

GRADUA: INDUSTRIA TEKNOLOGIEN
INGENIERITZA

GRADU AMAIERAKO LANA

AUTOMOZIOKO BIRABARKI BATEN PROZESU ORRIAREN GARAPENA

*2. ERANSKINA DIN EN-10083-3 ARAUAN JASOTZEN DIREN
TAULAK 37CRS4 MATERIALARENTZAKO*

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2. Eranskina. DIN EN-10083-3 arauan jasotzen diren taulak 37CrS4 materialarentzako

Steel designation		Chemical composition % by mass ^{a,b}									
Name	Number	C	Si max.	Mn	P max.	S	Cr	Mo	Ni	V	B
Steels without boron ^c											
38Cr2	1.7003	0,35 to 0,42	0,40	0,50 to 0,80	0,025	max. 0,035	0,40 to 0,60	-	-	-	-
46Cr2	1.7006	0,42 to 0,50	0,40	0,50 to 0,80	0,025	max. 0,035	0,40 to 0,60	-	-	-	-
34Cr4	1.7033	0,30 to 0,37	0,40	0,60 to 0,90	0,025	max. 0,035	0,90 to 1,20	-	-	-	-
34CrS4	1.7037					0,020 to 0,040	-	-	-	-	
37Cr4	1.7034	0,34 to 0,41	0,40	0,60 to 0,90	0,025	max. 0,035	0,90 to 1,20	-	-	-	-
37CrS4	1.7038					0,020 to 0,040	-	-	-	-	
41Cr4	1.7035	0,38 to 0,45	0,40	0,60 to 0,90	0,025	max. 0,035	0,90 to 1,20	-	-	-	-
41CrS4	1.7039					0,020 to 0,040	-	-	-	-	
25CrMo4	1.7218	0,22 to 0,29	0,40	0,60 to 0,90	0,025	max. 0,035	0,90 to 1,20	0,15 to 0,30	-	-	-
25CrMoS4	1.7213					0,020 to 0,040	-	-	-	-	
34CrMo4	1.7220	0,30 to 0,37	0,40	0,60 to 0,90	0,025	max. 0,035	0,90 to 1,20	0,15 to 0,30	-	-	-
34CrMoS4	1.7226					0,020 to 0,040	-	-	-	-	
42CrMo4	1.7225	0,38 to 0,45	0,40	0,60 to 0,90	0,025	max. 0,035	0,90 to 1,20	0,15 to 0,30	-	-	-
42CrMoS4	1.7227					0,020 to 0,040	-	-	-	-	
50CrMo4	1.7228	0,46 to 0,54	0,40	0,50 to 0,80	0,025	max. 0,035	0,90 to 1,20	0,15 to 0,30	-	-	-
34CrNiMo6	1.6582	0,30 to 0,38	0,40	0,50 to 0,80	0,025	max. 0,035	1,30 to 1,70	0,15 to 0,30	1,30 to 1,70	-	-
30CrNiMo8	1.6580	0,26 to 0,34	0,40	0,50 to 0,80	0,025	max. 0,035	1,80 to 2,20	0,30 to 0,50	1,80 to 2,20	-	-
35NiCr6	1.5815	0,30 to 0,37	0,40	0,60 to 0,90	0,025	max. 0,025	0,80 to 1,10	-	1,20 to 1,60	-	-
36NiCrMo16	1.6773	0,32 to 0,39	0,40	0,50 to 0,80	0,025	max. 0,025	1,60 to 2,00	0,25 to 0,45	3,6 to 4,1	-	-
39NiCrMo3	1.6510	0,35 to 0,43	0,40	0,50 to 0,80	0,025	max. 0,035	0,60 to 1,00	0,15 to 0,25	0,70 to 1,00	-	-
30NiCrMo16-6	1.6747	0,26 to 0,33	0,40	0,50 to 0,80	0,025	max. 0,025	1,20 to 1,50	0,30 to 0,60	3,3 to 4,3	-	-
51CrV4	1.8159	0,47 to 0,55	0,40	0,70 to 1,10	0,025	max. 0,025	0,90 to 1,20	-	-	0,10 to 0,25	-
Steels with boron											
20MnB5	1.5530	0,17 to 0,23	0,40	1,10 to 1,40	0,025	max. 0,035	-	-	-	-	0,0008 to 0,0050
30MnB5	1.5531	0,27 to 0,33	0,40	1,15 to 1,45	0,025	max. 0,035	-	-	-	-	0,0008 to 0,0050
38MnB5	1.5532	0,36 to 0,42	0,40	1,15 to 1,45	0,025	max. 0,035	-	-	-	-	0,0008 to 0,0050
27MnCrB5-2	1.7182	0,24 to 0,30	0,40	1,10 to 1,40	0,025	max. 0,035	0,30 to 0,60	-	-	-	0,0008 to 0,0050
33MnCrB5-2	1.7185	0,30 to 0,36	0,40	1,20 to 1,50	0,025	max. 0,035	0,30 to 0,60	-	-	-	0,0008 to 0,0050
39MnCrB6-2	1.7189	0,36 to 0,42	0,40	1,40 to 1,70	0,025	max. 0,035	0,30 to 0,60	-	-	-	0,0008 to 0,0050

^a Elements not quoted in this table shall not be intentionally added to the steel without the agreement of the purchaser, other than for the purpose of finishing the heat and for boron to have its effect on the hardenability. All reasonable precautions shall be taken to prevent the addition of such elements from scrap or other material used in the manufacture which affect the hardenability, mechanical properties and applicability.

^b Where requirements are made on hardenability (see Tables 5 and 6) or on the mechanical properties in the quenched and tempered condition (see Table 8), slight deviations from the limits for the cast analysis are permissible, except for the elements carbon, phosphorus and sulfur; the deviations shall not exceed the specifications of Table 4.

^c Steels with improved machinability as a result of the addition of higher sulphur contents up to around 0,10% S (including resulphurized steels with controlled inclusion content (e.g. Ca-treatment)) may be supplied on request. In this case the upper limit for the manganese content may be increased by 0,15 %.

1. Taula. Altzairuen graduak eta konposizio kimikoak.

2. Eranskina. DIN EN-10083-3 arauan jasotzen diren taulak 37CrS4 materialarentzako

Steel designation		Symbol	Limits of range	Distance in mm from quenched end														
Name	Number			Hardness in HRC														
				1,5	3	5	7	9	11	13	15	20	25	30	35	40	45	50
Steels without boron																		
38Cr2	1.7003	+H	max.	59	57	54	49	43	39	37	35	32	30	27	-	-	-	-
			min.	51	46	37	29	25	22	20	-	-	-	-	-	-	-	-
46Cr2	1.7006	+H	max.	63	61	59	57	53	47	42	39	36	33	32	-	-	-	-
			min.	54	49	40	32	28	25	23	22	20	-	-	-	-	-	-
34Cr4 34Cr4S	1.7033	+H	max.	57	57	56	54	52	49	46	44	39	37	35	34	33	32	31
	1.7037		min.	49	48	45	41	35	32	29	27	23	21	20	-	-	-	-
37Cr4 37CrS4	1.7034	+H	max.	59	59	58	57	55	52	50	48	42	39	37	36	35	34	33
	1.7038		min.	51	50	48	44	39	36	33	31	26	24	22	20	-	-	-
41Cr4 41CrS4	1.7035	+H	max.	61	61	60	59	58	56	54	52	46	42	40	38	37	36	35
	1.7039		min.	53	52	50	47	41	37	34	32	29	26	23	21	-	-	-
25CrMo4 25CrMoS4	1.7218	+H	max.	52	52	51	50	48	46	43	41	37	35	33	32	31	31	31
	1.7213		min.	44	43	40	37	34	32	29	27	23	21	20	-	-	-	-
34CrMo4 34CrMoS4	1.7220	+H	max.	57	57	57	56	55	54	53	52	48	45	43	41	40	40	39
	1.7226		min.	49	49	48	45	42	39	36	34	30	28	27	26	25	24	24
42CrMo4 42CrMoS4	1.7225	+H	max.	61	61	61	60	60	59	59	58	56	53	51	48	47	46	45
	1.7227		min.	53	53	52	51	49	43	40	37	34	32	31	30	30	29	29
50CrMo4	1.7228	+H	max.	65	65	64	64	63	63	63	62	61	60	58	57	55	54	54
			min.	58	58	57	55	54	53	51	48	45	41	39	38	37	36	36
34CrNiMo6	1.6582	+H	max.	58	58	58	58	57	57	57	57	57	57	57	57	57	57	57
			min.	50	50	50	50	49	48	48	48	48	48	47	47	47	46	45
30CrNiMo8	1.6580	+H	max.	56	56	56	56	55	55	55	55	55	54	54	54	54	54	54
			min.	48	48	48	48	47	47	47	46	46	45	45	44	44	44	43
35NiCr6	1.5815	+H	max.	58	58	58	57	57	55	55	55	53	53	50	50	-	-	-
			min.	49	49	49	48	48	44	44	44	40	40	35	35	-	-	-
36NiCrMo16	1.6773	+H	max.	57	56	56	56	56	56	55	55	55	55	55	55	55	55	55
			min.	50	49	48	48	48	48	47	47	47	47	47	47	47	47	47
39NiCrMo3	1.6510	+H	max.	60	60	59	58	58	57	57	56	55	52	51	49	48	46	45
			min.	52	51	50	49	48	46	44	43	39	36	34	33	32	31	30

2. Taula. Tenplaketa eskaera (normalak) dituzten altzairu gradu berezientzat Rockwell-en "C" gogortasun eskalako mugako balioak (+H gradua).

2. Eranskina. DIN EN-10083-3 arauan jasotzen diren taulak 37CrS4 materialarentzako

Steel designation		Symbol	Limits of range	Distance in mm from quenched end														
Name	Number			HRC Hardness														
				1,5	3	5	7	9	11	13	15	20	25	30	35	40	45	50
38Cr2	1.7003	+HH	max.	59	57	54	49	43	39	37	35	32	30	27	-	-	-	-
			min.	54	50	43	36	31	28	26	24	21	-	-	-	-	-	-
		+HL	max.	56	53	48	42	37	33	31	29	26	24	21	-	-	-	-
			min.	51	46	37	29	25	22	20	-	-	-	-	-	-	-	-
46Cr2	1.7006	+HH	max.	63	61	59	57	53	47	42	39	36	33	32	-	-	-	-
			min.	57	53	46	40	36	32	29	28	25	22	21	-	-	-	-
		+HL	max.	60	57	53	49	45	40	36	33	31	28	27	-	-	-	-
			min.	54	49	40	32	28	25	23	22	20	-	-	-	-	-	-
34Cr4	1.7033	+HH	max.	57	57	56	54	52	49	46	44	39	37	35	34	33	32	31
			min.	52	51	49	45	41	38	35	33	28	26	25	24	23	22	21
34Cr4S	1.7037	+HL	max.	54	54	52	50	46	43	40	38	34	32	30	29	28	27	26
			min.	49	48	45	41	35	32	29	27	23	21	20	-	-	-	-
37Cr4	1.7034	+HH	max.	59	59	58	57	55	52	50	48	42	39	37	36	35	34	33
			min.	54	53	51	48	44	41	39	37	31	29	27	25	24	23	22
37CrS4	1.7038	+HL	max.	56	56	55	53	50	47	44	42	37	34	32	31	30	29	28
			min.	51	50	48	44	39	36	33	31	26	24	22	20	-	-	-
41Cr4	1.7035	+HH	max.	61	61	60	59	58	56	54	52	46	42	40	38	37	36	35
			min.	56	55	53	51	47	43	41	39	35	31	29	27	26	25	24
41CrS4	1.7039	+HL	max.	58	58	57	55	52	50	47	45	40	37	34	32	31	30	29
			min.	53	52	50	47	41	37	34	32	29	26	23	21	-	-	-
25CrMo4	1.7218	+HH	max.	52	52	51	50	48	46	43	41	37	35	33	32	31	31	31
			min.	47	46	44	41	39	37	34	32	28	26	24	23	22	22	22
25CrMoS4	1.7213	+HL	max.	49	49	47	46	43	41	38	36	32	30	29	28	27	27	27
			min.	44	43	40	37	34	32	29	27	23	21	20	-	-	-	-
34CrMo4	1.7220	+HH	max.	57	57	57	56	55	54	53	52	48	45	43	41	40	40	39
			min.	52	52	51	49	46	44	42	40	36	34	32	31	30	29	29
34CrMoS4	1.7226	+HL	max.	54	54	54	52	51	49	47	46	42	39	38	36	35	35	34
			min.	49	49	48	45	42	39	36	34	30	28	27	26	25	24	24
42CrMo4	1.7225	+HH	max.	61	61	61	60	60	59	59	58	56	53	51	48	47	46	45
			min.	56	56	55	54	52	48	46	44	41	39	38	36	36	35	34
42CrMoS4	1.7227	+HL	max.	58	58	58	57	56	54	53	51	49	46	44	42	41	40	40
			min.	53	53	52	51	49	43	40	37	34	32	31	30	30	29	29

3. Taula. Tenplaketa dispertsio-banda mugatuak dituzten altzairu gradu berezientzat Rockwell-en "C" gogortasun eskalako mugako balioak (+HH/+HL graduak)

2. Eranskina. DIN EN-10083-3 arauan jasotzen diren taulak 37CrS4 materialarentzako

Steel designation		Mechanical properties for the ruling section (see EN 10083-1:2006, Annex A) with a diameter (d) or for flat products thickness (t) of																								
Name	Number	d ≤ 16 mm t ≤ 8 mm					16 mm < d ≤ 40 mm 8 mm < t ≤ 20 mm					40 mm < d ≤ 100 mm 20 mm < t ≤ 60 mm					100 mm < d ≤ 160 mm 60 mm < t ≤ 100 mm					160 mm < d ≤ 250 mm 100 mm < t ≤ 160 mm				
		R _e min.	R _m	A min.	Z min.	KV ^b min.	R _e min.	R _m	A min.	Z min.	KV ^b min.	R _e min.	R _m	A min.	Z min.	KV ^b min.	R _e min.	R _m	A min.	Z min.	KV ^b min.	R _e min.	R _m	A min.	Z min.	KV ^b min.
		MPa ^c		%	%	J	MPa ^c		%	%	J	MPa ^c		%	%	J	MPa ^c		%	%	J	MPa ^c		%	%	J
38Cr2	1.7003	550	800 to 950	14	35	-	450	700 to 850	15	40	35	350	600 to 750	17	45	35	-	-	-	-	-	-	-	-	-	-
46Cr2	1.7006	650	900 to 1100	12	35	-	550	800 to 950	14	40	35	400	650 to 800	15	45	35	-	-	-	-	-	-	-	-	-	-
34Cr4 34CrS4	1.7033 1.7037	700	900 to 1100	12	35	-	590	800 to 950	14	40	40	460	700 to 850	15	45	40	-	-	-	-	-	-	-	-	-	-
37Cr4 37CrS4	1.7034 1.7038	750	950 to 1150	11	35	-	630	850 to 1000	13	40	35	510	750 to 900	14	40	35	-	-	-	-	-	-	-	-	-	-
41Cr4 41CrS4	1.7035 1.7039	800	1000 to 1200	11	30	-	660	900 to 1100	12	35	35	560	800 to 950	14	40	35	-	-	-	-	-	-	-	-	-	-
25CrMo4 25CrMoS4	1.7218 1.7213	700	900 to 1100	12	50	-	600	800 to 950	14	55	50	450	700 to 850	15	60	50	400	650 to 800	16	60	45	-	-	-	-	-
34CrMo4 34CrMoS4	1.7220 1.7226	800	1000 to 1200	11	45	-	650	900 to 1100	12	50	40	550	800 to 950	14	55	45	500	750 to 900	15	55	45	450	700 to 850	15	60	45
42CrMo4 42CrMoS4	1.7225 1.7227	900	1100 to 1300	10	40	-	750	1000 to 1200	11	45	35	650	900 to 1100	12	50	35	550	800 to 950	13	50	35	500	750 to 900	14	55	35
50CrMo4	1.7228	900	1100 to 1300	9	40	-	780	1000 to 1200	10	45	30	700	900 to 1100	12	50	30	650	850 to 1000	13	50	30	550	800 to 950	13	50	30
34CrNiMo6	1.6582	1000	1200 to 1400	9	40	-	900	1100 to 1300	10	45	45	800	1000 to 1200	11	50	45	700	900 to 1100	12	55	45	600	800 to 950	13	55	45
30CrNiMo8	1.6580	1050	1250 to 1450	9	40	-	1050	1250 to 1450	9	40	30	900	1000 to 1300	10	45	35	800	1000 to 1200	11	50	45	700	900 to 1100	12	50	45
35NiCr6	1.5815	740	880 to 1080	12	40	-	740	880 to 1080	14	40	35	640	780 to 980	15	40	35	-	-	-	-	-	-	-	-	-	-
36NiCrMo16	1.6773	1050	1250 to 1450	9	40	-	1050	1250 to 1450	9	40	30	900	1100 to 1300	10	45	35	800	1000 to 1200	11	50	45	800	1000 to 1200	11	50	45
39NiCrMo3	1.6510	785	980 to 1180	11	40	-	735	930 to 1130	11	40	35	685	880 to 1080	12	45	40	635	830 to 980	12	50	40	540	740 to 880	13	50	40
30NiCrMo16-6	1.6747	880	1080 to 1230	10	45	-	880	1080 to 1230	10	45	35	880	1080 to 1230	10	45	35	790	900 to 1050	11	50	35	880	900 to 1050	11	50	35
51CrV4	1.8159	900	1100 to 1300	9	40	-	800	1000 to 1200	10	45	30	700	900 to 1100	12	50	30	650	850 to 1000	13	50	30	600	800 to 950	13	50	30
20MnB5	1.5530	700	900 to 1050	14	55	-	600	750 to 900	15	55	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30MnB5	1.5531	800	950 to 1150	13	50	-	650	800 to 950	13	50	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

4. Taula. Tenplaketa eta iraketa baldintzetan eta giro tenperaturan materialen propietate mekanikoak. (+QT)

2. Eranskina. DIN EN-10083-3 arauan jasotzen diren taulak 37CrS4 materialarentzako

Steel designation ^a		Max. HBW in condition ^b	
Name	Number	+S	+A
38Cr2	1.7003	255	207
46Cr2	1.7006	255	223
34Cr4, 34CrS4	1.7033, 1.7037	255	223
37Cr4, 37CrS4	1.7034, 1.7038	255	235
41Cr4, 41CrS4	1.7035, 1.7039	255 ^c	241
25CrMo4, 25CrMoS4	1.7218, 1.7213	255	212
34CrMo4, 34CrMoS4	1.7220, 1.7226	255 ^c	223
42CrMo4, 42CrMoS4	1.7225, 1.7227	255 ^c	241
50CrMo4	1.7228	- ^d	248
34CrNiMo6	1.6582	- ^d	248
30CrNiMo8	1.6580	- ^d	248
35NiCr6	1.5815	- ^d	223
36NiCrMo16	1.6773	- ^d	269
39NiCrMo3	1.6510	- ^d	240
30NiCrMo16-6	1.6747	- ^d	270
51CrV4	1.8159	- ^d	248
20MnB5	1.5530	- ^e	- ^f
30MnB5	1.5531	- ^e	- ^f
38MnB5	1.5532	- ^e	- ^f
27MnCrB5-2	1.7182	- ^e	- ^f
33MnCrB5-2	1.7185	255	- ^f
39MnCrB6-2	1.7189	255	- ^f

^a The values apply also for the steel with hardenability requirements (+H-, +HH- and +HL-grades) covered in Tables 5 and 6; see, however, footnote c.

^b The values are not applicable to slabs which have been continuously cast and not further deformed.

^c Depending on the chemical composition of the cast, and on the dimensions, particularly in the case of the +HH-grades, soft annealing may be necessary.

^d Where the shearability is of importance, this steel should be ordered in the "soft-annealed" condition.

^e Shearable in the untreated condition.

^f Condition +A is not applicable for boron steels.

5. Taula. "Ebaketa gaitasuna hobetzeko (+S)" edo "tenplaketa suabea (+A)" baldintzetan hornituko diren produktuen gogortasun maximoak.

2. Eranskina. DIN EN-10083-3 arauan jasotzen diren taulak 37CrS4 materialarentzako

Steel designation		Surface hardness
		HRC
		min.
Name	Number	
46Cr2	1.7006	54
37Cr4/37CrS4	1.7034/1.7038	51
41Cr4/41CrS4	1.7035/1.7039	53
42CrMo4/42CrMo4	1.7225/1.7227	53
50CrMo4	1.7228	58
^a The above values apply for the condition existing after quenching and tempering and surface hardening according to the conditions given in Table 11 followed by stress relieving at 150°C to 180°C for about 1h, and they relate to cross-sections up to 100 mm diameter for the steels 46Cr2, 37Cr4/37CrS4 and 41Cr4/41CrS4, and up to 250 mm diameter for the steels 42CrMo4/42CrMoS4 and 50CrMo4. It should be noted that surface decarburization may lead to lower hardness values in the surface hardened zones.		

6. Taula. Sugar edo indukzio bidezko gogorketa ondorengo altzairuen gainazal gogortasuna

2. Eranskina. DIN EN-10083-3 arauan jasotzen diren taulak 37CrS4 materialarentzako

Steel designation ²		Quenching ^{4d}	Quenching ⁴	Tempering ⁵	End quench test
Name	Number	°C	agent	°C	°C
38Cr2	1.7003	830 to 870	Oil or water	540 to 680	850 ± 5
46Cr2	1.7006	820 to 860	Oil or water	540 to 680	850 ± 5
34Cr4	1.7033	830 to 870	Water or oil	540 to 680	850 ± 5
34CrS4	1.7037				
37Cr4	1.7034	825 to 865	Oil or water	540 to 680	850 ± 5
37CrS4	1.7038				
41Cr4	1.7036	820 to 860	Oil or water	540 to 680	850 ± 5
41CrS4	1.7039				
25CrMo4	1.7218	840 to 900	Water or oil	540 to 680	850 ± 5
25CrMoS4	1.7213				
34CrMo4	1.7220	830 to 890	Oil or water	540 to 680	850 ± 5
34CrMoS4	1.7226				
42CrMo4	1.7225	820 to 880	Oil or water	540 to 680	850 ± 5
42CrMoS4	1.7227				
50CrMo4	1.7228	820 to 870	Oil	540 to 680	850 ± 5
34CrNiMo6	1.6582	830 to 860	Oil or water	540 to 660	850 ± 5
30CrNiMo8	1.6580	830 to 860	Oil or water	540 to 660	850 ± 5
35NiCr6	1.5815	840 to 860	Oil or water	530 to 630	850 ± 5
36NiCrMo16	1.6773	865 to 885	Air, oil or water	550 to 650	850 ± 5
39NiCrMo3	1.6510	830 to 850	Oil or water	550 to 650	850 ± 5
30NiCrMo16-6	1.6747	840 to 860	Oil	540 to 630	850 ± 5
51CrV4	1.8159	820 to 870	Oil	540 to 680	850 ± 5
20MnB5	1.5530	880 to 920	Water	400 to 600	900 ± 5
30MnB5	1.5531	860 to 900	Water	400 to 600	880 ± 5
38MnB5	1.5532	840 to 880	Water or oil	400 to 600	850 ± 5
27MnCrB5-2	1.7182	880 to 920	Water or oil	400 to 600	900 ± 5
33MnCrB5-2	1.7185	860 to 900	Oil	400 to 600	880 ± 5
39MnCrB5-2	1.7189	840 to 880	Oil	400 to 600	850 ± 5

^a The conditions given in this table are for guidance. However, the temperatures specified for the end quench test are mandatory.

² This table also applies for the various grades with specified hardenability (+H-, +HH- and +HL grades) covered in Tables 5 and 6.

³ The temperatures at the lower end of the range are generally applicable to hardening in water and those at the upper end for hardening in oil.

⁴ Austenitizing period: at least 30 min (guide value).

⁴ When choosing the quenching agent the influence of other parameters, such as shape, dimensions and quenching temperature on properties and crack susceptibility should be taken into account. Other quenching agents such as synthetic quenchants may also be used.

⁵ Tempering period: at least 60 min (guide value).

7. Taula. Tratamendu termikoak.

2. Eranskina. DIN EN-10083-3 arauan jasotzen diren taulak 37CrS4 materialarentzako

EN 10083-3		ISO 683-1:1987 ^a	Germany ^a		United Kingdom ^a	France ^a	Italy ^a	Sweden SS- steel	Spain ^a	
Name	Number		Name	Number					Name	Number
38Cr2	1.7003	-	38Cr2	1.7003	-	(38 C 2)	-	-	-	-
46Cr2	1.7006	-	46Cr2	1.7006	-	-	-	-	-	-
34Cr4 34CrS4	1.7033 1.7037	34Cr4 34CrS4	34Cr4 34CrS4	1.7033 1.7037	(530M32) -	(32 C 4) (32 C 4 u)	-	- -	- -	- -
37Cr4 37CrS4	1.7034 1.7038	37Cr4 37CrS4	37Cr4 37CrS4	1.7034 1.7038	(530M36) -	(38 C 4) (38 C 4 u)	-	- -	38Cr4 38Cr41	F1201 F1206(1)
41Cr4 41CrS4	1.7035 1.7039	41Cr4 41CrS4	41Cr4 41CrS4	1.7035 1.7039	(530M40) -	42 C 4 42 C 4 u	(41Cr4) (41Cr4)	- 2245	42Cr4 42Cr41	F1202 F1207(1)
25CrMo4 25CrMoS4	1.7218 1.7213	25CrMo4 25CrMoS4	25CrMo4 25CrMoS4	1.7218 1.7213	(708M25) -	25 CD 4 25 CD 4 u	(25CrMo4) (25CrMo4)	2225 -	- -	- -
34CrMo4 34CrMoS4	1.7220 1.7226	34CrMo4 34CrMoS4	34CrMo4 34CrMoS4	1.7220 1.7226	(708M32) -	(34 CD 4) (34 CD 4 u)	(35CrMo4) (35CrMo4)	2234 -	- -	- -
42CrMo4 42CrMoS4	1.7225 1.7227	42CrMo4 42CrMoS4	42CrMo4 42CrMoS4	1.7225 1.7227	(708M40) -	42 CD 4 42 CD 4 u	(42CrMo4) (42CrMo4)	2244 -	40CrMo4 40CrMo41	F1252 F1257(1)
50CrMo4	1.7228	50CrMo4	50CrMo4	1.7228	(708M50)	-	-	-	-	-
34CrNiMo6	1.6582	(36CrNiMo6)	(34CrNiMo6)	1.6582	(817M40)	-	-	2541	-	-
30CrNiMo8	1.6580	(31CrNiMo8)	30CrNiMo8	1.6580	[823M30]	30 CND 8	-	-	-	-
35NiCr6	1.5815	-	35NiCr6	-	-	-	-	-	-	-
36NiCrMo16	1.6773	-	-	-	-	35 NCD 16	-	-	-	-
39NiCrMo3	1.6510	-	-	-	-	-	(39NiCrMo3)	-	-	-
30NiCrMo16-6	1.6747	-	30NiCrMo16-6	1.6747	[835M30]	-	-	-	-	-
51CrV4	1.8159	(51CrV4)	50CrV4	1.8159	[735A50]	(50CV 4)	(50CrV4)	-	51CrV4	F1430

^a If a steel grade is given in round brackets, this means that the chemical composition differs only slightly from EN 10083-3. If it is given in square brackets, this means that greater differences exist in the chemical composition compared with EN 10083-3. If there are no brackets around the steel grade, this means that there are practically no differences in the chemical composition compared with EN 10083-3.

8. Taula. Herrialde desberdinetako altzairuen graduak.