



International Material Data System

IMDS Recommendation	IMDS 011
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Nonmetallic Coatings

(mono- and multi-layer systems)

e.g. Paint, Enamel, Metal-Flake (Pigment) Coating

1 Purpose

This recommendation outlines the general requirements for the creation of Material Data Sheets (MDS) describing painted (enameled) components. It shall be used to report complete paint systems like multi-layer vehicle surface coatings, also to describe mono coats (single paint layers) as they are being used for component painting.

For metallic coatings (electroplate/electroless) see References IMDS 007-009.

A paint/enamel normally consists of different layers (e.g. phosphate pretreatment, electrocoat, primer, basecoat, clearcoat). Each layer must be described separately. The IMDS Material Datasheet is requiring information on the product composition, i.e. enamel layers after the heat treatment (drying, curing, hardening process). Consequently solvents as contained in the liquid paint must not be reported, as they are no longer present in the cured material.

2 References

IMDS 001, IMDS 007, IMDS 008, IMDS 009, GADSL

3 Definitions

3.1 Mono Coat (single paint layer)

This paint type often consists of a simple resin-hardener system (e.g. Melamine), or a multi resin system (e.g. Acrylic-Polyester-Melamine) and a filler (e.g. talc), pigments (e.g. carbon black, rutile) and further additives, which are intentionally introduced. For the users' convenience the composition of many standard resin systems (Compound of a polymeric network) are listed in the IMDS Basic Substance Database as 'Basic Duromer' pseudo-substances (see example in section 4). Each layer can be described as a Material —●.

Typical ranges (Min.(X) – Max. (Y)) for the amount (percentage) of a basic substance may be used. Such ranges are NOT specifications. Ranges must not be used as a means to avoid declaring the full composition. Guidelines for acceptable ranges are listed below


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Portion: from X% to Y%	Maximum M = Y% - X%
$0 \leq X \leq 10$	$M \leq 2$
$10 < X \leq 20$	$M \leq 4$
$20 < X \leq 50$	$M \leq 6$
$50 < X \leq 100$	$M \leq 10$

3.2 Paint System (multi layer paint / enamel)

Each individual enamel layer can either be described as a material (see section 3.1) or as a multi-composed material  (see example in section 4) where each layer material (e.g. cross-linked binders, pigments, fillers, additives etc.) must be declared.

3.3 Material binders

Here is a table with some typical material binders.

<i>Matrix</i>	<i>Cross-linking functional group</i>
Epoxy resin (Bisphenol A type)	Urethane bond
Polyester-Melamine resin	Ether bond
Polyester resin	Urethane bond
Polyurethane-Melamine resin	Ether bond
Polyurethane resin	Urethane bond
Polyurethane-Polyester-Melamine resin	Ether bond
Polyurethane-Polyester resin	Urethane bond
Acrylic-Melamine resin	Ether bond
Acrylic-Polyester-Melamine resin	Ether bond
Acrylic-Polyester-Polyurethane-Melamine resin	Ether bond
Acrylic resin	Ether bond
Acrylic resin	Urethane bond

3.4 Phosphate coatings (phosphate pretreatment)

Phosphate coatings, often used as pretreatment before painting the metallic components, are in IMDS as standard materials. You can select them by searching for “*phosphate coating” as material name and “IMDS-Committee” as supplier.

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Search Criteria: Name=*phosphate coating, Supplier=IMDS-Committee, Origin=all, Version=current
9 items found, showing all items.

No.	Name, >Symbol<	Trade name	Mat.-No.	ID / Version	Supplier
1	Iron phosphate coat..., >Feph<	-	-	7029554 / 4	IMDS-Commit.
2	Manganese phosph..., >Mnph<	-	-	9502076 / 3	IMDS-Commit.
3	Manganese phos..., >MnNiph<	-	-	7031907 / 4	IMDS-Commit.
4	Zinc calcium pho..., >ZnCaph<	-	-	7027255 / 4	IMDS-Commit.
5	Zinc phosphate coat..., >Znph<	-	-	7026761 / 4	IMDS-Commit.
6	Zinc phosphate c..., >ZnMnph<	-	-	9501722 / 3	IMDS-Commit.
7	Zinc phosphate..., >ZnMnNiph<	-	-	9501829 / 4	IMDS-Commit.
8	Zinc phosphate co..., >ZnNiph<	-	-	9501801 / 3	IMDS-Commit.
9	Zink calcium ph..., >ZnCaNiph<	-	-	9501938 / 4	IMDS-Commit.

View

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Preview

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New Search

4 Examples

4.1 Example of a One layer (Monocoat) paint and a Multi-layer paint / enamel

<< contained in pdf 011b (under IMDS011), please download/open this file separately from the IMDS Recommendations screen >>

5 Release and Revisions

5.1 Release

The recommendation was initially approved and released on February 19th 2003.

5.2 Revision

Rev.	Date	Description / Reason	Originating Organization / Committee
01	30.10.03	Editorial review, examples added	IMDS SC
02	01.02.05	Phosphate coatings as standard materials added	IMDS-SC
03	01.10.06	Update of presentation in chapter 4.1	IMDS-SC
04	31.10.06	Update of ranges in chapter 3.1	IMDS-SC
05	16.03.07	Update of ppt presentation and range table (just the form, not the ranges)	IMDS-SC