

Explanation of Material list (Ver.2.10)

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Revision history

Version	Date	Notes
1	October 1, 2006	New issue for Version 2.01
2	July 1, 2007	The second edition issue for Version 2.02 *
3	November 1, 2008	The third edition issue for Version 2.04
4	June 1, 2009	The forth edition issue for Version 2.05
5	October 1, 2009	The fifth edition issue for Version 2.10

*: Version .2.03 applies the second edition.

1. Explanation of input rules regarding material information

1-1. Material number (Metal or materials other than plastics or rubber) Material symbol (plastics or rubber)

(1) General rules

1) If the material is regulated by public standards, such a material shall be chosen.

2) If the material is not regulated by public standards, a material of which the public standard is JAMAxxxxx *(Unique Code) shall be chosen.

*: xxxxx: A1111,A2222,A4444,H4444,HC,HCRF

Notes:

If the actual chemical composition is different from public standards specification as follows, a “Unique code” shall be chosen.

- Portion range of substances exceeds specification range regulated by public standards.
- Substance not regulated by public standards is included.

Remarks:

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

For plastics and rubber materials, material symbols shall be chosen in the Material list.

(2) Usage of symbols regulated by Public standards

- 1) Both Material number and Material symbol in the JAMA Material list refer to updated public standards.

Note:

With engineering drawings which have not been updated to reflect the latest JIS, discrepancies may occur between the engineering drawing and the Material list, so please refer to the updated JIS and check materials information.

- 2) In some JIS standards both current symbols and old symbols are listed. **In such a JIS, only current symbols are registered in the Material list.**
Refer to the example on the right.
- 3) If public standards are revised after the release of the updated Material list (Material number or Material symbol changes), material information shall be inputted using the current version.
- 4) In some JIS both JIS symbols and ISO symbol are listed.
In such a JIS, only JIS symbols are registered in the Material list.
Refer to Attachment 1–6. Comparative charts (JIS symbol – ISO symbol) are attached.

**Example of 2) JISG4401
(Carbon tool steels)**

Old	Current
SK1	SK140
SK2	SK120
SK3	SK105
SK4	SK95
SK5	SK85
SK6	SK75
SK7	SK65

(3) Usage of Unique Codes

Unique codes are classified as follows.

- | | |
|--------------|---|
| 1) JAMAA1111 | Supplied parts |
| 2) JAMAA2222 | Electronic parts (Only when corresponding to ELV directive ANNEX II) |
| 3) JAMAA4444 | Supplied parts, Electronic parts and (Other than Surface treatment) |
| 4) JAMAH4444 | Surface treatment (Other than 5, 6) |
| 5) JAMAHC | Surface treatment (Chromate film) |
| 6) JAMAHCRF | Surface treatment (Trivalent Chromium Passivation, Chromium-free Passivation) |

A reference chart for Unique Codes is shown in Appendix 2 (Page: Attachment 7 to 13).
To be referred to when searching for Unique Codes.

(4) Material number for Metal (\$ mark)

In ver.2.01, various JIS standard materials were added to the JAMA Material list, including materials used for minor applications. For these materials the Material number is set as a '\$' mark for the following reasons.

- Frequency of use for these materials is estimated to be small.
- If all material information is registered in the JAMA Material list (Excel file), the volume of data will be very large. (Concerns arise over degradation of working speed of personal computers.)

Input rules and notes concerning the '\$' mark are found below..

<Input rules>

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

Manually inputted by user

(Only symbols regulated by JIS shall be inputted.)

<Notes>

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

*:URL of JISC: <http://www.jisc.go.jp/app/JPS/JPSO0020.html>

- Prescribed information shall be inputted with a '\$' mark. (Lack of input will cause an error.)
- Only symbols regulated by JIS shall be inputted.
- Please be careful not to make a mistake when inputting a '\$' mark..

(5) Material symbol for Plastics

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

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

Surface treatment flag	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 are found below:

Ex.1) PBT/PC alloy (Unfilled)

For PBT>PC, please choose 'PBT+\$' and input 'PC' in place of '\$'.

For PBT<PC, please choose 'PC+\$' and input 'PBT' in place of '\$'.

For PBT=PC, both 'PBT+PC' and 'PC+PBT' are allowed by rule..

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

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

Please input symbols for both the second component and the third component in place of '\$'.

If the plastics material is PBT/PET/PC (PBT: main component), please choose 'PBT+\$' and input 'PET+PC' in place of '\$'.

Material symbols (Plastic materials) are listed on P.8-10.

Reference chart for
Material symbols
(Plastic materials) [1/3]

Material name	Material symbol
acrylonitrile-butadiene plastic	AB
acrylonitrile-butadiene-acrylate plastic; preferred term for ABA	ABAK
acrylonitrile-butadiene-styrene plastic	ABS
acrylonitrile-chlorinated polyethylene-styrene; preferred term for ACPES	ACS
acrylonitrile-(ethylene-propylene-diene)-styrene plastic; preferred term for AEPDMS	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; preferred term for EBA	EBAK
ethyl cellulose	EC
ethylene-ethyl acrylate plastic; preferred term for EEA	EEAK
ethylene-methacrylic acid plastic	EMA
ethylene-propylene plastic; preferred term for EPM	E/P
ethylene-tetrafluoroethylene plastic	ETFE
ethylene-vinyl acetate plastic; preferred term for EVA	EVAC
ethylene-vinyl alcohol plastic	EVOH
perfluoro(ethylene-propylene) plastic; preferred term for PFEP	FEP
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 12	PA12
polyamide 46	PA46
polyamide 6	PA6
polyamide 612	PA612
polyamide 66	PA66
polyamide 6T	PA6T
polyamide 9T	PA9T
poly(acrylic acid)	PAA
polyaryletherketone	PAEK
polyamidimide	PAI
polyacrylate	PAK
polyacrylonitrile	PAN
polyarylate	PAR

Reference chart for
Material symbols
(Plastic materials) [2/3]

Material name	Material symbol
poly(aryl amide)	PARA
polybutene	PB
poly(butyl acrylate)	PBAK
1, 2-polybutadiene	PBD
poly(butylene naphthalate)	PBN
poly(butylene terephthalate)	PBT
polycarbonate	PC
poly(cyclohexylene dimethylene cyclohexanedicarboxylate)	PCCE
polycaprolactone	PCL
poly(cyclohexylene dimethylene terephthalate)	PCT
polychlorotrifluoroethylene	PCTFE
polydicyclopentadiene	PDCPD
polyethylene	PE
polyethylene, chlorinated; preferred term for CPE	PE-C
polyethylene, high density; preferred term for HDPE	PE-HD
polyethylene, low density; preferred term for LDPE	PE-LD
polyethylene, linear low density; preferred term for LLDPE	PE-LLD
polyethylene, medium density; preferred term for MDPE	PE-MD
polyethylene, ultra high molecular weight; preferred term for UHMWPE	PE-UHMW
polyethylene, very low density; preferred term for VLDPE	PE-VLD
polyester carbonate	PEC
polyether ether ketone	PEEK
polyether ester	PEEST
polyether imide	PEI
polyether ketone	PEK
poly(ethylene naphthalate)	PEN
poly(ethylene oxide)	PEOX
polyester urethane	PESTUR
polyether sulfone	PESU
poly(ethylene terephthalate)	PET
polyether urethane	PEUR
perfluoro alkoxyl alkane resin	PFA
polyisobutylene	PIB
polyisocyanurate	PIR
polyketone	PK
polymethacrylimide	PMI
poly(methyl methacrylate)	PMMA
poly-N-methylmethacrylimide	PMMI
poly-4-methylpent-1-ene	PMP
poly- α -methylstyrene	PMS
polyoxymethylene; polyacetal; polyformaldehyde	POM
polypropylene	PP
polypropylene, expandable; preferred term for EPP	PP-E
polypropylene, high impact; preferred term for HIPP	PP-HI
poly(phenylene ether)	PPE

Reference chart for
Material symbols
(Plastic materials) [3/3]

Material name	Material symbol
poly(propylene oxide)	PPOX
poly(phenylene sulfide)	PPS
poly(phenylene sulfone)	PPSU
polystyrene	PS
polystyrene, expandable; preferred term for EPS	PS-E
polystyrene, high impact; preferred term for HIPS	PS-HI
polysulfone	PSU
polytetrafluoroethylene	PTFE
poly(trimethylene terephthalate)	PTT
poly(vinyl acetate)	PVAC
poly(vinyl alcohol), preferred term for PVOH	PVAL
poly(vinyl butyral)	PVB
poly(vinyl chloride)	PVC
poly(vinyl chloride), chlorinated; preferred term for CPVC	PVC-C
poly(vinyl chloride), unplasticized; preferred term for UPVC	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; preferred term for S/MA or SMA	SMAH
styrene- α -methylstyrene plastic	SMS
vinyl chloride-ethylene plastic	VCE
vinyl chloride-ethylene-methyl acrylate plastic; preferred term for VCEMA	VCEMAK
vinyl chloride-ethylene-vinyl acetate plastic	VCEVAC
vinyl chloride-methyl acrylate plastic; preferred term for VCMA	VCMAK
vinyl chloride-methyl methacrylate plastic	VCMMA
vinyl chloride-octyl acrylate plastic; preferred term for VCOA	VCOAK
vinyl chloride-vinyl acetate plastic	VCVAC
vinyl chloride-vinylidene chloride plastic	VCVDC
polyurethane	PUR
unsaturated polyester resin	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
perfluoro alkoxy alkane resin	PFA
polyimide	PI
polyamidimide	PAI
silicone plastic	SI
urea-formaldehyde resin	UF
vinyl ester resin	VE

1-2. 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

Remarks:

- 1. Gray zones may not be chosen now.
- 2. For Solder and Silver/Silver alloy, 4.2 and 8.1 are assigned, but 8.1 must be used for Electronics.

1-3. Others

1) Please be careful not to make a mistake when inputting a \$ mark (Material number or Material symbol) .

Objective: a) Plastics alloy (Example: PBT+\$)

b)JIS standard material of which the Material number is set as a \$ mark

2) Supplemental remarks and notes regarding choice of material information are shown on P.13.

Please refer to it.

3) File name of Ver.2.10 is 'EXLIST-2009-10-01EN.xls'. Please be careful not to use Ver.2.05.

(File name of Ver.2.05 is 'EXLIST-2009-06-01EN.xls'.)

4) There are some changes in registered materials, material name, material number from release of Ver.2.05 to now. Please refer to the explanation (P.14).

[Supplemental remarks and notes regarding choice of material information]

Surface treatment flag	Material name	Norms/Standards (Public standard)	Material number (Metal materials or other than plastics or rubber)	VDA Classification	Supplemental remarks and notes
	Sintered Metal Materials (Iron materials)	JAMAA4444	SINTERFE	1.1.1	Left column is applied only to Iron materials.
	Sintered Metal Materials (Stainless steels)	JAMAA4444	SINTERSUS	1.1.2	Left column is applied only to stainless materials.
	Sintered Metal Materials (Copper materials)	JAMAA4444	SINTERCU	3.2	Left column is applied only to copper materials.
	Carbon	JAMAA4444	CARBON	7.1	Example of use : bearing, vane, activated carbon, carbon fiber and packing
	Cotton	JISL0204	COTTON	7.1	If adhesive is impregnated to cotton, information of adhesive must be inputted to datasheet.
	Ceramics	JAMAA4444	CERAMICS	7.2	*Example of use : ZrO ₂ , Al ₂ O ₃ , MoSi ₂ , SiO ₂ , Boron Nitride, Silicon Nitride, Silicon Oxide, Soft Ferrite, Fused Silica, Mica *Left column is applied to Zeolite and Silica-gel et.al.
	Friction Materials	JAMAA4444	FRICM	7.3	Left column is applied to Silicone Oil.
	Supplied parts	JAMAA1111	SUPPLIED	7.3	Left column is applied only to materials used for supplied parts.
	Organic Materials (Electronic Components)	JAMAA2222	OEC	8.1	Left column can be applied in the case of no choice of other materials, and its use is limited to organic materials.
1	Lining	JAMAH4444	LINING	6.1	Left column is applied to lining of paint.
1	Coating (ceramics, glass)	JAMAH4444	COATINGCERAMICS	7.2	Left column is applied to coating (ceramics and glass).
1	Coating (Other compounds)	JAMAH4444	COATINGOTHER	7.3	Left column is applied to other coatings.

2. Change point to the previous version

2-1. Reflection of JIS standards revisions

Following revision is reflected in Material list of ver.2.10.

JIS Norms	Revision date	Content of revision
JISZ3211 (Covered electrodes for mild steel)	December,2008	Old material symbols were deleted. (Only international symbols 'E*' exist.)
JISZ3312 (Solid wires for MAG and MIG welding of mild steel, high strength steel and low temperature service steel)	February,2009	Old material symbols were deleted. (Only international symbols 'G*' exist.) Remarks: YGW11 to YGW19 are succeeded to as a kind that can be selected.
JISZ3313 (Flux cored wires for gas shielded and self-shielded metal arc welding of mild steel, high strength steel and low temperature service steel)	February,2009	Old material symbols were deleted. (Only international symbols 'T*' exist.)
JISH8306 (Cermet thermal spraying)	May,2009	Old material symbols were deleted.
JISG3133 (Decarburized steel sheet and strip for porcelain namelling)	June,2009	Material SPP was divided into SPPC, SPPD and SPPE.
JISH3300 (Copper and copper alloy seamless pipes and tubes)	July,2009	High strength type (C1565, C1862 and 5010) were added.
JISZ3232 (Aluminium and aluminium alloy welding rods and wires)	July,2009	ISO symbols were added as material symbols.

Appendix 1: Comparative chart (JIS symbol – ISO symbol)

	Norms	Material Name	Table No.	Page No.
1	JISZ3282	Solder	Appendix table 1-1	Attachment 2-3
2	JISZ3261	Silver Brazing Filler Metal	Appendix table 1-2	Attachment 4
3	JISZ3262	Copper Brazing Filler Metal	Appendix table 1-3	
4	JISZ3264	Copper Phosphorus Brazing Filler Metal	Appendix table 1-4	
5	JISZ3265	Nickel Alloy Brazing Filler Metals	Appendix table 1-5	
5	JISZ3266	Gold brazing filler metals	Appendix table 1-6	Attachment 5
6	JISZ3267	Palladium brazing filler metals	Appendix table 1-7	
7	JISZ3268	Precious brazing filler metals for vacuum service	Appendix table 1-8	
8	JISH2222	Magnesium alloy ingots for die castings	Appendix table 1-9	Attachment 6
9	JISH5202	Aluminium alloy castings	Appendix table 1-10	
10	JISH5203	Magnesium alloy castings	Appendix table 1-11	
11	JISH5303	Magnesium alloy die castings	Appendix table 1-12	

Appendix table 1-1.JISZ3282 (Solder)

[1/2]

Class		Symbol (JIS)	Symbol (ISO)
Lead-containing Solder	Sn-Pb series	H95A	Sn95Pb5
		H63A	Sn63Pb37
		H63E	Sn63Pb37E
		H60A	Sn60Pb40
		H60E	Sn60Pb40E
		H50A	Pb50Sn50
		H50E	Pb50Sn50E
		H45A	Pb55Sn45
		H40A	Pb60Sn40
		H35A	Pb65Sn35
		H30A	Pb70Sn30
		H20A	Pb80Sn20
		H10A	Pb90Sn10
	H5A	Pb95Sn5	
	Sn-Pb-Bi series	H57Bi3A	Sn57Pb40Bi3
		H46Bi8A	Sn46Pb46Bi8
		H43Bi14A	Sn43Pb43Bi14
	Sn-Pb-Ag series	H62Ag2A	Sn62Pb36Ag2
		H1Ag1.5A	Pb97.5Ag1.5Sn1

Appendix table 1-1. JISZ3282(Solder)

[2/2]

Class		Symbol (JIS)	Symbol (ISO)		
Lead-free solder	High temperature series	Sn-Sb series	S50	Sn95Sb5	
		Sn-Cu series	C30	Sn97Cu3	
			C7	Sn99.3Cu0.7	
		Sn-Cu-Ag series	C60A20	Sn92Cu6Ag2	
			C40A10	Sn95Cu4Ag1	
			C7A3	Sn99Cu0.7Ag0.3	
		Sn-Ag series	A50	Sn95Ag5	
		Middle and high temperature series	Sn-Ag series	A30	Sn97Ag3
				A37	Sn96.3Ag3.7
				A35	Sn96.5Ag3.5
	Sn-Ag-Cu series		A30C5	Sn96.5Ag3Cu0.5	
			A40C5	Sn95.5Ag4Cu0.5	
			A35C7	Sn95.8Ag3.5Cu0.7	
			A38C7	Sn95.5Ag3.8Cu0.7	
	Middle temperature series	Sn-Ag-Bi-Cu series	A25B10C5	Sn96Ag2.5Bi1Cu0.5	
		Sn-In-Ag-Bi series	N40A35B5	Sn92In4Ag3.5Bi0.5	
			N80A35B5	Sn88In8Ag3.5Bi0.5	
	Middle and low temperature series	Sn-Zn series	Z90	Sn91Zn9	
		Sn-Zn-Bi series	Z80B30	Sn89Zn8Bi3	
	Low temperature series	Sn-Bi series	B580	Bi58Sn42	
Sn-In series		N520	In52Sn48		

**Appendix table 1–2. JISZ3261
(Silver Brazing Filler Metal)**

Symbol (JIS)	Symbol (ISO)
BAg-1	B-Ag45CdZnCu-605/620
BAg-1A	B-Ag50CdZnCu-625/635
BAg-2	B-Ag35CuZnCd-605/700
BAg-3	B-Ag50CdZnCuNi-630/660
BAg-4	B-Ag40CuZnNi-670/780
BAg-5	B-Ag45CuZn-665/745
BAg-6	B-Ag50CuZn-690/775
BAg-7	B-Ag56CuZnSn-620/650
BAg-7A	B-Ag45CuZnSn-640/680
BAg-7B	B-Ag36AgZnSn-630/730
BAg-8	B-Ag72Cu-780
BAg-8A	B-Ag72Cu(Li)-770
BAg-8B	B-Ag60CuSn-600/720
BAg-20	B-Cu38ZnAg-675/765
BAg-20A	B-Cu41ZnAg-700/800
BAg-21	B-Ag63CuSnNi-690/800
BAg-24	B-Ag50ZnCuNi-660/705

**Appendix table 1–3. JISZ3262
(Copper Brazing Filler Metal)**

Symbol (JIS)	Symbol (ISO)
BCu-1	B-Cu100-1083
BCu-1A	B-Cu99-1083
BCu-2	B-Cu87-1083
BCu-3	B-Cu94Sn(P)-910/1040
BCu-4	B-Cu88Sn(P)-825/990
BCu-5	B-Cu60Zn-900/905
BCu-6	B-Cu59ZnSn-890/900
BCu-7	B-Cu59ZnSnNi(Mn,Si)870/890
BCu-8	B-Cu48ZnNi(Si)890/920

**Appendix table 1–4. JISZ3264
(Copper Phosphorus Brazing Filler Metal)**

Symbol (JIS)	Symbol (ISO)
BCuP-1	B-Cu95P-710/925
BCuP-2	B-Cu93P-710/795
BCuP-3	B-Cu89PAg-645/815
BCuP-4	B-Cu87PAg-645/720
BCuP-5	B-Cu80PAg-645/800
BCuP-6	B-Cu91PAg-645/790

**Appendix table 1–5. JISZ3265
(Nickel Alloy Brazing Filler Metals)**

Symbol (JIS)	Symbol (ISO)
BNi-1	B-Ni73CrFeSiB(C)-975/1060
BNi-1A	B-Ni74CrFeSiB-975/1060
BNi-2	B-Ni82CrSiBFe-970/1000
BNi-3	B-Ni92SiB-980/1040
BNi-4	B-Ni95SiB-980/1065
BNi-5	B-Ni71CrSi-1080/1135
BNi-6	B-Ni89P-875
BNi-7	B-Ni76CrP-890

**Appendix table 1–7. JISZ3267
(Palladium brazing filler metals)**

Symbol (JIS)	Symbol (ISO)
BPd-1	B-Ag68CuPd-805/810
BPd-2	B-Ag58CuPd-825/850
BPd-3	B-Ag67CuPd-830/860
BPd-4	B-Ag65CuPd-850/900
BPd-5	B-Ag52CuPd-875/900
BPd-6	B-Ag54PdCu-900/950
BPd-7	B-Ag95Pd-970/1010
BPd-8	B-Cu82Pd-1080/1090
BPd-9	B-Ag75PdMn-1000/1120
BPd-10	B-Ag64PdMn-1180/1200
BPd-11	B-Ni48MnPd-1120
BPd-12	B-Cu55PdNiMn-1060/1110
BPd-14	B-Pd60Ni-1235

**Appendix table 1–6. JISZ3266
(Gold brazing filler metals)**

Symbol (JIS)	Symbol (ISO)
BAu-1	B-Cu62Au-990/1015
BAu-2	B-Au80Cu-890
BAu-3	B-Cu62AuNi-975/1030
BAu-4	B-Au82Ni-950
BAu-5	B-Pd34NiAu-1135/1165
BAu-6	B-Au70NiPd-1005/1045
BAu-11	BV-Cu50Au-955/970
BAu-12	BV-Au75AgCu-890/895

**Appendix table 1–8. JISZ3268
(Precious brazing filler metals for vacuum service)**

Symbol (JIS)	Symbol (ISO)
BVAg-0	BV-Ag100-961
BVAg-6B	BV-Cu50-780/870
BVAg-8	BV-Ag72Cu-780
BVAg-8B	BV-Ag71CuNi-780/795
BVAg-18	BV-Ag60CuSn-600/720
BVAg-29	BV-Ag61CuIn-625/710
BVAg-30	BV-Ag68CuPd-805/810
BVAg-31	BV-Ag58CuPd-825/810
BVAg-32	BV-Ag54PdCu-900/950
BVAu-1	BV-Cu63Au-990/1015
BVAu-2	BV-Au80Cu-890
BVAu-3	BV-Cu62AuNi-975/1030
BVAu-4	BV-Au82Cu-950
BVAu-11	BV-Cu50Au-955/970
BVAu-12	BV-Au75CuAg-880/895

Appendix table 1-9.JISH2222
(Magnesium alloy ingots for die castings)

Symbol (JIS)	Symbol (ISO)
MD1B	MgAl9Zn1(B)
MD1D	MgAl9Zn1(A)
MD2B	MgAl6Mn
MD3B	MgAl4Si
MD4	MgAl5Mn
MD5	MgAl2Mn
MD6	MgAl2Si

Appendix table 1-10.JISH5202
(Aluminium alloy castings)

Symbol (JIS)	Symbol (ISO)
AC1B	Al-Cu4MgTi
AC4C	Al-Si7Mg(Fe)
AC4D	Al-Si5Cu1Mg
AC5A	Al-Cu4Ni2Mg2
AC4H	Al-Si7Mg
AC5A	Al-Cu4Ni2Mg2
AC4H	Al-Si7Mg

Appendix table 1-11.JISH5203
(Magnesium alloy castings)

Symbol (JIS)	Symbol (ISO)
MC2C	MgAl9Zn1(B)
MC2E	MgAl9Zn1(A)
MC8	MgRE3Zn2Zr
MC9	MgAg2RE2Zr
MC10	MgZn4RE1Zr
MC11	MgZn6Cu3Mn
MC12	MgY4RE3Zr
MC13	MgY5RE4Zr
MC14	MgRE2Ag1Zr

Appendix table 1-12.JISH5303
(Magnesium alloy die castings)

Symbol (JIS)	Symbol (ISO)
MDC1B	MgAl9Zn1(B)
MDC1D	MgAl9Zn1(A)
MDC2B	MgAl6Mn
MDC3B	MgAl4Si
MDC4	MgAl5Mn
MDC5	MgAl2Mn
MDC6	MgAl2Si
MDC5	MgAl2Mn
MDC6	MgAl2Si

Appendix 2: Reference chart of Unique Codes

	Norms	Material Name	Table No.	Page No.
1	JAMAA1111	Supplied parts	Appendix table 2-1	Attachment 8
2	JAMAA2222	Electronic parts		
3	JAMAA4444	Supplied parts, Electronic parts and (Other than Surface treatment)	Appendix table 2-2	Attachment 9-12
4	JAMAH4444	Surface treatment (Other than 5, 6)	Appendix table 2-3	Attachment 13
5	JAMAHC	Surface treatment (Chromate film)	Appendix table 2-4	Attachment 14
6	JAMAHCRF	Surface treatment (Trivalent Chromium Passivation, Chromium-free Passivation)		

Appendix table 2-1.Unique Code (JAMAA1111, JAMAA2222)

Surface treatment flag	Material name	Norms/Standards (Public standard)	Material number (Metal or other than plastics or rubber materials)	VDA Classification
	Supplied parts	JAMAA1111	SUPPLIED	7.3
	Pyrotechnic initiator of air bag	JAMAA2222	ABPP	7.3
	Silver/Silver alloy	JAMAA2222	AG@	8.1
	Solder	JAMAA2222	SOLDERPB	8.1
	Ceramics	JAMAA2222	CERAMICS	7.2
	Glass	JAMAA2222	GLASS	7.2
	Ferrite Magnet	JAMAA2222	MAGNETFERRITE	7.2

Appendix table 2–2.Unique Code (JAMAA4444)

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Surface treatment flag	Material name	Norms/Standards (Public standard)	Material number (Metal or other than plastics or rubber materials)	VDA Classification
	Semiconductor	JAMAA4444	SEMICON	7.2
	Iron/Other Iron alloy (Unalloyed, low alloyed)	JAMAA4444	FE@	1.1.1
	Iron/Other Iron alloy (Highly alloyed)	JAMAA4444	FE@	1.1.2
	Iron/Other Iron alloy (Cast iron with lamellar graphite / tempered cast iron)	JAMAA4444	FE@	1.2.1
	Iron/Other Iron alloy (Cast iron with nodular graphite / vermicular cast iron)	JAMAA4444	FE@	1.2.2
	Iron/Other Iron alloy (Highly alloyed cast iron)	JAMAA4444	FE@	1.2.3
	Other Stainless Steel	JAMAA4444	SUS	1.1.2
	Aluminium/Other Aluminium alloy (Cast aluminium alloys)	JAMAA4444	AL@	2.1.1
	Aluminium/Other Aluminium alloy (Wrought aluminium alloys)	JAMAA4444	AL@	2.1.2
	Magnesium/Other Magnesium alloy (Cast magnesium alloys)	JAMAA4444	MG@	2.2.1
	Magnesium/Other Magnesium alloy (Wrought magnesium alloys)	JAMAA4444	MG@	2.2.2
	Titanium/Other Titanium alloy	JAMAA4444	TI@	2.3
	Copper	JAMAA4444	CU	3.1
	Copper alloy	JAMAA4444	CU@	3.2
	Zinc/Other Zinc alloy	JAMAA4444	ZN@	3.3
	Nickel/Other Nickel alloy	JAMAA4444	NI@	3.4

Appendix table 2–2. Unique Code (JAMAA4444)

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Surface treatment flag	Material name	Norms/Standards (Public standard)	Material number (Metal or other than plastics or rubber materials)	VDA Classification
	Platinum/Platinum alloy	JAMAA4444	PT@	4.1
	Rhodium/Rhodium alloy	JAMAA4444	RH@	4.1
	Molybdenum/Molybdenum alloy	JAMAA4444	MO@	4.2
	Cobalt/Cobalt alloy	JAMAA4444	CO@	4.2
	Gold/Gold alloy	JAMAA4444	AU@	4.2
	Silver/Silver alloy	JAMAA4444	AG@	4.2
	Palladium/Palladium alloy	JAMAA4444	PD@	4.2
	Iridium/Iridium alloy	JAMAA4444	IR@	4.2
	Tantalum/Tantalum alloy	JAMAA4444	TA@	4.2
	Tungsten/Tungsten alloy	JAMAA4444	W@	4.2
	Tin/Other Tin alloy	JAMAA4444	SN@	4.2
	Lithium/Other Lithium alloy	JAMAA4444	LI@	4.2
	Sintered Metal Materials (Iron materials)	JAMAA4444	SINTERFE	1.1.1
	Sintered Metal Materials (Stainless steels)	JAMAA4444	SINTERSUS	1.1.2
	Sintered Metal Materials (Copper materials)	JAMAA4444	SINTERCU	3.2
	Magnet	JAMAA4444	MAGNET	4.2
	Ferrite Magnet	JAMAA4444	MAGNETFERRITE	7.2
	Lead Free Solder	JAMAA4444	SOLDERNONPB	4.2
	Solder	JAMAA4444	SOLDERPB	4.2

Appendix table 2-2. Unique Code (JAMAA4444)

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Surface treatment flag	Material name	Norms/Standards (Public standard)	Material number (Metal or other than plastics or rubber materials)	VDA Classification
	Ink	JAMAA4444	INK	6.1
	Lacquer CNR	JAMAA4444	CNR	6.1
	Adhesive CNR	JAMAA4444	CNR	6.2
	Adhesive STARCH	JAMAA4444	STARCH	6.2
	Carbon	JAMAA4444	CARBON	7.1
	Carbon brush	JAMAA4444	CARBONBRUSH	8.2
	Wood	JAMAA4444	WOOD	7.1
	Pulp	JAMAA4444	PULP	7.1
	Paper	JAMAA4444	PAPER	7.1
	Leather	JAMAA4444	LEATHER	7.1
	Ceramics	JAMAA4444	CERAMICS	7.2
	Glass	JAMAA4444	GLASS	7.2
	Stone	JAMAA4444	STONE	7.2
	Pad	JAMAA4444	PAD	7.3
	Friction Materials	JAMAA4444	FRICM	7.3
	Flux	JAMAA4444	FLUX	7.3
	Pyrotechnic initiator	JAMAA4444	PRP	7.3

Appendix table 2-2. Unique Code (JAMAA4444)

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Surface treatment flag	Material name	Norms/Standards (Public standard)	Material number (Metal or other than plastics or rubber materials)	VDA Classification
	Grease	JAMAA4444	GREASE	9.2
	Lubricating Oil	JAMAA4444	LUBOIL	9.2
	Oil	JAMAA4444	OIL	9.2
	Lubricants	JAMAA4444	LUBSOLID	9.2
	Washing water	JAMAA4444	FLUID	9.6
	Battery Acids	JAMAA4444	BATTERY	9.6
	Other Liquid	JAMAA4444	LIQUID	9.6
	Refrigerant	JAMAA4444	REFRIGERANT	9.5
	Gas Xe	JAMAA4444	XE	9.8
	Gas Halogen	JAMAA4444	HALOGEN	9.8
	Gas He	JAMAA4444	HE	9.8
	Gas Kr	JAMAA4444	KR	9.8

Appendix table 2–3. Unique Code (JAMAH4444)

Surface treatment flag	Material name	Norms/Standards (Public standard)	Material number (Metal or materials other than plastics or rubber)	VDA Classification
1	Zinc alloy hot dip galvanizing	JAMAH4444	HDZN	3.3
1	Aluminium alloy hot dip galvanizing	JAMAH4444	HDAL	2.1.1
1	Non electrolytically applied zinc flake coatings (Dacrotizing No	JAMAH4444	FLZNNCOTHER	7.3
1	GEOMET Coating	JAMAH4444	GMTNC	7.3
1	BONDE Coating (Oxalic)	JAMAH4444	OXALICBONDE	7.3
1	ZAY Coating	JAMAH4444	ZNALMG	3.3
1	Corrosion protection of aluminium alloys ZR	JAMAH4444	ZR	7.3
1	Corrosion protection of aluminium alloys TI	JAMAH4444	TI	7.3
1	Corrosion protection of aluminium alloys CO	JAMAH4444	CO	7.3
1	Black Oxide Coatings	JAMAH4444	FE3O4	7.2
1	Zinc phosphate Coatings	JAMAH4444	PZN	7.2
1	Iron phosphate Coatings	JAMAH4444	PFE	7.2
1	Mangane phosphate Coatings	JAMAH4444	PMN	7.2
1	Calcium phosphate Coatings	JAMAH4444	PCA	7.2
1	CrN Coatings	JAMAH4444	CRN	7.2
1	DLC Coatings	JAMAH4444	DLC	7.2
1	TiN Coatings	JAMAH4444	TIN	7.2
1	Lacquer CNR	JAMAH4444	CNR	6.1
1	Lacquer	JAMAH4444	LACQUER	6.1
1	Lining	JAMAH4444	LINING	6.1
1	Coating (ceramics, glass)	JAMAH4444	COATINGCERAMICS	7.2
1	Coating (Other compounds)	JAMAH4444	COATINGOTHER	7.3

Appendix table 2-4. Unique Code (JAMAHC RF, JAMAHC)

Surface treatment flag	Material name	Norms/Standards (Public standard)	Material number (Metal or materials other than plastics or rubber)	VDA Classification
1	Passivation clear/yellow for Zn/Zn alloy plating	JAMAHC RF	JAMAHC RF-TR-ZNPL C/Y	7.3
1	Passivation black for Zn/Zn alloy plating	JAMAHC RF	JAMAHC RF-TR-ZNPL B	7.3
1	Chromium-free Passivation for Zn/Zn alloy plating	JAMAHC RF	JAMAHC RF-FR-ZNPL	7.3
1	Chromate film for Zn Die castings	JAMAHC	JAMAHC-ZNDC	7.3
1	Trivalent Chromium Passivation for Zn Die castings	JAMAHC RF	JAMAHC RF-TR-ZNDC	7.3
1	Chromium-free Passivation for Zn Die castings	JAMAHC RF	JAMAHC RF-FR-ZNDC	7.3
1	Chromate film for Al/Al alloy	JAMAHC	JAMAHC-AL	7.3
1	Trivalent Chromium Passivation for Al/Al alloy	JAMAHC RF	JAMAHC RF-TR-AL	7.3
1	Chromium-free Passivation for Al/Al alloy	JAMAHC RF	JAMAHC RF-FR-AL	7.3
1	Chromate film for Mg/Mg alloy	JAMAHC	JAMAHC-MG	7.3
1	Trivalent Chromium Passivation for Mg/Mg alloy	JAMAHC RF	JAMAHC RF-TR-MG	7.3
1	Chromium-free Passivation for Mg/Mg alloy	JAMAHC RF	JAMAHC RF-FR-MG	7.3