

Explanation of the External List

Material List

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1. Concept of Material List

□ Purpose

The purpose of the material list is

to simplify and improve the material data input work.

In order to achieve that purpose, the followings were adopted.

- Unification of material names
- Selective input method
- Automatic entry of chemical substance information for standard materials

□ Listed Materials

The list covers the materials required for material surveys in the automobile field and the materials are in association with IMDS.

(Refer to Appendix “Material list abstract version”)

The composition is shown on the next page.

□ Composition of material list

classification	Standard	Material Name	Material Code	Material Symbol	VDA classification	Substance Info.	
Metal	JIS	●	●		●	●	※ 1712 data
		●	●		●		
	Unique code	●	●		●		
surface treatment	JIS	●	●		●	●	※ 37 data
	EN ISO9717	●	●		●		
	Unique code	●	●		●	●	
		●	●		●		
Plastic, rubber and so on	ISO1043, ISO1629, ISO18064	●		●	●		
others	JIS	●	●		●		
	Unique code	●	●		●		
(Any)	Other official standard	●	○	○	●		

● : Information available ○ : Enter either one (@place)

- For ※ materials, substance information is registered as standard materials. So if you select these, the component information is automatically entered.
- For other materials, enter the component information manually after selecting the material.

2. Registered material data with substances

(1) Metallic materials regulated by JIS

- Ferrous Materials:

Steel, Cast steel, Sintered steel, Cast iron etc.

- Non-Ferrous Materials:

Aluminium alloy, Copper/Copper alloy etc.

(i) Handling of “Remarks” and “Notes” in JIS

- Reflect only if the substances and the content rate are specified.
- Agreement between delivering parties (e.g. a manufacturer and the purchaser) is not reflected.

(ii) JIS materials not registered

1) Materials which exceed the threshold regulated by EU ELV for Pb, Hg, Cr6+ and Cd (Not including the materials exempted by ANNEX II)

<Example>

JIS Z3261, JIS Z3262, JIS Z3264, JIS Z3265: All materials

JIS H3270: C5441

JIS H5120: CAC401, CAC406, CAC602, CAC603 and so on

2) Materials whose compound content is not uniquely defined, and materials whose content range is too wide

Example1 JIS G3459 SUS321TP

Ti % > 5 × C% (Ti content is five times over the C content.)

Example 2 JIS G4303 SUS316F

C% > 0.15% (C content is over 0.15%.)

(2) Surface treatment

- Metallic coating (Electroplating, Electroless plating)
- Chromate film, Passivation

[Reference: IMDS Public Material data, technical data]

(3) IMDS Committee materials for phosphate coatings

- Zinc phosphate coating
 - Iron phosphate coating
 - Manganese phosphate coating
 - Zinc calcium phosphate coating
- etc.

3. Precautions for using registered material data

① Confirmation of actual component

Be sure to confirm the actual material component in advance.

If any of the actual material components are different from that of the registered material, manually enter the actual components without using the registered material. (Modify default value)

Example when there are differences : P. 8

Correction procedure : P. 9

Example when there are differences

SUP6 (JIS G4801, Spring steels)

a) Registered material data

Substance name	Substance portion	Substance portion (Min.)	Substance portion (Max.)	Substance portion (Rest)
Carbon	0.6	0.56	0.64	
Silicon	1.65	1.50	1.80	
Manganese	0.85	0.70	1.00	
Phosphorus	0.015	0	0.030	
Sulphur	0.015	0	0.030	
Copper	0.15	0	0.30	
Iron	96.72			1

b) Actual chemical composition

Substance name	Substance portion	Substance portion (Min.)	Substance portion (Max.)	Substance portion (Rest)
Carbon	0.6	0.56	0.64	
Silicon	1.65	1.50	1.80	
Manganese	0.85	0.70	1.00	
Phosphorus	0.0175	0	0.035	
Sulphur	0.0175	0	0.035	
Copper	0.15	0	0.30	
Iron	96.715			1

JIS allows these contents because the description below is written in remarks.

[Remarks]

‘The value of P and S may be specified to be no more than 0.035% under an agreement between the manufacturer and the purchaser.’

In such cases, it is not allowed to use the registered material data for reporting. Please report by using actual data as in b).

Correction procedure

- (1) Select a material and import the registered data.
- (2) Overwrite the substance data whose actual data on the chemical composition differ from the registered data.
- (3) Run data check *.

Details of “data check *”

Matching check*) is performed between input data and registered data. If data is the same, the message below will be shown and the ‘Node ID [material]’(Item No.:46) will be deleted after this check.

[mes115:Warning]

**The material-substance information is not found in the external list.
The values have been deleted.**

Matching check*) : When loading the data created by an old version of JAMA sheet, there is the case that Node ID for material data has been changed due to the data update. In such a case, as the old Node ID has already been deregistered, data check is not done, therefore, the warning message will not be displayed. (This is the case without procedure (1).)

② In principle, use of registered materials

Use the registered material data in principle if it is available. However, the user who creates data by JAMA sheet has the responsibility for using the registered material data, therefore, please check the precautions before using it.

③ Application Code

Registered material data do not have Application Code. Please input it manually after checking the related regulations.

④ Refer to the latest JIS standards

As described in p.3 (1) ii), when JIS standard is revised, the old material data is replaced to new one or deleted. Always use it with reference to the latest JIS standards.

4. Input rule of the special symbol '\$'

(1) In the case of material number for metal material and welding material

A manual input method is used for 'Material number' field to reduce registered data volume for materials that are expected to be infrequently input.

Input rule and notes concerning '\$' mark are as follows.

<Input rule>

Material name	Norms/Standards	Material number	VDA Classification
Titanium and titanium alloy castings	JISH5801	\$	2.3

Default

Manual replacing

(Only the relevant number/symbol shall be replaced.)

- Please refer to JIS HANDBOOK or the homepage of Japanese Industrial Standards Committee (JISC*) when searching for Material numbers.

JISC*: <https://www.jisc.go.jp/index.html>

<Notes>

- Be sure to enter a number/symbol in the material number field '\$'.
- An error occurs if you do not enter.
- The relevant number/symbol shall be replaced.

(2) Material symbols for Plastics

'Material symbol' for polymer alloy shall be indicated in the same way as material symbols regulated by ISO1043 or the recycling mark.

The Material symbol for polymer is inputted using a '\$' mark as follows.

Material name	Norms/Standards	Material number	Material symbol	VDA Classification
Plastics PBT (Filled)	ISO1043		PBT-\$	5.1.a
Plastics PBT (Unfilled)	ISO1043		PBT	5.1.b
Plastics PBT alloy (Filled)	ISO1043		PBT+\$-\$	5.1.a
Plastics PBT alloy (Unfilled)	ISO1043		PBT+\$	5.1.b

+\$ (left): Polymer, -\$ (right): Filler

Examples of entry method:

Ex.1) PBT/PC alloy (Unfilled)

For PBT>PC, please choose 'PBT+\$' and replace '\$' with 'PC'.

For PBT<PC, please choose 'PC+\$' and replace '\$' with 'PBT'.

For PBT=PC, both 'PBT+PC' and 'PC+PBT' are allowed to be used.

(It depends on the agreement between purchaser and supplier whether 'PBT+PC' or 'PC+PBT' is used.)

Ex.2) Polymer alloy composed of three polymers (Unfilled)

Please replace '\$' with the symbols for the second and the third components.

In the case of PBT/PET/PC (PBT: main component), please choose 'PBT+\$' and replace '\$' with 'PET+PC'.

Material symbols (Plastic materials) are listed on P.13-14.

Reference chart for Material symbols (Plastic materials) [1/2]

13/17

Material Name	Symbol
acrylonitrile-butadiene plastic	AB
acrylonitrile-butadiene-acrylate plastic	ABAK
acrylonitrile-butadiene-styrene plastic	ABS
acrylonitrile-chlorinated polyethylene-styrene	ACS
acrylonitrile-(ethylene-propylene-diene)-styrene plastic	AEPDS
acrylonitrile-methyl methacrylate plastic	AMMA
acrylonitrile-styrene-acrylate plastic	ASA
cellulose acetate	CA
cellulose acetate butyrate	CAB
cellulose acetate propionate	CAP
cellulose formaldehyde	CEF
carboxymethyl cellulose	CMC
cellulose nitrate	CN
cycloolefin copolymer	COC
cellulose propionate	CP
cellulose triacetate	CTA
ethylene-acrylic acid plastic	EAA
ethylene-butyl acrylate plastic	EBAK
ethyl cellulose	EC
ethylene-ethyl acrylate plastic	EEAK
ethylene-methacrylic acid plastic	EMA
ethylene-propylene plastic	E/P
ethylene-tetrafluoroethylene plastic	ETFE
ethylene-vinyl acetate plastic	EVAC
ethylene-vinyl alcohol plastic	EVOH
perfluoro(ethylene-propylene) plastic	FEP
poly[(3-hydroxybutyrate)-co-(3-hydroxyvalerate)]	HBV
liquid-crystal polymer	LCP
methyl methacrylate-acrylonitrile-butadiene-styrene plastic	MABS
methyl methacrylate-butadiene-styrene plastic	MBS
methyl cellulose	MC
α-methylstyrene-acrylonitrile plastic	MSAN
polyamide	PA
polyamide 11	PA11
polyamide 12	PA12
polyamide 46	PA46
polyamide 6	PA6

Material Name	Symbol
polyamide 610	PA610
polyamide 612	PA612
polyamide 66	PA66
polyamide 6T	PA6T
polyamide 9T	PA9T
polyamide MXD6	PAMXD6
poly(acrylic acid)	PAA
polyaryletherketone	PAEK
polyamideimide	PAI
polyacrylate	PAK
polyacrylonitrile	PAN
polyarylate	PAR
polyarylamide	PARA
polybutene	PB
poly(butyl acrylate)	PBAK
1,2-polybutadiene	PBD
poly(butylene naphthalate)	PBN
poly(butylene succinate)	PBS
poly(butylene succinate adipate)	PBSA
poly(butylene terephthalate)	PBT
polycarbonate	PC
poly(cyclohexylenedimethylene cyclohexanedicarboxylate)	PCCE
polycycloolefin	PCO
polycaprolactone	PCL
poly(cyclohexylenedimethylene terephthalate)	PCT
polychlorotrifluoroethylene	PCTFE
polydicyclopentadiene	PDCPD
polyethylene	PE
polyethylene, chlorinated	PE-C
polyethylene, high density	PE-HD
polyethylene, low density	PE-LD
polyethylene, linear low density	PE-LLD
polyethylene, medium density	PE-MD
polyethylene, ultra high molecular weight	PE-UHMW
polyethylene, very low density	PE-VLD
Polyestercarbonate	PEC
polyetheretherketone	PEEK

Reference chart for Material symbols (Plastic materials) [2/2]

Material Name	Symbol
polyetherester	PEEST
polyetherimide	PEI
polyetherketone	PEK
poly(ethylene naphthalate)	PEN
poly(ethylene oxide)	PEOX
poly(ethylene succinate)	PES
polyesterurethane	PESTUR
polyethersulfone	PESU
poly(ethylene terephthalate)	PET
polyetherurethane	PEUR
perfluoro(alkyl vinyl ether)-tetrafluoroethylene plastic	PFA
polyhydroxyalkanoate	PHA
poly(3-hydroxybutyrate)	PHB
polyisobutylene	PIB
polyisocyanurate	PIR
polyketone	PK
poly(lactic acid)	PLA
polymethacrylimide	PMI
poly(methyl methacrylate)	PMMA
poly(N-methylmethacrylimide)	PMMI
poly(4-methylpent-1-ene)	PMP
poly(α -methylstyrene)	PMS
poly(oxymethylene), polyacetal, polyformaldehyde	POM
polypropylene	PP
polypropylene, expandable	PP-E
polypropylene, high impact	PP-HI
poly(phenylene ether)	PPE
poly(propylene oxide)	PPOX
poly(phenylene sulfide)	PPS
poly(phenylene sulfone)	PPSU
polystyrene	PS
polystyrene, expandable	PS-E
polystyrene, high impact	PS-HI
polystyrene, sulfonated	PS-S
polysulfone	PSU
polytetrafluoroethylene	PTFE
poly(trimethylene terephthalate)	PTT

Material Name	Symbol
poly(vinyl acetate)	PVAC
poly(vinyl alcohol)	PVAL
poly(vinyl butyral)	PVB
poly(vinyl chloride)	PVC
poly(vinyl chloride), chlorinated	PVC-C
poly(vinyl chloride), unplasticized	PVC-U
poly(vinylidene chloride)	PVDC
poly(vinylidene fluoride)	PVDF
poly(vinyl fluoride)	PVF
poly(vinyl formal)	PVFM
poly(N-vinylcarbazole)	PVK
poly(N-vinylpyrrolidone)	PVP
styrene-acrylonitrile plastic	SAN
styrene-butadiene plastic	SB
styrene-maleic anhydride plastic	SMAH
styrene- α -methylstyrene plastic	SMS
vinyl chloride-ethylene plastic	VCE
vinyl chloride-ethylene methyl acrylate plastic	VCEMAK
vinyl chloride-ethylene-vinyl acetate plastic	VCEVAC
vinyl chloride-methyl acrylate plastic	VCMAC
vinyl chloride-methyl methacrylate plastic	VCMMA
vinyl chloride-octyl acrylate plastic	VCOAK
vinyl chloride-vinyl acetate plastic	VCVAC
vinyl chloride-vinylidene chloride plastic	VCVDC
polyurethane	PUR
unsaturated polyester	UP
cresol-formaldehyde resin	CF
epoxide, epoxy resin or plastic	EP
furan-formaldehyde resin	FF
melamine-formaldehyde resin	MF
melamine-phenol resin	MP
poly(diallyl phthalate)	PDAP
phenol-formaldehyde resin	PF
polyimide	PI
silicone plastic	SI
urea-formaldehyde resin	UF
vinyl ester resin	VE

5. Proper use of materials with public standard and those with unique code ^{15/17}

1) If a material is regulated by a public standard, the material with the public standard shall be chosen.

Example:

If a material is A1100 (JISH4000), search for A1100 on the search screen and select it.

2) If a material is not regulated by any public standard, the material with Unique Code shall be chosen.

Please use also unique codes in the following cases.

- There is a component which is out of the range of the component ratio specified by the official standard.
- There are components which are not specified by the public standard.

Remark:

Plastics and rubber materials don't have specifications in their public standards, but material types are regulated by them. Therefore, 'Unique codes' are not defined.

Public standards for plastics and rubber:

Plastic: ISO1043, Rubber: ISO1629, Thermoplastic Elastomer: ISO18064

unique codes and the materials

Unique code	Material
JAMAA1111	Supplied material
JAMAA4444	Material other than Supplied material and Surface treatment
JAMAH4444	Surface treatment (Other than Chromate film)
JAMAHCRF	Surface treatment (Trivalent Chromium Passivation, Chromium-free Passivation)
JAMAHC	Surface treatment (Hexavalent Chromium Passivation)

6. VDA classification

Reference chart of VDA classification (Code–definition) is as follows.

VDA Classification	Definition
0	undefined
1	Steels and iron materials
1.1	Steels / cast steels / sintered steels
1.1.1	unalloyed, low alloyed
1.1.2	highly alloyed
1.2*	Cast iron
1.2.1	Cast iron with lamellar graphite / tempered cast iron
1.2.2	Cast iron with nodular graphite / vermicular cast iron
1.2.3	Highly alloyed cast iron
2	Light alloys, cast and wrought alloys
2.1*	Aluminium and aluminium alloys
2.1.1	Cast aluminium alloys
2.1.2	Wrought aluminium alloys
2.2*	Magnesium and magnesium alloys
2.2.1	Cast magnesium alloys
2.2.2	Wrought magnesium alloys
2.3	Titanium and titanium alloys
3	Heavy metals, cast and wrought alloys
3.1	Copper (e.g. copper amounts in cable harnesses)
3.2	Copper alloys
3.3	Zinc alloys
3.4	Nickel alloys
3.5	Lead
4	Special metals
4.1	Platinum / rhodium
4.2	Other special metals

VDA Classification	Definition
5	Polymer materials
5.1	Thermoplastics
5.1.a	filled Thermoplastics
5.1.b	unfilled Thermoplastics
5.2	Thermoplastic elastomers
5.3	Elastomers / elastomeric compounds
5.4*	Duromer
5.4.1	Polyurethane
5.4.2	Unsaturated polyester
5.4.3	Others duromers
5.5	Polymeric compounds (e.g. inseparable laminated trim parts)
5.5.1*	Plastics (in polymeric compounds)
5.5.2*	Textiles (in polymeric compounds)
6	Process polymers
6.1	Lacquers
6.2	Adhesives, sealants
6.3*	Underseal
7	Other materials and material compounds (scope of mixture)
7.1	Modified organic natural materials (e.g. leather, wood, cardboard)
7.2	Ceramics / glass
7.3	Other compounds (e.g. friction linings)
8	Electronics / electrics
8.1	Electronics (e.g. pc boards, displays)
8.2	Electrics
9	Fuels and auxiliary means
9.1*	Fuels
9.2	Lubricants
9.3	Brake fluid
9.4	Coolant / other glycols
9.5	Refrigerant
9.6	Washing water, battery acids
9.7*	Preservative
9.8	Other fuels and auxiliary means

Remarks:

1. VDA Classification highlighted in gray color cannot be chosen in IMDS and JAMA sheet.
In addition, VDA Classification with * mark after number cannot be chosen in JAMA sheet.
2. For Silver/Silver alloy, 4.2 and 8.1 are assigned, but 8.1 must be used for Electronics.

History

History	Date	Ver.	Description
N	Oct. 01, '19	3.02	Create new
1			
2			
3			
4			
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