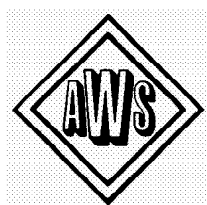


**INTERNATIONAL INDEX
OF
WELDING FILLER METAL
CLASSIFICATIONS**

Compiled by the
**International Institute of Welding
Commission II**



AMERICAN WELDING SOCIETY

550 N.W. LeJeune Road, Miami, FL 33126

International Standard Book Number: 0-87171-703-4

American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126

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International Index of

Welding Filler Metal

Classifications

Compiled by the
International Institute of Welding
Commission II

Prepared by the
AWS Technical Services Division

Under the Direction of the
Technical Activities Committee

Approved by
AWS Board of Directors

Abstract

This document updates IFS:1998, the first document that proposed to establish a “generic” system for identification of welding filler metals for use in ISO specifications. Since that issue, additional ISO draft standards for welding filler metals have been prepared, many of which have taken cognizance of the proposed generic system. In doing so, several refinements in the generic system have been adopted. This document also recognizes revisions proposed in draft national standards since the earlier edition. IIW representatives from Europe, Canada, Japan, China, Australia, Argentina, Brazil, Russia, and the United States collaborated in providing the data from specifications in their respective countries.

AMERICAN WELDING SOCIETY
550 N. W. LeJeune Road, Miami, Florida 33126

Foreword

The American Welding Society (AWS) and other member societies of the International Institute of Welding (IIW) receive many inquiries concerning comparison classifications of filler metals produced in the industrialized countries of the world. The cross-referencing of AWS classifications with those of foreign specifications was first accomplished in AWS publication, *International Specification Cross Reference List*, IFS-87. Since then, the standards of many individual European countries have been superceded by standards prepared by the European Committee for Standardization, which is known by its acronym CEN (Comité Européenne de Normalization). In addition, other national bodies have revised filler metal standards and have added new classifications.

During the past two decades, the IIW and the International Organization for Standardization (ISO), through its Committee ISO TC44/SC3, have been active in drafting international standards for welding consumables.

The cross-referencing of specifications is becoming increasingly important in this era of multinational enterprises. Like its predecessors, this publication in electronic format provides a listing of similar products that may be expected to meet the requirements of different national and international specifications. Though similarities exist in the many such specifications, there are frequently significant differences in requirements. Caution should be exercised in the selection of the reported comparable classifications. In critical applications or when engineering or other codes exist in construction or repair activities, the applicable specifications of the selected alternate filler metal should be reviewed for conformity with the applicable codes. Neither AWS nor IIW assumes responsibility for the accuracy of the comparisons. Fabricators should verify properties and compositions as part of a normal quality assurance program.

An index number is the basis for establishing the comparability of various classifications. This number, described in detail in Annex A, is based upon what has been termed a "generic system for filler metal designations." The designations have been adopted in several recently drafted international specifications. The index number with the initials "WFM" (weld filler metal) appears in the first column in each of the tables and becomes the cross-reference identification in the compilation of grades shown for each national specification.

Unlike its predecessor, the tables in the present electronic format allow the properties that define the classification to appear in the same table with columnar headings for specifications with comparable filler metals. The considerably larger tables no longer need to be divided into sizes that fit the printed page. The computer allows the scrolling of such tables, permitting the user to view the portion of direct interest. Furthermore, the searching capability enables the user to locate and address the portions of the tables needed.

The principal tables are arranged first according to product type and then by welding process. For example, the unalloyed carbon steels are in sequential tables, first as covered electrodes for SMAW, then as flux-cored wires for flux cored arc welding (FCAW), and then as solid and composite (metal-cored) wires for submerged arc welding (SAW), gas metal arc welding (GMAW), and gas tungsten arc welding (GTAW). Likewise, low-alloy steels; stainless steels; nickel-, aluminum-, and titanium- alloys along with hard-facing and other surfacing alloys; and cast iron filler metals are grouped together in sequential tables for the different welding processes.

Because national and international specifications are subject to frequent review and revision, this document will require updating from time to time. CEN specifications listed herein may have existed at the time of this publication as provisional specifications (prEN) and are assumed to become EN specifications by dropping the provisional designation. Similarly, revisions to AWS specifications that have not yet been published but are in various stages of acceptance are included in the listings in this document. ISO specifications that at the time of inclusion in this publication may have existed as Draft International Standards (DIS or FDIS) are presented without the draft prefixes. Users of these tables must be aware that specifications that were in the draft stages before final publication may be altered or classifications may be added or deleted from the final specifications.

Comments and inquiries concerning this publication are welcome. They should be sent to the Managing Director, Technical Services Division, American Welding Society, 550 NW LeJeune Road, Miami, FL 33126.

Acknowledgements

Subcommission XII-D of the International Institute of Welding, chaired by David Shackleton, initiated the task of assigning the designations for welding filler metals in 1984 and appointed R. David Thomas, Jr. as rapporteur. This task group was comprised of Raul Timerman (Argentina), Roger Daemon (Belgium), Fritz Weyland (Germany), David Ellis (United Kingdom), Lea Roberts (Canada), and Damian Kotecki (United States). In 1989, the task group sought and received acceptance of the generic system for filler metal designations at the IIW Annual Assembly in Helsinki, Finland.¹¹

In 1995 in Stockholm, Sweden, Commission XII agreed to the publication by the American Welding Society of an index of filler metals classifications in national specifications. Following the publication of *International Index of Welding Filler Metal Classifications* IFS:1998, IIW Commission II agreed to undertake the revisions needed to update this project. Many persons have contributed to the updating of this project. The American Welding Society is especially pleased to acknowledge the efforts of the following persons.

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¹¹ IIW doc. XII-1141-89 *Generic system for designating welding filler metals -- proposal for submission to ISO*

General Index of Specifications

Table	Page No.	Description	ISO	USA	Canada	Brazil	Argentina	Australia	Japan	China	Russia	Europe	
				AWS	AMS	CSA	ABNT	IRAM-IAS	AS/NZS	JIS	GB/T	GOST	CEN
1	1	Carbon Steel Covered Electrodes	2580	A5.1		W48	NBR 10614	U500-601	1553.1	Z3211 & 12	5117	9467	EN499
2	2	Carbon Steel Flux Cored Wires	17632	A5.20		W48			2203.1	Z3313	10046	26271	EN768
3	3	Carbon Steel Wires for SAW	14171	A5.17		W48	NBR10617		1858.1	Z3361	5293		EN766
4	4	Carbon Steel Wires for GTAW/GMAW	14341/CD636	A5.18		W48			2717.1	Z3312 & 16	8110		EN1668/440
5A	5	Low-Alloy Medium-Strength Steel Electrodes	14341			W48				Z3212, 14 & 41			EN499
5B	6	Low-Alloy Cr-Mo Steel Electrodes	3580	A5.5		W48		U500-127	1553.2	Z3223		5118	EN1569
5C	7	Low-Alloy High-Strength Steel Electrodes	18275			W48				Z3212			EN757
6A	8	Low-Alloy Medium-Strength Steel Flux Cored Wires	17632							Z3313 & 20			EN758
6B	9	Low-Alloy Cr-Mo Steel Flux Cored Wires	17634	A5.29					2203.1	Z3318	17493	26271	EN12071
6C	10	Low-Alloy High-Strength Steel Flux Cored Wires	18276							Z3313			EN12535
7A	11	Low-Alloy Medium-Strength Steel Wires for SAW	14171										EN756
7B	12	Low-Alloy Creep Resistant Steel Wires for SAW		A5.23					1858.2	Z3351	S8110	2246	EN12070
7C	13	Low-Alloy High-Strength Steel Wires for SAW											N458 *
8A	14	Low-Alloy Medium-Strength Steel Wires for GTAW/GMAW	14341/CD636							Z3312, 15 & 25			EN1668/440
8B	15	Low-Alloy Cr-Mo Steel Wires for GTAW/GMAW		A5.28					2717.1	Z3316 & 17			EN12070
8C	16	Low-Alloy High-Strength Steel Wires for GTAW/GMAW			64xx					Z3316			EN12534
9A	17-18	Stainless Steel Covered Electrodes	3581	A5.4		W48			1553.3	Z3221	983	10052	EN1600
9B	19	Stainless Steel Flux Cored Wires	17633	A5.22						Z3323	17853	26271	EN12073
9C	20-21	Stainless Steel Solid Wires	14343	A5.9	Note a				2717.3	Z3321, 22 & 24	17854	2246	EN12072
10A	22	Nickel-Alloy Covered Electrodes	14172	A5.11						Z3224 & 25	13814	10052	EN ISO 14172
10B	23	Nickel-Alloy Flux Cored Wires		A5.34									
10C	24	Nickel-Alloy Solid Wire	18274	A5.14	Note b					Z3332 & 34	15620	2246	EN ISO 18274
11	25	Aluminum-Alloy Solid Wires and Rods	18273	A5.10	41xx & 42xx		NBR 9111		2717.2	Z3232	10858	7871	EN ISO 18273
12A	26	Copper-Alloy Covered Electrodes		A5.6						Z3231	3670		
12B	27	Copper-Alloy Solid Wires		A5.7						Z3341	9460	16130	EN13347
13A	28-30	Hard-Facing Covered Electrodes, Fe-Based		A5.13					2576	Z3251	984	10051	
13B	31	Hard-Facing Covered Electrodes, NonFe-Based										10543	
14A	32-33	Hard-Facing Bare & Composite Alloy Wires, Fe-Based		A5.21					2576	Z3326		10543	N523
14B	34	Hard-Facing Bare & Composite Alloy Wires, NonFe-Based			5788								
15	35	Titanium Alloy Bare Solid Wires		A5.16	49xx					Z3331			WI 321
16A	36	Covered Electrodes for Cast Iron								Z3252	10044		
16B	37	Flux-Cored Wires for Cast Iron											
16C	38	Solid Rods and Wires for Cast Iron	1071	A5.15								26271	EN ISO 1071

Annex A 39-49

Notes:

- a. AMS 5680, 5692, 5694, 5696, 5776, 5782, 5790, 5803, 5806, 5825, 5831
b. AMS 5675, 5676, 5679, 5778, 5786, 5798, 5832, 5836, 5837, 5839.

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TABLE 1. Carbon Steel Covered Electrodes

WFM No.	Mechanical Properties			ISO 2560		USA AWS		Canada CSA	Argentina IRAM-IAS	Australia AS/NZS	Brazil ABNT	China GB/T	Japan JIS	Russia Gost	Europe CEN
	(Note h)			A		A5.1		A5.1M	W48	U500-601	1553.1 (Note c)	NBR 10614	5117	Z3211	Z3212
	Strength	Impact	Temp.	(Note c)	B										(Note d)
(Note a)	MPa	J	°C												(Note c)
E4300	430	27	0										E4300		
E4301	430	27	0	E35xRA12									E4301	D4301	E412-AP
E4303	430	27	0	E35xRB12	E4303								E4303	D4303	E35xRB12
E4310	430	27	-30	E35xC21	E4310	E6010	E4310	E4310	E4310	E4310-x	E 6010		E4310		E414-LJ
E4311	430	27	-30	E35xC11	E4311	E6011	E4311	E4311	E4311	E4311-x	E 6011	E4311	D4311		E35xC11
E4312	430			E35ZR12	E4312	E6012	E4312	E4312	E4312	E4312-Z	E 6012	E4312			E430-PA
E4313	430			E35ZR12	E4313	E6013	E4313	E4313	E4313	E4313-Z	E 6013	E4313	D4313		E414-P
E4315	430	27	-30	E35xB22									E4315		E35xB22
E4316	430	27	-30	E35xB32	E4316								E4316	D4316	E35xB32
E4318	430	27	-30		E4318	E6018	E4318						E4318		E414-BJK
E4319	430	27	-20	E35xRA12	E4319	E6019	E4319								E433-AP
E4320	430			E35ZA13	E4320	E6020	E4320			E4320-Z	E 6020	E4320			E35xRA12
E4322	430			E35ZA33		E6022	E4322	E4322		E4322-Z	E 6022	E4322			E35ZA33
E4323	430	27	0										E4323		
E4324	430			E35ZRR54	E4324								E4324	D4324	E410-PJK
E4326	430	47	0										E4326		E35ZRR54
E4327	430	27	-30	E35xRA54	E4327	E6027	E4327	E4327		E4327-x	E 6027	E4327	D4327		E35xRA54
E4328	430	27	-20	E35xB53									E4328		E35xB53
E4340	430	27	0		E4340									D4340	
E4900	490	47	0											D5000	
E4901	490	27	0	E38xRA12									E5001		E38xRA12
E4903	490	27	0	E38xRB12	E4903								E5003	D5003	E38xRB12
E4910	490	27	-30	E38xC21	E4910			E4910		E4810-x					E38xC21
E4911	490	27	-30	E38xC11	E4911			E4911				E5011			E38xC11
E4912	490			E38xR12	E4912			E4912							E38xR12
E4913	490			E38xR12	E4913			E4913							E38xR12
E4914	490			E38xR32	E4914	E7014	E4914	E4914	E5114	E4814-Z	E 7014	E5014			E430-P
E4915	490	27	-30	E38xB22	E4915	E7015	E4915	E4915	E5115	E4815-x	E 7015	E5015			E430-PJK
E4916	490	27	-30	E38xB12	E4916	E7016	E4916	E4916	E5116	E4816-x	E 7016	E5016		D5016	E38xB22
E4916-1	490	27	-45		E4916-1	E7016-1	E4916-1								E38xB12
E4918	490	27	-30	E38xB32	E4918	E7018	E4918	E4918	E5118	E4818-x	E 7018	E5018			E38xB32
E4918-1	490	27	-45		E4918-1	E7018-1	E4918-1	E4918-1		E4818-x					
E4918M	490	67	-30			E7018M	E4918M								E38xB32
E4919	490	27	-20		E4919										
E4922	490			E38xA33				E4922							E38xA33
E4924	490			E38xRR4	E4924	E7024	E4924	E4924	E5124	E4824-Z	E 7024	E5024			E38xRR4
E4924-1	490	27	-20	E38xRR4	E4924-1	E7024-1	E4924-1	E4924-1		E4824-x					E433-PJK
E4926	490	47	0	E38xB34										D5026	E38xB34
E4927	490	27	-30	E38xRA54	E4927	E7027	E4927	E4927		E4827-x	E 7027	E5027			E38xRA54
E4928	490	27	-30	E38xB53	E4928	E7028	E4928	E4928	E5128	E4828-x	E 7028	E5028			E38xB53
E4948	490	27	-30	E38xB35	E4948	E7048	E4948	E4948	E5148	E4848-x	E 7048	E5048			E38xB35
E5716	570	27	-20		E5716										
E5728	570	27	-20		E5728										
E4910-P1	490	27	-30		E4910-P1										
E5510-P1	550	27	-30		E5510-P1										

Notes:

- See Annex A, Paragraph A2.0 for a description of the WFM index system and Paragraph A2.1 as it applies to this table.
- Mechanical properties shown are nominal and may vary in different specifications
- See Specification for impact options, indicated by the "x" in the grade designation, or "Z", not required
- The numeric digits following the "E" indicate tensile strength, then impact, finally coating type in Cyrillic symbols.

TABLE 2 Carbon Steel Flux Cored Wires

WFM No.	Mechanical Properties			ISO		USA AWS		Canada	Australia	China	Japan	Russia	Europe
	Strength	Impact	Temp.						AS	GB/T	JIS	GOST	CEN
	(MPa)	(J)	(°C)	17632-A	17632-B	A5 20	A5 20M	W48	2203.1	10045	Z3313	26271	EN 758
(Note a)	(Note b)	(Note c)		(Note d)	(Note e)			(Note f)	(Note g)	(Note e)	(Note h)	(Note i)	(Note d)
T43xT11-zy	430	27 or 47	c	T35 x R y	T43xT11-zy				TP GypW40x		YFW-y43xR		T35 x R y
T43T2-zy	430	27	0	T3T Z R y	T43T2-zy				TDSGypW400		YFW-S43xR	ЛП34x	T3T Z R y
T43T3-z	430	27	0	T3T Z V N	T43T3-zN				TDSN pW400		YFW-S43xG		T3T Z V N
T43xT4-z	430	27 or 47	c	T35 x W N	T43xT4-zN				TD N Pw400			ЛС34x	T35 x W N
T43xT5-zy	430	27 or 47	c	T35 x B y	T43xT5-zy				TP GypW40x		YFW-y43xB	ЛП34x	T35 x B y
T43xT6-z	430	27 or 47	c	T35 x W N	T43xT6-zN				TD N pW40x		YFW-S43xG		T35 x W N
T43xT7-z	430	27 or 47	c	T35 x W N	T43xT7-zN				TP N nW40x				T35 x W N
T43xT8-z	430	27 or 47	c	T35 x Y N	T43xT8-zN				TP N nW40x			ЛС34x	T35 x Y N
T43T10-zy	430	27	0	T3T Z V N	T43T10-zN				TDSN nW400		YFW-S43xG		T3T Z V N
T43xT11-z	430	27 or 47	c	T35 x W N	T43xT11-zN				TP N nW40x				T35 x W N
T43xT12-y	430	27 or 47	c	T35 x R y	T43xT12-zy				TP GypW40x		YFW-y43xG	ЛП34x	T35 x R y
T43T13-z	430	27	0	T3T Z V N	T43T13-zN				TPSN nW400		YFW-S43xG		T3T Z V N
T43T14-z	430	27	0	T3T Z V N	T43T14-zN				TPSN nW400			ЛС34x	T3T Z V N
C43xT15-zy	430	27 or 47	c	T35 x M y	T43xT15-zy				TPGMPw40x		YFW-y43xM		T35 x M y
T49xT1-zy	490	27	-20	T42 x R y	T49T1-zy	E7zT-1y	E49zT-1y	E49zT-1y	TP GypW50x	E50xT-1, E50xT-1M	YFW-y50xR		T42 x R y
T49T2-zy	490	27 or 47	c*	T4T x R N	T49T2-zy	F70T-2y	F490T-2y	F492T-2y	TDSGypW500	F50xT-2, F50xT-2M		ЛП39x	T4T x R N
T49T3-z	490			T4T Z V N	T49T3-zN	E70T-3	E490T-3	E492T-3	TDSN pW500	E50xT-3	YFW-S50GG		T4T Z V N
T49xT4-z	490	27 or 47	c*	T42 x W N	T49xT4-zN	E70T-4	E490T-4	E492T-4	TD N Pw500	E50xT-4		ЛС39x	T42 x W N
T49xT5-zy	490	27	-30	T42 x B y	T49T5-zy	E7zT-5y	E49zT-5y	E492T-5y	TP GypW50x	E50xT-5, E50xT-5M		ЛП39x	T42 x B y
T49xT6-z	490	27	-30	T42 x Y N	T49T6-zN	E70T-6	E490T-6	E492T-6	TD N pW50x	E50xT-6			T42 x Y N
T49xT7-z	490	27 or 47	c*	T42 x W N	T49xT7-zN	E7zT-7	E49zT-7	E492T-7	TP N nW50x	E50xT-7			T42 x W N
T49xT8-z	490	27	-30	T42 x Y N	T49T8-zN	E7zT-8	E49zT-8	E492T-8	TP N nW50x	E50xT-8		ЛС39x	T42 x Y N
T49xT9-zy	490	27	-30			E7zT-9y	E49zT-9y	E492T-9y					
T49T10-z	490			T4T Z V N	T49T10-zN	E70T-10	E490T-10	E492T-10	TDSN nW500	E50xT-10	YFW-S50GG		T4T Z V N
T49xT11-z	490	27 or 47	c*	T42 x W N	T49xT11-zN	E7zT-11	E49zT-11	E492T-11	TP N nW50x	E50xT-11		ЛП39x	T42 x W N
T49xT12-zy	490	27	-30	T42 x R y	T49T12-zy	E7zT-12y	E49zT-12y	E492T-12y	TP GypW50x	E50xT-12, E50xT-12M		ЛС39x	T42 x R y
T49T13-z	490			T4T Z V N	T49T13-zN	E7zT-13	E49zT-13	E492T-13	TPSN nW500	E50xT-13	YFW-S50GG		T4T Z V N
T49T14-z	490			T4T Z V N	T49T14-zN	E71T-14	E491T-14	E491T-14	TPSN nW500	E50xT-14	YFW-S50GG		T4T Z V N
C49T15-zy	490	27	-20	T42 x M y	T49T15-zy			E49C-3y	TPGMPwW50x		YFW-y50xM		T42 x M y
C49T15-zy	490	27	-30		T49T15-zy			E49C-6y					
T55xT11-zy	530	27 or 47	c	T46 x R y									T46 x R y
T55xT2-zy	530	27 or 47	c	T46 x P y								ЛП49x	T46 x P y
T55xT5-zy	530	27 or 47	c	T46 x B y									T46 x B y
T55T10-z	500			T5T Z V N									T5T Z V N
T55xT7-z	530	27 or 47	c	T46 x W N								ЛС49x	T46 x W N
T55xT6-z	530	27 or 47	c	T46 x Y N									T46 x Y N
C55xT15-zy	530	27 or 47	c	T46 x M x									T46 x M x

Notes:

- See Annex A, Paragraph A2.0 for a description of the WFM index system, and Paragraph A2.1.3 as it applies to this table. Note: The initial letter "C" designates metal-cored composite wires.
- Minimum tensile strength in the as welded condition and may vary in different specifications. See specifications for postweld heat treatments if any.
- See specification for details of impact requirement. The numeric figures shown in these columns are the as-welded impact requirements shown in AWS A5.20M (c* = not required by A5.20M)
- Yield strength is used for strength designators; x= impact temperature for 47J; capital letters R, V, W, B, M, Y = core ingredients; y = shielding gas, C = CO₂, or M = argon + CO₂, N = none.
- The "z" designates positionality (0=flat and horizontal; 1=all-position), y=shielding gas required, CO₂ (no symbol) or "M" = mixed gas, argon + CO₂ is used for classification.
- The "z" designates positionality (1=all-position, 2=flat and horizontal), y=shielding gas required, CO₂ (no symbol) or "M" = mixed gas, argon + CO₂ is used for classification.
- See specification for designations: positionality (P or D), current (p or n), gas shielding (Gy or N, where y=either CO₂ or argon + CO₂) and W = tensile strength and impact, x=temperature, or 0=not required
- The symbol following the YFW-, y=shielding gas, C for CO₂, A for mixed argon + CO₂, S for none. Following the two-digit tensile strength symbol, the "x"= impact temperature, G= not required.
- The final symbol is core ingredient, R=rutile, B=basic, M= metal, G=other.
- The symbol, ЛП, designates gas shielded flux cored wire, the symbol, ЛС, self shielded flux cored wire. The numeric digits indicate minimum yield strength, and the "x" indicates the temperature at which impact values are attained.

TABLE 3. Carbon Steel Wires for SAW

WFM No.	Nominal Composition				ISO		USA AWS	Canada CSA	Brazil ABNT	Australia AS	Japan JIS	China GB/T	Russia GOST	Europe CEN
	C	Mn	Si	Other	14171A	14171B	A5.17/A5.17M	W48.6	NBR 10617	1858.2	Z3351	5293	2246	EN756
Note a							(Note b)	(Note b)		(Note b)				
S1000	0.1	0.5	0.05		S1	SU11	EL 12	EL 12	EL 12	EL 12	YS-S1		Св-08	S1
S1001	0.1	0.7	0.05							ELM12				
S1100	0.08	0.5	0.05				EL 8		EL 8	EL 8		H08A, H08E	Св-08А, Св-08АА	
S1110	0.08	0.5	0.2		S1Si	SU12	EL8K	EL8K	EL 8K	EL8K				S1Si
S2000	0.1	1	0.05		S2	SU22	EM12	EM12	EM 12	EM12	YS-S2	H08MnA	Св-08ГА, Св-10ГА	S2
S2001	0.1	1.3	0.05										Св-08ГА	
S2010	0.1	1	0.2		S2Si	SU21	EM12K	EM12K	EM 12K	EM12K				S2Si
S2020	0.1	1	0.5		S2Si2	SU25	EM13K	EM13K	EM 13K	EM13K		H10MnSi		S2Si2
S2021	0.1	1.1	0.5	Ti 0.1		SU24	EM14K	EM14K						
S2030	0.1	1.3	0.75				EM11K	EM11K						
S2210	0.15	1.1	0.2			SU23	EM15K	EM15K	EM 15K	EM15K	YS-S3			
S3000	0.12	1.6	0.15			SU32	EH10K	EH10K			YS-S5		Св-10Г2	
S3001	0.12	1.6	0.05		S3	SU33					YS-S4			S3
S3010	0.12	1.8	0.4			SU42	EH12K	EH12K		EMH12K				
S3011	0.12	1.6	0.25		S3Si									S3Si
S3020	0.12	1.6	0.6								YS-S8			
S3030	0.12	1.6	1			SU31	EH11K	EH11K					Св-08ГС	
S3100	0.08	1.6	0.05							EMH12				
S4000	0.12	2	0.05		S4	SU41	EH14	EH14	EH 14	EH14		H10Mn2		S4
S4010	0.12	2	0.3		S4Si									S4Si
S4020	0.12	2.2	0.4			SU42					YS-S7			
S4110	0.08	2	0.8										Св-08Г2С	
S5000	0.12	2.5	0.05			SU51					YS-S6			

- a. See Annex A, Paragraph A2.0 for a description of the WFM index system, and Paragraph A2.1.2 as it applies to this table. Note: the initial designator "S" is replaced by "C" for metal-cored composite wires
- b. Tubular metal-cored wires have initial designators "EC".

Table 4 Carbon Steel Wires for GMAW and GTAW

Table 4 Carbon Steel wires for S2AW and G2AW																				
WFN No.	Nominal Composition				ISO				ISO		USA		Canada	Australia	Japan		China	Russia	Europe	
					14341				CD636-1		AWS		CSA	AS	JIS		GB/T	GOST		
	C	Mn	Si	Other	14341A	14341B	CD636A	CD636B	A5.18	A5.18M	48.4	2717.1	Z3312	Z3316	8110	2246	EN440	EN1668		
(Note a)					(Note b)				(Note c)		(Note c)	(Note c)						(Note b)		
S2030	0.1	1.2	0.6		G2Si	SG3	W2Si	SW3	ER70S-3	ER48S-3	ER49S-3	ES3					ER50-3		G2Si	W2Si
S2032	0.1	1	0.5	Al 0.6	G2Al							ES5					ER50-5	Cb-12°C	G2Al	
S2040	0.1	1	0.8					SW4	ER70S-4	ER48S-4	ER49S-4	ES4					ER50-4			
S2040A	0.1	1.3	0.8			SG4		SW16												
S2040R	0.1	1.3	0.7			SG16							YGW16							
S2043	0.1	1.3	0.7	Ti + Zr 0.1		SG15							YGW15							
S2131	0.06	1.2	0.6	Ti 0.1, Zr 0.1, Al 0.1	G2Ti	SG2	W2Ti	SW2	ER70S-2	ER48S-2	ER49S-2	ES2					ER50-2		G2Ti	W2Ti
S2231	0.15	0.8	0.6	Zr 0.1, Al 0.4, Ce 0.2														Cb-15°CCTH0LA		
S2241	0.2	1	0.8	Al 0.4, Ce 0.4														Cb-20°CCTH0A		
S3040	0.1	1.6	1			SG6		SW6	ER70S-6	ER48S-6	ER49S-6	ES6					ER50-6			
S3040	0.1	1.5	0.8		G3Si1	SG12	W3Si1	SW12					YGW12						G3Si	W3Si1
S3041	0.1	1.6	0.7	Ti + Zr 0.15, Al 0.3		SG13							YGW13							
S3043	0.1	1.7	0.8	Ti+Zr 0.15		SG11							YGW11	YGT50						
S3050	0.1	1.5	1.2		G3Si2	SG14							YGW14&17						G3Si2	
S4023	0.1	1.8	0.4	Ti+Zr 0.15		SG17														
S4040	0.1	1.8	0.7			SG7		SW7	ER70S-7	ER48S-7	ER49S-7	ES7					ER50-7			
S4043	0.1	2	0.8	Ti+Zr 0.15		SG18							YGW18&19							
S4050	0.1	1.8	1		G4Si1		W4Si1											Cb-08°C2C	G4Si1	W4Si1

Notes:

- a. See Annex A, Paragraph A2.0 for a description of the WFM index system, and Paragraph A2.1.2 as it applies to this table. Note: the initial designator "S" is replaced by "C" for metal-cored composite wires.
- b. See specification for mechanical property designators, which precede the composition designators
- c. For tubular metal-cored composite wires, "R" is deleted and "S" is replaced with "C".

TABLE 5A Low Alloy Steel Medium Strength Electrodes (excl. Cr-Mo & High Strength – Note b)																						
WFM No.	Nominal Mechanical Properties			Nominal Composition							ISO		USA AWS		Canada CSA	Argentina IRAM-IAS	Australia AS/NZS	China GB/T	Japan JIS		Russia GOST	Europe CEN
	Strength	Impact	Temp.	C	Mn	Ni	Cr	Mo	Note	2560A (Note c)	2560B	A5.5	A5.5M	W48	U500-127	15503.2	5118b	Z 3212	Z 3214	Z 3241	9467	EN 499
(Note a,b)																						
Manganese-Molybdenum Alloy Steels																						
E49xx- 1M3	490	27	-40	0.1	0.5				0.4		E38xMo	E49xx-1M3	E70xx-A1	E49xx-A1	E49xx-A1	E490xx-A1	E490xx-A1	E50xx-A1				E38xMo
E55xx- 3M2	550	27	-50	0.1	1.5				0.5			E55xx-3M2	E8018-D1	E55xx-D1	E62xx-D1	E62xx-D1	E62xx-D1	D60xx-E1				3 10F 1MΦ
Nickel Alloy Steels																						
E49xx- N1	490	27	-40	0.08	1.5	0.5						E49xx-N1								DL50x6-xx0		
E55xx- N1	550	27	-40	0.06	1.5	0.5						E55xx-N1										
E55xx- N2	550	47	c	0.1	1.7	1					E38xMn1Ni											E38xMn1Ni
E55xx- N2	550	27	-40	0.1	1	1					E38x1Ni	E55xx-N2	E80xx-C3	E55xx-C3	E55xx-C3	E550xx-C3	E550xx-C3	E550xx-C3				E38xMn1Ni
E49xx- N2L	490	27	-50	0.08	1	1						E49xx-N2	E80xx-C3L	E55xx-C3L								
E49xx- N3	490	27	-50	0.08	1	1.5						E49xx-N3										
E55xx- N3	550	27	-50	0.08	1	1.5						E55xx-N3	E80xx-C4	E55xx-C4	E55xx-C4							DL5016-4x1
E5516- 3N3	550	27	-50	0.08	1.3	1.5																
E55xx- N5	550	27	-60	0.1	1	2.5						E55xx-N5	E80xx-C1	E55xx-C1	E55xx-C1	E550xx-C1	E550xx-C1	E550xx-C1			355	E46x2Ni
E40xx- N5L	400	27	-70	0.04	1	2.5						E40xx-N5	E70xx-C1L	E40xx-C1L	E40xx-C1L	E400xx-C1L	E400xx-C1L	E80xx-C1L				E38x2Ni
F55xx- N7	490	27	-75	0.1	1	3.3						F55xx-N7	F80xx-C2	F55xx-C2	F55xx-C2	F550xx-C2	F550xx-C2	F850xx-C2			3 08FMH3	F38x3Ni
E49xx- N7	490	27	-100	0.04	1	3.3						E49xx-N7	E70xx-C2L	E49xx-C2	E49xx-C2L	E490xx-C2L	E490xx-C2L	E80xx-C2L				E46x3Ni
E5516- N13	550	27	-40	0.04	0.8	6.5						E55xx-N13	E8015-C5L	E5515-C5L								DL5016-10x3 DL5016-10x4
Nickel-Molybdenum Alloy Steels																						
E55xx- N2M3	550	27	-40	0.08	1	1		0.5	d		E38x1NiMo	E55xx-N2M3	E80xx-NM1	E55xx-NM1	E55xx-NM	E55018-NM	E550xx-NM	E55018-NM				E38x1NiMo
Weathering Alloy Steels																						
E49xx- NCC2	490	27	-20	0.1	0.5	0.3	0.2		Cu 0.4			E49xx-NCC2	E7018-W1	E49xx-W1	E4918-W	E49018-W	E490xx-W					
E49xx- NCC1	490	27	0	0.1	0.6	0.6	0.6		Cu 0.5			E49xx-NCC1										
E55xx- NCC1	550	27	-20	0.1	0.6	0.6	0.6		Cu 0.5			E5518-NCC1	E8018-W2	F55xx-W2	F5518-W	F55018-W	F550xx-W					
E57xx- NCC1	570	27	0	0.1	0.6	0.6	0.6		Cu 0.5			E57xx-NCC1										
E40xx- NC	490	27	0	0.1	1	0.6			Cu 0.4			E40xx-NC										
E57xx- NC	570	27	0	0.1	1	0.5			Cu 0.4													
E49xx- CC	490	27	0	0.1	1.2		0.5		Cu 0.5			E49xx-CC								DA58xxG		
E57xx- CC	570	47	0	0.1	1.2		0.5		Cu 0.5			E57xx-CC								DA58xxP		
E49xx- NCC	490	27	0	0.1	1	0.3	0.6		Cu 0.5			E49xx-NCC										
E57xx- NCC	570	47	0	0.1	1	0.3	0.6		Cu 0.5			E57xx-NCC								DA58xxW		
E55xx- NCC3	550			0.1	0.8	0.4	1		Cu 0.5												350A	
Not Specified																						
E52xx	520	47	0																		D53xx	
E57xx	570	47	-5																		D56xx	

- Notes:
- a. See Annex A, Paragraph A2.0 for a description of the WFM index system and A2.1.1 and A2.2 as they apply to this table.
- b. See Tables 5B for Cr-Mo alloy steels and 5C for weld metal classification with minimum tensile strengths of 600 MPa or greater.
- c. Yield strength designators may vary; x denotes impact temperature options at 47 J — See specifications
- d. May also contain V, Cu, Al

TABLE 5B. Low Alloy Cr-Mo Steel Covered Electrodes

WFM No.	Nominal Strength	Nominal Composition					ISO 3580		USA			Canada	Argentina	Australia	China		Japan	Russia	Europe
		C	Mn	Cr	Mo	Other	A	B	A5.6	A5.6M	AMS	CSA	IRAM-1AS	A5/NZS	GB/T	GB/T	JIS	GOST	CEN
(Note a)	MPa						(Note b)												(Note b)
E49xx-1M3	490			0.1	0.5		E49xx-1M3	E70xx-A1	E49xx-A1			E49xx-A1	E48xx-A1	E48xx-A1	E50xx-A1		DT1216	3-09M	EN1699
E55xx-CM	550	0.1	0.6	0.5	0.5		ECrMo0.5 x	E55xx-CM	E80xx-B1	E55xx-B1		E55xx-B1	E55xx-B1	E55xx-B1	E50xx-B1			3-09MX	ECrMo0.5 x
E55xx-C1M	550	0.1	0.5	0.5	1.1			E55xx-C1M	E80xx-B5	E55xx-B5		E5518-B5	E5516-B5	E5516-B5	E5516-B5				
E55xx-C1MV	550	0.1	1	0.5	1	V 0.4	EMoV x												EMoV x
E55xx-1CM	550	0.1	0.6	1.2	0.5		ECrMo1 x	E55xx-1CM	E80xx-B2	E55xx-B2		E55xx-B2	E55xx-B2	E55xx-B2	E5515-B2		DT23xx	3-09X1M	ECrMo1 x
E55xx-1CML	490	0.04	0.6	1.2	0.5		ECrMo1L x	E55xx-1CML	E70xx-B2L	E49xx-B2L		E55xx-B2L	E55xx-B2L	E55xx-B2L	E55xx-B2L		DT2315		ECrMo1L x
E55xx-1C1MV	550	0.1	0.4	1.2	1	V0.3, Nb 0.2													
E55xx-1CMV	550	0.1	0.6	1.2	0.5	V 0.3	ECrMoV1 x												ECrMoV1 x
E55xx-1C1MVW	550	0.1	0.4	1.2	1	V 0.4, W 0.4													
E62xx-2C1M	620	0.1	0.6	2.2	1		ECrMo2 x	E62xx-2C1M	E80xx-B3	E62xx-B3		E62xx-B3	E62xx-B3	E62xx-B3	E55xx-B3		DT24xx	3-09X2M	ECrMo2 x
E55xx-2C1ML	550	0.04	0.6	2.2	1		ECrMo2L x	E55xx-2C1ML	E80xx-B3L	E55xx-B3L		E55xx-B3L	E62xx-B3L	E62xx-B3L	E80xx-B3L		DT2415	3-05X2M	ECrMo2L x
E55xx-2CM1L	550	0.04	0.6	2	0.5			E55xx-2CM1L	E80xx-B4L	E55xx-B4L		E55xx-B4L	E5515-B4L	E5515-B4L	E5515-B4L				
E55xx-2C1MV	550	0.1	0.6	2.6	0.9	V 0.4, Nb 0.5													
E55xx-2CMV	550	0.1	0.6	2	0.5	V													
E55xx-5CM	550	0.06	0.6	5	0.5		ECrMo5 x	E55xx-5CM	E80xx-B6	E55xx-B6	6467	E55xx-B6	E4216-B6	E41xx-5Cr		E502	DT2516		ECrMo5 x
E55xx-5CML	550	0.04	0.6	5	0.5			E55xx-5CML	E80xx-B6L	E55xx-B6L		E55xx-B6L	E42xx-B6L						
E55xx-5CMV	550	0.1	0.6	5	0.5	V 0.3													
E55xx-7CM	550	0.06	0.6	7	0.5			E55xx-7CM	E80xx-B7	E55xx-B7		E55xx-B7	E42xx-B7	E41xx-7Cr		EMoV		3-10X5Mφ	
E55xx-7CML	550	0.04	0.6	7	0.5			E55xx-7CML	E80xx-B7L	E55xx-B7L		E55xx-B7L	E42xx-B7L			E7Cr			
E55xx-9C1M	550	0.06	0.6	9	1		ECrMo9 x	E55xx-9C1M	E80xx-B8	E55xx-B8		E55xx-B8	E42xx-B8	E41xx-9Cr		E505	DT2616		ECrMo9 x
E55xx-9C1ML	550	0.04	0.6	9	1			E55xx-9C1ML	E80xx-B8L	E55xx-B8L		E55xx-B8L	E42xx-B8L						
E62xx-5C1MV	620	0.11	1	9	1	Nb 0.05, V 0.2	ECrMo91 x	E62xx-5C1MV	E90xx-B9	E55xx-B9		E55xx-B9					E9Mo		ECrMo91 x
E62xx-12CMV	620	0.2	1	11	1	W 0.5, V 0.3	ECrMoWV12 x												ECrMoWV12 x

Notes:

a. See Annex A, Paragraph A2.0 for a description of the WFM index system and A2.1.1 and A2.2 as they apply to this table.

b. The "x" denotes coating, B = basic, R = rutile.

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TABLE 5C Low Allow High Strength Steel Electrodes																					
WFM.No.	Nominal Mechanical Properties			Nominal Composition						ISO		USA		Canada	Argentina	Australia	China	Japan	Russia	Europe	
	Strength	Impact	Temp.	C	Mn	Ni	Cr	Mo	Other	18275A	18275B	A5.5	A5.5M	AMG	CSA	IRAM-IA3	AS/NZS	GB/T	JIS	GOST	CEN
(Note a)	Manganese-Molybdenum Steels									(Note b)											(Note b)
E59xx-3M2	590	27	-20	0.1	1.4			0.35			E5916-3M2										
E62xx-3M2	620	27	-20	0.1	1.4			0.35			E62xx-3M2										
E62xx-3M3	630	27	-50	0.12	1.5			0.5		E550xMnMo	E62xx-3M3	E90xx-D3	E62xx-D3		E62xx-D3						D6216
E69xx-4M2	690	27	-50	0.12	1.8			0.35			E69xx-4M2	E100xx-D2	E69xx-D2		E69xx-D2	E69xx-D2	E70xx-D2				E550xMnMo
E69xx-1M4V	690			0.1	0.5			1	Si 0.5, V 0.2					6464							
E8315-3MC1M2	830			0.13	1.4			0.8	0.4												385
E8315-3MC1M4	830			0.15	1.5			1	0.8												3100
Nickel Steels																					
F62xx-N2	620	47	c	0.08	1.7	1				F550xMn1Ni											
E62xx-N13L	620	27	-115	0.04	0.8	6.5					E6215-N13L	E90xx-C5L	E62xx-C5L								F550xMn1Ni
Nickel-Molybdenum Steels (Note c)																					
E59xx-N1M1	590	27	-20	0.1	1.1	0.7		0.25			E59xx-N1M1										D58X6
E59xx-N5M1	590	27	-60	0.1	0.9	2.4		0.15			E5916-N5M1										D5816
E62xx-N1M1	620	27	-20	0.1	1.1	0.6		0.25			E62xx-N1M1										D6216
E62xx-N2M1	620	27	-20	0.1	1.1	1.1		0.25			E62xx-N2M1										D6216
E62xx-N2M2	620	47	c	0.08	1	1		0.4		E50xx1NiMo	E62xx-N2M3										E50xx1NiMo
E62xx-N3M1	620	27	-50	0.08	1	1.6		0.2		E550x1.5NiMo	E6218-N3M1	E9018-M	E6218-M		E6218-M	E6218-M	E6018-M				E550x1.5NiMo
E62xx-N4M1	620	27	-40	0.1	1	1.8		0.2			E62xx-N4M1										D6216
E62xx-N4M3	620	47	c	0.08	1	2		0.5		E550x2NiMo	E6216-N4M3										E550x2NiMo
F62xx-N5M1	620	27	-60	0.1	0.9	2.4		0.2			FR16-NJ5M1										FR6216
E69xx-N2M3	690	47	c	0.08	1.7	1		0.5		E62xxMn1NiMo											E62xxMn1NiMo
E69xx-N3M2	690	27	-50	0.08	1.2	1.7		0.4	(Note c)		E6918-N3M2	E10018-M	E6918-M		E6918-M	E6918-M	E69xx-M	E7018-M			
E69xx-N4M3	690	27	-40	0.05	1.2	2.1		0.5			E6918-N4M3										D7016
E70xx-N4M2	700	27	-50	0.08	1.5	1.9					E7018-N4M2										
E78xx-N5M4	780	27	-60	0.1	1.7	2.5					E7816-N5M4										D8016
E78xx-N9M3	780	27	-80	0.1	1.4	4.6		0.5			E7816-N9M3										D8016
E83xx-N4M3	830	47	c	0.08	1.7	2		0.5		E69xxMn2NiMo											E69xxMn2NiMo
Nickel-Chromium-Molybdenum Steels																					
E09xx-N3CM1	690	27	-20	0.1	1.5	1.5	0.2	0.2			E09xx-N3CM1										D7016
E69xx-N7CM3	690	27	-60	0.1	1.1	3.4	0.25	0.45			E69xx-N7CM3										D7016
F76xx-N4CM2	760	27	-50	0.08	1.5	2	0.3	0.4	(Note c)	F69xxMn2NiCrMo	F7618-N4CM2	F11018-M	F7618-M		F7618-M	F76xx-M	F7518-M				F69xxMn2NiCrMo
E78xx-N4CM2	780	27	-20	0.1	1.5	1.8	0.25	0.4			E7816-N4CM2										D8016
E78xx-N4CM1	780	27	-20	0.1	1.3	2	0.7	0.2			E7816-N4CM1										D8016
E78xx-N5CM3	780	27	-20	0.1	1.3	2.5	0.25	0.5			E7816-N5CM3										D8016
E83xx-N4C2M2	830	27	-50	0.08	1.7	2	1	0.4	(Note c)	E09xxMn2Ni1CrMo	E8316-N4C2M2	E12018-M	E8316-M		E8316-M	E8316-M	E70xx-M	E8516-M			E09xxMn2Ni1CrMo
E83xx-N7CM1	830	67	-20	0.08	1.1	3.4	0.4	0.3	(Note c)			E12018-M1	E8318-M1		E8318-M1	E8318-M1	E78xx-M1	E8518-M1			
Not Specified																					
E62xx	610	39	-20																		D62x6
E69xx	690	39	-20																		D7016
E76xx	750	39	-20																		D7616
E78xx	780	34	0																		D8000
E78xx	780	39	-20																		D8016

Notes:

- a. See Annex A, Paragraph A2.0 for a description of the WFM index system and A2.1.1 and A2.2 as they apply to this table.
b. Yield strength designators may vary; x denotes impact options at 47 J — See specifications
c. May also contain V, Cu, Al
d. Chromium either not specified or specified as a maximum.

TABLE 6A. Low Alloy Medium Strength Steel Flux Cored Wires (excl. Cr-Mo & High Strength - Note b)

TABLE 01: LOW Alloy Medium Strength Steel Flux Cored Wires (Excl. Cr-Mo & High Strength - Note 5)																				
WFM No.	Mechanical Properties			Nominal Composition						ISO		USA AWS		Australia	China GB/T	Japar JIS		Europe CEN		
	Strength	Impact		C	Mn	Ni	Cr	Mo	Note	17632-A	17632-B	A5.29	A5.29M	2203:1	17493	Z 3313	Z 3320	EN758	EN12071	
(Note a)	(Note c)	(Note d)								(Note e)	(Note a)	(Note f)	(Note g)	(Note g)	(Note f)	(Note h)		(Note e)		
Manganese-Molybdenum Steels																				
T493T5-zp-2M3	490	27	-30	0.1	1			0.5			T493T5-zp-2M3	E7zT5-A1	E49zT5-A1		E500T5-A1					
T49ZT1-zp-2M3	490			0.1	1			0.5		T46Z-Mo x y	T55ZT1-zyA-2M3	E8zTn-A1	E55zTn-A1	W550P.A1	E55zT1-A1			T46Z-Mo x y		
T49ATn-2M3	490	47	20	0.05	1			0.5												
	550			0.12	1.5			0.4		T46Z-MnMo x y	T55ZT1-zyA-3M2								TMoL x y	
T49ATn-1M3V	490	47	20	0.1	0.7			0.5	V, 0.3										TMoV x y	
Nickel Alloys																				
T433T8-z-N1	430	27	-30	0.1	1	0.7			Al 1.5		T433T8-zNA-N1	E6zT8-K6	E43zT8-K6	W409A.K6	E431T8-K6					
T493T8-z-N1	490	27	-30	0.1	1	0.7			Al 1.5		T493T8-zNA-N1	E7zT8-K6	E49zT8-K6	W489A.K6	E501T8-K6					
T496T5-zy-N1	490	27	-60	0.1	1	0.7					T496T5-zyA-N1	E7zT5-K6	E49zT5-K6	W489A.K6						
T433T1-z-N2	430	27	-30	0.1	1.2	1				T353-1Ni x y	T433T1-zyA-N2	E6zT1-Ni1	E43zT1-Ni1					T353-1Ni x y		
T493T6-z-N2	490	27	-30	0.1	1.2	1			Al 1.5	T383-1Ni x y	T493T6-zNA-N2	E7zT6-Ni1	E49zT6-Ni1	W509A.Ni1	E501T8-Ni1			T383-1Ni x y		
T493T8-z-N2	490	27	-30	0.1	1.2	1			Al 1.5		T493T8-zNA-N2	E7zT8-Ni1	E49zT8-Ni1							
T493T1-zy-N2	490	27	-30	0.1	1.2	1					T563T1-zyA-N2	E8zT1-Ni1	E55zT1-Ni1			YFL-x503x				
T566T5-zyP-N2	550	27	-60	0.1	1.2	1				T463-1Ni x y	T566T5-zyP-N2	E8zT5-Ni1	E55-T5-Ni1	W554A.Ni1	E550T5-Ni1			T463-1Ni x y		
T552Tn-N2	550	47	-20	0.1	1.6	1				T462-Mn1Ni x y								T462-Mn1Ni x y		
T496Tn-N3	490	27	-60	0.1	1.2	1.5										YFL-x506x				
T552Tn-N3	550	47	-20	0.1	1.2	1.5				T462-1.5Ni x y								T462-1.5Ni x y		
T494T8-zN5	490	27	-40	0.1	1.2	2.2				T384-2Ni x y	T494Tn-N5			W484A.Ni2		YFL-x504x		T384-2Ni x y		
T493T8-zN5	490	27	-30	0.1	1.2	2.2			Al 1.5		T493T8-zNA-N5	E7zT8-Ni2	E49T8-Ni2		E501T8-Ni2					
T566T8-zN5	550	27	-60	0.1	1.2	2.2			Al 1.5		T563T8-zNA-N5	E8zT8-Ni2	E56T8-Ni2							
T564T1-zyN5	550	27	-40	0.1	1.2	2.2				T464-2Ni x y	T564T1-zyA-N5	E8zT1-Ni2	E55zT1-Ni2	W554A.Ni2	E55zTx-Ni2			T464-2Ni x y		
T557T5-zyP-N7	550	27	-70	0.1	1.2	3.2				T466-3Ni x y	T557T5-zyP-N7	E8zT5-Ni3	E55zT5-Ni3	W557A.Ni3	E550T5-Ni3			T466-3Ni x y		
Nickel-Molybenum Alloys																				
T551Tn-zy-N1M2	550	27	-10	0.1	1	0.7		0.4			T551Tn-zyA-N1M2									
T554T5-zy-N2M2	550	27	-40	0.1	1.2	1		0.4		T503-1NiMo x y	T554T5-zyA-N2M2	E8zT5-K1	E55zT5-K1	W559A.K1	E550T5-K1			T503-1NiMo x y		
T492T4-z-N3M1	490	27	-20	0.1	1.4	1.5		0.2	Al 1.5		T492T4-zNA-N3M1	E70T4-K2	E49zT4-K2	W489A.K2	E50zTx-K2					
T493T7-z-N3M1	490	27	-30	0.1	1.4	1.5		0.2	Al 1.5		T493T7-zNA-N3M1	E70T7-K2	E49zT7-K2							
T493T11-z-N3M1	490	27	-30	0.1	1.4	1.5		0.2	Al 1.5		T493T8-zNA-N3M1	E70T8-K2	E49zT8-K2							
T495T11-z-N3M1	490	27	-50	0.1	1.4	1.5			Al 1.5		T495T8-zNA-N3M1	E7zT11-K2	E49zT11-K2							
T553T1-zy-N3M1	550	27	-30	0.1	1.4	1.5		0.2			T563T1-zyA-N3M1	E8zT1-K2	E55zT1-K2	W554A.K2	E550T5-K2					
T553T5-zy-N3M1	550	27	-30	0.1	1.4	1.5		0.2			T563T5-zyA-N3M1	E8zT5-K2	E55zT5-K2							
Weathering Alloys																				
T490Tn-NCC1	490	47	0	0.1	1	0.5	0.5		Cu 0.4		T490Tn-zyA-NCC1						YFA-50W			
T553T1-zy-NCC1	550	27	-30	0.1	1	0.6	0.6		Cu 0.4		T553T1-zyA-NCC1	T8zT1-W2	E55zT1-W2	W559A.W						
T550Tn-NCC1	550	47	-5	0.1	1	0.5	0.6		Cu 0.5		T550Tn-zyA-NCC1						YFA-58W			
T490Tn-CC	490	47	0	0.1	1		0.5		Cu 0.4		T490Tn-zyA-CC						YFA-50P			
T550Tn-CC	550	47	-5	0.1	1		0.5		Cu 0.4		T550Tn-zyA-CC						YFA-58P			

Notes:

a. See Annex A, paragraph A2.0 for a description of the WFM index system, and paragraphs A2.1.3 and A2.2 as they apply to this table. Tn = a number 1 to 15 (see Annex Table A3 for usability description).

b. See Tables 6B for Cr-Mo alloy steels and 6C for weld metals classifications with minimum tensile strengths of 600 MPa or greater.

c. Mechanical properties shown are nominal for the as welded condition and may vary in different specifications. Also see specifications for postweld heat treatments if any (marked with "P").

d. See specification for details of impact requirement, 47J in some cases 27J in others.

e. Yield strength is used for strength designators, followed by impact temperature for 47J. The x signifies core ingredients, the "y", shielding gas.

f. The "z" designates positionality (0=all; 1=all-position). See Annex Table A2 for usability designators.

g. Designations shown are based on weld metal classifications. These may be preceded by digits for positionality, shielding gas, and current suitability.

h. The symbol following the YFL- or YFA-, y=shielding gas, C for CQ, M for mixed argon + CO₂, S for none. Following the two digit strength symbol, x=impact temperature, G= not required.

The final symbol is core ingredient, R=rutile, B=base, M= metal, G=other.

TABLE 6B Low Alloy Creep Resistant Steel Flux Cored Wires (Mn-Mo & Cr-Mo)

WFM No.	Mechanical Properties			Nominal Composition					ISO		USA		Australia	China	Japan	Europe
	Strength	Impact	Temp.	C	Mn	Cr	Mo	Note	17634 A	17634B	A5.29	A5.29M	AS	GB/T	JIS	CEN
(Note a)	(Note b)	(Note c)							(Note d)	(Note a)	(Note e)	(Note f)	(Note f)	(Note a)	(Note g)	(Note d)
T55 Tn-zy-2M3	550			0.1	1		0.5		T Mo x y	T55 Tn-zy-2M3	E8xT1-A1	E55xT1-A1		E55xTn-A1		T Mo x y
T553Tn-zy-2M3L	490	27	-30	0.05	1.2		0.5		T MoL x y	T49 Tn-zy-2M3	E7xT5-A1	E49xT5-A1		E50xTn-A1	YFM-x	T MoL x y
T55 Tn-zy-2MV	550			0.09	0.7		0.5	V 0.35	T MoV x y							T MoV x y
T55 Tn-zy-CM	550			0.1	1		0.5			T55 Tn-zy-CM	E8xT1-B1		W550P.B1	E55xTn-B1	YFCM-x	
T55 Tn-zy-CML	550			0.04	1		0.5			T55 Tn-zy-CML	E8xT1-B1L		E55xT1-B1L			
T55 Tn-zy-1CM	550			0.1	1		1.2		T CrMo1 x y	T55 Tn-zy-1CM	E8xTn-B2		W550P.B2	E55xTn-B2	YF1CM-x	T CrMo1 x y
T55 Tn-zy-1CML	550			0.04	1		1.2		T CrMo1L x y	T55 Tn-zy-1CML	E8xTn-B2L		W550P.B2	E55xTn-B2L		T CrMo1L x y
T55 Tn-zy-1CMH	550			0.12	1		1.2			T55 Tn-zy-1CMH	E8xT1-B2H		W550P.B2C	E55xTn-B2H		
T55 Tn-zy-2C1M	550			0.1	1		2.2		T CrMo2 x y	T69 Tn-zy-2C1M	E10xTn-B3		W550P.B3		YF2CM-x	T CrMo2 x y
T55 Tn-zy-2C1ML	550			0.04	1		2.2		T CrMo2L x y	T62 Tn-zy-2C1ML	E9xT1-B3L		W550P.B3L			T CrMo2L x y
T55 Tn-zy-2C1MH	550			0.12	1		2.2			T55 Tn-zy-2C1MH	E10xT1-B3H		W550P.B3C			
T55 Tn-zy-5CM	550			0.1	1		5	0.5	T CrMo5 x y	T55 Tn-zy-5CM	E8xT5-B6		W550P.5Cr			T CrMo5 x y
T55 Tn-zy-5CML	550			0.04	1		5	0.5		T55 Tn-zy-5CML	E8xT5-B6L					
T55 Tn-zy-7CM	550			0.1	1		7	0.5					WW50P.7Cr			
T55 Tn-zy-9C1M	550			0.1	1		9	1		T55 Tn-zy-9C1M	E8xT5-B8		W550P.9Cr			
T55 Tn-zy-9C1ML	550			0.04	1		9	1		T55 Tn-zy-9C1ML	E8xT5-B8L					
T62 Tn-zy-9C1MV	550			0.1	1		9	1	h	T69 Tn-zy-9CMV	E10xT1-B9					

Notes:

- See Annex A, paragraph A2.0 for a description of the WFM index system, and paragraphs A2.1.3 and A2.2 as they apply to this table. Tn = 1, 5, or 15 (see Annex Table A3 for usability description).
- Strength shown is the minimum ultimate tensile strength after heat treatment.
- See specifications for impact requirements. Most specifications do not require impact testing, though some require tests at room temperature or 0oC.
- The "x" signifies core ingredients, and "y", shielding gas.
- The "x" designates positionality (0=flat; 1=all-position). Tn = T1 (rutile) or T5 (basic) with CO₂ gas shielding (no symbol), or argon+CO₂ if designated with "M".
- Designations shown are based on weld metal classifications. These may be preceded by digits for positionality, shielding gas, and current suitability.
- The "x" designates shielding gas, "C" = CO₂, "G" not specified.
- V 0.2, Nb 0.06, N 0.04.

TABLE 6C Low Alloy High Strength Steel Flux Cored Wires

WFM No.	Mechanical Properties			Nominal Composition (Note c)					ISO		USA		Australia	China	Japan	Europe				
	Strength	Impact	Temp.	C	Mn	Ni	Cr	Mo	Note	17632A	17632B	18276A	18276B	A5.29	A5.29M	2203.1	17493	Z 3313	EN758	EN12535
	(Note a)	(Note b)	(Note c)							(Note d)	(Note e)	(Note d)	(Note a)	(Note e)	(Note f)	(Note e)	(Note g)	(Note d)		
Manganese-Molybdenum Alloy Steels																				
T604T1-z-y-3M2	620	27	-40	0.1	1.6			0.4		T502-MnMo x y		T627T1-z-y-3M2	E62T1-D1y	E62zT1-D1y	W600x-D1	E601T1-D1			T502-MnMo x y	
T625T5-z-y-4M2	620	27	-50	0.12	2			0.4			T553-MnMo x y	T625T5-z-y-4M2	E62zT5-D2y	E62zT5-D2y			E600T5-D2			
T694T5-z-y-4M2	690	47	-20	0.08	1.6			0.4			T552-MnMo x y								T552-MnMo x y	
T694T5-z-y-4M2	690	27	-40	0.12	2			0.4			T622-MnMo x y	T694T5-z-y-4M2	E10zT5-D2y	E69zT5-D2y	W699x-D2	E700T5-D2			T622-MnMo x y	
T623T1-z-y-3M3	620	27	-30	0.1	1.4			0.5				T651-MnMo x y	T623T1-z-y-3M3	E62zT1-D3y	E02zT1-D3y	W629x-D3	E600T1-D2			
Nickel Alloy Steels																				
T625Tn-z-y-N2	620	47	-30	0.08	1.7			0.9			T553-Mn1Ni x y									T553-1MnNi x y
T625T8-z-y-N2	620	27	-50	0.1	1.5	1			AI 1.5			T625T8-z-y-N2		E62zT8-K8	E62zT8-K8	W629x-K8				
T620Tn-z-y-N3	620	47	-40	0.08	1.4	1.5					T554-Mn1.5Ni x y									
T624Tn-z-y-N4	620	27	-40	0.1	1.2	2.2				T504-2Ni x y		T624Tn-z-y-N4	F62T1-N2y	F62zT1-N2y		E602T1-N2			T504-2Ni x y	
T693T1-z-y-N4	690	27	-30	0.1	1.5	2.4			h			T693T1-z-y-N4	E10zT1-K7y	E69zT1-K7y	W699x-K7	E701T1-K7				T566-Mn2.5Ni x y
T593Tn-z-y-N5	620	47	-30	0.08	1.5	2.5					T555-Mn2.5Ni x y									T555-Mn2.5Ni x y
T627T5-z-y-N7	620	27	-70	0.1	1.2	3.2				T506-3Ni x y		T627T5-z-y-N7	E62zT5-N3y	E62zT5-N3y	W627x-N3	E600T5-N3			T506-3Ni x y	
Nickel-Molybdenum Alloy Steels																				
T624Tn-z-y-N2M2	620	47	-20	0.08	1	0.9		0.5			T552-1NiMo x y									T552-1NiMo x y
T693Tn-z-y-N2M1	690	47	-10	0.08	1.4	0.9		0.5			T551-4Mn1NiMo x y									T551Mn1NiMo x y
T692Tn-z-y-N3M2	590	27	-20	0.1	1.4	1.5		0.5				T592Tn-z-y-N3M2		E62zTn-K3y	E62zTn-K3y	W629x-K2	F60Ty-K2			YFW-x602x
T627Tn-z-y-N3M2	620	27	-20	0.1	1.4	1.5		0.2	h											
T598Tn-z-y-N3M2	620	47	-40	0.08	1	1.5		0.5			T554-1.5NiMo x y									T554-1.5Ni x y
T624Tn-z-y-N4M3	620	47	-20	0.08	1	2		0.5			T555-2NiMo x y									T555-2NiMo x y
T624Tn-z-y-N4M2	690	27	-20	0.1	1.5	2		0.1	h			T692Tn-z-y-N3M2	E10zTn-K3y	E69zTn-K3y	W699x-K3	E700T5-K3			T552-Mn2NiMo x y	
T762Tn-z-y-N4M2	760	27	-20	0.1	1.5	2		0.1	h			T623-Mn2NiMo x y	T762Tn-z-y-N3M2	E11zTn-K3y	E76zTn-K3y	W769x-K3	E750Tn-K3			T623-Mn2NiMo x y
Nickel-Chromium-Molybdenum Alloy Steels																				
T836T1-z-y-N3C1M2	830	27	-60	0.2	1	1.3	0.4	0.3	h			T836T1-z-y-N3C1M2	E12zTn-K5y	E63zTn-K5y	W839x-K5	E850T1-K5				
T765Tn-z-y-N4C1M2	760	27	-30	0.1	1.8	2.2	0.5	0.5	h			T623-Mn2NiCrMo x y	T765Tn-z-y-N4C1M2	E11zTn-K4y	E76zTn-K4y	W769x-K4	E750Tn-K4			I623-Mn2NiCrMo x y
T832Tn-z-y-N4C1M2	830			0.1	1.8	2.2	0.6	0.6	h			T693-Mn2NiCrMo x y	T832Tn-z-y-N4C1M2	E12zTn-K4y	E83zTn-K4y	W839x-K4	E850Tn-K4			T694-Mn2NiCrMo x y
T836Tn-z-y-N4C1M2	830	47	-40	0.1	1.8	2.2	0.8	0.5	h			T694-Mn2NiCrMo x y								T694-Mn2NiCrMo x y
T697T1-z-y-N6C1M1	690	47	-50	0.08	1	2.5														
I623T1-z-y-N6C1M4	620	27	-30	0.06	1	2.5						T697T1-z-y-N6C1M1	E10zT1-K9y	E69zT1-K9y	W699x-K9					

Notes:

a. See Annex A, paragraph A2.0 for a description of the WFM index system, and paragraphs A2.1.3 and A2.2 as they apply to this table. Tn = a number 1 to 15 (see Annex Table A3 for usability description)

b. Mechanical properties shown are nominal for the as welded condition and may vary in different specifications. Also see specifications for postweld heat treatments if any.

c. See specification for details of impact requirement, 47J in some cases 27J in others. Where 27 J values are given, the comparable requirement for 47J is assumed to be 20°C higher.

d. Yield strength is used for strength designators, followed by impact temperature for 47J. The "x" signifies core ingredients, ym "y", shielding gas.

e. The "z" designates positionality (0=flat, 1=all-position), y=shielding gas required, CQ (no symbol) or "M" = mixed gas, argon + CO₂ is used for classification.

f. Designations shown are based on weld metal classifications. These may be preceded by digits for positionality, shielding gas, and current suitability.

g. The symbol following the YFW-, y=shielding gas, C for CO₂, M for mixed argon + CO₂, S for none. Following the two digit strength symbol, x=impact temperature, G= not required.

h. May contain V < 0.5.

i. See Table 6A for ISO 17632B for low alloy steels with minimum strength less than 600 MPa, and ISO 18270B herein for higher minimum strength low alloys.

TABLE 7A

Low Alloy Medium Strength Steel Wires for SAW (excl. Cr-Mo & High Strength -- Note b)

WFM No.	Nominal Composition							ISO		USA AWS	Australia AS	Japan JIS	Russia GOST	Europe CEN	
	C	Mn	Si	Ni	Cr	Mo	Other	14171A	14171B	A5.23/A5.23M	1858.2	Z 3351	2246	EN756	EN12070
(Note a)								(Note e)	(Note e)	(Note c)				(Note e)	(Note d)
Manganese Molybdenum Alloy Steels															
S1001-1M3	0.1	0.5	0.1			0.5		S1Mo							
S1000-1M3	0.1	0.8	0.1			0.5			SU1M3	EA1	EA1				
S3001-2M1	0.1	1.1	0.1			0.3			SU2M1						
S2000-2M3	0.1	1.2	0.1			0.5		S2Mo	SU2M3	FA2	FA2	YS-M3		S2Mo	SMo
S4001-3M1	0.12	1.6	0.1			0.3			SU3M1						
S4010-3M1	0.12	1.8	0.4			0.3						YS-M2			
S3000-3M3	0.1	1.5	0.1			0.5		S3Mo	SU3M3	EA4	EA3	YS-M4		S3Mo	SMnMo
S3010-3M3	0.12	1.5	0.4			0.5									
S4000-4M1	0.12	2	0.1			0.3			SU4M1			YS-M1			
S4000-4M3	0.1	2	0.1			0.5		S4Mo	SU4M3	EA3	EA4			S4Mo	
S4020-4M3	0.1	1.8	0.7			0.5			SU4M31	EA3K					SMoSi
S5010-5M3	0.12	2.5	0.1			0.5			SU5M3			YS-M5			
Nickel Alloy Steels															
S2000-N2	0.1	1	0.2	1				S2Ni1	SUN2	ENi1	ENi1		Св-10ГН	S2Ni1	
S2010-N2	0.1	1.1	0.6	1					SUN21	ENi1K					
S3000-N3	0.1	1.7	0.5	1.5					SUN31			YS-N1			
S2000-N3	0.1	1	0.2	1.5				S2Ni1,5	SUN3					S2Ni1,5	
S3000-N3	0.1	1.5	0.2	1.5				S3Ni1,5						S3Ni1,5	
S2000-N5	0.1	1	0.2	2.3				S2Ni2	SUN5	ENi2	ENi2			S2Ni2	
S2000-N7	0.1	0.9	0.2	3.5				S2Ni3	SUN7	ENi3	ENi3	YS-N2	Св-06H3	S2Ni3	
Nickel Molybdenum Alloy Steels															
S4005-N1M3	0.12	2	0.1	0.6		0.5			SUN1M3	EF2	EF2				
S2002-N2M1	0.1	1.4	0.2	1		0.2			SUN2M1	ENi5					
S2005-N2M3	0.1	1.2	0.2	1		0.5		S2Ni1Mo	SUN2M3	EF1	EF1			S2Ni1Mo	
S3005-N2M3	0.1	1.5	0.2	1.1		0.5		S3Ni1Mo	SUN2M31					S3Ni1Mo	
S4005-N2M3	0.12	2	0.1	1		0.5			SUN2M32	EF3	EF3	YS-NM1			
S4008-N2M3	0.12	2.3	0.2	1.1		0.8						YS-NM3			
S2005-N3M3	0.1	0.9	0.2	1.5		0.5							Св-10HMA		
S3004-N3M3	0.1	1.5	0.2	1.5		0.4		S3Ni1,5Mo						S3Ni1,5Mo	
S2002-N4M1	0.15	0.8	0.2	1.9		0.2				ENi4	ENi4				
Weathering Alloy Steels															
S1000-N1CC	0.1	0.5	0.3	0.6	0.7		Cu 0.6		SUNCC1	EW	EW				
S3000-CC	0.1	1.3	0.2		0.4		Cu 0.3		SUCC			YS-CuC1			
S3000-NCC3	0.1	1.3	0.2	0.6	0.7		Cu 0.4		SUNCC3			YS-CuC2			

Notes:

- See Annex A, paragraph A2.0 for a description of the WFM index system, and paragraphs A2.1.2 and A2.2 as they apply to this table. Note: the initial designator "S" is replaced by "C" for metal-cored composite wires.
- See Tables 7B for Cr-Mo alloy steels and 7C for weld metal classification with minimum tensile strengths of 600 MPa or greater.
- The initial digit, "F", followed by designators for the mechanical properties precedes the composition designators. Tubular metal-cored wires have the initial designators "EC".
- Composition designators are followed by designators for mechanical properties.
- Designators for the mechanical properties precede the composition designators.