the abbreviation for minimum.

Example: 3 h, 10 s, 55 mm

2 h @ 125°C

38°C min

25 minutes @ -40°C

3.12.6 Emphasis. Words needing emphasis in a document can be set aside as a NOTE, typed in ALL CAPITAL LETTERS, *italics*, **bold**, or a combination, such as **BOLD AND ALL CAPITAL LETTERS**. (Underscore is not currently supported by the ERM standards publishing and distribution system.) The word NOTE is always capitalized and followed with a colon. Avoid quotation marks.

Example: The material is NOT APPROVED for use in production.

3.12.7 Avoid repetition.

RIGHT: 35 x 55 mm

WRONG: 35 mm x 55 mm

3.12.8 Use a dash with a space on each side when typing a range of values. Use the word **to** when typing the range of values in sentences.

Example: 0.025 - 0.028 mm (in table or list)

0.025 to 0.028 mm (in text)

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3.12.9 Figures. Figures will be numbered, titled, and referenced in the text. ERM will load all artwork to the ERM standards publishing and distribution system that is to be included in the standard. Pictures are not currently supported within the standard, but can be maintained separately if required. Figures vary in size to cover one or both columns in width and lengths of 1/4, 1/2, 3/4, or the full column. Figures are generally placed where they are referenced for single columns. For double columns, the figures are generally moved to either the top or bottom of the page. In some cases, they are moved to the end of the standard.

NOTE: Identical figures appearing in more than one document are electronically stored once. The document of origin needs to be referenced to avoid duplication of the figure.

3.12.10 Tables. Use a standard table format for requirements whenever possible. Specify the property, a quantitative test value reported in SI units, and the referenced test method (GMXXXXP, ASTM, SAE, etc.), along with any specific details for running the test that may not be defined in the referenced standard. Short test procedures that are not separately published standards may be described in the standard being written under TEST PROCEDURES and the paragraph number referenced in the test methods column.

3.12.10.1 Lines or grids are used only when needed for clarity. Abbreviations are used in tables. Additional title information may be added to the table title to more fully describe the contents of that table. The table should also be referenced in the text. For an example of a table, see Table 1.

TABLE 1 - EXAMPLE

Properties	Values	Test Methods
Left Justified	Centered	Left Justified
Range		Referenced standard or paragraph in the document
Specific Gravity	1.15 - 1.30	ASTM D792
Minimum		
Tensile Strength	6.0 MPa min	ASTM D412, Method A, Die C
Adhesion	4.46 kg/cm	See 4.4

Test Methods referenced in this Table are for example only.

3.12.10.2 Tables vary in size to cover one or both columns in width. Lengths are variable, up to the full length of the column. Tables are generally placed where they are referenced for single columns. For double columns, the tables are moved to either the top or bottom of the page. In some cases, they are moved to the end of the standard.

3.12.11 Nontabular Requirements. Requirements that cannot be put into Table format should be written as paragraphs. Indicate the property in the paragraph title, along with any referenced standard. The description of the requirements, which should include quantitative values whenever possible, follows with as many sentences and subparagraphs as needed.

3.12.11.1 The following paragraphs are examples of requirements using a reference to another standard.

ODOR (SAE J1351). There shall be no offensive odor; rating of 2.

COMPATIBILITY (GM9141P). The foam material must not adversely affect or stain adjacent or contacting materials when tested.

3.12.11.2 The following paragraph is an example of a requirement using a cross reference to a paragraph within the same document.

Vacuum Collapse Test (4.4.2). OD collapse shall not exceed 10%.

3.12.11.3 A list may be more appropriate in some instances. For example:

Oil Resistance Test (4.13).

Volume Change, %, max +110

Original Tensile, %, max -60

Original Elongation, %, max -60

3.12.12 Cross Reference. Use a cross reference to avoid repeating information. (This supports the concept of recording information once, facilitating configuration management for the information.)

3.12.12.1 Reference other standards documents, whether internal to GM or external, by the standard number, as described in 3.6. Refer to specific sections within those other standards by indicating a title or description of the section. Avoid using a paragraph or section number of the referenced standard as they frequently change and would require a revision to the GM standard.

3.12.12.2 When referencing a paragraph or section within the same document, use only the number of the paragraph. Cross references within a document are under configuration manage-