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ISO/TR 20174

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Welding — Grouping systems for materials — Japanese materials

Soudage — Systèmes de groupement des matériaux — Matériaux japonais

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Foreword

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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ISO/TR 20174 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 121, *Welding*, in collaboration with Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 10, *Unification of requirements in the field of metal welding*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Welding — Grouping systems for materials — Japanese materials

1 Scope

This Technical Report provides a Japanese grouping system for materials for welding purposes, classified in accordance with the grouping system of ISO/TR:15608.

It may also apply for other purposes, such as heat treatment, forming, and non-destructive testing.

This Technical Report covers grouping systems for the following standardized materials:

— steel;

— aluminium and its alloys;

— titanium and its alloys.

2 Japanese grouping system for materials

2.1 Types of steels in accordance with the grouping system of ISO/TR 15608:2000, Table 1

See Table 1.

Table 1 — Japanese grouping system for steels

Group	Reference standard	Designation
1.1	JIS G 3101	SS330
		SS400
	JIS G 3103	SB410
		SB450
		SB480
		SB450M
		SB480M
	JIS G 3106	SM400A
		SM400B
		SM400C
	JIS G 3113	SAPH310
	JIS G 3116	SG255
	JIS G 3115	SPV235
	JIS G 3118	SGV410
		SGV450
		SGV480
	JIS G 3126	SLA235A
		SLA235B
	JIS G 3131	SPHC
		SPHD
		SPHE
	JIS G 3135	SPFC340
		SPFC370
		SPFC390
		SPFC440
		SPFC490Y
		SPFC540Y
		SPFC590Y
		SPFC340H
	JIS G 3136	SN400A
		SN400B
		SN400C
	JIS G 3444	STK290
		STK400
		STK500
		STK490

Table 1 (*continued*)

Group	Reference standard	Designation
1.1	JIS G 3452	SGP
	JIS G 3454	STPG370
		STPG410
	JIS G 3455	STS370
		STS410
		STS480
	JIS G 3456	STPT370
		STPT410
		STPT480
	JIS G 3457	STPY400
	JIS G 3458	STPA12
	JIS G 3460	STPL380
	JIS G 3461	STB340
		STB410
	JIS G 3462	STBA12
		STBA13
	JIS G 3464	STBL380
	JIS G 3467	STF410
		STFA12
	JIS G 3472	STAM290GA
		STAM290GB
		STAM340G
		STAM390G
	JIS G 3473	STC370
	JIS G 3475	STKN400W
		STKN400B
	JIS G 3201	SF340A
		SF390A
		SF440A
		SF490A
		SF540A

Table 1 (*continued*)

Group	Reference standard	Designation
1.1	JIS G 3202	SFVC1
		SFVC2A
		SFVC2B
	JIS G 3203	SFVAF1
	JIS G 3205	SFL1
		SFL2
1.2	JIS G 3101	SS490
	JIS G 3106	SM490A
		SM490B
		SM490C
		SM490YA
		SM490YB
	JIS G 3115	SPV315
		SPV355
	JIS G 3116	SG295
		SG325
	JIS G 3119	SBV1A
		SBV1B
		SBV2
	JIS G 3120	SQV1A
		SQV2A
	JIS G 3126	SLA325A
		SLA325B
	JIS G 3134	SPFH490
		SPFH540
		SPFH540Y
		SPFH590Y
	JIS G 3135	SPFC490
		SPFC540
		SPFC590
	JIS G 3136	SN490B
		SN490C
	JIS G 3461	STB510

Table 1 (*continued*)

Group	Reference standard	Designation
1.2	JIS G 3472	STAM440G
		STAM470G
		STAM500G
		STAM440H
	JIS G 3473	STC440
	JIS G 3475	STKN490B
	JIS G 3201	SF540B
		SF590A
		SF590B
	JIS G 3204	SFVQ1A
1.3	JIS G 3106	SM520BN
		SM520CN
	JIS G 3113	SAPH370
		SAPH400
		SAPH440
	JIS G 3115	SPV450N
		SPV490N
	JIS G 3124	SEV245N
		SEV295N
		SEV345N
1.4	JIS G 3114	SMA400AW
		SMA400AP
		SMA400BW
		SMA400BP
		SMA400CW
		SMA400CP
		SMA490AW
		SMA490AP
		SMA490BW
		SMA490BP
		SMA490CW
		SMA490CP

Table 1 (*continued*)

Group	Reference standard	Designation
2.1	JIS G 3106	SM490YATMC
		SM490YBTMC
		SM520BTMC
		SM520CTMC
		SM570TMC
	JIS G 3114	SMA490AWTMC
		SMA490APTMC
		SMA490BWTMC
		SMA490BPTMC
		SMA490CWTMC
		SMA490CPTMC
	JIS G 3114	SMA570WTMC
		SMA570PTMC
	JIS G 3115	SPV410TMC
		SPV450TMC
	JIS G 3129	SH590P-TMC
		SH590S-TMC
2.2	JIS G3115	SPV490TMC
3.1	JIS G 3106	SM570Q
	JIS G 3114	SMA570WQ
		SMA570PW
	JIS G 3115	SPV410Q
		SPV450Q
		SPV490Q
	JIS G 3120	SQV1B
		SQV2B
		SQV3A
		SQV3B
	JIS G 3128	SHY685
		SHY685N
		SHY685NS
		SHY685NS-F
	JIS G 3201	SF640B

Table 1 (*continued*)

Group	Reference standard	Designation
3.1	JIS G 3204	SFVQ1B
		SFVQ2B
		SFVQ3
4.2	JIS G 3458	STPA20
	JIS G 3462	STBA20
	JIS G 3203	SFVAF2
5.1	JIS G 3458	STPA22
		STPA23
	JIS G 3462	STBA22
		STBA23
	JIS G 3467	STFA22
		STFA23
	JIS G 4109	SCMV11
		SCMV12
		SCMV21
		SCMV22
		SCMV31
		SCMV32
	JIS G 3203	SFVAF12
		SFVAF11A
		SFVAF11B
5.2	JIS G 3458	STPA24
	JIS G 3462	STBA24
	JIS G 3467	STFA24
	JIS G 4109	SCMV41
		SCMV42
		SCMV51
		SCMV52
	JIS G 4110	SCMQ4E
	JIS G 3203	SFVAF22A
		SFVAF22B
		SFVAF21A
		SFVAF21B
	JIS G 3206	SFVCMF22B

Table 1 (*continued*)

Group	Reference standard	Designation
5.3	JIS G 3458	STPA25
	JIS G 3462	STBA25
	JIS G 3467	STFA25
	JIS G 4109	SCMV61
		SCMV62
	JIS G 3203	SFVAF5A
		SFVAF5B
		SFVAF5C
		SFVAF5D
5.4	JIS G 3458	STPA26
		STBA26
	JISN G 3467	STFA26
	JIS G 3203	SFVAF9
6.2	JIS G 4110	SCMQ4V
		SCMQ5V
	JIS G 3206	SFVCMF22V
		SFVCMF3V
7.1	JIS G 4304	SUS405
		SUS410L
		SUS429
		SUS430
		SUS430LX
		SUS430J1L
		SUS434
		SUS436L
		SUS436J1L
		SUS444
		SUS445J1
		SUS445J2
		SUS447J1
		SUSXM27
	JIS G4305	SUS405
		SUS410L

Table 1 (*continued*)

Group	Reference standard	Designation
7.1	JIS G4305	SUS429
		SUS430
		SUS430LX
		SUS430J1L
		SUS434
		SUS436L
		SUS436J1L
		SUS444
		SUS445J1
		SUS445J2
		SUS447J1
		SUSXM27
	JIS G 3446	SUS430TKA
		SUS430TKC
	JIS G 3463	SUS405TB
		SUS409TB
		SU409LTB
		SUS430TB
		SUS430LXTB
		SUS430J1LTB
		SUS436LTB
		SUS444TB
		SUSXM8TB
		SUSXM27TB
7.2	JIS G4304	SUS403
		SUS410
		SUS410S
		SUS420J1
		SUS420J2
		SUS429J1
		SUS440A
	JIS G 4305	SUS403
		SUS410

Table 1 (*continued*)

Group	Reference standard	Designation
7.2	JIS G 4305	SUS410S
		SUS420J1
		SUS420J2
		SUS429J1
		SUS440A
	JIS G 3214	SUSF410-A
		SUSF410-B
		SUSF410-C
		SUSF410-D
		SUSF6B
		SUSF6NM
	JIS G 3446	SUS410TKA
		SUS420J1TKA
		SUS420J2TKA
		SUS410TKC
7.3	JIS G4304	SUS630
		SUS631
	JIS G4305	SUS630
		SUS631
	JIS G 3214	SUSF630
8.1	JIS G 4304	SUS301
		SUS301L
		SUS301J1
		SUS302
		SUS302B
		SUS304
		SUS304L
		SUS304N1
		SUS304N2
		SUS304LN
		SUS304J1
		SUS304J2
		SUS305

Table 1 (*continued*)

Group	Reference standard	Designation
8.1	JIS G 4304	SUS315J1
		SUS315J2
		SUS316
		SUS316L
		SUS316N
		SUS316LN
		SUS316Ti
		SUS316J1
		SUS316J1L
		SUS317
		SUS317L
		SUS317LN
		SUS317J1
		SUS321
		SUS347
		SUSXM7
		SUSXM151J1
	JIS G4305	SUS301
		SUS301L
		SUS301J1
		SUS302
		SUS302B
		SUS304
		SUS304L
		SUS304N1
		SUS304N2
		SUS304LN
		SUS304J1
		SUS304J2
		SUS305
		SUS315J1
		SUS315J2
		SUS316

Table 1 (*continued*)

Group	Reference standard	Designation
8.1	JIS G4305	SUS316L
		SUS316N
		SUS316LN
		SUS316Ti
		SUS316J1
		SUS316J1L
		SUS317
		SUS317L
		SUS317LN
		SUS317J1
		SUS321
		SUS347
		SUSXM7
		SUSXM151J1
	JIS G 3446	SUS304TKA
		SUS316TKA
		SUS321TKA
		SUS347TKA
		SUS304TKC
		SUS316TKC
	JIS G 3463	SUS304TB
		SUS304HTB
		SUS304LTB
		SUS316TB
		SUS316HTB
		SUS316LTB
		SUS316TiTB
		SUS317TB
		SUS317LTB
		SUS321TB
		SUS321HTB
		SUS347TB
		SUS347HTB
		SUSXM15J1TB

Table 1 (*continued*)

Group	Reference standard	Designation
8.1	JIS G 3467	SUS304TF
		SUS304HTF
		SUS316TF
		SUS316HTF
		SUS321TF
		SUS321HTF
		SUS347TF
		SUS347HTF
	JIS G 3468	SUS304TPY
		SUS304LTPY
		SUS316TPY
		SUS316LTPY
		SUS317TPY
		SUS317LTPY
		SUS321TPY
		SUS347TPY
	JIS G 3214	SUSF304
		SUSF304H
		SUSF304L
		SUSF304N
		SUSF304LN
		SUSF316
		SUSF316H
		SUSF316L
		SUSF316N
		SUSF316LN
		SUSF317
		SUSF317L
		SUSF321
		SUSF321H
		SUSF347
		SUSF347H

Table 1 (*continued*)

Group	Reference standard	Designation
8.2	JIS G 4304	SUS309S
		SUS310S
		SUS317J2
		SUS317J3L
		SUS836L
		SUS890L
	JIS G 4305	SUS309S
		SUS310S
		SUS317J2
		SUS317J3L
		SUS836L
		SUS890L
	JIS G 3463	SUS310TB
		SUS310STB
		SUS836LTB
		SUS890LTB
	JIS G 3467	SUS309TF
		SUS310TF
	JIS G 3214	SUSF310
8.3	JIS G 4303	SUS201
		SUS202
9.1	JIS G 3127	SL2NS55
9.2	JIS G 3127	SL3N255
		SL3NS75
		SL3N440
		SL5N590
	JIS G 3460	STPL450
	JIS G 3464	STBL450
	JIS G 3127	SL9N520
		SL9N590
	JIS G 3460	STPL690
	JIS G 3464	STBL690
	JIS G 3205	SFL3

Table 1 (*continued*)

Group	Reference standard	Designation
10.1	JIS G 4304	SUS329J1
		SUS329J3L
	JIS G 4305	SUS329J1
		SUS329J3L
10.2	JIS G 4304	SUS329J4L
	JIS G 4305	SUS329J4L
11.1	JIS G 4051	S28C
		S30C
		S33C
		S35C
	JIS G 4052	SMn433H
	JIS G 4053	SMn433
11.2	JIS G 4051	S38C
		S40C
		S43C
		S45C
		S48C
		S50C
	JIS G 4052	SMn438H
		SMn443H
	JIS G 4053	SMn438
		SMn443
11.3	JIS G 4051	S53C
		S55C
		S58C

2.2 Types of aluminium and aluminium alloys in accordance with the grouping system of ISO/TR 15608:2000, Table 2

See Table 2.

Table 2 — Japanese grouping system for aluminium and aluminium alloys

Group	Reference standard	Number
21	JIS H 4000	1085
		1080
		1070
		1050
		1100
		1200
		1N00
		1N30
		1050A
	JIS H 4040	1070
		1050
		1100
		1200
		1050A
	JIS H 4080	1070
		1050
		1100
		1200
		1050A
	JIS H 4090	1070
		1050
		1100
		1200
	JIS H 4100	1100
		1200
	JIS H 4140	1100
		1200
22.1	JIS H 4000	3003
		3203
		3004
		3103

Table 2 (*continued*)

Group	Reference standard	Number
22.1	JIS H 4000	3104
		3005
		3105
	JIS H 4040	3003
		3103
	JIS H 4080	3003
		3103
		3203
	JIS H 4090	3003
		3203
	JIS H 4100	3003
		3203
22.2	JIS H 4000	5005
		5N01
	JIS H 4040	5050 [a]
	JIS H 4080	5005
		5050 [a]
22.3	JIS H 4000	5052
		5652
		5154 [a]
		5254 [a]
		5454
		5754 [a]
	JIS H 4040	5052
		5N02 [a]
		5154 [a]
		5454
		5754 [a]
	JIS H 4080	5052
		5154 [a]
		5454
		5251
		5754 [a]

Table 2 (*continued*)

Group	Reference standard	Number
22.3	JIS H 4090	5052
		5154 [a]
	JIS H 4100	5052
		5454
	JIS H 4140	5052
22.4	JIS H 4000	5082
		5182
		5083
		5086
	JIS H 4040	5056
		5083
		5086
	JIS H 4080	5056
		5083
		5086
	JIS H 4090	5083
	JIS H 4100	5083
		5086
	JIS H 4140	5056
		5083
	JIS H 5202	AC7A
23.1	JIS H 4000	6061
		6082
	JIS H 4040	6061
		6063
		6060
		6262
		6005A
		6082
		6181
	JIS H 4080	6061
		6063
		6060
		6005A

Table 2 (*continued*)

Group	Reference standard	Number
23.1	JIS H 4080	6082
		6262
	JIS H 4100	6161
		6N01
	JIS H 4100	6063
		6060
		6005A
		6082
	JIS H 4140	6151
		6061
23.2	JIS H 4000	7075
		7N01
		7178
		7475
		7010
		AlZn6MgCuMn
	JIS H 4040	7003
		7N01
		7075
		7020
		7050
		7049A
		AlZn4Mg1.5Mn
		AlZn6MgCuMn
	JIS H 4080	7003
		7N01
		7075
		7020
		7050
	JIS H 4100	7003
		7N01
		7075
		7020

Table 2 (*continued*)

Group	Reference standard	Number
23.2	JIS H 4100	7005
		7050
		AlZn4Mg1.5Mn
		AlZn6MgCuMn
23.2	JIS H 4140	7050
		7075
		7N01
24.1	JIS H 5202	AC3A
		AlSi5
		AlSi12
24.2	JIS H 5202	AC4C
		AlSi5Mg [a]
		AlSi10Mg
25	JIS H 5202	AC2A [a]
		AC2B
		AC4B
26	JIS H 5202	AlCu4Ti

[a] Although the range of chemical composition mainly belongs to the above group, there are some that belong to other groups or that do not belong to any group.