CAMDS Application Guidance

V2.0

中国汽车材料数据系统
China Automotive Material Data System

CATARC

CAMDS Management Center

2011/12

CONTENTS

FOREWORD

China Automotive Material Data System (CAMDS) is a material data application and management platform specially developed to implement management and control of prohibited/restricted substance of automotive products and to enhance recycling rate of automotive products. Component suppliers at all levels in the supply chain of automotive products can accomplish application of product material data and information through this system and support complete vehicle manufacturers to successfully pass the certification of related laws and regulations home and abroad.

To help CAMDS suppliers of automotive component at all levels to better report and update product materials data and information, enhance standardization and coherence of recorded data so as to guarantee product material data and information communicate accurately and efficiently along the supply chain, CAMDS Management Center has formulated *China Automotive Material Data System Application Guidance* (CAMDS Application Guidance). As a technical instruction document to record product material data and information, this guidance has provided users with instructive principles and requirements to establish various material data sheets (MDS) in CAMDS system. This guidance has 16 documents (for details, see the Content) including the approaches to establish MDS of regular automotive materials and components. To establish metal material MDS should refer to the Document namely CAMDS 01-General Provisions for implementation while to establish MDS for other material or component can refer to related documents.

If you are responsible for inputting CAMDS data and application, please read part or all content of this document based on the products while using this system. If you have any questions in the process, you can log on the official website of CAMDS (www.camds.org) for help.

This content is not mandatory requirement, if the requirement is not in line with your clients' requirement of material data sheet or your product information has unique features, please coordinate with you client.

China Automotive Material Data System Management Center

Dec. 15, 2011

CAMDS 01 General Provisions

1 Scope

This document represents the general requirements for creating MDS in CAMDS, including a basic composition of data structure, components, semi-components, materials, basic substances in CAMDS, refines relations of different levels in MDS and a basic principle as how to fill in component content. This document is in line with an establishment of all sorts of MDS in this system. As for materials or components without particular documents to be filled in, like metal materials, assembly and the like, they could mainly be implemented in reference to this document.

2 References

Clauses in the document all are referred directly or indirectly to articles in the following documents. As for referred documents with dates, the amendment (excluding corrigenda) or the expurgated edition should not be applicable to the Guidance. As for the referred documents without dates, the newest edition can be applied to the Guidance.

GB/T 1844	Plastics - Symbols and abbreviated terms
GB/T 5576	Rubbers and latices-Nomenclature
GB/T 22027	Thermoplastic elastomers - Nomenclature and abbreviated terms
GB/T 19515	Road vehicles Recyclability and recoverability Calculation method
GB/T 26988	Marks for recoverability of automobile parts
GB/T 26989	Automobile recovery – Terminology
QC/T 797	Material identification & marking of automotive plastic,rubber & thermoplastic elastomer parts
ISO 1043	Plastics - Symbols and abbreviated terms
ISO 1629	Rubber and latices - Nomenclature
ISO 11469	Plastics - Generic identification and marking of plastics products
ISO 18064	Thermoplastic elastomers - Nomenclature and abbreviated terms
ISO 22628	Road vehicles - Recyclability and recoverability - Calculation method
GADSL	Global Automotive Declarable Substance List

3 Definition
3.1 Structure

Data sheet adopts a tree structure, which develops in accordance to different levels for the product. This tree would starts from components, semi-components or materials even to the basic substance. Components could include other components, semi-components and material as the child nodes. Semi-components could only include other semi-components and materials as the child nodes. Materials could only include other materials or basic substances as the child nodes. Components could be positioned as the same level as materials or semi-components and materials can be at the same level, but semi-components and

components can not. Please refer to 4 Exemplification for details.

3.2　Component

3.2.1　Signs

3.2.2　Description

3.2.2.1　Component

Component serves for combining all parts in order to satisfy a certain function. One kind of material, one semi-component or one subcomponent at least requires to be filled in Component MDS. Generally speaking, an establishment of part MDS should accords to a feasible structure of products.

Synonym: part, assembly part

3.2.2.2　Subcomponent

Subcomponent refers to components under those, which are leveled at the first stage. They accord to the same requirements as for components. Signs of subcomponent are identical with those of components.

3.2.3　Mass deviation

Mass deviation refers to a deviation between the whole weights of all materials measured in components and the totality of mass of components leveled at the lower. The mass deviation allowed is required by different factories. The deviation is suggested less than 5%.

3.3　Semi-component

3.3.1　Signs

3.3.2　Description

Compared with subcomponent, semi-component is just a semi-finished product, like steel plate, electric wire and leather and others components, which need to be made in other processes (clipping, stamping and the like) to form finished products. Their mass cannot be identified before these processes. Therefore, the mass of semi-components needs not to be filled in CAMDS.

Synonym: roughcast (for instance textile, bull rod, rods and bars, profiles, plates and so on)

In MDS of semi-components must include one kind of material or another semi-component at least. Semi-component can consist of several materials, like metal plate with cladding (substrate material, cladding, passivation layer) or electric wire (copper core and insulating layer).

3.3.3　Mass percent

In CAMDS, the semi-components, with their real value of mass, should be filled in the column of components. The mass percent between mass of semi-component and that of materials, which are included

in semi-components, can be fixed value, a range like "X%～Y%" or "residual" (the percent of different child nodes from the same parent node). However, the totality of all percent from the same node should equal to 100%.

Note：

Given percents of all child nodes represent as "fixed value", the sum of them should be 100%; otherwise, the system would prompt "error".

Given a percent of one child node is filled as "residual", the sum of percents of other child nodes should be less than 100%; otherwise, the system would prompt "error".

Given there is no "residual" to be chosen for any child node, the min sum of all child nodes can not over 100% and the max sum of them can not less than 100%; otherwise, the system would prompt "error".

Providing the type of mass percent is "range", it should satisfy a requirement in Table 1 (CAMDS requires that all components should not be omitted by adopting "range" mentioned in this *Guidance*.)

Table 1: Range of mass percent in child node of semi-component

Mass percent：X%～Y%	Maximum: M=Y%－X%
$0 < X \leq 100$	$M \leq 20\%$

For example, a certain material used in a semi-component has been used 20% of it. Range of mass percent as X%～Y% shows that mass of the material used in this semi-component can be represented as 10%～28%.

Note: given the range of percent of child node of semi-component excesses an allowed range, the system would prompt "error".

3.4   Material
3.4.1 Signs
3.4.2 Description

Material consists of basic substances. The percent of all basic substances should be 100%. In particular, material could be made up of other materials.

Note:

Given the percents of all child nodes are filled in "fixed value", the sum of all values should be 100%; otherwise, the system would prompt "error".

Given the percent of one child node is "residual", the sum of other nodes should be less than 100%; otherwise, the system prompt "error".

Given there is no "residual" to be chosen, the min sum of all nodes should not over 100% and the max sum

of them can not less than 100%; otherwise, the system would prompt "error".

Standard materials (like metal materials, PCB materials and the like) published by Committee of CAMDS can be quoted into MDS directly. If chemical components in materials have been defined in GB, EN, JIS, ASTM and other public standards, but they have not issued by Committee of CAMDS, please connect to managing center of CAMDS to add these standard materials or to create a MDS by yourself.

3.4.3 Material Details

The Required Information in Creating Material MDS

ID/Version

When creating new material, it will be generated by the System, which is used to identify this material.

Supplier

It is generated by the System automatically.

Material Name

Mandatory item. The name of the material must be able to identify the material accurately, and the material name shall not be brand name.

If there are open standard, material name must be in the same as the one in the open standard. For example:

- For the metal material (using material trademark);
  - Steel-should be consistent with the standard of GB, ISO, JIS, etc. such as 45;
  - Aluminum-should be consistent with the standard of GB, ISO, JIS, etc. such as ZL104;
  - Copper alloy-should be consistent with the standard of GB, ISO, etc. such as H62.
- For plastic material (using the abbreviation code)---ISO 1043 or GB/T 1844 (see CAMDS 04), such as PE-LD;
- For the rubber material---ISO 1629 or GB/T 5576 (see CAMDS 05), such as ACM;
- For the thermoplastic elastomer material---ISO 18064 or GB/T 22027 (see CAMDS 05), such as TPA-ES.

If there is no name in the open standard, the description should be in accordance with the following methods:

- The adhesive layer (such as used for cementing compound), such as hemmed adhesives, spot welding sealant, etc;
- Degreasant (such as used for leather), such as fatty alcohol class of non-ionic surface active agent;
- Laminated composite materials (such as used for textile laminated sheet), such as seat fabric;
- Primer/Finishing coat (such as used for paint), such as polyester resin finish coat.

Name (Foreign)

Optional item. It could be in the same with the material name.

Material Number

Optional item. It is the internal material code that the supplier used to differentiate their products.

Trade Name

Optional item. It is often used in plastics, cementing compound, paint and so on.

Material Classification

Mandatory item. All materials shall be filled into their correct classification.

Material Number

Optional item. Metal material from class 1 to 4 could be reported.

Material code

Optional item. For plastics (QC/T 797, the code should be in accordance with ISO 11469, see CAMDS 04), the thermoplastic elastomer (QC/T 797, the code should be in accordance with ISO 18064, see CAMDS 05), rubber (QC/T 797, the code should be in accordance with ISO 1629, see CAMDS 05), which could be reported.

Norms/Standards

Optional item. It is the standard number that the material cited.

Test Report Number

Optional item. It could be the test report of banned material, the functioning report of the material or the number of other reports.

Recyclability Rate and Recoverability Rate

Optional item. Referring to GB/T 19515/ISO 22628.

Remarks

Optional item. It is used to supplement the material.

Simplified Check Rules

Simplifying the checking items.

Creation Date

It is generated by the System automatically.

Check Date

It is generated by the System automatically.

Release date

It is generated by the System automatically.

3.4.4 Range of mass percentage

When the sub-nodes of a material fall into other material, the range of their mass percentage should meet the requirements of Table 2.

Table 2 The range of mass percentage of sub-nodes of materials

Mass percentage：X%～Y%	Maximum: M=Y%－X%
0＜X≤100	M≤20%

For example: the usage of one material is amount to 20% in the components, if the range of mass percentage of X%～Y% is selected to indicate its mass in the components, it could be stated as 10%～30%.

Note: if the range of mass percentage exceeds the allowed range, the system will prompt "warning".

3.5   Basic substance

3.5.1 Signs   ⚠

3.5.2 Description

The basic substance is the components of the material, which must be selected from the CAMDS system. If the weight percentage of the basic substance is less than 0.1%, it needn't to be added into MDS, but it must be reported if it is prohibited or needed to be declared. The basic substance must be filled into MDS in its form that existed in the material, for example, the basic substance of polymeric material is not permitted to be filled into MDS by splitting into basic elements (C, H, N, O, etc.). The sum of the basic substance in material datasheet must be 100% (if the range is selected, the sum of its minimum number should not beyond 100%, and the sum of its maximum number should not smaller than 100 %.). If the basic substance being used could not be searched in CAMDS, one can apply to the secretariat of the CAMDS Management Committee for appending. The requirement and relevant information of the basic substance should be provided and appended after being approved.

Note: the lowest level of a MDS must be basic substance, otherwise, the system would prompt "error".

3.5.3 Range of mass percentage of basic substance

The range of mass percentage of basic substance should meet the requirements of Table 3.

Table 3: the range of mass percentage of basic substances

Mass percentage：X%～Y%	Maximum: M=Y%－X%
$0 \leq X \leq 7.5$	$M \leq 3\%$
$7.5 < X \leq 20$	$M \leq 5\%$
$20 < X \leq 100$	$M \leq 10\%$

For example: the usage of one basic substance is amount to 18% in material, if the range of mass percentage of X%～Y% is selected to indicate its mass in material, it could be stated as 15%～20%.

The following conditions are out of the limitation of Table 3:

➢   The basic substance content being defined in the open standard;
➢   The basic substance is defined in a large range in the technical requirement, but must be stated in the notes;
➢   All documents that published by CAMDS Management Committee.

Note: if the basic substance contained in the self-created material exceeds the prescribed range, the system would display "warning".

3.5.4 Basic substance type

The basic substance could be divided into 2 types:

1) The basic substance that could be used to describe material accurately, such as iron, EPDM, etc.
2) Wildcard material

When the components of the confidential substance are unknown or unwilling to disclose to other users, the "wildcard material" could be used. The "wildcard material" is not permitted to be banned material or material that needs to be reported, and could not be marked as confidential.

The CAS number of the "wildcard material" in CAMDS is system, and can be divided into three kinds:

① wildcard＞additives, need not to be reported＜; flame retardant, additives, impact modifiers, pigments, etc. used in base material

② wildcard＞component, need not to be reported＜; organic components, inorganic components, plasticizers, etc.

③ wildcard＞impurities, need not to be reported＜; impurities or residue, etc.

The basic substance has two special applications in CAMDS system:

1) Declaring substance

The substance needs to be declared or banned according to GADSL could not be marked as confidential, and its application should be specified according to requirements.

2) Confidential substance

The mass of confidential substance could not exceed 10% of the same material, and it is not permitted to be the substance that needs to be declared or banned. The confidential substance is only open to trustful users, who is the OEM user or other user that specified by the administrator of MDS initial company. The company that created the datasheet owns its ownership.

Under the same material, the sum of the confidential material and the wildcard material should not exceed 10% of the total weight of material (if the range is selected to indicate their contents, the sum of the maximum number of the range should not exceed 10% of the total weight).

Note: if the confidential substance and the wildcard substance under the same material exceed 10% of the total weight of the material, the system will prompt "error".

4   Exemplification
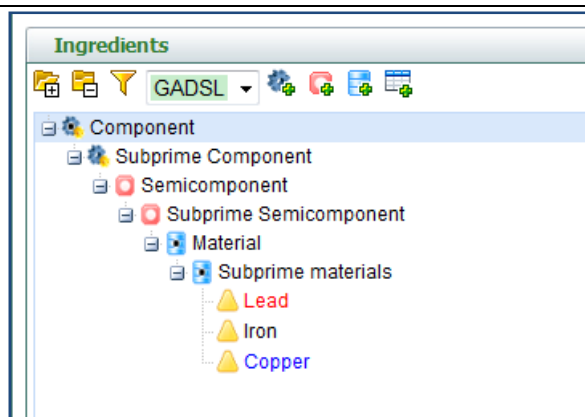
5 Edition and Effective Date

The document is the second edition of CAMDS 01 General Provisions;

The document comes into effect since December 15, 2011.

CAMDS 02 Guidance for Creating MDS of Metallic Coatings and Conversion Coatings for Automobile

1   Scope

This document represents the general requirements for creating MDS of metallic coatings and conversion coatings for automobile in CAMDS. Electroplated coatings, hot-dip galvanized coatings, chemical coatings, thermal spray coatings, vacuum coatings, conversion coatings (such as passivation coating, oxide coating, phosphate coating and coloring film) should follow the requirements stipulated in this document.

2   References

Clauses in the document all are referred directly or indirectly to articles in the following documents. As for referred documents with dates, the amendment (excluding corrigenda) or the expurgated edition should not be applicable to the Guidance. As for the referred documents without dates, the newest edition can be applied to the Guidance.

GB 9800	Chromate conversion coatings on electroplated zinc and cadmium coatings
GB/T 9792	Conversion coatings on metallic materials - Determination of coating mass per unit area-Gravimetric methods
GB/T 5267	Fasteners - Electroplated coatings
QC/T 625	Metallic coatings and conversion coatings for automobile
ISO 4042	Electroplated coatings

3   Definition
3.1 Basic material

Basic material refers to the materials excluding coatings and conversion coatings. They can be found in the drawings/design or the delivery documents.

Many kinds of basic material such as iron and steel, aluminum alloy and magnesium alloy have already been entered into CAMDS. These materials can be directly quoted in CAMDS.

3.2 Conversion coatings

Conversion coatings include oxide coatings, phosphate coating and coloring films, the MDS of which the suppliers can create on their own. There are two kinds of chromate passivation coatings:

1)   Hexavalent chromium passivation coatings
2)   Trivalent chromium passivation coatings

Every kind of conversion coating is of the same level as basic material when entered into CAMDS.

3.3 Metallic coatings

In order to user-friendly, standard materials of many kinds of coatings (such as Ep-Zn、Ep-Fe/Cu、+ZE75/75 (electrolytic zinc)) has been entered into CAMDS. These coatings can be directly quoted or created in the system.

Every metallic coating is of the same level as basic material when entered into CAMDS.

3.4 Blocking agent

Blocking agent, as a kind of material, is created in CAMDS by suppliers.

4   Mass calculation of basic substance, conversion coatings and metallic coatings

4.1   Mass calculation of basic material

1) Calculate through density, surface area and thickness.
2) Calculate through weight.

4.2 Mass calculation of conversion coatings

Calculate through density, surface area and thickness.

4.3 Mass calculation of metallic coatings

1) Calculate through density, surface area and thickness.
2) Calculate through weight.

5   Exemplification

5.1 MDS of bolt with trivalent chromium passivation coatings and zinc coatings (Fe/Ep·Zn8)
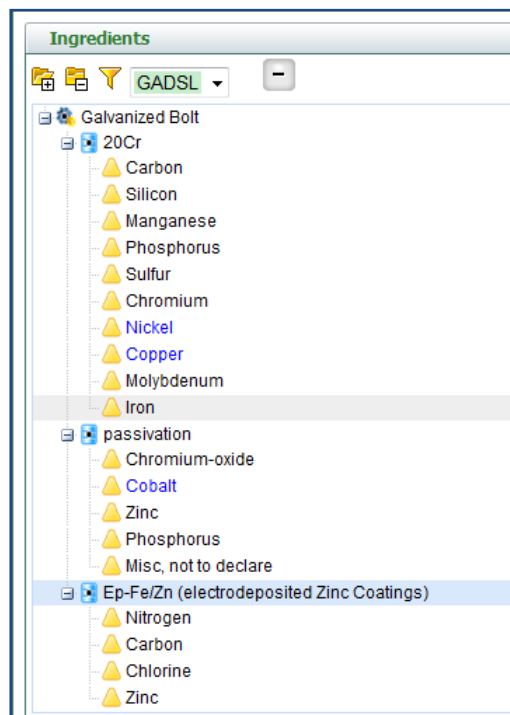
Demonstration of mass calculation of metallic coatings and passivation coatings

Electroplated zinc bolt. Materials: 20Cr；Surface treatment: electroplated zinc (the thickness of coatings is 8μm); passivation treatment: trivalent chromium passivation.

1) Bolt weight

Calculate through the drawings or weigh the bolt without surface treatment.

2) Total area of bolts

$A=A_1\times$length of threaded part $+A_2\times$length of stem end$+A_3=48.31\times20+31.42\times0+905.8=18.72$ cm^2
(Calculation of surface area can refer to the annex of GB/T 5267.1, nameley, the surface area of bolts, screws and nuts.)

3) Weight of zinc coatings

Surface area $\times$ density $\times$ thickness$=18.72$ cm$^2\times7.1$ g/cm$^3\times0.0008$ cm$=106.33$ mg
(Notes: Thickness is determined by the electroplated zinc technique of suppliers.)

4) Weight of passivation coatings

Mass of passivation coating per unit area $\times$ surface area$=0.9$ g/m$^2\times18.72$ cm$^2=1.68$ mg
(**Note:** Mass of passivation coating per unit area can refer to GB 9800.)

6   Edition and Effective Date

The document is the second edition of CAMDS 02 Guidance for Creating MDS of Metallic Coatings and Conversion Coatings for Automobile.

The document comes into effect since December 15, 2011.

CAMDS 03 Guidance for Creating Non-metallic Coatings MDS

1   Scope

This document represents the general requirements for creating non-metallic coatings MDS in CAMDS. Lacquer, varnish coatings should follow the requirements stipulated in this document. This document illustrates by taking the lacquer coatings for example.

Lacquer coatings are generally composed of different coatings, such as phosphate coating, electophoretic coating, prime coating, floating coating and varnish. Every coating must be described alone.

MDS in CAMDS only requires the product composition after its baking. If the lacquers don't contain solvents after the baking, then the solvents don't need to be declared.

2   References

Clauses in the document all are referred directly or indirectly to articles in the following documents. As for referred documents with dates, the amendment (excluding corrigenda) or the expurgated edition should not be applicable to the Guidance. As for the referred documents without dates, the newest edition can be applied to the Guidance.

    QC/T 484   Lacquer coating for automobile

3   Definition

3.1   Single coating

Single coating is generally composed of simple resin curing system or resin-rich system (such as PAA cyanamid), fillers, pigments and additives.

3.2   Multiple coatings

Multiple coatings include two or more than two kinds of coatings. Every coating must be declared alone.

4   Exemplification

Create MDS for door outer panel with multiple coatings, as shown in the picture below:
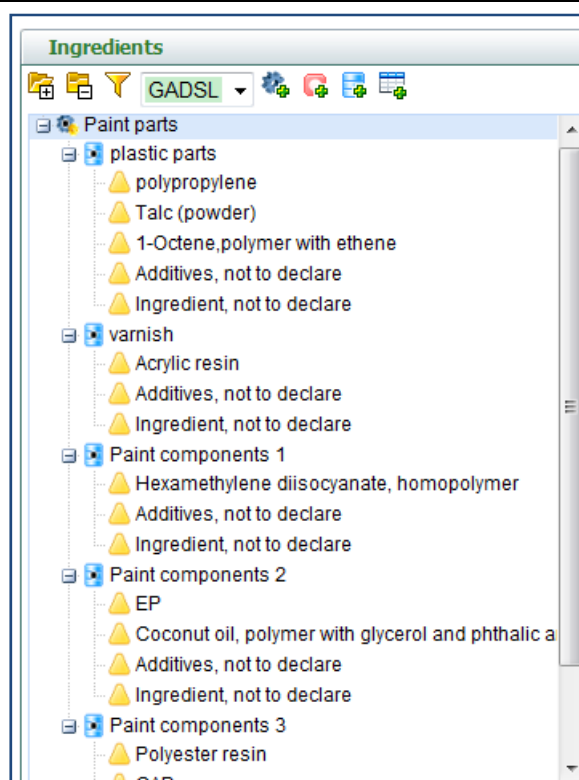
5   Edition and Effective Date

The document is the second edition of CAMDS 03 Guidance for Creating Non-metallic Coatings MDS.

The document comes into effect since December 15, 2011.

CAMDS 04 Guidance for Creating Plastics MDS

1   Scope

This document represents the general requirements for creating plastics MDS in CAMDS and gives an overview of thermoplastics and thermosetting plastics. Plastic materials such as PB, PP, PVC and PU used in dashboards, trim panels, seats and bumpers for automobiles should follow the requirements stipulated in this document.

2   References

Clauses in the document all are referred directly or indirectly to articles in the following documents. As for referred documents with dates, the amendment (excluding corrigenda) or the expurgated edition should not be applicable to the Guidance. As for the referred documents without dates, the newest edition can be applied to the Guidance.

GB/T 1844	Plastics Signs and Abbreviation
QC/T 797	Identification and marking of plastic components of automobiles, rubber components and thermoplastic elastomer
ISO 11469	Plastics - Generic identification and marking of plastic products
ISO 1043	Plastics Signs and Abbreviation

3   Definition
3.3   Plastics

According to the physical and chemical properties of resins (thermal behavior and whether it has the processability of repeated molding), plastics can be divided into thermoplastics and thermosetting plastics. Thermoplastics can be divided into unfilled or filled thermoplastics. If the material contains the amount of fillers or pigments (such as carbon black) which is below 7.5%, it is regarded as unfilled thermoplastics. If the material contains the amount of fillers or pigments (such as carbon black) which is at or above 7.5%, it is regarded as filled thermoplastics. For example, enhanced thermoplastics, in which the amount of fiber accounts for 10%, is filled thermoplastics.

Plastics are composed of the following basic substances: basic polymer (synthetic resin), additives (such as stabilizer, plasticizer, age resister, flame retardant, preservatives), fillers and coloring agent.

The components of plastic materials should exist in the components at its final state and not include the basic substances from the intermediate reaction such as monomer and vulcanizing agent, unless there are some leftovers from the intermediate reaction.

Basic polymer and functional additives in plastics can be chosen from the basic substance column in CAMDS. The code of basic polymer and functional additives can be seen in ISO 1043 or GB/T 1844 (ISO

1043-1 or GB/T 1844.1 basic polymer、ISO 1043-2or GB/T 1844.2 fillers、ISO 1043-3 or GB/T 1844.3 plasticizer、ISO 1043 or GB/T 1844.4 flame retardant).

Plastics MDS can directly list MDS of the basic substances and secondary materials (such as master batches) which it contains or uses.

Directly list the plastics containing basic substances as shown in the picture below:
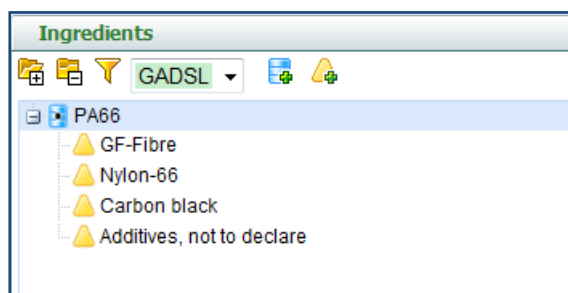
Plastics using secondary materials as shown in the picture below:
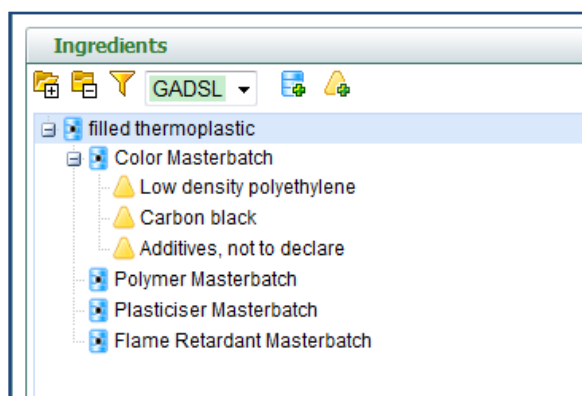
Basic polymer should be the component of basic substances or secondary materials.

Basic polymers can be entered only when materials exist in the final components. It is not allowed to be divided into basic elements such as C, H, N, O when entered into MDS.

4   Exemplification

4.1   Creation of thermoplastics MDS details

4.1.1 Filled thermoplastics

The drop-down menu can assist to create signs:

Code can be created for filled thermoplastics through drop-down menu.

4.1.2 Unfilled thermoplastics

Code can be created for unfilled thermoplastics through drop-down menu.

After creating the code and name of plastic material, the secondary material of plastics must be added manually.

4.2 Creation of thermosetting plastic MDS details

4.2.1 Choose the classification of "thermosetting plastics".

4.2.2 Add code of thermosetting plastics manually

4.2.3 Demonstration of SMC

4.3 Basic polymer

4.3.1 Plastics and resin (search key words "? Resin?" or "? Plastics?", "?" in semi-angle)

Search "? Resin". The results show the resin types, the name of which end with "resin" in CAMDS.

Search"? Resin". The results show the resin types, the name of which begin with "resin" in CAMDS.

Search"? Resin?". The results show the resin types entered in CAMDS, as shown in the picture below.

4.3.2　Shock-resistant modified plastics (search key words "? Shock-resistant?", "?"in semi-angle)

Search"?Shock-resistant?". The results show the list of shock-resistant modified plastics entered in CAMDS.

4.4　Fillers (take talcum powder for an example)

Search "?Talcum powder?". The results show the talcum powder MDS entered in CAMDS.

No.	Name	English Name	CAS No.	EU-Index	EC-Index	REACH-SVHC	Synonym	GADSL
1	滑石粉	Saponite	1319-41-1		215-289-0		皂石	
2	滑石粉	Talc	14807-96-6		238-877-9		滑石	
3	超细滑石粉	Talc (powder)	14378-12-2				滑石	

4.5 Plasticizer (search key words "? Plasticizer?", "?" in semi-angle)

Search"?Plasticizer?". The results show the plasticizer MDS entered in CAMDS.

No.	Name	English Name	CAS No.	EU-Index	EC-Index	REACH-SVHC	Synonym	GADSL
1	三(β-氯乙基)磷酸酯	Tris(2-chloroethyl) phosphate	115-96-8	015-102-00-0	204-118-5	Yes	三氯乙基磷酸酯阻燃增塑剂TCEP	D
2	增塑剂7-11	Santicizer 7-11	39393-37-8					
3	增塑剂DAP	Diallyl-phthalate	131-17-9	607-086-00-4	205-016-3		Allyl Phthalate	
4	增塑剂DCHP	Dicyclohexyl phthalate	84-61-7		201-545-9		邻苯二甲酸二环己酯	
5	增塑剂DMP	Dimethyl phthalate	131-11-3		205-011-6		DMP	
6	增塑剂DNP	Dinonyl-phthalate	84-76-4		201-560-0		邻苯二甲酸二壬酯	
7	增塑剂DOZ	Nonanedioic acid, bis(2-ethylhexyl) ester	103-24-2		203-091-7		DOZ	
8	增塑剂Edenol 1200	Edenol 1200 (9CI)	68994-24-1				A polymeric plasticizer based on adipic acid	
9	己二酸酯增塑剂	Adipate plasticizer ISO 1043-3, not declarable					ISO 1043-3: Plasticizer, Adipate, not declarable	
10	环保增塑剂 MESAMOLL	Mesamoll	94188-65-5					

4.6 Flame retardant (key words "flame retardant")

Search"?Flame retardant?". The results show the flame retardant MDS entered in CAMDS.

No.	Name	English Name	CAS No.	EU-Index	EC-Index	REACH-SVHC	Synonym	GADSL
1	乙撑双四溴邻苯二甲酰亚胺	N,N'-ethylenebis(3,4,5,6-tetrabromophthalimide)	32588-76-4		251-118-6		1,2-双(四溴邻苯二甲酰亚胺)乙烷	
2	卤化物阻燃剂	Halogenated compound ISO 1043-4, not declarable					ISO 1043-4: flame retardant, Halogenated compound, not declarable	
3	添加剂，不需申报	Additives, not to declare	system	system	system		基体材料用的阻燃剂、冲击改性剂、颜料等	
4	硼或锌化合物阻燃剂	Boron or zinc compound ISO 1043-4, not declarable					ISO 1043-4: flame retardant, boron or zinc compound, not declarable	
5	聚磷酸铵	Polyphosphoric acids,ammonium salts	68333-79-9		269-789-9		多聚磷酸铵	
6	锑化合物阻燃剂	Antimony compound, ISO 1043-4, not declarable					ISO 1043-4: flame retardant, Antimony compound	
7	阻燃剂 FRC-1	Bis[[5-ethyl-2-methyl-1,3,2-dioxaphosphorinan-5-yl)methyl] methyl phosphonate P,P'-dioxide	42595-45-9		255-902-9		甲基磷酸-P,P'-二氧代-双[(5-乙基-2-甲基-1,3,2-二氧磷杂环己烷-5-基)甲]酯	
8	阻燃剂BD/P	Phosphoric acid, (1-methylethylidene)di-4,1-phenylene tetraphenyl ester	5945-33-5				(1-甲基亚乙基)二-4,1-亚苯基四个苯基磷酸酯	
9	阻燃剂ZB	Boric acid, zinc salt	1332-07-6		215-566-6		Zinc borate	

5 Edition and Effective Date

The document is the second edition of CAMDS 04 Guidance for Creating Plastics MDS.

The document comes into effect since December 15, 2011.

CAMDS 05 Guidance for Creating MDS of Rubber and Thermoplastic Elastomer

1 Scope

This document represents the general requirements for creating rubber and thermoplastic elastomer MDS in CAMDS. Rubber and elastomer used in components such as car oil pipes, water pipes, seals and tyres should follow the requirements stipulated in this document.

2 References

Clauses in the document all are referred directly or indirectly to articles in the following documents. As for referred documents with dates, the amendment (excluding corrigenda) or the expurgated edition should not be applicable to the Guidance. As for the referred documents without dates, the newest edition can be applied to the Guidance.

GB/T 5576	Rubber and latex- Nomenclature
GB/T 22027	Thermoplastic elastomer-Nomenclature and abbreviation
ISO 1629	Rubber and latex- Nomenclature
ISO 18064	Thermoplastic elastomer - Terms and abbreviation

3 Definition
3.1 Rubber material

Rubber and thermoplastic elastomer used for automobiles are composed of base polymer and functional additives. The information required by MDS in CAMDS should be the product components in its delivery state.

Base polymer used by rubber and thermoplastic elastomer such as NBR and TPU-ARES can be found in the base material database in CAMDS. The nomenclature of base polymer can refer to ISO 1629、GB/T 5576 and ISO 18064、GB/T 22027.

As for the rubber products having complex composition of different kinds of rubber and plastics (such as oil pipes with interior, middle, fiber enhancement and outer layers), every kind of material in its composition should be added when creating MDS, as shown in the picture below:
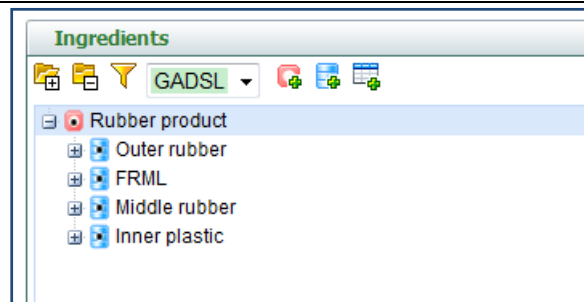
4 Exemplification

4.1 Demonstration of creating MDS of rubber and thermoplastic elastomer

4.1.1 Choose the material type
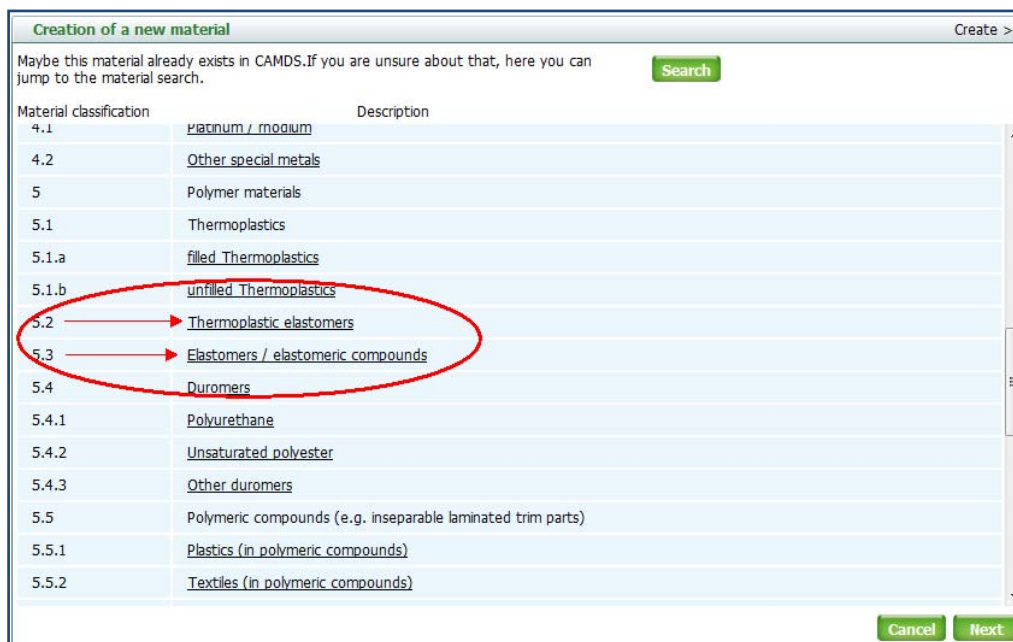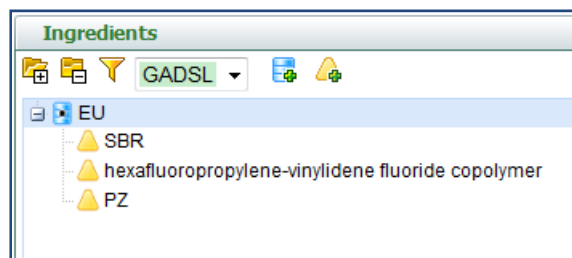
4.1.2 Base polymer of rubber and thermoplastic elastomer

Base polymer of rubber and thermoplastic elastomer is chosen in the drop-down menu:

4.1.3 Add basic substance
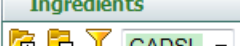
4.2 Demonstration of rubber products (multi-layered rubber hose with enhancement layers)

4.2.1 Interior layer of rubber hose
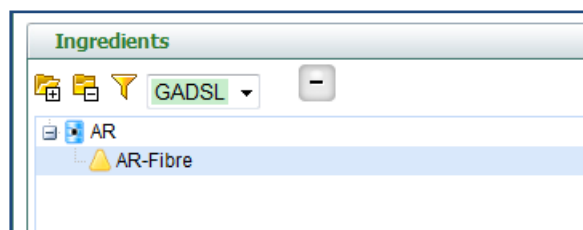
Enhancement layer of rubber hose

Outer layer of rubber hose
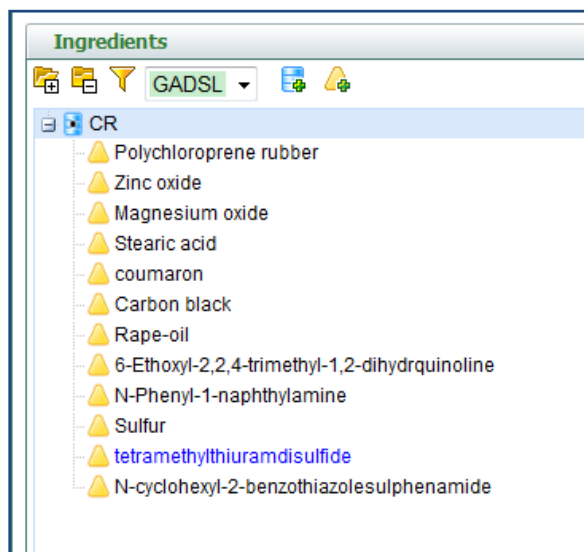
4.2.2 Rubber hose MDS

A rubber hose MDS which contains three parts (the first part: interior layer, the second part: fiber layer, the third part: outer layer)
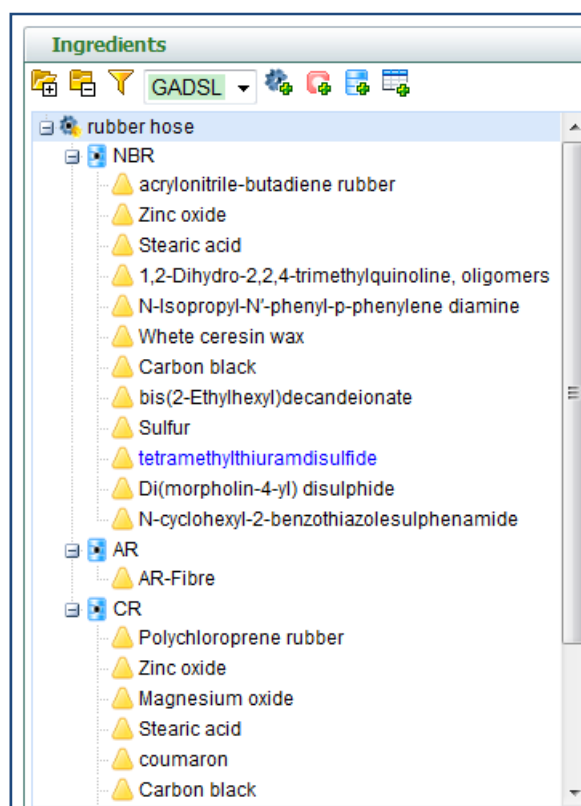
4.3   Demonstration of thermoplastic elastomer products
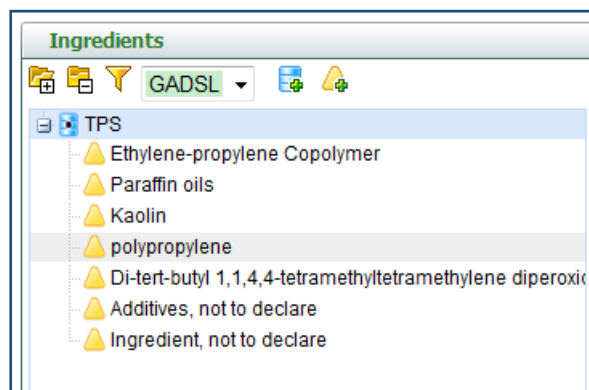
Ratio range of substance:

EPM (35%~45%)

Paraffin oil (25%~35%)

Clay (10%~15%)

Polypropylene (10%~20%)

Vulcanizing agent (0~5%)

Components and additives not to be declared (0~5%)

The ration range above is only for reference.

5   Edition and Effective Date

The document is the second edition of CAMDS 05 Guidance for Creating MDS of Rubber and Thermoplastic Elastomer.

The document comes into effect since December 15, 2011.

CAMDS 06 Guidance for Creating Fiber Products MDS

1   Scope

This document represents the general requirements for creating fiber products MDS in CAMDS. Fiber materials used in components such as seats, roof linings, sun visors, textiles used for clothes stand, carpet for cars, floor mats and braids used for safety belt should follow the requirements stipulated in this document.

Fiber products are composed of basic fiber material, dye, flame retardant, water-proof and oil-proof agent which can stay in the products. Those which can't stay in the products, such as those which can be washed away by water, don't need to be declared.

2   References

Clauses in the document all are referred directly or indirectly to articles in the following documents. As for referred documents with dates, the amendment (excluding corrigenda) or the expurgated edition should not be applicable to the Guidance. As for the referred documents without dates, the newest edition can be applied to the Guidance.

GB/T 4146	Textile	Chemical Fiber
GB/T11951	Textile	Natural Fiber
ISO 2076	Textile	Artificial Fiber
ISO 6938	Textile	Natural Fiber

3   Definition

3.1   Basic substance (fiber)

For textiles, artificial and natural fibers are commonly-used material, which can be found in the basic substance column in CAMDS.

3.2   Dye

Generally speaking, fiber itself has a certain color or is dyed by dying agent. Chemical materials or dye kept in the fibers must be declared.

If the components of chemical materials or dye belong to the list of GADSL, their scientific names must be adopted in declaration (such as dye red and dye yellow of cobalt complex). If the material doesn't belong to the list of GADSL, it can use wildcard characters＞additive, not to be declared＜replacement.

If the fiber contains different kinds of dye (such as light-color and deep-color dye), dye which the fiber contains the most can replace other dyes in being entered.

3.3 Additives

Additives such as flame retardant and waterproof and oil proof agent which are kept in the products must be declared. If the materials belong to the list of GADSL, their scientific names must be adopted in declaration. If the material doesn't belong to the list of GADSL, it can use wildcard characters＞additive, not to be declared＜replacement.

4 Exemplification:
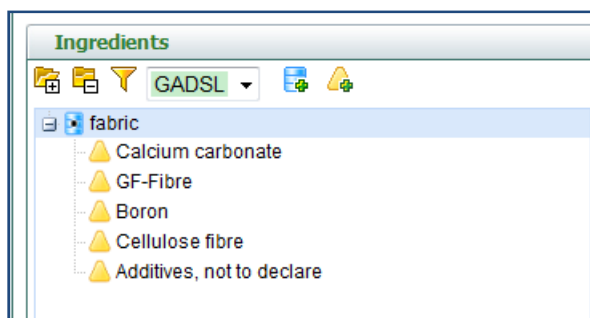
5 Edition and Effective Date

This document is the second edition of CAMDS 06 Guidance for Creating Fiber Products MDS.

The document comes into effect since December 15, 2011.

CAMDS 07 Guidance for Creating Leather MDS

1. Scope

This document represents the general requirements for creating leather MDS in CAMDS. Leather used in components like automobile seats and leather trim should follow the requirements stipulated in this document.

2. References

None

3. Definition

Leather is generally created as semi-components in CAMDS. Raw skin and coatings should be created as material.

Tanning agent and varnish film need to be described for the auxilliary material coating. As for the tanned leather, the name of the animals (such as cow, buffalo) and tanning methods (such as chrome tanning, vegetable tanning) should be mentioned.

Varnish film should be described according to the crosslinking agent dye and other materials remaining in the varnish film or on surface.

4. Exemplification

Demonstration of Leather Products
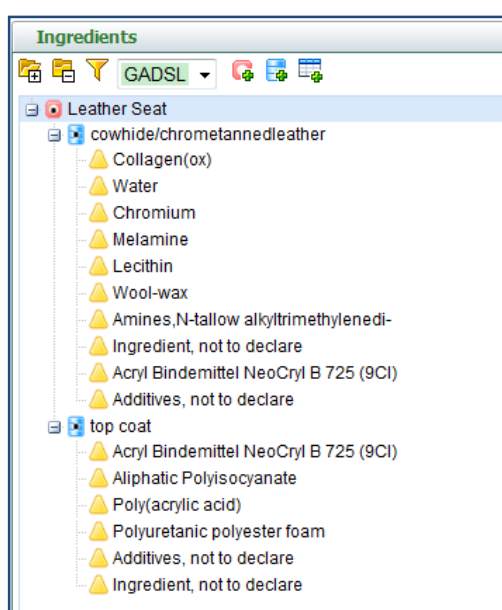
Ration range of components in leather:

Collagens (9CL) (40%~45%)
Water (25%~35%)
Chromium (0~3%)
Melamine (10%~15%)
Lecithin (0~10%)
Lanolin (0~10%)
N-cow fat alkyl-trimethylene diamine (0~3%)
Acrylic resin NeoCryl B 725 (0~3%)
Components and addictives not to be declared (0~5%)

Ratio range of components in varnish film:

Acrylic resin NeoCryl B 725 (25%~35%)
IPDI and PP-1, 2-glycol ethers polymer (5%~15%)
PAA (2%~8%)
Polyurethane Resin LQX 13 (45%~55%)
Components and addictives not to be declared (0~8%)

5. Edition and Effective Date

The document is the second edition of CAMDS 07 Guidance for Creating Leather MDS.

The document comes into effect since December 15, 2011.

CAMDS 08 Guidance for Creating Adhesives and Sealants MDS

1 Scope

This document represents the general requirements for creating sealants and adhesives MDS in CAMDS. Glass adhesives, folding adhesives and ceiling adhesives in automobiles should follow the requirements stipulated in this document.

MDS of this kind of product should describe its chemical composition under the curing state. The description of the products' composition should include basic substance, functional additives and materials which might be left.

2 References

None

3 Definition
3.1 Sealants and adhesives described as semi-components

Sealants and adhesives are generally described as semi-components

As for the same products with different packing, such as adhesives using pipes, plastic bottles, barrels or other container to pack, the supplier can only create one MDS. The products are described in the notes or product names, according to its different application.

3.2 Sealants and adhesives described as material

Sealants and adhesives are generally described as material. The composition of Sealants and adhesives (such as resin, addictives and leftovers) can be described by using the basic substance in CAMDS.

4 Exemplification
4.1 Demonstration of Standard adhesives (as material)
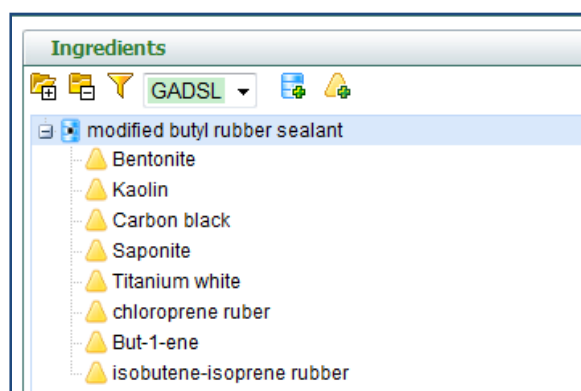
4.2 Demonstration of standard performing material (as semi-component) after heat treatment
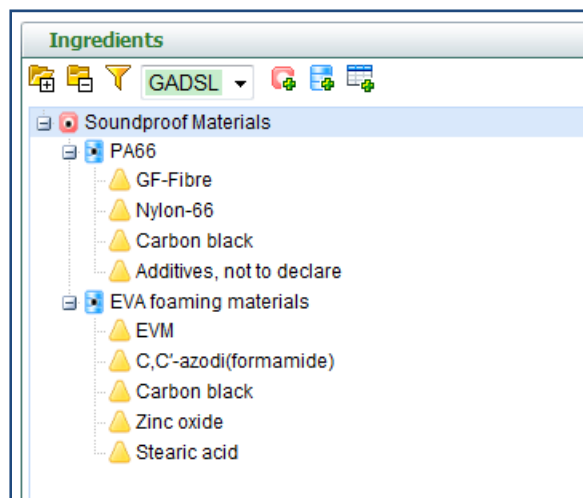
5   Demonstration of tape (as semi-component)
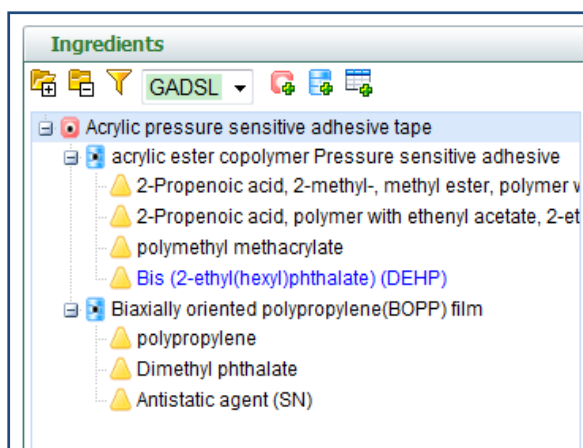
6   Edition and Effective Date

The document is the second edition of CAMDS 08 Guidance for Creating Sealants and Adhesives MDS.

The document comes into effect since December 15, 2011.

CAMDS 09 Guidance for Creating Lubricants MDS

1 Scope

This document represents the general requirements for creating lubricants MDS in CAMDS. Steering oil, brake fluid, engine lubricants, gear oil, CVT lubricants for automobile should follow the requirements stipulated in this document.

Lubricants in this document refer to the lubricants used for automobiles, which don't include the industrial lubricants used in the production process.

2 References

Clauses in the document all are referred directly or indirectly to articles in the following documents. As for referred documents with dates, the amendment (excluding corrigenda) or the expurgated edition should not be applicable to the Guidance. As for the referred documents without dates, the newest edition can be applied to the Guidance.

GADSL   Global Automotive Declarable Substance List

3 Definition

Lubricants should meet the following requirements in CAMDS:

1) Lubricants' composition should be described at its final state in automobiles.
2) Lubricants should be described as material rather than components and semi-components.

Lubricant materials include basic substance and additives, see Table 1.

1) Basic substance: a high percentage in the composition of lubricants. It must be reflected in MDS.
2) Addictives: a low percentage in the composition of lubricants. Only materials in GADSL need to be declared.

Table 1: Lubricants with different material composition

| Lubricant Composition	Basic Substance	Additives
Material Category	1. Esters and synthetic oil as basic oil 2. Aluminum soap base as thickening agent	Only materials in GADSL need to be declared

4 Exemplification

Create lithium base grease material as shown in the picture below:
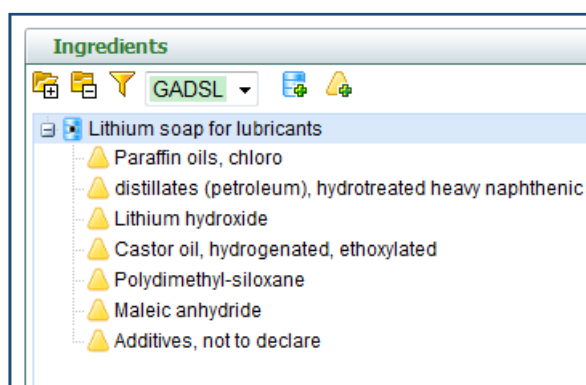
5   Edition and Effective Date

The document is the second edition of CAMDS 09 Guidance for Creating Lubricants MDS.

This document comes into effect since December 15, 2011.

CAMDS 10 Guidance for Creating Electronic Components MDS

-PCB and Wiring Harness Assembly

1   Scope

This document represents the general requirements for creating electronic components MDS in CAMDS, such as PCB and wiring harness assembly.

This document doesn't include the creation of shell and mounting panel which are connected with electronic components.

2   References

Clauses in the document all are referred directly or indirectly to articles in the following documents. As for referred documents with dates, the amendment (excluding corrigenda) or the expurgated edition should not be applicable to the Guidance. As for the referred documents without dates, the newest edition can be applied to the Guidance.

GADSL   Global Automotive Declarable Substance List

3   Definition

Electronic components such as PCB and wiring harness assembly are light in quality and complex in structure, which might include more than one hundred semi-components. In order to facilitate the creation, the suppliers can enter according to PCB material classification. Wiring harness assembly can be simplified and entered as semi-components.

Users can't use PCB standard material to conceal basic substance that can't meet the requirements of regulations (such as GADSL) and customers.

4   Creation of electronic component MDS

4.1   Basic substance used by PCB

In order to facilitate the description of PCB assembly, standard material of PCB components can uniformly be added with "PCB-". Material in PCB components correspond to the table below.

Name of PCB standard material in CAMDS	Real name of Material
PCB-EP	EP
PCB-PVC	PVC
PCB-Organic Material	Organic Material

PCB-Glass Fiber	Glass Fiber
PCB-Ceramics	Ceramics
PCB-Inorganic Material	Inorganic Material
PCB-Copper	Copper Alloy
PCB-Aluminium	Aluminium Alloy
PCB-Solder	Sn/Pb-Alloy (Solder)
PCB- Precious Metal	Precious Metal

The unlisted material in the table above can be created in CAMDS voluntarily.

Different types of PCB are mainly composed of the following materials:

PCB-EP
PCB-PVC
PCB-Organic material
PCB-Glass fiber
PCB-Ceramics
PCB-Inorganic material
PCB-Copper
PCB-Aluminum
PCB-Solder
PCB-Precious Metal

4.2　Wiring Harness Assembly

In CAMDS, MDS of components in wiring harness assembly are uniformly created as semi-components. The names of semi-components are shown in the table below.

Assembly	Semi-components
Wiring Harness	Connector
	Wire
	Tape
	Jacket
	Cable ties
	Fastener
	Label
	Auxiliary components

5　Exemplification
5.1　PCB MDS
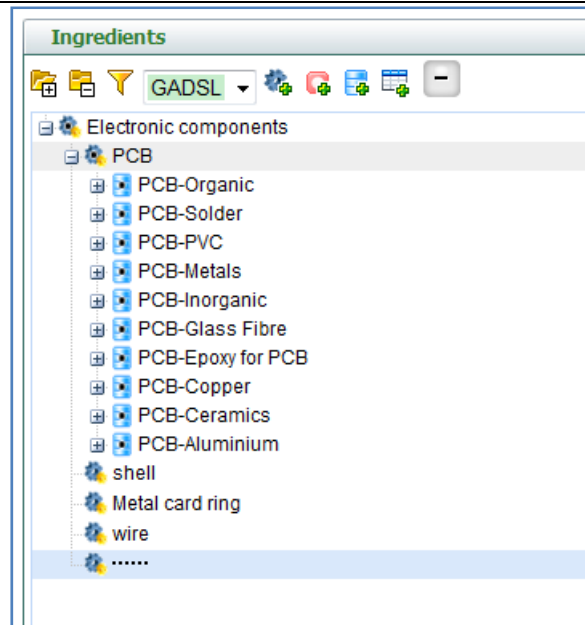
5.2 Wiring Harness Assembly MDS
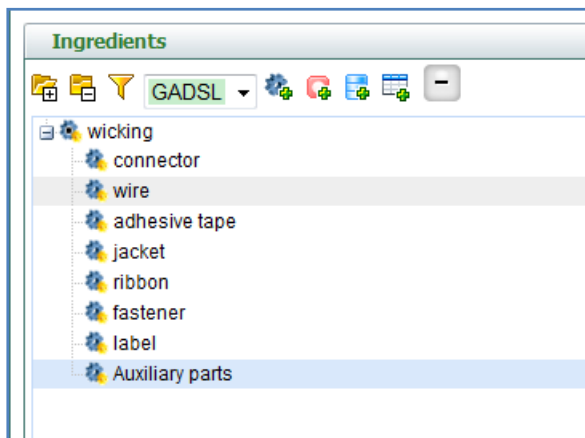
6 Edition and Effective Date

The document is the second edition of CAMDS 10 Guidance for Creating Electronic Components MDS.

The document comes into effect since December 15, 2011.

CAMDS 11 Guidance for Creating MDS for Components in Automobile Lighting System

1 Scope

This document represents the general requirements for creating MDS of automobile lighting components (such as headlamps, taillights and signal lamps) in CAMDS.

2 References

None

3 Definition

Automobile lighting system is composed of semi-components such as shell, lens and reflector. Besides, special components such as light source and waterproof paper should be added.

4 Exemplification

General structure of automobile lighting components
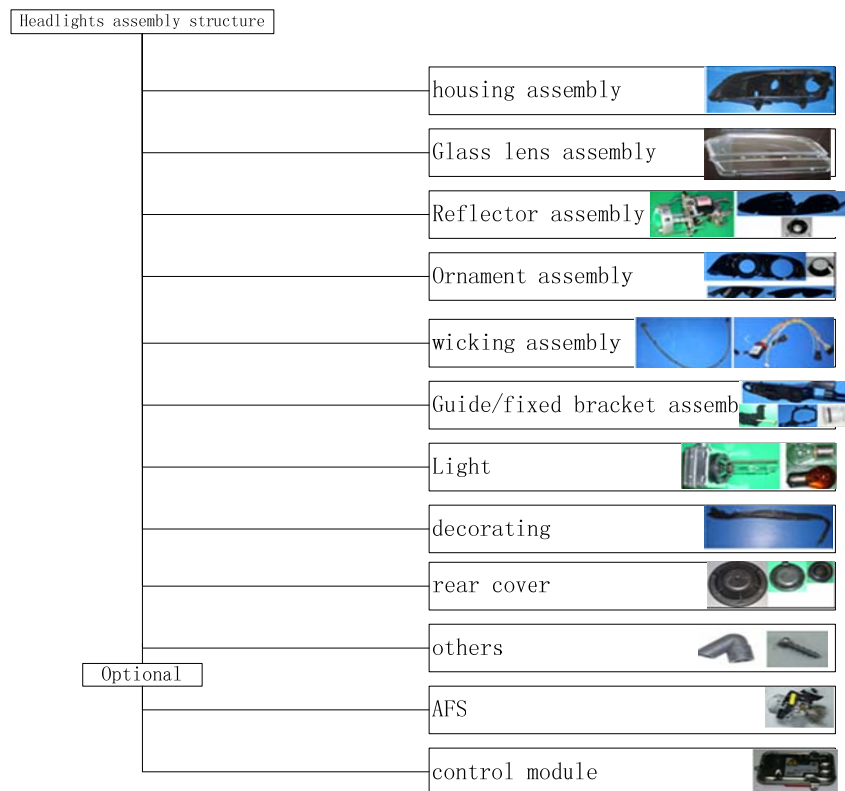
MDS demonstration of headlight assembly
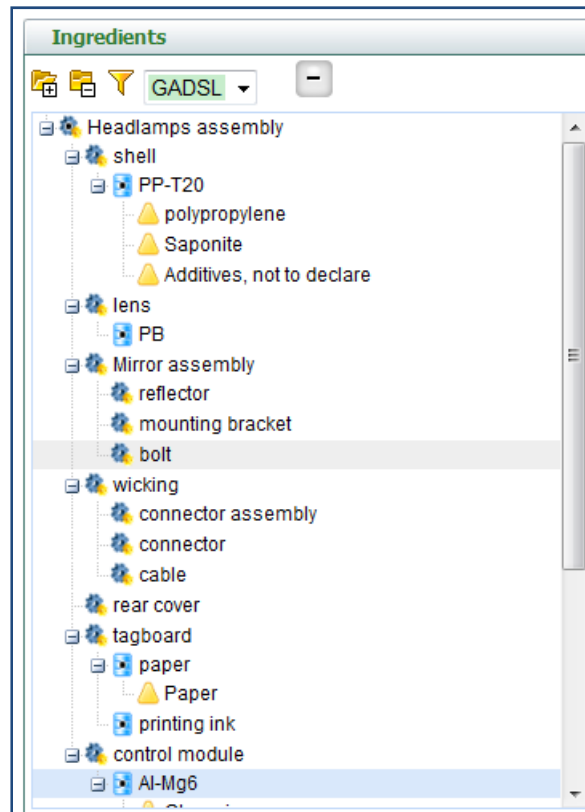
5 Edition and Effective Date

The document is the second edition of CAMDS 11 Guidance for Creating MDS for Components in Automobile Lighting System.

The document comes into effect since December 15, 2011.

CAMDS 12 Guidance for Creating MDS for Automobile Glass Components

1   Scope

This document represents the general requirements for creating MDS for automobile glass components in CAMDS, such as windscreen, side window glass, tail door glass, skylight glass and in-car glass partitions. Other glass, such as the rear-view glass or headlight is not included in the document.

2   References

Clauses in the document all are referred directly or indirectly to articles in the following documents. As for referred documents with dates, the amendment (excluding corrigenda) or the expurgated edition should not be applicable to the Guidance. As for the referred documents without dates, the newest edition can be applied to the Guidance.

GADSL   Global Automotive Declarable Substance List

3   Definition
3.1   Components

Automobile glasses (including windscreen and other subcomponents fastened upon it) are entered as components. Subcomponents are composed of semi-components or material (see Demonstration 4).

3.2   Basic substance
3.2.1   Basic substance to be entered

The following basic substances must be entered:

1) Major composition
2) All the D, P, D/P substance contained in GADSL

3.3   General module for automobile glass

The general modules below are used to describe the common material or semi-component in the automobile glass components. The modules are only applied to those products which meet the requirements of material composition. If other materials needing to be declared exist in the products, new MDS need to be created.

3.3.1   Demonstration of Slice Glass
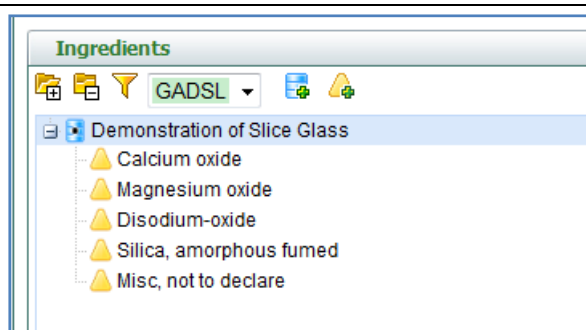
3.3.2 Demonstration of PVB Laminated Glass
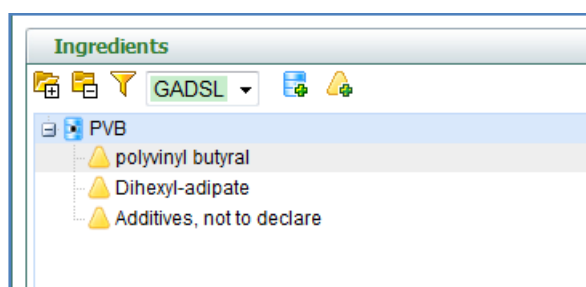
3.3.3 Demonstration of Print Coating
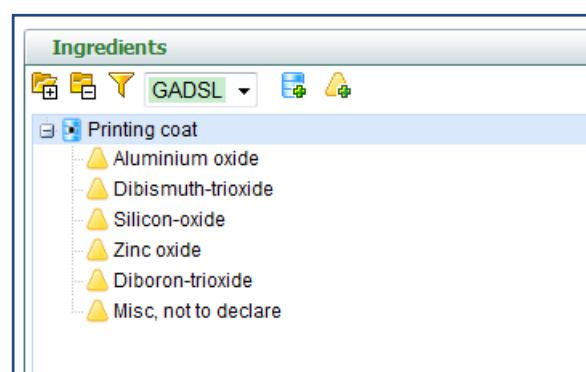
3.3.4 Demonstration of Glass Enamels
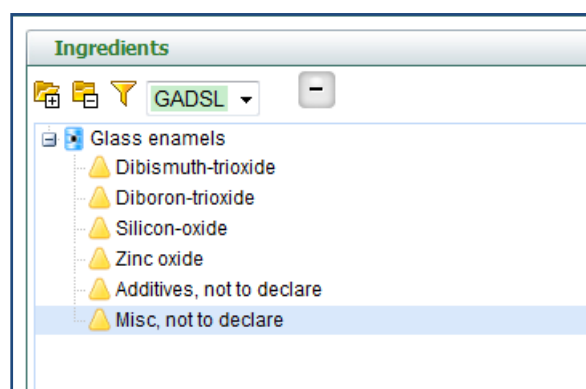
4 Exemplification

The following demonstration lists the structural tree of automobile glass components created in CAMDS. The automobile glass components generally contain …. If other material or components exist, they should be added to the structural tree in MDS.

Structural Tree:
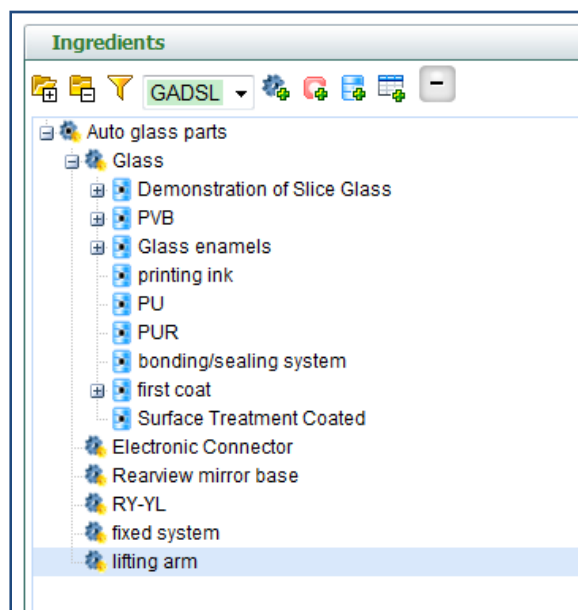
5 Edition and Effective Date

The document is the second edition of CAMDS 12 Guidance for Creating MDS for Automobile Glass Components.

The document comes into effect since December 15, 2011.

CAMDS 13 Guidance for Creating MDS of Components in Heat Exchange System

1. Scope

This document represents the general requirements for creating MDS of components in heat exchange system in CAMDS. The heat system for automobile generally include the following semi-components: oil cooler, radiator, condenser, exhaust gas recirculation cooler, inter cooler, battery, receiver dryer, cooling hose, A/C pipeline (hose and tube), compressor of air conditioner, exhaust pipe, HVAC, HVAC module and front end module (including radiator, condenser, inter cooler and fans).

2. References

None

3. Definition

The heat system products can be divided into two types according to the link modes between components, namely, non-splittable category and splittable category. Products belonging to the non-splittable category refer to the components which are joint forever (through welding, brazing, copper brazing and rivet joint). Products belonging to the splittable category refer to the composite components which can be theoretically divided.

Products belonging to the non-splittable category include oil cooler, radiator, condenser, exhaust gas recirculation cooler, inter cooler, battery, receiver dryer, cooling hose, A/C pipeline (hose and tube), compressor of air conditioner, exhaust pipe, HVAC. Products belonging to the splittable category include HVAC module and front end module (including radiator, condenser, inter cooler and fans).

4. Exemplification

In creating the inter cooler of the heat system, it can be seen as a non-splittable component in this document.
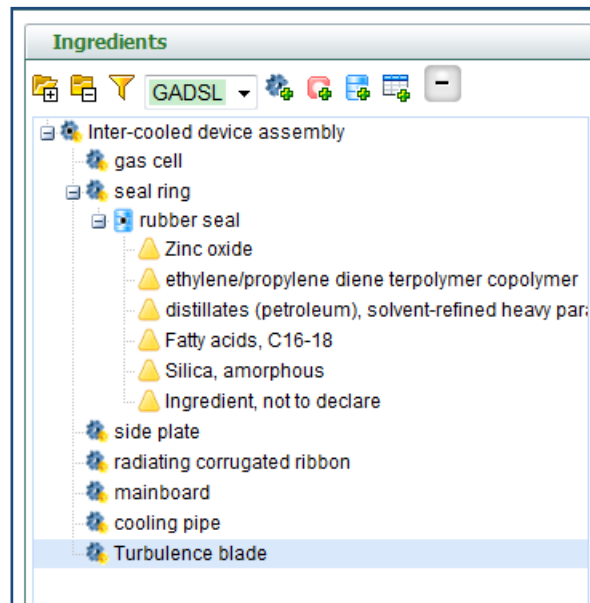
Note: This example is the independent inter cooler assembly. If it needs a bearer or other auxiliary means, similar methods must be adopted to expand the tree structure so as to include these components.

In creating HVAC module, it can be seen as the splittable component in this document.
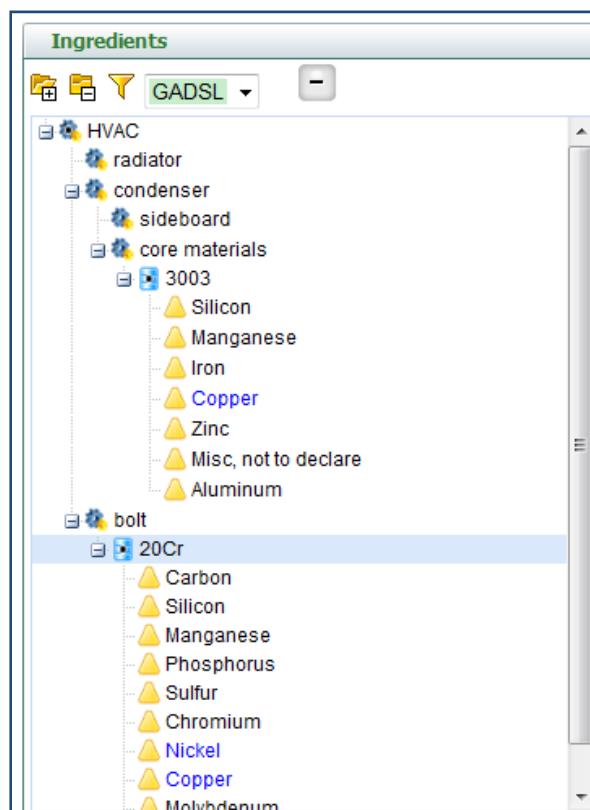
Note: If the module includes other fasteners and auxiliary means (such as bearer), similar methods must be adopted to expand the tree structure so as to include these components.

5. Edition and Effective Date

The document is the second edition of CAMDS 13 Guidance for Creating MDS for Components in Heat Exchange System.

The document comes into effect since December 15, 2011.

CAMDS 14 Guidance for Creating MDS for Components in Automobile Steering System

1   Scope

This document represents the general requirements for creating MDS for components in automobile steering system. The automobile steering system generally mainly includes steering column assembly, gear assembly, power steering pump, hose assembly and drive (semiaxis) assembly.

2   References

None

3   Definition

The steering system is generally composed of different and independent assemblies. The components in steering system assembly, such as steering column assembly, gear assembly, power steering pump, hose assembly and drive (semiaxis) assembly are all standard units and should be described as semi-components.

4   Exemplification

Create gear system:
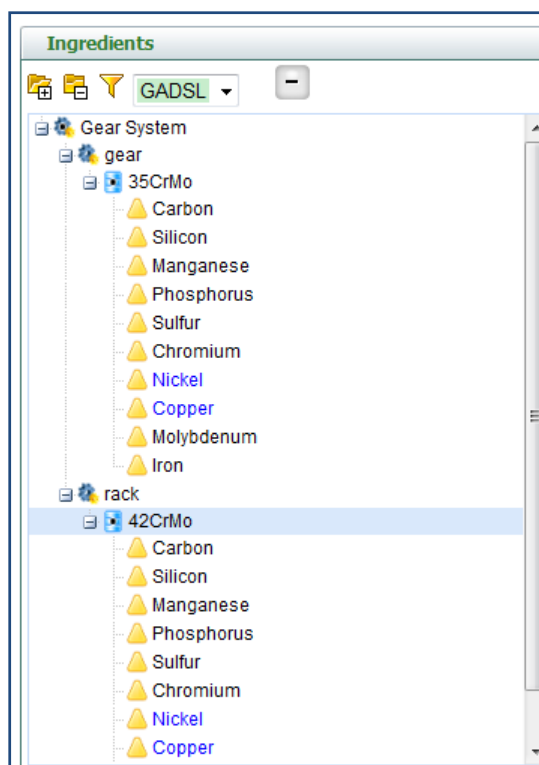
Create the whole steering system:
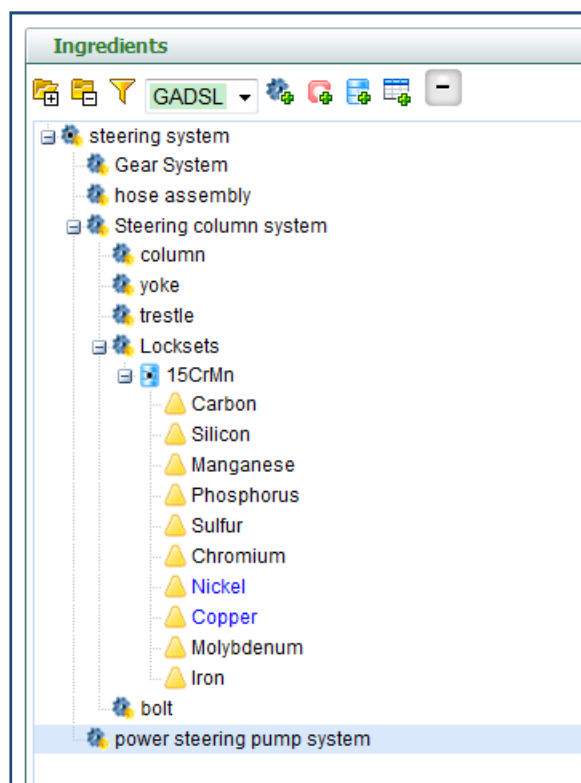
5 Edition and Effective Date

The document is the second edition of CAMDS 14 Guidance for Creating MDS for Components in Automobile Steering System.

The document comes into effect since December 15, 2011.

CAMDS 15 Guidance for Creating Oil Filter MDS

1. Scope

This document represents the general requirements for creating oil filter MDS in CAMDS. All types of oil filter for automobiles should follow the requirements stipulated in this document.

2. References

None

3. Definition

There are many types of oil filter for automobiles, but their composition is basically the same.

Generally speaking, oil filters are mainly made up of the following materials:

Iron and steel (85.0~88.0%, coating as a single material)
Paper element (5.0~7.0%)
Paper element with synthetic fiber
Paper element without synthetic fiber
Adhesive (3.0~6.0%)

    1) Hot melt adhesive
    2) Tape
    3) Polyurethane adhesive

Rubber (2.2~2.4%)

    1) NBR
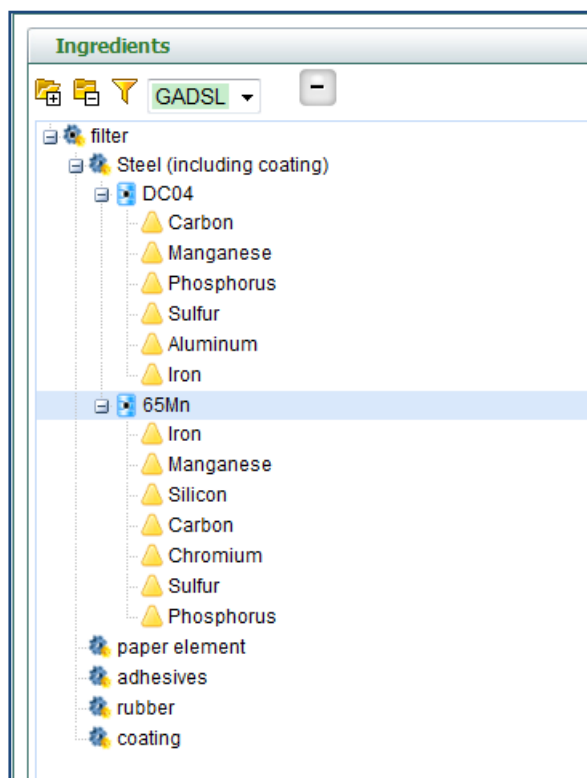   2) AEM
    3) NBR/SBR
    4) ACM
    5) VMQ

Lacquer (0.5~0.9%)

    1) Water-based lacquer
    2) Solvent lacquer
    3) Powder coating

4. Exemplification

The picture below is a rotating oil filter MDS.

5. Edition and Effective Date

The document is the second edition of CAMDS 15 Guidance for Creating Oil Filter MDS.

The document comes into effect since December 15, 2011.

CAMDS 16 Guidance of Modification to MDS

1 Scope

This document has pointed out various situations where modification, update and reapplication of MDS are needed in CAMDS.

2 Reference

Clauses in the document all are referred directly or indirectly to articles in the following documents. As for referred documents with dates, the amendment (excluding corrigenda) or the expurgated edition should not be applicable to the Guidance. As for the referred documents without dates, the newest edition can be applied to the Guidance.

GADSL   Global Automotive Declarable Substance List

3 Principle of MDS data update

3.1 No modification should be made to integer version of MDS that have been sent to client and not be rejected. If modification to details of MDS is necessary, the MDS should be copied and modification can be done to the newly created MDS.

3.2 When GADSL changes that some substance changes from "N/A" to "Declarable" or "Prohibited", it can no longer be set as "confidential substance" or replaced by "wildcard substance". No changes will happen to the original MDS of that substance which requires the user to amend it.

3.3 For standard material, if relevant standard is changed or revised, CAMDS Management Committee will issue new material according to new standard while the MDS referring substance with old standard will not update automatically which requires user to modify that MDS according to the real situation of the product.

3.4 For prohibited substance application, if relevant standard or regulation is changed or revised, users in this system can select Apply and make coherent changes and modification. The original MDS will not update automatically which requires users to modify the MDS related to application based on the real situation of the product.

4 Principle of modification of ID and version number

4.1 New ID number will be created by the system automatically while establishing new MDS; No changes will occur to the ID number and version number when modifying MDS.

4.2 When MDS version number changes from decimal to integer, one will be added to the biggest integer version number in the system. e.g. After copying new version, there will be MDS with different version number (1.01, 2.01, 3.01, 1, 2, 3) and the biggest integer version number is 3. So when changing any of MDS from decimal version number (1.01, 2.01, 3.01) to integer number, it would be changed into 4.

5   Edition and Effective Date

The document is the second edition of CAMDS 16 Guidance of Modification to MDS.

The document comes into effect from December 15, 2011.