



International Material Data System

IMDS Recommendation	IMDS 015
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Automotive Steering Systems

1. Purpose

This recommendation describes the general requirements for the creation of Material Data Sheets for Automotive Steering System assemblies: Columns assemblies, Gears assemblies, Pumps assemblies, Hoses assemblies and Transmission (Half shafts) assemblies.

2. References

- IMDS001 general recommendation.
- Global Automotive Declarable Substance List (GADSL, www.gadsl.org).
- Recommendation documents on fasteners (IMDS008), coated metals (IMDS007 and IMDS 009), plastics (IMDS010), elastomers (IMDS 003), circuit boards (IMDS019) and electronic parts.

3. Definition

The Steering System is made of different assemblies supplied in many cases as separate assemblies.

3.1 Part



The Steering System parts, like Column assemblies, Gear assemblies, Pump assemblies, Hoses assemblies and Transmissions (Half shafts) assemblies, are standard units.

All this assemblies are described with parts, sub-parts and / or flat bill of materials.

Here are some general guidelines:

- All materials and substances involved have to be mentioned and quantified within the accuracy limits stated in the IMDS guidelines
- Materials, containing reportable or prohibited substances have to be mentioned specifically (e.g. Lead in PVC, Aluminium Alloy, Hex Chromium in annex II ref. 2002/525/EC of 2000/53/EC directive....)
- Steering Systems containing the maximum number of options could be taken as representative product

3.2 Material



Describes from which material a part is produced of. Materials consist of substances (for further information see IMDS001).

3.3 Substances



Substances describe a material. A material consists of one or various substances. Main substances and all substances listed in the GADSL list have to be reported.

4. Examples

The following examples show how to structure a standard steering system.




- Example 1: Gears System assembly
- Example 2: Gear assemblies, Hoses assemblies and Pump assemblies
- Example 3: Column system

4.1 Example 1: Steering System = Gear System Assembly only

Ingredients












Steering Systems 10483614 / 0.01 (Node ID 10483614)

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 **Steering Systems**

-  **Rack & Pinion ASM**
 -  EN AW-ALSi1Fe
 -  100Cr6
 -  Spring Steel Wire A DIN 17223
 -  NBR
 -  PA6.6-GF 30
-  **REPS mechanism**
 -  C10
 -  e-plate Zn (electrodeposited Zinc Coatings)
 -  Passivation blue/transp. Zn/ZnFe/ZnNi
-  **Tie Rod ASM**
 -  C15
 -  X50CrMoV15
 -  e-plate ZnFe (electrodeposited Zinc-Iron Coatings)
 -  Passivation black ZnNi
-  **Fixtures & Annexes**
 -  19MnB4
 -  e-plate Zn (electrodeposited Zinc Coatings)
 -  Passivation blue/transp. Zn/ZnFe/ZnNi

Type	Component (MDS)
ID / Version	10483614 / 0.01
MDS Supplier	
Description	Steering Systems
Part/Item No.	123 456 789
Measured Weight per Item	6000 [g]
Tolerance	+/- 5 [%]
Calculated Weight per Item	5951.11 [g]
Deviation	-0.814833 [%]
Development Sample Report	

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4.2 Example 2: Steering System = Gear + Pump + Hoses


Ingredients

Steering Systems 10501220 / 0.01 (Node ID 10501220) → Create → MDS → Ir

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Steering Systems




- [-] ■ Gear System ASM
 - [+] ■ Rack & Pinion ASM
 - [+] ■ REPS (Rack Electronic Power System)
 - [+] ■ Tie Rod ASM
 - [+] ■ Fixtures & other annexes
- [-] ■ Pump Assemblies
 - [+] ■ Pump ASM
 - [+] ■ Fixtures & Annexes
- [-] ■ Hydraulic Hoses Assemblies
 - [+] ■ Hoses (polymeric)
 - [+] ■ Coolers
 - [+] ■ Lines (metallic)

Type	Component (MDS)
ID / Version	10501220 / 0.01
MDS Supplier	
Description	<div style="border: 1px solid #ccc; padding: 2px;">Steering Systems</div>
Part/Item No.	<div style="border: 1px solid #ccc; padding: 2px;">Z 111 222 33 44</div>
Measured Weight per Item	<div style="display: flex; align-items: center;"> <div style="border: 1px solid #ccc; padding: 2px 10px;">6500</div> <div style="border: 1px solid #ccc; padding: 2px 5px;">g</div> </div>
Tolerance	+/- <div style="border: 1px solid #ccc; padding: 2px 10px;">2</div> [%]
Calculated Weight per Item	
Deviation	Material see Example1 (Gear System ASM)
Development Sample Report	<input type="checkbox"/>




4.3 Example 3: Steering System = Column System only


Ingredients

Steering Systems 10501220 / 0.01 (Node ID 10501220) → Create → MDS → Ir

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Steering Systems

- [-] ■ Column System
 - [+] ■ Column ASM
 - [+] ■ Column fixing system
 - [+] ■ EPS (Electric Power System)
 - [+] ■ Intermediate Shaft
 - [+] ■ Steering Wheel + Annexes

Type	Component (MDS)
ID / Version	10501220 / 0.01
MDS Supplier	
Description	<div style="border: 1px solid #ccc; padding: 2px;">Steering Systems</div>
Part/Item No.	<div style="border: 1px solid #ccc; padding: 2px;">Z 222 44</div>
Measured Weight per Item	<div style="display: flex; align-items: center;"> <div style="border: 1px solid #ccc; padding: 2px 10px;">3400</div> <div style="border: 1px solid #ccc; padding: 2px 5px;">g</div> </div>
Tolerance	+/- <div style="border: 1px solid #ccc; padding: 2px 10px;">2</div> [%]
Calculated Weight per Item	
Deviation	Material see Example 1 (Gear System ASM)
Development Sample Report	<input type="checkbox"/>



5 This document is recommended by

Adam Opel AG
Bayerische Motoren Werke AG
DaimlerChrysler AG
Dr. Ing. h.c.F. Porsche AG
Fiat Auto
Ford Motor Company
Toyota Motor Corporation
Volkswagen Group
Volvo Car Corporation

6 Release and Revisions

6.1 Release

The recommendation was first approved and released March 2004.

6.2 Revision

Rev.	Date	Description / Reason	Released by
01	June 2005	ILRS to GADSL	IMDS Material Services

7 Cooperation and Assistance

Georges Katundi	Delphi Saginaw Steering System Europe
Andrea Bihr	ZF Lenksystem GmbH
Doug Jahn	Delphi Steering Systems World Wide