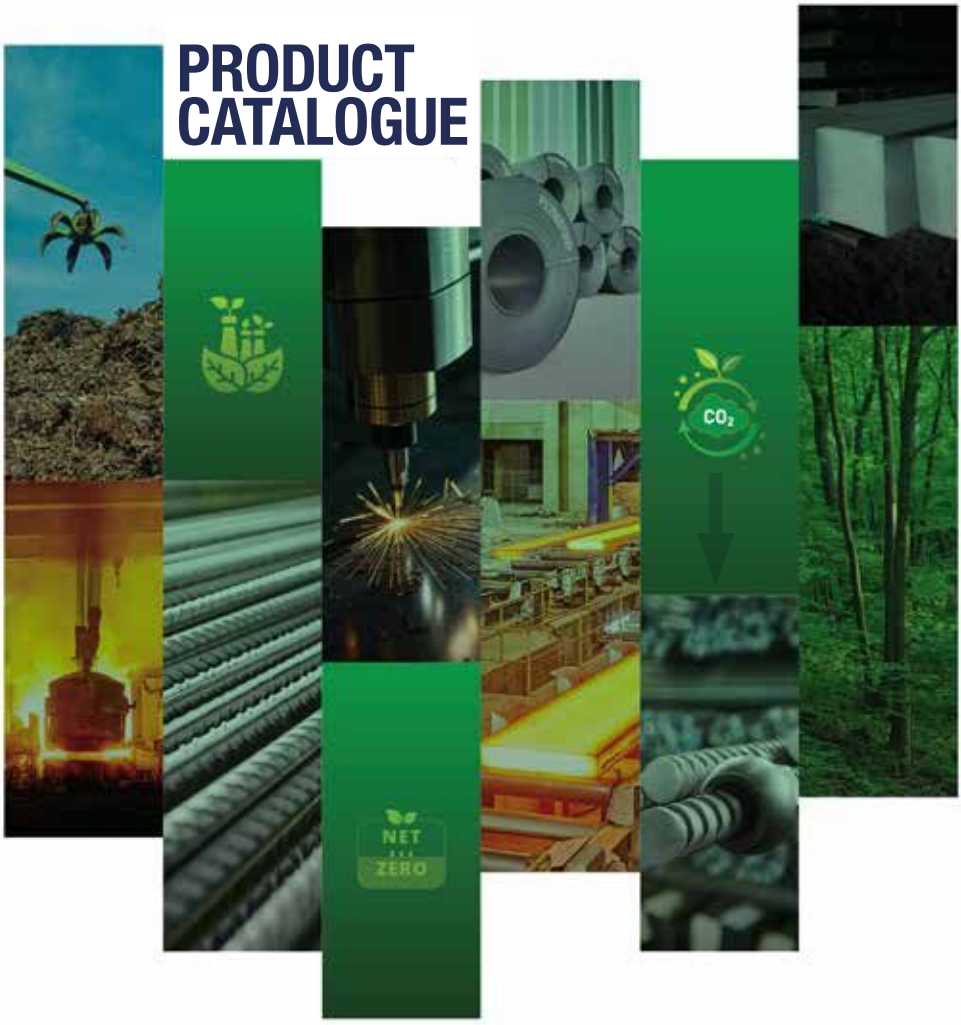
PRODUCT CATALOGUE



Çolakoğlu Metalurji

Çolakoğlu Metalurji | PRODUCT CATALOGUE

FUTURE - READY STEEL


Çolakoğlu Metalurji
1

FLAT STEEL PRODUCTS

CHEMICAL AND MECHANICAL PRODUCTION INFORMATION

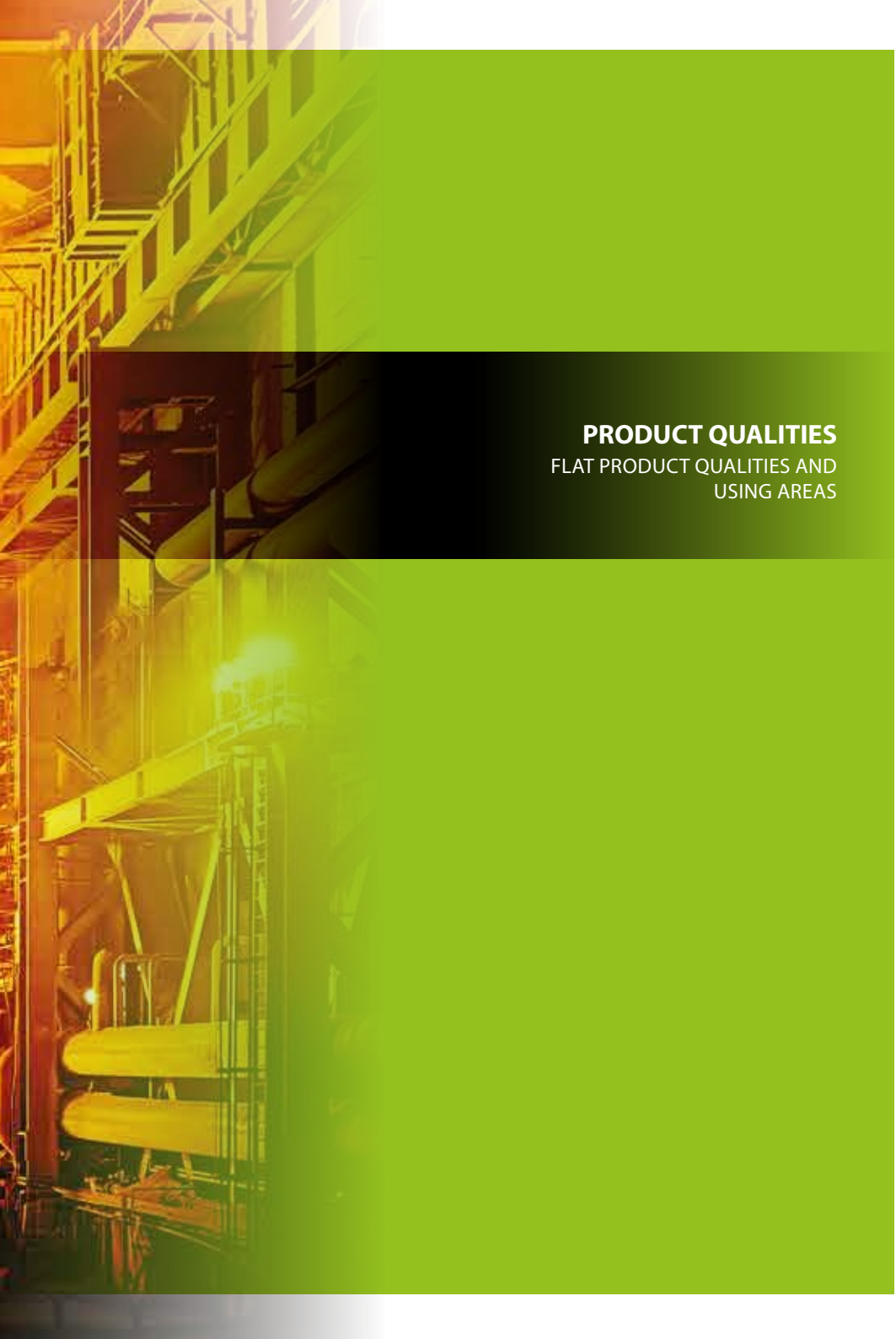
Çolakoğlu Metalurji Material Codes

Material Code	Material Brief
HRC	Hot Rolled Coil
HRC-D	Hot Rolled Divided Coil
HRC-DK	Hot Rolled Divided Edge Trimmed Coil
HRC-K	Hot Rolled Edge Trimmed Coil
HRC-R	Hot Rolled Recoiled Coil
HRC-S	Hot Rolled Slitted Coil
HRC-SK	Hot Rolled Slitted with Cut Edge Coil
HRC-SR	Hot Rolled Slitted Recoiled with Cut Edge Coil
HRCM	Hot Rolled Hequered Coil
HRCP	Hot Rolled Pickled Coil
HRCP-D	Hot Rolled Pickled Divided Coil
HRCP-DK	Hot Rolled Pickled Divided with Edge Trimmed Coil
HRCP-K	Hot Rolled Pickled with Edge Trimmed Coil
HRCP-S	Hot Rolled Pickled Slitted Coil
HRCPO	Hot Rolled Pickled Oiled Coil
HRCPO-D	Hot Rolled Pickled Oiled Divided Coil
HRCPO-DK	Hot Rolled Pickled Oiled Divided Edge Trimmed Coil
HRCPO-K	Hot Rolled Pickled Oiled Coil with Edge Trimmed Coil
HRCPO-S	Hot Rolled Pickled Oiled Coil Divided Coil
HRS	Hot Rolled Sheet
HRS-K	Hot Rolled Edge Trimmed Sheet
HRS-L	Hot Rolled Laser Cut Sheet
HRS-S	Hot Rolled Slitted Sheet
HRS-T	Hot Rolled Skin Passed Sheet
HRS-TK	Hot Rolled Skin Passed Edge Trimmed Sheet
HRSM	Hot Rolled Chequered Sheet
HRSP	Hot Rolled Pickled Sheet
HRSP-K	Hot Rolled Pickled Edge Trimmed Sheets
HRSP-S	Hot Rolled Pickled Slitted Sheet
HRSPO	Hot Rolled Pickled and Oiled Sheet
HRSPO-K	Hot Rolled Pickled and Oiled Edge Trimmed Sheets
HRSPO-S	Hot Rolled Pickled and Oiled Slitted Sheet

CERTIFICATES

EXTERNAL AUDITS	
CERTIFICATE NAME	**AUDIT TYPE**
ISO 9001:2015 Quality Management System Certificate	Quality Management System
IATF 16949:2016 Automotive Quality Management System Certificate	Automotive Quality Management System
IEC/ISO 17025 Laboratory Accreditation Certificate	Laboratory Accreditation Management System
ISO 9001:2015 Quality Management System Certificate	Quality Management System
UK Product Certificate	Billet / Long Product
Australian Product Certification	Long Product
France Product Certificate	Long Product
Belgian Product Certificate	Long Product
Bulgaria Product Certificate	Long Product
Scandinavian Product Certificate	Long Product
Finland Product Certificate	Long Product
Romania Product Certificate	Long Product
Colombia Product Certificate	Long Product
Serbia Product Certificate	Long Product
Costa Rica Product Certificate	Long Product
Germany Product Certificate	Long Product
Dutch Product Certificate	Long Product
CE Marking Certificate	Sheet Product
Pressure Vessels Certificate	Sheet Product
Pressure Vessels UKCA Certificate	Sheet Product
CE Marking UKCA Certificate	Sheet Product
Malaysia Product Certificate	Long Product
Malaysia Product Certificate	Sheet Product
TSE Qualification Certificate	Long Product
G Certificate of Conformity	Long Product
Polish Product Certificate	Long Product

ORGANIZATION	COUNTRY OF RECEIVED	STANDARTS/SPECIFICATIONS
TUV NORD	GERMANY	ISO 9001:2015
TUV NORD	GERMANY	IATF 16949:2016
IAS	AMERICA	IEC/ISO 17025
CARES	ENGLAND	ISO 9001:2015
CARES	ENGLAND	BS 4449:2005
ACRS	AUSTRALIA	AS/NZS4671:2019
AFCAB	FRANCE	NFA 35-080-1:2020
BENOR	BELGIUM	NBN A 24-301:1986 NBN A 24-302:1986 NBN A 24-303:1986 NBN A 24-303:1990 NBN A 24-304:1986 NBN A 24-304:1988
BULGAR KONTROLA	BULGARIA	BDS 9252:2007
GLOBECERT	SWEDEN , NORWAY	EN 10080:2006 SS212540:2014
GLOBECERT	FINLAND	SFS 1300:2020
ICECON	ROMANIA	SR 438-1:2012, ST 009:2011
ICONTEC	COLOMBIA	NTC 2289:2015
INSTITUT IMS AD BEOGRAD	SERBIA	EN 10080:2008
INTECO	COSTA RICA	INTE 06-09-01, INTE 06-09-02
KIWA	GERMANY	DIN-488
KIWA	NETHERLANDS	NEN-6008
KIWA	TURKEY	EN 10025-1
KIWA (HPI/VS)	TURKEY	EN 10028-2:2017
KIWA (HPI/VS)	TURKEY	EN 10028-2:2017
CARES	ENGLAND	EN 10025-1
SIRIM	MALAYSIA	MS 146:2014
SIRIM	MALAYSIA	MS EN 10025-2 : 2011
TSE	TURKEY	TS 708
TSE	TURKEY	TS 708
ZETOM	POLAND	PN-H-93220:2018-02
		ISO 27001
		ISO 45001
		YYS/Authorized liable certificate



PRODUCT QUALITIES

FLAT PRODUCT QUALITIES AND
USING AREAS

FLAT PRODUCT QUALITIES AND USING AREAS				
Using areas of Steel Qualities	**Standard**	**Standard Quality**	**Colakoglu Quality Id**	**Page No**
STAINLESS STEEL GRADES FOR COLD ROLLING	EN 10088 /ASTM A240	EN 1.4307 ASTM-AISI 304L	27301	28
		EN 1.4301 ASTM-AISI 304H	27307	28
HOT ROLLED STEEL GRADES FOR COLD ROLLING AND GALVANIZING	DIN 1614-Part1-1986	St 22	20122	28
		St 22	25122	28
		St 22	25222	28
		RRSt 23	20123	28
		RRSt 23	30623	28
		St 24	20124	28
		St 24	30624	28
HOT ROLLED INTERSTITIAL FREE STEEL GRADES FOR COLD ROLLING, DEEP DRAWING AND GALVANIZING	-	DQ-Ti (DC04)	71114	28
		DDQ-Ti (DC05)	71115	28
		EDDQ -Ti (DC06)	71116	28
		EDDQ-Ti+Nb (DC06)	71216	28
HOT ROLLED LOW CARBON STEEL GRADES FOR COLD FORMING	EN 10111-2008	DD11	35111	29
		DD11	30111	29
		DD11	34111	29
		DD11	30611	29
		DD12	30112	29
		DD12	30612	29
		DD13	30113	29
		DD13	30613	29
		DD13	30513	29
HOT ROLLED STEEL GRADES SUITABLE FOR COLD ROLLING AND GALVANIZING	SAE J403-2024	SAE 1006	21006	30
		SAE 1006	21406	30
		SAE 1006	21506	30
		SAE 1006 - Mod	21106	30
		SAE 1006 - Mod	21606	30
		SAE 1008	21008	30
		SAE 1010	21010	30
		SAE 1010	21410	30
		SAE 1010	21110	30
		SAE 1012 - Mod	21112	30
		SAE 1018 - Mod	21118	30
		SAE 1019 - Mod	21119	30
UNALLOYED GENERAL STRUCTURAL STEEL	ASTM A36-2019	A 36	56036	31
UNALLOYED GENERAL STRUCTURAL STEEL SUATABLE FOR GALVANIZING	ASTM A36-2019	A 36	56436	31
UNALLOYED PIPE AND PROFILE STEEL GRADES	ASTM A53-2024	Grade A	56053	32
UNALLOYED PIPE AND PROFILE STEEL GRADES SUITABLE FOR GALVANIZING	ASTM A53-2024	Grade A	56453	32
PIPE AND PROFILE STEEL GRADES	ASTM A53-2024	Grade B	56052	33

FLAT PRODUCT QUALITIES AND USING AREAS

Using areas of Steel Qualities	Standard	Standard Quality	Colakoglu Quality Id	Page No
UNALLOYED PIPE AND PROFILE STEEL GRADES SUITABLE FOR GALVANIZING	ASTM A53-2024	Grade B	56452	33
UNALLOYED GENERAL STRUCTURAL STEEL	ASTM A283-2024	Grade C	56380	34
UNALLOYED PIPE AND PROFILE STEEL GRADES SUITABLE FOR GALVANIZING	ASTM A500-2023	Grade B	56542	34
		Grade C	56546	34
CARBON STEEL SUITABLE FOR USING WITH A PRESSURE AT MIDDLE AND HIGH TEMPERATURES	ASTM A516-2017	Grade 60	56660	35
HIGH STRENGTH LOW ALLOY STRUCTURAL STEEL GRADES	ASTM A572-2021	Grade 50 Type 1	56350	35
		Grade 50 Type 2	56550	35
		Grade 55 Type 1	56355	35
		Grade 55 Type 2	56555	35
		Grade 60 Type 1	56560	35
		Grade 65 Type 1	56565	35
MICROALLOYED HIGH STRENGTH STEEL RESISTANT TO ATMOSPHERE CORRISION	ASTM A606-2023	Type 2	55340	36
		Type 4	58350	36
STRUCTURAL STEEL GRADES SUITABLE FOR COLD FORMING AND BENDING	ASTM A1011-2023	CS Type B	56340	37
		SS Grade 33	56360	37
		SS 36 Type 1	56365	37
		SS 36 Type 2	56400	37
		SS Grade 40	56275	37
		SS Grade 50	56454	37
		SS Grade 50	56450	37
		SS Grade 55	56484	37
		SS Grade 55	56480	37
MICROALLOYED STRUCTURAL STEEL GRADES SUITABLE FOR COLD FORMING AND BENDING	ASTM A1011-2023	HSLAS Grade 45 Class 2	56245	38
		HSLAS Grade 50 Class 1	56150	38
		HSLAS Grade 50 Class 1	56151	38
		HSLAS Grade 50 Class 1	56152	38
		HSLAS Grade 50 Class 2	56250	38
		HSLAS Grade 55 Class 1	56155	38
		HSLAS Grade 55 Class 1	56655	38
		HSLAS Grade 55 Class 1	56156	38
		HSLAS Grade 55 Class 2	56255	38
		HSLAS Grade 55 Class 2	56256	38
		HSLAS Grade 55 Class 1 / Class 2	56455	38
		HSLAS Grade 60 Class 1	56160	38
		HSLAS Grade 60 Class 1	56162	38
		HSLAS Grade 60 Class 2	56260	38
		HSLAS Grade 70 Class 2	56270	38
		HSLAS-F Grade 80	56080	38

FLAT PRODUCT QUALITIES AND USING AREAS				
Using areas of Steel Qualities	**Standard**	**Standard Quality**	**Colakoglu Quality Id**	**Page No**
STRUCTURAL STEEL GRADES SUITABLE FOR COLD FORMING AND BENDING	ASTM A1018-2023	CS Type B	56830	39
		SS Grade 33	56833	39
		SS 36 Type 1	56836	39
		SS 36 Type 2	56837	39
		SS 36 Type 2	56838	39
		SS Grade 40	56840	39
MICRO ALLOYED STEEL GRADES SUITABLE FOR COLD FORMING AND BENDING	ASTM A1018-2023	HSLAS Grade 45 Class 1	56845	40
		HSLAS Grade 45 Class 2	56945	40
		HSLAS Grade 50 Class 1	56850	40
		HSLAS Grade 50 Class 1	55850	40
		HSLAS Grade 50 Class 1	56851	40
		HSLAS Grade 50 Class 1	55851	40
		HSLAS Grade 50 Class 2	56950	40
		HSLAS Grade 55 Class 1	56855	40
		HSLAS Grade 55 Class 1	56755	40
		HSLAS Grade 55 Class 1	56856	40
		HSLAS Grade 55 Class 2	56955	40
		HSLAS Grade 55 Class 2	56956	40
		HSLAS Grade 60 Class 1	56860	40
		HSLAS Grade 60 Class 2	56960	40
		HSLAS Grade 65 Class 2	56965	40
		HSLAS Grade 70 Class 2	56970	40
		HSLAS-F Grade 80	56980	40
UNALLOYED GENERAL STRUCTURAL STEEL GRADES	EN 10025-2-2019	S235JR	51235	41
		S235JR	55235	41
		S235JR+N	51236	41
		S235J2+N	52235	41
		S275JR	51275	41
		S275J2+N	52275	41
		E295	51295	42
		E335	51335	42
		S355J0	50355	43
		S355JR	51355	43
		S355J2	53355	43
		S355J2+N	52355	43
		S355J2+N	55355	43

FLAT PRODUCT QUALITIES AND USING AREAS

Using areas of Steel Qualities	Standard	Standard Quality	Colakoglu Quality Id	Page No
UNALLOYED GENERAL STRUCTURAL STEEL GRADES SUITABLE FOR GALVANIZING AND BENDING	EN 10025-2-2019	S235JR	54235	44
		S235JR	50236	44
		S235JR	54231	44
		S235JR	56235	44
		S235J0	50237	44
		S235J0	50235	44
		S235J2	50238	44
		S235J2	53235	44
		S275JR	54275	44
		S275JR	54271	44
		S275J0	50275	44
		S275J2	53275	44
UNALLOYED GENERAL STRUCTURAL STEEL GRADES (SUITABLE FOR CLASS 1 TYPE GALVANIZING STANDARD)	EN 10025-2-2019	S355JR	54355	45
		S355JR	54351	45
		S355J0	54356	45
		S355J2	54358	45
		S355JR+N	54354	45
		S355J2+N	54357	45
GENERAL STRUCTURAL STEEL GRADES SUITABLE FOR COLD FORMING, BENDING AND SPINNING	EN 10025-2-2019	S235JRC	40234	46
		S235J2C	40235	46
		S235JRC+N	44235	46
		S275JRC	43275	46
		S275J2C	40275	46
		S275JRC+N - Mod	44276	46
		S275J2C+N	44275	46
		S355JRC	42355	47
		S355JRC	40356	47
		S355J0C	41355	47
		S355J2C	43355	47
		S355J2C	40355	47
		S355J2C+N	45355	47
		S355J2C+N - Mod	44357	47
		S355J2C+N	44355	47
		S355J2C+N	44356	47
		S355K2C+N	46355	47

FLAT PRODUCT QUALITIES AND USING AREAS				
Using areas of Steel Qualities	**Standard**	**Standard Quality**	**Colakoglu Quality Id**	**Page No**
HIGH STRENGTH NORMALISED STRUCTURAL STEEL GRADES SUITABLE FOR HOT FORMING	EN 10025-3-2019	S355N	57355	48
		S420N	52420	48
		S420N	54420	48
		S460N	52460	48
		S460N - Mod	52462	48
ATMOSPHERE CORROSION RESISTANT STEEL GRADES	EN 10025-5-2019	S235J0W	58235	49
		S235J2W	58236	49
		S355J0W	58355	49
		S355J2W	58356	49
		S355J0WP	58357	49
		S355J2WP	58358	49
		S420J0W	58420	49
		S420J2W	58421	49
		S460J0W	58460	49
		S460J2W	58461	49
WHEEL STEEL GRADES SUITABLE FOR COLD FORMING, BENDING AND SPINNING	EN 10025-2-2019	S235JRC	82235	50
		S235J2C+N	81235	50
		S275JRC	82280	50
		S275JRC	82290	50
		S355JRC	82330	50
		S355J2C+N	82355	50
		S355JRC	81330	50
		S355J2	82331	50
		S235JR	80235	50
		S235JR	80236	50
		S275J0	80280	50
		S275J2+N	80290	50
		S355J0	80355	50
WHEEL STEEL GRADES SUITABLE FOR COLD FORMING, BENDING AND SPINNING	EN 10111-2008	DD 11	81222	51
		DD 11	80122	51
		DD 11	80222	51
HIGH STRENGTH WHEEL STEEL GRADES SUITABLE FOR COLD FORMING AND SPINNING	EN 10149-2-2013	S355MC	83355	51
		S355MC	84355	51
		S420MC	83420	51
		S460MC	83460	51
HIGH STRENGTH DUAL PHASE STEEL GRADES SUITABLE FOR COLD FORMING	EN 10338-2015	HCT500X (DP 500)	83500	52

FLAT PRODUCT QUALITIES AND USING AREAS

Using areas of Steel Qualities	Standard	Standard Quality	Colakoglu Quality Id	Page No
HIGH STRENGTH DUAL PHASE WHEEL STEEL SUITABLE FOR COLD FORMING AND SPINNING	EN 10338-2015	HDT580X (DP 600)	83600	52
		HDT580X (DP 600)	83601	52
HOT ROLLED HIGH STRENGTH DUAL PHASE STEEL SUITABLE FOR COLD FORMING	EN 10338-2015	HCT600X (DP 600)	83610	52
		HCT780X (DP 780)	83780	52
BOILER STEEL GRADES	EN 10028-2-2017	P235GH	86235	53
		P265GH	86265	53
		P295GH	86295	53
		P355GH	86355	53
		P355GH+N	88355	53
		16Mo3	86163	53
		P355NL1	87355	53
		P460NL2	87460	53
STEEL GRADES SUITABLE TO USE UNDER LOW PRESSURE	EN 10207-2017	P275SL	86275	54
BOILER PIPE STEEL GRADES	EN 10217-2-2019	P235GH	86435	54
		P275NL1	86475	55
LPG TUBE STEEL GRADES	EN 10120-2017	P245NB	85245	55
		P265NB	85265	55
		P310NB	85310	55
		P355NB	85355	55
GENERAL STRUCTURAL STEEL GRADES SUITABLE FOR HEAT TREATMENT	EN ISO 683-1-2018	28Mn6	98628	56
		C35E	98035	56
		C35E	98135	56
		C45E	98145	56
		C60E	98060	56
		C60E	98160	56
		C60E	98260	56
		30MnB5	98430	56
		30MnB5	98530	56
		34MnB5	98534	56
		27MnCrB5-2	98527	56
		26MnB5	98526	56
		22MnB5	98522	56
		30MnB5	98630	56
		51CrV4	98551	56

FLAT PRODUCT QUALITIES AND USING AREAS				
Using areas of Steel Qualities	**Standard**	**Standard Quality**	**Colakoglu Quality Id**	**Page No**
HIGH STRENGTH STEEL GRADES SUITABLE FOR COLD FORMING AND BENDING	EN 10149-2-2013	S315MC	36315	57
		S355MC	36355	57
		S355MC	36356	57
		S420MC	36420	57
		S420MC	36421	57
		S460MC	36460	57
		S460MC	36461	57
		S500MC	36500	57
		S500MC	36501	57
		S550MC	36550	57
		S550MC	36551	57
		S600MC	36600	57
		S650MC	36650	57
		S700MC	36700	57
		S900MC	36900	57
		S315MC	37315	58
		S355MC	37355	58
		S355MC	37352	58
		S420MC	37420	58
		S420MC	37421	58
		S420MC	37422	58
		S460MC	37460	58
		S460MC	37462	58
		S280NC - Mod	38280	59
PRESSURE PIPE STEEL GRADES	EN 10217-1-2019	P235TR1	94235	59
		P235TR2	94236	59
		P235TR1	94035	59
		P235TR2	94036	59
UNALLOYED STRUCTURAL STEEL GRADES SUATABLE FOR HOT FORMING (SRM PIPE PRODUCTION), COLD ROLLING, NORMALIZING AND GALVANIZING	EN 10025-2-2019	S235JR+N	41235	60
		S235J2+N	42235	60
		S275JR+N	41275	60
		S275J2+N	42275	60

FLAT PRODUCT QUALITIES AND USING AREAS

Using areas of Steel Qualities	Standard	Standard Quality	Colakoglu Quality Id	Page No
UNALLOYED STRAP STEEL GRADES FOR COLD ROLLING AND GALVANIZING	EN 10025-2-2019	S235JR	51238	60
		S235JR	54238	60
STRUCTURAL STEEL GRADES FOR SHIP BUILDING	ABS-Part 2-2021	ABS Grade A	57701	61
		ABS Grade B	57702	61
UNALLOYED GENERAL STRUCTURAL STEEL	JIS G 3101-2024	SS400	93400	61
CHROME ADDED GENERAL STRUCTURAL STEEL GRADES	JIS G 3101-2024	SS400	93430	62
BORON ADDED GENERAL STRUCTURAL STEEL GRADES	JIS G 3101-2024	SS400	93420	62
HOT ROLLED LOW CARBON COMMERCIAL QUALITY STEEL GRADES SUITABLE FOR COLD FORMING	JIS G 3131-2018	SPHC	93111	63
		SPHC	93211	63
HOT ROLLED LOW CARBON PIPE AND PROFILE STEEL GRADES SUITABLE FOR COLD FORMING AND GALVANIZING	JIS G 3132-2018	SPHT-1	93270	64
		SPHT-2	93340	64
ATMOSPHERE CORROSION RESISTANT STEEL GRADES	JIS G 3125-2021	SPA-H	93125	64
UNALLOYED GENERAL STRUCTURAL STEEL GRADES SUITABLE FOR GALVANIZING AND BENDING	AS NZS 1594-2002	HA250	94250	65
		HA350	94350	65
UNALLOYED GENERAL STRUCTURAL STEEL GRADES	CSA G40-2013	350 WT	96350	66
		44W/50W	96450	66
HIGH STRENGHT AND MICROALLOYED STEEL GRADES SUITABLE FOR COLD FORMING AND BENDING	SAE J2340-2017	340XF	38340	66
		420XF	38420	66

FLAT PRODUCT QUALITIES AND USING AREAS				
Using areas of Steel Qualities	**Standard**	**Standard Quality**	**Colakoglu Quality Id**	**Page No**
HOT ROLLED CARBON STEEL GRADES	SAE J403-2024	SAE 1006	91006	67
		SAE 1008	91008	67
		SAE 1008 - Mod	91108	67
		SAE 1010	91010	67
		SAE 1010 - Mod	91110	67
		SAE 1010	91210	67
		SAE 1012	91012	67
		SAE 1012	91112	67
		SAE 1015	91015	67
		SAE 1015 - Mod	91115	67
		SAE 1017	91017	67
		SAE 1018	91018	67
		SAE 1018 - Mod	91118	67
		SAE 1020	91020	67
		SAE 1020	91120	67
		SAE 1020	91121	67
		SAE 1022 - Mod	91022	67
		SAE 1022	91222	67
		SAE 1022	91122	67
		SAE 1025	91025	67
		SAE 1026	91026	67
		SAE 1030	91030	67
HOT ROLLED MEDIUM AND HIGH CARBON STEEL GRADES	SAE J403-2024 SAE J404-2009	SAE 1040	91040	67
		SAE 1045	91045	67
		SAE 1045	91145	67
		SAE 1050	91050	67
		SAE 1055	91055	67
		SAE 1060	91060	67
		SAE 1070	91070	67
		SAE 1080	91080	67
		SAE 4130	92130	68

FLAT PRODUCT QUALITIES AND USING AREAS

Using areas of Steel Qualities	Standard	Standard Quality	Colakoglu Quality Id	Page No
STEEL GRADES FOR PIPE LINES	API 5L 46th Edition-2018/ISO 3183-2019	A / L210 / PSL1	95130	68
		B / L245 / PSL1	95135	68
		X42 / L290 / PSL1	95142	68
		X46 / L320 / PSL1	95146	68
		X52 / L360 / PSL1	95152	68
		X56 / L390 / PSL1	95156	68
		X52 / L360 / PSL1	95652	68
		X60 / L415 / PSL1	95160	68
		X65 / L450 / PSL1	95165	68
		X70 / L485 / PSL1	95170	68

FLAT PRODUCT QUALITIES AND USING AREAS				
Using areas of Steel Qualities	**Standard**	**Standard Quality**	**Colakoglu Quality Id**	**Page No**
STEEL GRADES FOR PIPE LINES WITH STANDARD YIELD STRENGTH/TENSILE STRENGTH RATIO	API 5L 46th Edition-2018/ISO 3183-2019	BM / L245M / PSL2	95035	69
		BM / L245M / PSL2	95735	69
		BM / L245M / PSL2	95036	69
		X42M / L290M / PSL2	95042	69
		X46M / L320M / PSL2	95046	69
		X52M / L360M / PSL2	95752	69
		X52M / L360M / PSL2	95052	69
		X56M / L390M / PSL2	95056	69
		X60M / L415M / PSL2	95060	69
		X65M / L450M / PSL2	95065	69
		X70M / L485M / PSL2	95070	69
STEEL GRADES FOR PIPE LINES WITH LOW YIELD STRENGTH/ TENSILE STRENGTH RATIO	API 5L 46th Edition-2018/ISO 3183-2019	BM / L245M / PSL2	95835	70
		X42M / L290M / PSL2	95842	70
		X46M / L320M / PSL2	95846	70
		X52M / L360M / PSL2	95852	70
		X52M / L360M / PSL2	95952	70

FLAT PRODUCT QUALITIES AND USING AREAS

Using areas of Steel Qualities	Standard	Standard Quality	Colakoglu Quality Id	Page No
STEEL GRADES FOR PIPE LINES WITH LOW YIELD STRENGTH/ TENSILE STRENGTH RATIO	API 5L 46th Edition-2018/ISO 3183-2019	BN / L245N / PSL2	95535	71
		BN / L245N / PSL2	95536	71
		X42N / L290N / PSL2	95542	71
		X46N / L320N / PSL2	95546	71
STEEL GRADES FOR PIPE LINES	EN ISO3183-2019 Annex A	L360NE PSL2 (API 5L X52NE)	95552	72
		L415NE PSL2 (API 5L X60NE)	95560	72
		L450ME PSL2(API 5L X65ME)	95565	72
		L485ME PSL2(API 5L X70ME)	95570	72
STEEL GRADES FOR CASING AND/OR TUBING	API 5CT 11th Edition-2023	J55 Upgradeable (Tubing)	95254	73
		J55 Upgradeable (Casing)	95255	73
		J55 Upgradeable	95256	73
		J55 Upgradeable	95257	73
		J55 regular	95355	73
		J55 regular	95356	73
		5CT J55 Upgradeable	95455	73
UNALLOYED GENERAL STRUCTURAL STEEL GRADES (FLOOR PLATE)	ASTM A36-2019 ASTM A786-2015	ASTM A786 (ASTM A36)	56435	74
UNALLOYED GENERAL STRUCTURAL STEEL GRADES SUITABLE FOR GALVANIZING (FLOOR PLATE)	ASTM A36-2019 ASTM A786-2015	ASTM A786 (ASTM A36)	56437	74

BILLET- CARBON STEEL QUALITIES CHEMICAL COMPOSITION (%)

Area of Usage	Standard	Standard Quality	Page No.
CARBON STEEL	SAE J 403 : 2014	SAE 1005	92
CARBON STEEL	SAE J 403 : 2014	SAE 1006	
CARBON STEEL	SAE J 403 : 2014	SAE 1008	
CARBON STEEL	SAE J 403 : 2014	SAE 1010	
CARBON STEEL	SAE J 403 : 2014	SAE 1012	
CARBON STEEL	SAE J 403 : 2014	SAE 1015	
CARBON STEEL	SAE J 403 : 2014	SAE 1018	
CARBON STEEL	SAE J 403 : 2014	SAE 1020	
CARBON STEEL	SAE J 403 : 2014	SAE 1030	
CARBON STEEL	SAE J 403 : 2014	SAE 1035	
CARBON STEEL	SAE J 403 : 2014	SAE 1040	
CARBON STEEL	SAE J 403 : 2014	SAE 1045	
CARBON STEEL	SAE J 403 : 2014	SAE 1050	
CARBON STEEL	SAE J 403 : 2014	SAE 1055	
CARBON STEEL	SAE J 403 : 2014	SAE 1060	

BILLET FOR REINFORCING STEEL BAR QUALITIES CHEMICAL COMPOSITION (%)

Area of Usage	Standard	Standard Quality	Page No.
REINFORCING STEEL BAR	ABNT NBR 7480 : 2017	CA 50	93
REINFORCING STEEL BAR	AS/NZS 4671:2019	500 N	
REINFORCING STEEL BAR	AS/NZS 4671:2019	500 E	
REINFORCING STEEL BAR	ASTM A 615:2022	GR 40	
REINFORCING STEEL BAR	ASTM A 615:2022	GR 60	
REINFORCING STEEL BAR	ASTM A 615:2022	GR 75	
REINFORCING STEEL BAR	ASTM A 706:2022	GR 60	
REINFORCING STEEL BAR	BDS 9252 : 2007	B 500B	
REINFORCING STEEL BAR	BDS 9252:2007	B 500 C	
REINFORCING STEEL BAR	BS 4449:2005	B 500 B	
REINFORCING STEEL BAR	BS 4449:2005	B 500 C	
REINFORCING STEEL BAR	CAN/CSA.G30.18-21	GR 400R	
REINFORCING STEEL BAR	CAN/CSA.G30.18-21	GR 400W	
REINFORCING STEEL BAR	CAN/CSA.G30.18-21	GR 500W	
REINFORCING STEEL BAR	DIN 17100	St 50	
REINFORCING STEEL BAR	DIN 17100	St 60	
REINFORCING STEEL BAR	DIN 17100	St 37-2	
REINFORCING STEEL BAR	DIN 488: 2009	B 500 B	
REINFORCING STEEL BAR	E 449 : 2010	A 400 NR	
REINFORCING STEEL BAR	E 450 : 2010	A 500 NR	
REINFORCING STEEL BAR	GOST 380	3SP	
REINFORCING STEEL BAR	GOST 380	5SP	
REINFORCING STEEL BAR	GOST-R 52544:2006	A 500 C	

BILLET FOR REINFORCING STEEL BAR QUALITIES CHEMICAL COMPOSITION (%)

Area of Usage	Standard	Standard Quality	Page No.
REINFORCING STEEL BAR	INTE C400:2020	GR 40	93
REINFORCING STEEL BAR	INTE C400:2020	GR 60	
REINFORCING STEEL BAR	INTE C401:2020	GR 60	
REINFORCING STEEL BAR	IS 6935-2 : 2007	B 500 BWR	
REINFORCING STEEL BAR	JS 33: 2013	GR 300	
REINFORCING STEEL BAR	JS 33: 2013	GR 400	
REINFORCING STEEL BAR	LVS 191-1:2012	B 500 B	
REINFORCING STEEL BAR	LVS 191-1:2012	B 500 C	
REINFORCING STEEL BAR	MS 146 : 2014	B 500 B	
REINFORCING STEEL BAR	NBN_A_24-301-304:1986	BE500S	
REINFORCING STEEL BAR	NCh 206 : 2020	A 630- 420H	
REINFORCING STEEL BAR	NCh 206 : 2020	A 440- 280H	
REINFORCING STEEL BAR	NEN 6008:2020	B 500 B	
REINFORCING STEEL BAR	NF A 35- 080-1:2020	B 500 B	
REINFORCING STEEL BAR	NS3576-2: 2012	B 500 NB	
REINFORCING STEEL BAR	NS3576-3: 2012	B 500 NC	
REINFORCING STEEL BAR	NTC 2289:2015	GR 60	
REINFORCING STEEL BAR	PN-H-93220:2018	B 500 SP	
REINFORCING STEEL BAR	SFS 1300:2020	B 500 B	
REINFORCING STEEL BAR	SFS 1300:2020	B 500 C	
REINFORCING STEEL BAR	SI 4466-3 : 2013	S 400	
REINFORCING STEEL BAR	SI 4466-3 : 2013	S 400 W	
REINFORCING STEEL BAR	SI 4466-3 : 2013	S 500 W-C	
REINFORCING STEEL BAR	SR 438-1:2012	OB 37	
REINFORCING STEEL BAR	SR 438-1:2012	PC 52	
REINFORCING STEEL BAR	SRPS EN 10080 - 2008	B 500 B	
REINFORCING STEEL BAR	SRPS EN 10080 - 2008	B 500 C	
REINFORCING STEEL BAR	SS212540:2014	K 500 B-T	
REINFORCING STEEL BAR	SS212540:2014	K 500 C-T	
REINFORCING STEEL BAR	ST 009: 2001	B 500 B (C)	
REINFORCING STEEL BAR	TS 708 : 2016	B 420 B	
REINFORCING STEEL BAR	TS 708 : 2016	B 420C	
REINFORCING STEEL BAR	TS 708 : 2016	B 500 B	
REINFORCING STEEL BAR	TS 708 : 2016	B 500 C	
REINFORCING STEEL BAR	TS 708 : 2016	S 420	

REINFORCING STEEL BAR QUALITIES CHEMICAL COMPOSITION (%) - 1

Where Used	Standard	Standard Quality	Page No.
Building	ABNT NBR 7480	CA 50	94
Building	AS/NZS 4671:2019	500 E	
Building	AS/NZS 4671:2019	500 N	
Building	ASTM A 615:2022	GR 40	
Building	ASTM A 615:2022	GR 60	
Building	ASTM A 615:2022	GR 75	
Building	ASTM A 706:2022	GR 60	
Building	BDS 9252:2007	B 500 C	
Building	BDS 9252:2007	B 500B	
Building	BS 4449:2005	B 500 B	
Building	BS 4449:2005	B 500 C	
Building	CAN/CSA G30.18-21	GR 400R	
Building	CAN/CSA G30.18-21	GR 400W	
Building	CAN/CSA G30.18-21	GR 500W	
Building	DIN 488:2009	B 500 B	
Building	E 449 : 2010	A 400 NR	
Building	E 450 : 2010	A 500 NR	
Building	GOST-R 52544:2006	A 500 C	
Building	INTE C400:2020	GR 40	
Building	INTE C400:2020	GR 60	
Building	INTE C401:2020	GR 60	
Building	IS 6935-2 :2007	B 500 BWR	

HELICAL ROD QUALITIES

Where Used	Standard	Standard Quality	Page No.
Building	NCh 204 : 2020	A 630- 420H	99
Building	NCh 204 : 2020	A 440- 280H	

HELICAL ROD QUALITIES

Where Used	Standard	Standard Quality	Page No.
Building	JS 33 : 2013	GR 300	96
Building	JS 33 : 2013	GR 400	
Building	LVS 191-1:2012	B 500 B	
Building	LVS 191-1:2012	B 500 C	
Building	MS 146 : 2014	B 500 B	
Building	NBN_A_24-301-304:1986	BE500S	
Building	NCh 204:2020	A 440- 280H	
Building	NCh 204:2020	A 630- 420H	
Building	NEN 6008:2020	B 500 B	
Building	NF A35-080-1:2020	B 500 B	
Building	NS3576-2: 2012	B 500 NB	
Building	NS3576-3: 2012	B 500 NC	
Building	NTC 2289:2015	GR 60	
Building	PN-H-93220:2018	B 500 SP	
Building	SFS 1300:2020	B 500 B	
Building	SFS 1300:2020	B 500 C	
Building	SI 4466-3:2013	S 400	
Building	SI 4466-3:2013	S 400 W	
Building	SI 4466-3:2013	S 500 W-C	
Building	SR 438-1:2012	OB 37	
Building	SR 438-1:2012	PC 52	
Building	SRPS EN 10080 - 2008	B 500 B	
Building	SRPS EN 10080 - 2008	B 500 C	
Building	SS212540:2014	K 500 B-T	
Building	SS212540:2014	K 500 C-T	
Building	ST 009: 2001	B 500 B (C)	
Building	TS 708 : 2016	B 420 B	
Building	TS 708 : 2016	B 420C	
Building	TS 708 : 2016	B 500 B	
Building	TS 708 : 2016	B 500 C	
Building	TS 708 : 2016	S 420	

FLAT STEEL PRODUCTS

CHEMICAL & MECHANICAL PROPERTIES

Slab	
Thickness:	200-250 mm
Width:	800-1650 mm
Length:	5.80-11.80 m

Slab qualities are the same as Hot Rolled Steel Qualities

Hot Rolled Steel Coil (HRC)	
Thickness:	1.10-25.4 mm
Width:	800-1650 mm
Coil Weight:	10-39 tonnes
Mandrel Diameter:	762 mm

STAINLESS STEEL GRADES FOR COLD ROLLING

Standard: EN 10088 /ASTM A240

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Cr	Ni	Cu	N
				max	max	max	max	max	max	max	max	max
27301	EN 10088 / ASTM A240	**EN 1.4307 ASTM-AISI 304L**	Standard	0.03	1.50-1.80	0.30-0.50	0.035	0.004	18.0-18.3	8.0-8.2	0.40	0.065
27307	EN 10088 / ASTM A240	**EN 1.4301 ASTM-AISI 304H**	Standard	0.05	1.20-1.50	0.30-0.50	0.045	0.015	18.0-19.5	8.0-10.5	—	0.10

Explanations

1)Mechanical test is not applied.

2) %P + %S is max. 0.04

HOT ROLLED STEEL GRADES FOR COLD ROLLING AND GALVANIZING

Standard: DIN 1614-Part1-1986

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	P	S	N[1]	Al
				max	max	max	max	max	min
20122	DIN 1614-1	**St 22**	Standard	0.10	0.45	0.035	0.035	0.007	—
25122	DIN 1614-1	**St 22**	Standard	0.10	0.45	0.035	0.035	0.007	—
25222	DIN 1614-1	**St 22**	Standard	0.10	0.45	0.035	0.035	0.007	—
20123	DIN 1614-1	**RRSt 23**	Standard	0.10	0.45	0.030	0.030	—	0.020
30623	DIN 1614-1	**RRSt 23**	Standard	0.10	0.45	0.035	0.035	—	0.020
20124	DIN 1614-1	**St 24**	Standard	0.08	0.40	0.025	0.025	—	0.020
30624	DIN 1614-1	**St 24**	Standard	0.08	0.40	0.030	0.030	—	0.020

Explanations

1) The maximum value for nitrogen does not apply if the chemical composition shows a minimum aluminium content of 0.020 %.

2) Mechanical test is not applied.

3) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

HOT ROLLED INTERSTITIAL FREE STEEL GRADES FOR COLD ROLLING, DEEP DRAWING AND GALVANIZING

Standard: DQ, DDQ and EDDQ

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	P	S	N[1]	Ti
				max	max	max	max	max	max
71114	-	**DQ-Ti (DC04)**	-	0.08	0.40	0.030	0.030	0.007	—
71115	-	**DDQ-Ti (DC05)**	-	0.06	0.35	0.025	0.025	0.007	—
71116	-	**EDDQ -Ti (DC06)**	-	0.02	0.25	0.020	0.020	0.007	0.3
71216	-	**EDDQ-Ti+Nb (DC06)**	-	0.02	0.25	0.020	0.020	0.007	0.3

Explanations

1) Mechanical test is not applied.

HOT ROLLED LOW CARBON STEEL GRADES FOR COLD FORMING

Standard: EN 10111-2008

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality[1]		C	Mn	P	S	N	Al
				max	max	max	max	max	min
35111[2]	EN 10111	**DD11**	Standard	0.12	0.60	0.045	0.045	0.007	—
30111[2]	EN 10111	**DD11**	Standard	0.12	0.60	0.045	0.045	0.007	—
34111[2]	EN 10111	**DD11**	Standard	0.12	0.60	0.045	0.045	0.007	—
30611[2]	EN 10111	**DD11**	Standard	0.12	0.60	0.045	0.045	—	—
30112[3]	EN 10111	**DD12**	Standard	0.10	0.45	0.035	0.035	—	0.020
30612[3]	EN 10111	**DD12**	Standard	0.10	0.45	0.035	0.035	—	0.020
30113[3]	EN 10111	**DD13**	Standard	0.08	0.40	0.030	0.030	—	0.020
30613[3]	EN 10111	**DD13**	Standard	0.08	0.40	0.030	0.030	—	0.020
30513[3]	EN 10111	**DD13**	Standard	0.08	0.40	0.030	0.030	—	0.020

Explanations

1) All grades are produced as fully killed steel (Al ≥ % 0.02)
2) Guarantee period in usage is one month in standard (When Al ≥ % 0.02, Guarantee period is 6 months.)
3) Guarantee period in usage is 6 months .
4) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re		Rm[1]	A(%)			Bending
			N/mm²			A_{80}		A_5	(trans., 180°)
			1.5≤ d < 2	2≤ d ≤ 8		1.5≤ d<2	2≤ d < 3	3≤ d <11	mrb
					maks.	min.	min.	min.	d:thickness
35111	EN 10111	**DD11**	170 - 360	170 - 340	440	23	24	28	1 d
30111	EN 10111	**DD11**	170 - 360	170 - 340	440	23	24	28	1 d
34111	EN 10111	**DD11**	170 - 360	170 - 340	440	23	24	28	1 d
30611	EN 10111	**DD11**	170 - 360	170 - 340	440	23	24	28	1 d
30112	EN 10111	**DD12**	170 - 340	170 - 320	420	25	26	30	0
30612	EN 10111	**DD12**	170 - 340	170 - 320	420	25	26	30	0
30113	EN 10111	**DD13**	170 - 330	170 - 310	400	28	29	33	0
30613	EN 10111	**DD13**	170 - 330	170 - 310	400	28	29	33	0
30513	EN 10111	**DD13**	170 - 330	170 - 310	400	28	29	33	0

Explanations

1) Tensile tests are applied to "Transverse" test samples.

HOT ROLLED STEEL GRADES SUITABLE FOR COLD ROLLING AND GALVANIZING

Standard : SAE J403-2024

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	P	S	Cu	Ni	Cr	Mo	B
				max	max	max	max	max	max	max	max	ppm
21006	SAE J403	**SAE 1006**	Standard	0.08	0.25-0.40	0.030	0.050	0.20	0.20	0.15	0.06	-
21406	SAE J403	**SAE 1006**	Standard	0.08	0.25-0.40	0.030	0.050	0.20	0.25	0.20	0.06	-
21506	SAE J403	**SAE 1006**	Standard	0.08	0.25-0.40	0.030	0.050	0.20	0.25	0.20	0.06	30 - 60
21106	SAE J403	**SAE 1006 - Mod**	Standard	0.03-0.06	0.15-0.25	0.020	0.015	0.08	0.06	0.05	0.015	-
21606	SAE J403	**SAE 1006 - Mod**	Standard	0.08	0.25-0.40	0.030	0.050	0.20	0.20	0.15	0.06	30 - 50
21008	SAE J403	**SAE 1008**	Standard	0.10	0.30-0.50	0.030	0.050	0.20	0.20	0.15	0.06	-
21010	SAE J403	**SAE 1010**	Standard	0.08-0.13	0.30-0.60	0.030	0.050	0.20	0.20	0.15	0.06	-
21410	SAE J403	**SAE 1010**	Standard	0.08-0.13	0.30-0.60	0.030	0.050	0.20	0.20	0.15	0.06	-
21110	SAE J403	**SAE 1010**	Standard	0.08-0.13	0.80-1.00	0.030	0.050	0.20	0.20	0.15	0.06	-
21112	SAE J403	**SAE 1012 - Mod**	Standard	0.10-0.15	0.30-0.60	0.030	0.050	0.20	0.20	0.15	0.06	-
21118	SAE J403	**SAE 1018 - Mod**	Standard	0.15-0.20	0.60-0.90	0.030	0.035	0.20	0.20	0.15	0.06	-
21119	SAE J403	**SAE 1019 - Mod**	Standard	0.15-0.20	0.70-1.00	0.030	0.035	0.20	0.20	0.15	0.06	-

Explanations

1) Mechanical test is not applied.
2) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

UNALLOYED GENERAL STRUCTURAL STEEL GRADES

Standard: ASTM A36-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	P	S	Si
				max	max	max	max	max
56036	ASTM A36	**A36**	Standard	0.25	0.80 - 1.20	0.040	0.050	0.40

Explanations

1) If the thickness is 20 mm and thinner, Mn % limit is not required.
2) For each reduction of 0.01 % for carbon, an increase of 0.06 % for manganese is permitted, up to a maximum of 1.35 %.
3) Optionally, 0.2 % Cu is permitted

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm(1)	A(%)		Impact	
			N/mm²		A_{50}	A_{200}	Sıc.	KVc
			(min)	(min)	min	min	C	J
56036	ASTM A36	**A36**	250	400 - 550	21	18	-20	40

Explanations

1) Tensile tests are applied to "Transverse" test samples.
2) Impact tests are not required if nominal thickness is lesser than 6 mm.
3) Impact tests are carried out if it is customer's request in order.

UNALLOYED GENERAL STRUCTURAL STEEL GRADES SUATABLE FOR GALVANIZING

Standard: ASTM A36-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	P	S	Cu
				max	max	max	max	max
56436	ASTM A36	**A36**	Standard	0.25	0.80 - 1.20	0.040	0.050	0.20

Explanations

1) If the thickness is 20 mm and thinner, Mn % limit is not required.
2) For each reduction of 0.01 % for carbon, an increase of 0.06 % for manganese is permitted, up to a maximum of 1.35 %.
3) Optionally, 0.2 % Cu is permitted

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm(1)	A(%)		Impact	
			N/mm²		A_{50}	A_{200}	Sıc.	KVc
			(min)	(min)	min	min	C	J
56436	ASTM A36	**A36**	250	400 - 550	23	20	-20	40

Explanations

1) Tensile tests are applied to "Transverse" test samples.
2) Impact tests are not required if nominal thickness is lesser than 6 mm.
3) Impact tests are carried out if it is customer's request in order.

UNALLOYED PIPE AND PROFILE STEEL GRADES

Standard: ASTM A53-2024

Kimyasal Kompozisyon (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	P	S	Si	Cu[1]	Ni[1]	Cr[1]	Mo[1]	V[1]
				max	max	max	max	max	max	max	max	max	max
56053	ASTM A53	**Grade A**	Standard	0.25	0.95	0.050	0.045	0.35	0.40	0.40	0.40	0.15	0.08

Explanations

1) Total weight of these elements are max. % 1.00 for ASTM A 53 Grade A.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm[1]	A_{50} (%)
			N/mm²		
			(min)	(min)	(min)
56053	ASTM A53	**Grade A**	205	330	"2"

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.
2) A_{50} (%) = 1940 S_0 0.2 / U0.9 (S_0 : Cross sectional area, mm² ; U : Tensile stress, N/mm²)

UNALLOYED PIPE AND PROFILE STEEL GRADES SUITABLE FOR GALVANIZING

Standard: ASTM A53-2024

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	P	S	Si	Cu[1]	Ni[1]	Cr[1]	Mo[1]	V[1]
				max	max	max	max	max	max	max	max	max	max
56453[2]	ASTM A53	**Grade A**	Standard	0.25	0.95	0.050	0.045	—	0.40	0.40	0.40	0.15	0.08

Explanations

1) Total weight of these elements are max. % 1.00 for ASTM A 53 Grade A.
2) 56453 with %Si ≤ 0.04 is suitable for galvanizing and cold forming.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm[1]	A_{50} (%)
			N/mm²		
			(min)	(min)	(min)
56453	ASTM A53	**Grade A**	205	330	"2"

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.
2) A_{50} (%) = 1940 S_0 0.2 / $U^{0.9}$ (S_0 : Cross sectional area, mm² ; U : Tensile stress, N/mm²)

PIPE AND PROFILE STEEL GRADES

Standard: ASTM A53-2024

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	P	S	Cu[1]	Ni[1]	Cr[1]	Mo[1]	V[1]
				max	max	max	max	max	max	max	max	max
56052	ASTM A53	**Grade B**	Standard	0.30	1.20	0.050	0.045	0.50	0.40	0.40	0.15	0.08

Explanations

1) Total weight of these elements are max. % 1.00 for ASTM A 53 Grade B.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm[1]	A_{50} (%)
			N/mm²		
			min.	min.	min.
56052	ASTM A53	**Grade B**	240	415	"2"

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.
2) A_{50} (%) = 1940 S_0 0.2 / $U^{0.9}$ (S_0 : Cross sectional area, mm² ; U : Tensile stress, N/mm²)

UNALLOYED PIPE AND PROFILE STEEL GRADES SUITABLE FOR GALVANIZING

Standard: ASTM A53-2024

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	P	S	Si	Cu[1]	Ni[1]	Cr[1]	Mo[1]	V[1]
				max	max	max	max	max	max	max	max	max	max
56452	ASTM A53	**Grade B**	Standard	0.30	1.20	0.050	0.045	—	0.40	0.40	0.40	0.15	0.08

Explanations

1) Total weight of these elements are max. % 1.00 for ASTM A 53 Grade B.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm[1]	A_{50} (%)
			N/mm²		
			min.	min.	min.
56452	ASTM A 53	**Grade B-Düşük Si**	240	415	"2"

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.
2) A_{50} (%) = 1940 S_0 0.2 / $U^{0.9}$ (S_0 : Cross sectional area, mm² ; U : Tensile stress, N/mm²)

UNALLOYED GENERAL STRUCTURAL STEEL GRADES

Standard: ASTM A283-2024

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn[2]	P	S	Si	Cu
				max	max	max	max	max	max
56380	ASTM A283	Grade C	Standard	0.24	0.90	0.035	0.040	0.40	0.20

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm[1]	A (%)	
			N/mm²		A_{50} (%)	A_{200}
			min	min	min	min
56380	ASTM A283	Grade C	205	380 - 515	23	20

Explanations

1) Tensile tests are applied to "Transverse" test samples.

UNALLOYED PIPE AND PROFILE STEEL GRADES SUITABLE FOR GALVANIZING

Standard: ASTM A500-2023

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	P	S	Cu
				max	max	max	max	max
56542	ASTM A500	Grade B	Standard	0.26	1.35	0.035	0.035	0.20
56546	ASTM A500	Grade C	Standard	0.23	1.35	0.035	0.035	0.20

Explanations

1) For each reduction of 0.01 % for carbon, an increase of 0.06 % for manganese is permitted, up to a maximum 1.50 %.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm[1]	A (%)
			N/mm²		A_{50}
			min	min	min
56542	ASTM A 500	Grade B	290	400	23[2]
56546	ASTM A 500	Grade C	315	425	21[3]

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.
2) Given elongation values are valid for 4.7 mm and thicker samples. % elongation = 2.40.d+ 12 formula is applied for the products with lower thichness than 4.7 mm
3) Given elongation values are applied for 3.05 mm and thicker samples.

CARBON STEEL SUITABLE FOR USING WITH A PRESSURE AT MIDDLE AND HIGH TEMPERATURES

Standard: ASTM A516-2017

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	P	S	Si
				max	max	max	max	max
56660	ASTM A516	Grade 60	Standard	0.23	0.6-1.2	0.025	0.025	0.15–0.40

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	$Rm^{(1)}$	A_{50} (%)
			N/mm²		
			min	min	min
56660	ASTM A516	Grade 60	220	415	25

HIGH STRENGTH LOW ALLOY STRUCTURAL STEEL GRADES

Standard: ASTM A572-2021

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		$C^{(1)}$	$Mn^{(3)}$	P	S	Si	$Cu^{(2)}$	V	Nb
				max	max	max	max	max	min		max
56350	ASTM A572	Grade 50 Type 1	Standard	0.23	0.80-1.35	0.04	0.05	0.40	0.20	-	0.005-0.05
56550	ASTM A572	Grade 50 Type 2	Standard	0.23	0.80-1.35	0.04	0.05	0.40	0.20	0.01-0.15	0.05
56355	ASTM A572	Grade 55 Type 1	Standard	0.25	0.80-1.35	0.04	0.05	0.40	0.20	-	0.005-0.05
56555	ASTM A572	Grade 55 Type 2	Standard	0.25	0.80-1.35	0.04	0.05	0.40	0.20	0.01-0.15	-
56560	ASTM A572	Grade 60 Type 1	Standard	0.26	0.80-1.35	0.04	0.05	0.40	0.20	-	0.005-0.05
56565	ASTM A572	Grade 65 Type 1	Standard	0.23	0.80-1.65	0.04	0.05	0.40	0.20	-	0.005-0.05

Explanations

1) For each reduction of 0.01 % for carbon, an increase of 0.06 % for manganese is permitted, up to a maximum of 1.60.
2) When copper is specified, a minimum of 0.20 % is required.
3) %Mn will be min %0.80 if the coil thickness bigger than 10 mm and will be min %0.50 if the coil thickness is equal or less than 10 mm.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	$Rm^{(1)}$	A(%)		Impact (long.)²	
			N/mm²		A_{50}	A_{200}	Temp.	KVc
								min
			min	min	min	min	°C	J
56350	ASTM A572	Grade 50 Type 1	345	450	21	18	+20	27
56550	ASTM A572	Grade 50 Type 2	345	450	21	18	+20	27
56355	ASTM A572	Grade 55 Type 1	380	485	20	17	+20	27
56555	ASTM A572	Grade 55 Type 2	380	485	20	17	+20	27
56560	ASTM A572	Grade 60 Type 1	415	520	18	16	+20	27
56565	ASTM A572	Grade 65 Type 1	450	550	17	15	+20	27

Explanations

1) Tensile tests are applied to "Transversal" test samples.
2) Impact tests are carried out if it is customer's request in order.

MICROALLOYED HIGH STRENGTH STEEL RESISTANT TO ATMOSPHERIC CORRISION

Standard: ASTM A606-2023

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	S	P	Cu	Cr	Ni	N ppm
				max	max	max	max	max	min	min	max	max
55340	ASTM A606	**Type 2**	Standard	0.22	1.25	-	0.04	-	0.20	-	-	-
58350	ASTM A606	**Type 4**	Standard	0.16	0.50-1.50	0.50	0.035	0.035	0.20-0.55	0.40-0.80	0.65	90

Explanations

1) %C max. could be 0.15 in case %Mn is 1.40 max.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm	A (%)
			N/mm²		A_{50}
			(min)	(min)	(min)
55340	ASTM A606	**Type 2**	340	480	22
58350	ASTM A606	**Type 4**	340	480	22

STRUCTURAL STEEL GRADES SUITABLE FOR COLD FORMING AND BENDING

Standard: ASTM A 1011-2023

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	P	S	Si	Cu[2]	Ni	Cr	Mo	V	Nb	Ti [3]	Ca
				max	max	max	max	max	max	max	max	max	max	max	max	max
56340	ASTM A1011	**CS Type B**	Standard	0.02–0.15	0.60	0.030	0.035	-	0.20	0.20	0.15	0.06	0.008	0.008	0.025	-
56360	ASTM A1011	**SS Grade 33**	Standard	0.25	0.90	0.035	0.040	-	0.20	0.20	0.15	0.06	0.008	0.008	0.025	0.0080
56365	ASTM A1011	**SS 36 Type 1**	Standard	0.25	0.90	0.035	0.040	-	0.20	0.20	0.15	0.06	0.008	0.008	0.025	0.0080
56400[1]	ASTM A1011	**SS 36 Type 2**	Standard	0.25	1.35	0.035	0.040	-	0.20	0.20	0.15	0.06	0.008	0.008	0.025	-
56275	ASTM A1011	**SS Grade 40**	Standard	0.25	0.90	0.035	0.040	-	0.20	0.20	0.15	0.06	0.008	0.008	0.025	-
56454	ASTM A1011	**SS Grade 50**	Standard	0.25	1.35	0.035	0.040	-	0.20	0.20	0.15	0.06	0.008	0.008	0.025	-
56450	ASTM A1011	**SS Grade 50**	Standard	0.25	1.35	0.035	0.040	-	0.20	0.20	0.15	0.06	0.008	0.008	0.025	-
56484	ASTM A1011	**SS Grade 55**	Standard	0.25	1.35	0.035	0.040	-	0.20	0.20	0.15	0.06	0.008	0.008	0.025	-
56480	ASTM A1011	**SS Grade 55**	Standard	0.25	1.35	0.035	0.040	-	0.20	0.20	0.15	0.06	0.008	0.008	0.025	-

Explanations

1) For each reduction of 0.01 % for carbon, an increase of 0.06 % for manganese is permitted, up to a maximum of 1.50 %.
2) When copper is specified, a minimum of 0.20 % is required.
3) Ti/ N is max. 3.4.
4) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm[1]	A(%)			Bending
			N/mm²		A_{50}		A_{200}	(tran.; 90°)
					2.5≤T≤6.0	1.6≤T≤2.5	T≤6.0	mrb
			min	min	min	min	min	(d=thickness)
56340	ASTM A 1011	**CS Type B**	205-340	-	-	-	-	-
56360	ASTM A 1011	**SS Grade 33**	230	360	23	22	18	1d
56365	ASTM A 1011	**SS 36 Type 1**	250	365	22	21	17	1.5d
56400	ASTM A 1011	**SS 36 Type 2**	250	400 - 550	21	20	16	2d
56275	ASTM A 1011	**SS Grade 40**	275	380	21	20	16	2d
56454	ASTM A 1011	**SS Grade 50-Düşük Si**	340	450	17	16	12	2.5d
56450	ASTM A 1011	**SS Grade 50**	340	450	17	16	12	2.5d
56484	ASTM A 1011	**SS Grade 55-Düşük Si**	380	480	15	14	10	3d
56480	ASTM A 1011	**SS Grade 55**	380	480	15	14	10	3d

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.
2) Bending tests are carried out if it is customer's request in order.

MICROALLOYED STRUCTURAL STEEL GRADES SUITABLE FOR COLD FORMING AND BENDING

Standard: ASTM A1011-2023

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Cr	Ni	Cu	Al	Mo	V	Ti	N ppm	Nb
				max.	max.	max.	max.	max.	max.	max.	max.	min.	max.	min	min	max.	min
56245[1]	ASTM A1011	**HSLAS Grade 45 Class 2**	Standard	0.15	1.35	-	0.04	0.04	0.15	0.20	0.20	-	0.06	0.005	0.005	-	0.005
56150[1]	ASTM A1011	**HSLAS Grade 50 Class 1**	Standard	0.23	1.35	-	0.04	0.04	0.15	0.20	0.20	-	0.06	0.005	0.005	-	0.005
56151[1]	ASTM A1011	**HSLAS Grade 50 Class 1**	Standard	0.23	1.35	0.14-0.25	0.04	0.04	0.15	0.20	0.20	-	0.06	0.005	0.005	-	0.005
56152	ASTM A1011	**HSLAS Grade 50 Class 1**	Standard	0.23	1.35	-	0.040	0.040	0.15	.20	0.20-0.30	-	0.06	0.005	0.005	-	0.005
56250	ASTM A1011	**HSLAS Grade 50 Class 2**	Standard	0.15	1.50		0.04	0.04	0.15	0.20	0.20		0.06	0.005	0.005		0.005
56155[1]	ASTM A1011	**HSLAS Grade 55 Class 1**	Standard	0.25	1.35	-	0.04	0.04	0.15	0.20	0.20	-	0.06	0.005	0.005	-	0.005
56655[1]	ASTM A1011	**HSLAS Grade 55 Class 1**	Standard	0.25	1.35	-	0.04	0.04	0.15	0.20	0.20-0.30	-	0.06	0.005	0.005	-	0.005
56156[1]	ASTM A1011	**HSLAS Grade 55 Class 1**	Standard	0.25	1.35	0.14-0.25	0.04	0.04	0.15	0.20	0.20	-	0.06	0.005	0.005	-	0.005
56255	ASTM A1011	**HSLAS Grade 55 Class 2**	Standard	0.15	1.35	-	0.04	0.04	0.15	0.20	0.20	-	0.06	0.005	0.005	-	0.005
56256	ASTM A1011	**HSLAS Grade 55 Class 2**	Standard	0.15	1.35	-	0.04	0.04	0.15	0.20	0.20-0.30	-	0.06	0.005	0.005	-	0.005
56455	ASTM A1011	**HSLAS Grade 55 Class 1 / Class 2**	Standard	0.15	1.35	-	0.04	0.04	0.15	0.20	0.20-0.30	-	0.06	0.005	0.005	-	0.005
56160	ASTM A1011	**HSLAS Grade 60 Class 1**	Standard	0.26	1.50	-	0.04	0.04	0.15	0.20	0.20	-	0.06	0.005	0.005	-	0.005
56162	ASTM A1011	**HSLAS Grade 60 Class 1**	Standard	0.26	1.50	-	0.040	0.040	0.15	.20	0.20-0.30		0.06	0.005	0.005		0.005
56260	ASTM A1011	**HSLAS Grade 60 Class 2**	Standard	0.15	1.50	-	0.040	0.040	0.15	0.20	0.20	-	0.06	0.005	0.005	-	0.005
56270	ASTM A1011	**HSLAS Grade 70 Class 2**	Standard	0.15	1.65	-	0.040	0.040	0.15	0.20	0.20	-	0.16	0.005	0.005	-	0.005
56080	ASTM A1011	**HSLAS-F Grade 80**	Standard	0.15	1.65	-	0.020	0.025	0.15	0.20	0.20	-	0.16	0.005	0.005	-	0.005

Explanations

1) For each reduction of 0.01 % for carbon, an increase of 0.06 % for manganese is permitted, up to a maximum of 1.50 %.
2) ASTM A1011/A 1011M-2007 standard is valid for strip thickness T≤6 mm coils.
3) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm[1]	A(%)		Bending[2]
			N/mm²		A_{50}		(tran; 90°)
					T<2.5	2.5<T	mrb
			(min)	(min)	(min)	(min)	(d=thickness)
56245[1]	ASTM A1011	**HSLAS Grade 45 Class 2**	310	380	23	25	1.5d
56150[1]	ASTM A1011	**HSLAS Grade 50 Class 1**	340	450	20	22	2d
56151[1]	ASTM A1011	**HSLAS Grade 50 Class 1**	340	450	20	22	2d
56250	ASTM A1011	**HSLAS Grade 50 Class 1**	340	410	20	22	1.5d
56155[1]	ASTM A1011	**HSLAS Grade 50 Class 2**	380	480	18	20	2d
56655[1]	ASTM A1011	**HSLAS Grade 55 Class 1**	380	480	18	20	2d
56156[1]	ASTM A1011	**HSLAS Grade 55 Class 1**	380	480	18	20	2d
56255	ASTM A1011	**HSLAS Grade 55 Class 1**	380	450	18	20	2d
56256	ASTM A1011	**HSLAS Grade 55 Class 2**	380	450	18	20	2d
56455	ASTM A1011	**HSLAS Grade 55 Class 2**	380	450	18	20	2d
56160	ASTM A1011	**HSLAS Grade 55 Class 1 / Class 2**	410	520	16	18	2.5d
56260	ASTM A1011	**HSLAS Grade 60 Class 1**	410	480	16	18	2d
56270	ASTM A1011	**HSLAS Grade 60 Class 1**	480	550	12	14	3d
56080	ASTM A1011	**HSLAS Grade 60 Class 2**	550	620	16	18	2d
56152	ASTM A1011	**HSLAS Grade 70 Class 2**	340	450	20	22	2d
56162	ASTM A1011	**HSLAS-F Grade 80**	410	520	16	18	2.5d

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.
2) Bending tests are carried out if it is customer's request in order.

STRUCTURAL STEEL GRADES SUITABLE FOR COLD FORMING AND BENDING

Standard: ASTM A1018-2023

Chemical Composition (%)

Colakoglu Quality ID	Standard	Kalite		C	Mn	P	S	Cu[2]	Ni	Cr	Mo	V	Nb	Ti[3]	N
				max	max	max	max	max	max	max	max	max	max	max	max
56830	ASTM A1018	**CS Type B**	Standard	0.02-0.15	0.60	0.030	0.035	0.20	0.20	0.15	0.06	0.008	0.008	0.025	-
56833	ASTM A1018	**SS Grade 33**	Standard	0.25	1.50	0.035	0.040	0.20	0.12	0.10	0.02	0.008	0.008	0.025	0.014
56836	ASTM A1018	**SS 36 Type 1**	Standard	0.25	1.50	0.035	0.040	0.20	0.20	0.15	0.06	0.008	0.008	0.025	0.014
56837[1]	ASTM A1018	**SS 36 Type 2**	Standard	0.25	1.35	0.035	0.040	0.20	0.20	0.15	0.06	0.008	0.008	0.025	0.014
56838	ASTM A1018	**SS 36 Type 2**	Standard	0.25	1.35	0.035	0.040	0.20	0.20	0.15	0.06	0.008	0.008	0.025	0.014
56840	ASTM A1018	**SS Grade 40**	Standard	0.25	1.50	0.035	0.04	0.20	0.12	0.10	0.02	0.008	0.008	0.025	0.014

Explanations

1) Mn % is 0.80-1.20 for 20 mm and thicker strips. For each reduction of 0.01 % for carbon, an increase of 0.06 % for manganese is permitted, up to a maximum of 1.35.
2) When copper is specified, a minimum of 0.20 % is required.
3) Ti/ N is max. 3.4.
4) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Kalite	Re	Rm[1]	A(%)		Impact (long.)[2]		Bending
			N/mm²		A_{50} T≤25	A_{200} 4.5≤T≤25	Temp.	KVc (min)	(tran; 90°) mrb
			(min)	(min)	(min)	(min)	°C	J	(d=thickness)
56830	ASTM A1018	**CS Type B**	-	-	-	-	-	-	-
56833	ASTM A1018	**SS Grade 33**	230	360	22	16	+20	40	1d
56836	ASTM A1018	**SS 36 Type 1**	250	365	21	15	+20	40	1.5d
56837	ASTM A1018	**SS 36 Type 2**	250	400-550	21	18	+20	40	2d
56838	ASTM A1018	**SS 36 Type 2**	250	400-550	21	18	+20	40	2d
56840	ASTM A1018	**SS Grade 40**	275	380	19	14	+20	40	2d

Explanations

1) Tensile tests are applied to "Transversal" test samples.
2) Impact and Bending tests are carried out if it is customer's request in order.

MICRO ALLOYED STEEL GRADES SUITABLE FOR COLD FORMING AND BENDING

Standard: ASTM A1018-2023

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	Si
				max	max	max	max	max	max	max	max	min	min	min	max
56845	ASTM A1018	**HSLAS Grade 45 Class 1**	Standard	0.22	1.50	0.04	0.04	0.20	0.20	0.15	0.06	0.005	0.005	0.005	
56945	ASTM A1018	**HSLAS Grade 45 Class 2**	Standard	0.15	1.50	0.04	0.04	0.20	0.20	0.15	0.06	0.005	0.005	0.005	
56850	ASTM A1018	**HSLAS Grade 50 Class 1**	Standard	0.23	1.50	0.04	0.04	0.20	0.20	0.15	0.06	0.005	0.005	0.005	
55850	ASTM A1018	**HSLAS Grade 50 Class 1**	Standard	0.23	1.50	0.04	0.04	0.20	0.20	0.15	0.06	0.005	0.005	0.005	
56851	ASTM A1018	**HSLAS Grade 50 Class 1**	Standard	0.23	1.50	0.04	0.04	0.20	0.20	0.15	0.06	0.005	0.005	0.005	0.14-0.25
55851	ASTM A1018	**HSLAS Grade 50 Class 1**	Standard	0.23	1.50	0.04	0.04	0.20	0.20	0.15	0.06	0.005	0.005	0.005	0.14-0.25
56950	ASTM A1018	**HSLAS Grade 50 Class 2**	Standard	0.15	1.50	0.040	0.040	0.20	0.20	0.15	0.06	0.005	0.005	0.005	
56855	ASTM A1018	**HSLAS Grade 55 Class 1**	Standard	0.25	1.50	0.04	0.04	0.20	0.20	0.15	0.06	0.005	0.005	0.005	
56755	ASTM A1018	**HSLAS Grade 55 Class 1**	Standard	0.25	1.50	0.04	0.04	0.20	0.20	0.15	0.06	0.005	0.005	0.005	
56856	ASTM A1018	**HSLAS Grade 55 Class 1**	Standard	0.25	1.50	0.04	0.04	0.20	0.20	0.15	0.06	0.005	0.005	0.005	0.14-0.25
56955	ASTM A1018	**HSLAS Grade 55 Class 2**	Standard	0.15	1.50	0.04	0.04	0.20	0.20	0.15	0.06	0.005	0.005	0.005	
56956	ASTM A1018	**HSLAS Grade 55 Class 2**	Standard	0.15	1.50	0.04	0.04	0.20	0.20	0.15	0.06	0.005	0.005	0.005	
56860	ASTM A1018	**HSLAS Grade 60 Class 1**	Standard	0.26	1.50	0.04	0.04	0.20	0.20	0.15	0.06	0.005	0.005	0.005	
56960	ASTM A1018	**HSLAS Grade 60 Class 2**	Standard	0.15	1.50	0.04	0.04	0.20	0.20	0.15	0.06	0.005	0.005	0.005	
56965	ASTM A1018	**HSLAS Grade 65 Class 2**	Standard	0.15	1.50	0.04	0.04	0.20	0.20	0.15	0.06	0.005	0.005	0.005	
56970	ASTM A1018	**HSLAS Grade 70 Class 2**	Standard	0.15	1.65	0.04	0.040	0.20	0.20	0.15	0.16	0.005	0.005	0.005	
56980	ASTM A1018	**HSLAS-F Grade 80**	Standard	0.15	1.65	0.020	0.025	0.20	0.20	0.15	0.16	0.005	0.005	0.005	

Explanations

1) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm[1]	A(%)		Bending
			N/mm²		A_{50}	A_{200}	(tran; 90°)
					T≤25	4.5≤T≤25	mrb
			(min)	(min)	(min)	(min)	(d=thickness)
56845	ASTM A1018	**HSLAS Grade 45 Class 1**	310	410	22	17	1.5d
56945	ASTM A1018	**HSLAS Grade 45 Class 2**	310	380	22	17	1.5d
55850	ASTM A1018	**HSLAS Grade 50 Class 1**	340	450	20	16	2d
56850	ASTM A1018	**HSLAS Grade 50 Class 1**	340	450	20	16	2d
55850	ASTM A1018	**HSLAS Grade 50 Class 1**	340	450	20	16	2d
56851	ASTM A1018	**HSLAS Grade 50 Class 1**	340	450	20	16	2d
56950	ASTM A1018	**HSLAS Grade 50 Class 2**	340	410	20	16	1.5d
56855	ASTM A1018	**HSLAS Grade 55 Class 1**	380	480	18	15	2d
56755	ASTM A1018	**HSLAS Grade 55 Class 1**	380	480	18	15	2d
56856	ASTM A1018	**HSLAS Grade 55 Class 1**	380	480	18	15	2d
56955	ASTM A1018	**HSLAS Grade 55 Class 2**	380	450	18	15	2d
56956	ASTM A1018	**HSLAS Grade 55 Class 2**	380	450	18	15	2d
56860	ASTM A1018	**HSLAS Grade 60 Class 1**	410	520	16	14	2.5d
56960	ASTM A1018	**HSLAS Grade 60 Class 2**	410	480	16	14	2d
56965	ASTM A1018	**HSLAS Grade 65 Class 2**	450	520	14	12	2.5d
56970	ASTM A1018	**HSLAS Grade 70 Class 2**	480	550	12	10	3d
56980	ASTM A1018	**HSLAS-F Grade 80**	550	620	12	10	2d

Explanations

1) Tensile tests are applied to "Transversal" test samples.
2) Bending tests are carried out if it is customer's request in order.

UNALLOYED GENERAL STRUCTURAL STEEL GRADES

Standard: EN 10025-2-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C (max)		Mn	P	S	Cu	Al[1]	N[1]	Ceq[2]
				d≤16	16<d≤40	max	max	max	max	min	max	max
51235	EN 10025-2	**S235JR**	Standard	0.17	0.17	1.40	0.035	0.035	0.55	—	0.012	0.35
55235	EN 10025-2	**S235JR**	Standard	0.17	0.17	1.40	0.035	0.035	0.55	—	0.012	0.35
51236	EN 10025-2	**S235JR+N**	Standard	0.17	0.17	1.40	0.025	0.025	0.55	0.020	—	0.35
52235	EN 10025-2	**S235J2+N**	Standard	0.17	0.17	1.40	0.025	0.025	0.55	0.020	—	
51275	EN 10025-2	**S275JR**	Standard	0.21	0.21	1.50	0.035	0.035	0.55	—	0.012	0.40
52275	EN 10025-2	**S275J2+N**	Standard	0.18	0.18	1.50	0.025	0.025	0.55	0.020	—	0.40

Explanations

1) The maximum value for nitrogen does not apply if the chemical composition shows a minimum aluminium content of 0.020 %.
2) Ceq is calculated by %CE (IIW) = C+Mn/6+(C+Mo+V)/5+(Ni+Cr)/15 formula.
3) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re N/mm² min.	Re N/mm² min.	Rm[4] N/mm²		A(%), min. A_{80}				A_5	Impact (long)[2] Temp.	Impact (long)[2] KVc min.
			d : thickness, mm		d : thickness, mm		d : thickness, mm						
				16<d≤40	<3	3≤d<40	1<d≤1.5	1.5<d≤2	2<d≤2.5	2.5<d≤3	3≤d≤40	°C	J
51235	EN 10025-2	**S235JR**	235	225	360 - 510	360 - 510	16	17	18	19	24	+20	27[3]
55235	EN 10025-2	**S235JR**	235	225	360 - 510	360 - 510	16	17	18	19	24	+20	27
51236	EN 10025-2	**S235JR+N**	235	225	360 - 510	360 - 510	16	17	18	19	24	+20	27
52235	EN 10025-2	**S235J2+N**	235	225	360 - 510	360 - 510	16	17	18	19	24	-20	27
51275	EN 10025-2	**S275JR**	275	265	430 - 580	410 - 560	14	15	16	17	21	+20	27[3]
52275	EN 10025-2	**S275J2+N**	275	265	430 - 580	410 - 560	14	15	16	17	21	-20	27

Explanations

1) Grades with N code can be normalized and/or hot formed by customers.
2) Impact tests are not required if nominal thickness is lesser than 6 mm.
3) Impact tests are carried out if it is customer's request in order.
4) Tensile tests are applied to "Transversal" test samples.

UNALLOYED GENERAL STRUCTURAL STEEL GRADES

Standard: EN 10025-2-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		P	S	Cu	N
				max	max	max	max
51295	EN 10025-2	**E295**	Standard	0.045	0.045	0.55	120
51335	EN 10025-2	**E335**	Standard	0.045	0.045	0.55	120

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re		Rm[2]		A (%), min				
			N/mm²		N/mm²		A_{80}				A 5
			min.	min.	d : thickness, mm		d : thickness, mm				
			d : thickness, mm								
				16<d≤40	<3	3≤d<100	1<d≤1.5	1.5<d≤2	2<d≤2.5	2.5<d≤3	3≤d≤40
51295	EN 10025-2	**E295**	295	285	490-660	470-610	11	12	13	14	18
51335	EN 10025-2	**E335**	335	325	590-770	570-710	7	8	9	10	14

Explanations

1) Tensile tests are applied to "Transversal" test samples.
2) Impact tests are not carried out if nominal thickness is lesser than 6 mm.
3) Impact tests are carried out if it is customer's request in order.

UNALLOYED GENERAL STRUCTURAL STEEL GRADES

Standard: EN 10025-2-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C (max)		Si	Mn	P	S	Cu	Al[1]	N[1]	Ceq[2]
				d≤16	16<d≤40	max	max	max	max	max	min	max	max
50355	EN 10025-2	**S355J0**	Standard	0.20	0.20	0.55	1.6	0.030	0.030	0.55	—	0.012	0.45
51355	EN 10025-2	**S355JR**	Standard	0.24	0.24	0.55	1.6	0.035	0.035	0.55	—	0.012	0.45
53355	EN 10025-2	**S355J2**	Standard	0.20	0.20	0.55	1.6	0.025	0.025	0.55	—	—	0.45
52355	EN 10025-2	**S355J2+N**	Standard	0.20	0.20	0.55	1.6	0.025	0.025	0.55	0.020	—	0.45
55355	EN 10025-2	**S355J2+N**	Standard	0.20	0.20	0.55	1.6	0.025	0.025	0.55	—	—	0.45

Explanations

1) The maximum value for nitrogen does not apply if the chemical composition shows a minimum aluminium content of 0.020 %.
2) Ceq is calculated by %CE (IIW) = C+Mn/6+(C+Mo+V)/5+(Ni+Cr)/15 formula.
3) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re		Rm[2]		A(%), min.					Impact (long.)[3]	
			N/mm²		N/mm²		A_{80}				A_5	Temp.	KVc
			min.	min.	d : thickness, mm		d : thickness, mm						min.
			d : thickness, mm										
			≤16	16<d≤40	<3	3≤d<40	1<d≤1.5	1.5<d≤2	2<d≤2.5	2.5<d≤3	3≤d≤40	°C	J
50355	EN 10025-2	**S355J0**	355	345	510 - 680	470 - 630	13	14	15	16	20	0	27[4]
51355	EN 10025-2	**S355JR**	355	345	510 - 680	470 - 630	13	14	15	16	20	+20	27
53355	EN 10025-2	**S355J2**	355	345	510 - 680	470 - 630	13	14	15	16	20	-20	27[4]
52355	EN 10025-2	**S355J2+N**[1]	355	345	510 - 680	470 - 630	13	14	15	16	20	-20	27
55355	EN 10025-2	**S355J2+N**[1]	355	345	510 - 680	470 - 630	13	14	15	16	20	-20	27[4]

Explanations

1) Grades with +N code can be normalized and/or hot formed by customers.
2) Tensile tests are applied to "Transversal" test samples.
3) Impact tests are not carried out if nominal thickness is lesser than 6 mm.
4) Impact tests are carried out if it is customer's request in order.

UNALLOYED GENERAL STRUCTURAL STEEL GRADES SUITABLE FOR GALVANIZING AND BENDING

Standard: EN 10025-2:2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C (max)		Mn	P	S	Cu	Al[1]	N[1]	Ceq[2]
				d≤16	16<d≤40	max	max	max	max	min	max	max
54235	EN 10025-2	**S235JR**	Standard	0.17	0.17	1.40	0.035	0.035	0.55	—	0.012	0.35
50236	EN 10025-2	**S235JR**	Standard	0.17	0.17	1.40	0.035	0.035	0.55	—	0.012	0.35
54231	EN 10025-2	**S235JR**	Standard	0.17	0.17	1.40	0.035	0.035	0.55	—	0.012	0.35
56235	EN 10025-2	**S235JR**	Standard	0.17	0.17	1.40	0.035	0.035	0.55	—	0.012	0.35
50237	EN 10025-2	**S235J0**	Standard	0.17	0.17	1.40	0.035	0.035	0.55	—	0.012	0.35
50235	EN 10025-2	**S235J0**	Standard	0.17	0.17	1.40	0.030	0.030	0.55	—	0.012	0.35
50238	EN 10025-2	**S235J2**	Standard	0.17	0.17	1.40	0.035	0.035	0.55	—	0.012	0.35
53235	EN 10025-2	**S235J2**	Standard	0.17	0.17	1.40	0.025	0.025	0.55	—	0.012	0.35
54275	EN 10025-2	**S275JR**	Standard	0.21	0.21	1.50	0.035	0.035	0.55	—	0.012	0.40
54271	EN 10025-2	**S275JR**	Standard	0.21	0.21	1.50	0.035	0.035	0.55	—	0.012	0.40
50275	EN 10025-2	**S275J0**	Standard	0.18	0.18	1.50	0.030	0.030	0.55	—	0.012	0.40
53275	EN 10025-2	**S275J2**	Standard	0.18	0.18	1.50	0.025	0.025	0.55	—	0.012	0.40

Explanations

1) The maximum value for nitrogen does not apply if the chemical composition shows a minimum aluminium content of 0.020 %.
2) Ceq is calculated by %CE (IIW) = C+Mn/6+(C+Mo+V)/5+(Ni+Cr)/15 formula.
3) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re		Rm[1]		A(%), min.					Impact (long.)[3]	
			N/mm²				A_{80}				A_5	Temp.	KVc
			min.	min.	d : thickness, mm		d : thickness, mm						min.
			d : thickness, mm										
			≤16	16<d≤40	<3	3≤d<40	1<d≤1.5	1.5<d≤2	2<d≤2.5	2.5<d≤3	3≤d≤40	°C	J
54235	EN 10025-2	**S235JR**	235	225	360 - 510	360 - 510	16	17	18	19	24	+20	27[3]
50236	EN 10025-2	**S235JR**	235	225	360 - 510	360 - 510	16	17	18	19	24	+20	27[3]
54231	EN 10025-2	**S235JR**	235	225	360 - 510	360 - 510	16	17	18	19	24	+20	27[3]
56235	EN 10025-2	**S235JR**	235	225	360 - 510	360 - 510	16	17	18	19	24	+20	27[3]
50237	EN 10025-2	**S235J0**	235	225	360 - 510	360 - 510	16	17	18	19	24	0	27[3]
50235	EN 10025-2	**S235J0**	235	225	360 - 510	360 - 510	16	17	18	19	24	0	27[3]
50238	EN 10025-2	**S235J2**	235	225	360 - 510	360 - 510	16	17	18	19	24	0	27[3]
53235	EN 10025-2	**S235J2**	235	225	360 - 510	360 - 510	16	17	18	19	24	-20	27[3]
54275	EN 10025-2	**S275JR**	275	265	430 - 580	410 - 560	14	15	16	17	21	+20	27[3]
54271	EN 10025-2	**S275JR**	275	265	430 - 580	410 - 560	14	15	16	17	21	+20	27[3]
50275	EN 10025-2	**S275J0**	275	265	430 - 580	410 - 560	14	15	16	17	21	0	27
53275	EN 10025-2	**S275J2**	275	265	430 - 580	410 - 560	14	15	16	17	21	-20	27

Explanations

1) Tensile tests are applied to "Transversal" test samples.
2) Impact tests are not carried out if nominal thickness is lesser than 6 mm.
3) Impact tests are carried out if it is customer's request in order.

UNALLOYED GENERAL STRUCTURAL STEEL GRADES (SUITABLE FOR CLASS 1 TYPE GALVANIZING STANDARD)

Standard: EN 10025-2-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C (max)		Si	Mn	P	S	Cu	Al[1]	N[1]	Ceq[2]
				d≤16	16<d≤40	max	max	max	max	max	min	max	max
54355	EN 10025-2	**S355JR**	Standard	0.24	0.24	0.55	1.6	0.035	0.035	0.55	—	0.012	0.45
54351	EN 10025-2	**S355JR**	Standard	0.24	0.24	0.55	1.6	0.035	0.035	0.55	—	0.012	0.45
54356	EN 10025-2	**S355J0**	Standard	0.20	0.20	0.55	1.6	0.030	0.030	0.55	—	0.012	0.45
54358	EN 10025-2	**S355J2**	Standard	0.20	0.20	0.55	1.6	0.025	0.025	0.55	—	—	0.45
54354	EN 10025-2	**S355JR+N**	Standard	0.24	0.24	0.55	1.6	0.035	0.035	0.55	—	0.012	0.45
54357	EN 10025-2	**S355J2+N**	Standard	0.20	0.20	0.55	1.6	0.025	0.025	0.55	—	—	0.45

Explanations

1) The maximum value for nitrogen does not apply if the chemical composition shows a minimum aluminium content of 0.020 %.
2) Ceq is calculated by %CE (IIW) = C+Mn/6+(C+Mo+V)/5+(Ni+Cr)/15 formula.
3) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re		Rm[2]		A(%), min					Impact (long.)[3]	
			N/mm²				A_{80}				A_5	Temp.	KVc
			min.	min.	d : thickness, mm		d : thickness, mm						min.
			d : thickness, mm										
			≤16	16<d≤40	<3	3≤d<40	1<d≤1.5	1.5<d≤2	2<d≤2.5	2.5<d≤3	3≤d≤40	°C	J
54355	EN 10025-2	**S355JR**	355	345	510-680	470-630	13	14	15	16	20	+20	27[4]
54351	EN 10025-2	**S355JR**	355	345	510-680	470-630	13	14	15	16	20	+20	27[4]
54356	EN 10025-2	**S355J0**	355	345	510-680	470-630	13	14	15	16	20	0	27[4]
54358	EN 10025-2	**S355J2**	355	345	510-680	470-630	13	14	15	16	20	-20	27[4]
54354	EN 10025-2	**S355JR+N**[1]	355	345	510-680	470-630	13	14	15	16	20	+20	27[4]
54357	EN 10025-2	**S355J2+N**[1]	355	345	510-680	470-630	13	14	15	16	20	-20	27[4]

Explanations

1) Grades with N code can be normalized and/or hot formed by customers.
2) Tensile tests are applied to "Transversal" test samples.
3) Impact tests are not carried out if nominal thickness is lesser than 6 mm.
4) Impact tests are carried out if it is customer's request in order.

GENERAL STRUCTURAL STEEL GRADES SUITABLE FOR COLD FORMING, BENDING AND SPINNING

Standard: EN 10025-2-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C (max.)		Mn	P	S	Ca	Al[1]	Ceq[2]
				d≤16	16<d≤40	max.	max.	max.	ppm	min.	max.
40234	EN 10025-2	S235JRC	Standard	0.17	0.17	1.4	0.035	0.035	20	0.020	0.35
40235	EN 10025-2	S235J2C	Standard	0,17	0,17	1.4	0.025	0.025	20	0.020	0.35
44235	EN 10025-2	S235JRC+N	Standard	0.17	0.17	1.4	0.035	0.035	20	0.020	0.35
43275	EN 10025-2	S275JRC	Standard	0.21	0.21	1.5	0.035	0.035	0.55	0.020	0.40
40275	EN 10025-2	S275J2C	Standard	0.18	0.18	1.5	0,025	0,025	20	0.020	0.40
44276	EN 10025-2	S275JRC+N - Mod	Standard	0.21	0.21	1.5	0.035	0.035	0.55	0.020	0.40
44275	EN 10025-2	S275J2C+N	Standard	0.18	0.18	1.5	0.025	0.025	20	0.020	0.40

Explanations

1) The maximum value for nitrogen does not apply if the chemical composition shows a minimum aluminium content of 0.020 %.
2) Ceq is calculated by %CE (IIW) = C+Mn/6+(C+Mo+V)/5+(Ni+Cr)/15 formula.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re		Rm[3]		A(%)					Impact (long.)[3]	
			N/mm²				A_{80}				A_5	Temp.	KVc
			min.	min.	d : thickness, mm		d : thickness, mm						min.
			d : thickness, mm										
			≤16	16<d≤40	<3	3≤d<40	1<d≤1.5	1.5<d≤2	2<d≤2.5	2.5<d≤3	3≤d≤40	°C	J
40234	EN 10025-2	S235JR[C(2)]	235	225	360 - 510	360 - 510	16	17	18	19	24	+20	27[(5)]
40235	EN 10025-2	S235J2C	235	225	360 - 510	360 - 510	16	17	18	19	24	-20	27[(5)]
44235	EN 10025-2	S235JRC+N[(1)(2)]	235	225	360 - 510	360 - 510	16	17	18	19	24	+20	27[(5)]
43275	EN 10025-2	S275JRC[(2)]	275	265	430 - 580	410 - 560	14	15	16	17	21	+20	27[(5)]
40275	EN 10025-2	S275J2C	275	265	430 - 580	410 - 560	14	15	16	17	21	-20	27[(5)]
44276	EN 10025-2	S275JRC+N - Mod	275	265	430 - 580	410 - 560	14	15	16	17	21	+20	27[(5)]
44275	EN 10025-2	S275J2C+N[(1)(2)]	275	265	430 - 580	410 - 560	14	15	16	17	21	-20	27[(5)]

Explanations

1) Grades with N code can be normalized and/or hot formed by customers.
2) Grades with C code can be cold formed and/or cold flanged by customers.
3) Tensile tests are applied to "Transversal" test samples.
4) Impact tests are not carried out if nominal thickness is lesser than 6 mm.
5) Impact tests are carried out if it is customer's request in order.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Bending[(1)] (trans., ≤90°) (mrb)							
			thickness, d (mm)							
			6<d≤7	7<d≤8	8<d≤10	10<d≤12	12<d≤14	14<d≤16	16<d≤18	18<d≤20
40234	EN 10025-2	S235JRC	10	12	16	20	25	28	36	40
40235	EN 10025-2	S235J2C	10	12	16	20	25	28	35	40
44235	EN 10025-2	S235JRC+N	10	12	16	20	25	28	36	40
43275	EN 10025-2	S275JRC	12	16	20	25	28	32	40	45
40275	EN 10025-2	S275J2C	12	16	20	25	28	32	40	45
44276	EN 10025-2	S275JRC+N - Mod	12	16	20	25	28	32	40	45
44275	EN 10025-2	S275J2C+N	12	16	20	25	28	32	40	45

GENERAL STRUCTURAL STEEL GRADES SUITABLE FOR COLD FORMING, BENDING AND SPINNING

Standard: EN 10025-2-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C (max)		Si	Mn	P	S	Cu	Al[1]	N[1]	Ceq[2]
				d≤16	16<d≤40	max	max	max	max	max	min	max	max
42355	EN 10025-2	**S355JRC**	Standard	0.24	0.24	0.55	1.60	0.035	0.035	0.55	—	0.012	0.45
40356	EN 10025-2	**S355JRC**	Standard	0.24	0.24	0.55	1.60	0.035	0.035	0.55	—	0.012	0.45
41355	EN 10025-2	**S355J0C**	Standard	0.24	0.24	0.55	1.60	0.035	0.035	0.55	—	0.012	0.45
43355	EN 10025-2	**S355J2C**	Standard	0.20	0.20	0.55	1.60	0.025	0.025	0.55	—	—	0.45
40355	EN 10025-2	**S355J2C**	Standard	0.20	0.20	0.55	1.60	0.025	0.025	0.55	0.020		0.45
45355	EN 10025-2	**S355J2C+N**	Standard	0.20	0.20	0.55	1.60	0.025	0.025	0.55	0.020	—	0.45
44357	EN 10025-2	**S355J2C+N - Mod**	Standard	0.20	0.20	0.55	1.60	0.025	0.025	0.55	0.020	—	0.45
44355	EN 10025-2	**S355J2C+N**	Standard	0.20	0.20	0.55	1.60	0.025	0.025	0.55	0.020	—	0.45
44356	EN 10025-2	**S355J2C+N**	Standard	0.20	0.20	0.55	1.70	0.025	0.025	0.55	0.020	—	0.45
46355	EN 10025-2	**S355K2C+N**	Standard	0.20	0.20	0.55	1.70	0.025	0.025	0.55	0.020	—	0.45

Explanations

1) The maximum value for nitrogen does not apply if the chemical composition shows a minimum aluminium content of 0.020 %.
2) Ceq is calculated by %CE (IIW) = C+Mn/6+(C+Mo+V)/5+(Ni+Cr)/15 formula.
3) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re		Rm[3]		A(%)					Impact (long)[4]	
			N/mm²				A_{80}				A_5	Temp.	KVc
			min.	min.	d : thickness, mm		d : thickness, mm						min
			d : thickness, mm										
			≤16	16<d≤40	<3	3≤d<40	1<d≤1.5	1.5<d≤2	2<d≤2.5	2.5<d≤3	3≤d≤40	°C	J
42355	EN 10025-2	**S355JRC-Düşük Si**	355	345	510-680	470-630	13	14	15	16	20	+20	27[5]
41355	EN 10025-2	**S355J0C-Düşük Si**	355	345	510-680	470-630	13	14	15	16	20	0	27[5]
43355	EN 10025-2	**S355J2C-Düşük Si**	355	345	510-680	470-630	13	14	15	16	20	-20	27[5]
40355	EN 10025-2	**S355J2C**	355	345	510 - 680	470 - 630	13	14	15	16	20	-20	27[5]
44355	EN 10025-2	**S355J2C+N**	355	345	510-680	470-630	13	14	15	16	20	-20	27[5]
40356	EN 10025-2	**S355JRC**	355	345	510-680	470-630	13	14	15	16	20	+20	27[5]
44356	EN 10025-2	**S355J2C+N-Özel**	355	345	510-680	470-630	13	14	15	16	20	-20	27[5]
40355	EN 10025-2	**S355J2C**	355	345	510 - 680	470 - 630	13	14	15	16	20	-20	27[5]
44355	EN 10025-2	**S355J2C+N**	355	345	510-680	470-630	13	14	15	16	20	-20	27[5]
40356	EN 10025-2	**S355JRC**	355	345	510-680	470-630	13	14	15	16	20	+20	27[5]

Explanations

1) Grades with N code can be normalized and/or hot formed by customers.
2) Grades with C code can be cold formed and/or cold flanged by customers.
3) Tensile tests are applied to "Transversal" test samples.
4) Impact tests are not carried out if nominal thickness is lesser than 6 mm.
5) Impact tests are carried out if it is customer's request in order.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Bending[1] (trans., ≤90°) (mrb)							
			thickness, d (mm)							
			6<d≤7	7<d≤8	8<d≤10	10<d≤12	12<d≤14	14<d≤16	16<d≤18	18<d≤20
42355	EN 10025-2	**S355JRC**	—	—	—	—	—	—	—	—
40356	EN 10025-2	**S355JRC**	-	-	-	-	-	-	-	-
41355	EN 10025-2	**S355J0C**	12	16	20	25	32	36	45	50
43355	EN 10025-2	**S355J2C**	12	16	20	25	32	36	45	50
40355	EN 10025-2	**S355J2C**	12	16	20	25	32	36	45	50
45355	EN 10025-2	**S355J2C+N**	12	16	20	25	32	36	45	50
44357	EN 10025-2	**S355J2C+N - Mod**	12	16	20	25	32	36	45	50
44355	EN 10025-2	**S355J2C+N**	12	16	20	25	32	36	45	50
44356	EN 10025-2	**S355J2C+N**	12	16	20	25	32	36	45	50
46355	EN 10025-2	**S355K2C+N**	12	16	20	25	32	36	45	50

Explanations

1) The values for bending tests are applied to 90° and acute angles.

HIGH STRENGTH NORMALISED STRUCTURAL STEEL GRADES SUITABLE FOR HOT FORMING

Standard: EN 10025-3-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Nb	V	Ti	Mo	Cr	Ni	Cu	Al	N ppm
				max	max	max	max	max	max	max	max	max	max	max	max	min	max
57355	EN 10025-3	**S355N**	Standard	0.20	0.90-1.65	0.50	0.030	0.025	0.05	0.12	0.05	0.10	0.30	0.50	0.55	0.02	150
52420	EN 10025-3	**S420N**	Standard	0.20	1.00-1.70	0.60	0.030	0.025	0.05	0.20	0.05	0.10	0.30	0.80	0.55	0.02	250
54420	EN 10025-3	**S420N**	Standard	0.20	1.00-1.70	0.60	0.030	0.025	0.05	0.20	0.05	0.10	0.30	0.80	0.55	0.02	250
52460	EN 10025-3	**S460N**	Standard	0.20	1.00-1.70	0.60	0.025	0.030	0.05	0.20	0.05	0.10	0.30	0.80	0.55	0.02	250
52462	EN 10025-3	**S460N - Mod**	Standard	0.20	1.00-1.70	0.60	0.025	0.030	0.05	0.20	0.05	0.10	0.30	0.80	0.55	0.02	250

Explanations

1) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re N/mm² min. d : thickness, mm ≤16	Re N/mm² min. d : thickness, mm 16<d≤40	Rm[1] N/mm²	A(%) A_5 d : thickness, mm	Impact (long.)[2] Temp. °C	Impact (long.)[2] KVc min. J	Bending (tran., ≤180°) thickness, d (mm)
57355	EN 10025-3	**S355N**	355	345	470-630	22	-20	40	4d
52420	EN 10025-3	**S420N**	420	400	520-680	19	-20	40	4d
54420	EN 10025-3	**S420N**	420	400	520-680	19	-20	40	4d
52460	EN 10025-3	**S460N**	460	440	540-720	17	-20	40	4d
52460	EN 10025-3	**S460N**	460	440	540-720	17	-20	40	4d

THICKNESS

Standard: EN 10025-5-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Cr	Ni	Cu	Al	N ppm
				max	max	max	max	max	max	max	max	min	max
58235	EN 10025-5	**S235J0W**	Standard	0.13	0.20-0.60	0.40	0.035	0.035	0.40-0.80	0.65	0.25-0.55	—	90
58236	EN 10025-5	**S235J2W**	Standard	0.13	0.20-0.60	0.40	0.035	0.030	0.40-0.80	0.65	0.25-0.55	—	90
58355	EN 10025-5	**S355J0W**	Standard	0.16	0.50-1.50	0.50	0.035	0.035	0.40-0.80	0.65	0.25-0.55	—	90
58356	EN 10025-5	**S355J2W**	Standard	0.16	0.50-1.50	0.50	0.030	0.030	0.40-0.80	0.65	0.25-0.55	—	90
58357	EN 10025-5	**S355J0WP**	Standard	0.12	1.00	0.75	0.06-0.15	0.035	0.30-1.25	0.65	0.25-0.55	—	90
58358	EN 10025-5	**S355J2WP**	Standard	0.12	1.00	0.75	0.06-0.15	0.030	0.30-1.25	0.65	0.25-0.55	—	90
58420	EN 10025-5	**S420J0W**	Standard	0.20	0.50-1.35	0.65	0.035	0.035	0.40-0.80	0.65	0.25-0.55	0.02	90
58421	EN 10025-5	**S420J2W**	Standard	0.20	0.50-1.35	0.65	0.030	0.030	0.40-0.80	0.65	0.25-0.55	0.02	90
58460	EN 10025-5	**S460J0W**	Standard	0.20	1.40	0.65	0.035	0.035	0.40-0.80	0.65	0.25-0.55	0.02	90
58461	EN 10025-5	**S460J2W**	Standard	0.20	1.40	0.65	0.030	0.030	0.40-0.80	0.65	0.25-0.55	0.02	90

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re N/mm² min. d : thickness, mm		Rm[1] N/mm² d : thickness, mm		A (%) A_{80} d : thickness, mm			A_5	Impact (long.)[2] Temp.	KVc min.
			≤16	16<d≤40	<3	3≤d<100	1.5<d≤2	2<d≤2.5	2.5<d≤3	3<d≤40	°C	J
58235	EN 10025-5	**S235J0W**	235	225	360-510	360-510	19	20	21	26	0	27[3]
58236	EN 10025-5	**S235J2W**	235	225	360-510	360-510	17	18	19	24	-20	27[3]
58355	EN 10025-5	**S355J0W**	355	345	510-680	470-630	16	17	18	22	0	27[3]
58356	EN 10025-5	**S355J2W**	355	345	510-680	470-630	14	15	16	20	-20	27[3]
58357	EN 10025-5	**S355J0WP**	355	345	510-680	470-630	16	17	18	22	0	27[3]
58358	EN 10025-5	**S355J2WP**	355	345	510-680	470-630	14	15	16	20	-20	27[3]
58420	EN 10025-5	**S420J0W**	420	400	520-680	500-660	15	15	15	19	0	27[3]
58421	EN 10025-5	**S420J2W**	420	400	520-680	500-660	15	15	15	19	-20	27[3]
58460	EN 10025-5	**S460J0W**	460	440	540-720	530-710	14	14	14	17	0	27[3]
58461	EN 10025-5	**S460J2W**	460	440	540-720	530-710	14	14	14	17	-20	27[3]

Explanations

1) Tensile tests are applied to "Transversal" test samples.
2) Impact tests are applied to "Longitudinal" test samples.
3) Impact tests are carried out if it is customer's request in order.

WHEEL STEEL GRADES SUITABLE FOR COLD FORMING, BENDING AND SPINNING

Standard: EN 10025-2-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Cu	Cu+Cr+Ni	Al	N	Ca
				max	max	max	max	max	max	max	min	max	ppm
82235	EN 10025-2	**S235JRC**	Standard	0.17	0.70	0.15	0.02	0.01	"1"	0.30	0.02-0.045	0.001	—
81235	EN 10025-2	**S235J2C+N**	Standard	0.14	0.70	0.1	0.02	0.015	"1"	0.30	0.02-0.07	0.009	—
82280	EN 10025-2	**S275JRC**	Standard	0.10	0.80	0.05	0.02	0.015	"1"	0.30	0.015-0.07	0.009	—
82290	EN 10025-2	**S275JRC**	Standard	0.18	1.25	0.1	0.020	0.015	"1"	0.30	0.02-0.07	0.009	—
82330[2]	EN 10025-2	**S355JRC**	Standard	0.15-0.18	1.30-1.40	0.1	0.02	0.01	0.15	—	0.02-0.06	0.001	20-50
82355	EN 10025-2	**S355J2C+N**	Standard	0.24	1.60	0.55	0.035	0.035	0.55	—	—	0.012	—
81330	EN 10025-2	**S355JRC**	Standard	0.19	1.60	0.3	0.025	0.02	"2"	0.30	0.02-0.07	0.009	—
82331	EN 10025-2	**S355J2**	Standard	0.20	1.60	0.55	0.025	0.025	0.55	—	0.020	—	20
80235	EN 10025-2	**S235JR**	Standard	0.06-0.16	0.40-0.90	0.015-0.1	0.025	0.015	—	—	0.020-0.06	—	—
80236	EN 10025-2	**S235JR**	Standard	0.06-0.16	0.40-0.90	0.015-0.1	0.025	0.015	—	—	0.020-0.06	—	—
80280	EN 10025-2	**S275J0**	Standard	0.21	1.60	—	0.05	0.05	—	—	—	—	—
80290	EN 10025-2	**S275J2+N**	Standard	0.21	1.60	—	0.05	0.05	—	—	—	—	—
80355	EN 10025-2	**S355J0**	Standard	0.23	1.70	0.6	0.05	0.05	—	—	—	—	—

Explanations

1) Ceq is calculated by %CE (IIW) = C+Mn/6+(C+Mo+V)/5+(Ni+Cr)/15 formula.
2) Cu+Cr+Ni is permitted up to a maximum 0.3 %.
3) Cr max. 0.05 %, Mo max. 0.015 %, V max. 0.005 %, Ni max. 0.1 %, Nb max. 0.005 %.
4) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm[1]	A(%)	Katlama	Impact (long.)[2]	
			N/mm²		A_5	Ø	Temp.	KVc
			min.	min.	min.	d: thickness	°C	min.
82235	EN 10025-2	**S235JRC**	235	360-440	30	0.5d	+20	27[3]
81235	EN 10025-2	**S235J2C+N**	235-320	350-430	35	0.5d	-20	27[3]
82280	EN 10025-2	**S275JRC**	280-350	390-460	28	0.5d	+20	27[3]
82290	EN 10025-2	**S275JRC**	280-420	420-500	29	0.5d	+20	27[3]
82330	EN 10025-2	**S355JRC**	330-450	480-590	25	2.0d	+20	27[3]
82355	EN 10025-2	**S355J2C+N**	330-540	480-600	24	2.0d	-20	27[3]
81330	EN 10025-2	**S355JRC**	330-540	480-600	24	2.0d	+20	27[3]
82331	EN 10025-2	**S355J2**	330-540	480-600	24	2.0d	+20	27[3]
80235	EN 10025-2	**S235JR**	230	370-450	30	0.5d	-	-
80236	EN 10025-2	**S235JR**	230	370-450	30	0.5d	-	-
80280	EN 10025-2	**S275J0**	275	410-560	24	-	0	27
80290	EN 10025-2	**S275J2+N**	275	410-560	24	-	0	27
80355	EN 10025-2	**S355J0**	355	470-630	24	-	0	27

Explanations

1) Tensile tests are applied to "Transversal" test samples.
2) Impact tests are not carried out if nominal thickness is lesser than 6 mm.
3) Impact tests are carried out if it is customer's request in order.

WHEEL STEEL GRADES SUITABLE FOR COLD FORMING, BENDING AND SPINNING

Standard: EN 10111-2008

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Cu	Al
				max	max	max	max	max	max	min
81222	EN 10111	DD 11	Standard	0.10	0.45	-	0.035	0.035	—	—
80122	EN 10111	DD 11	Standard	0.14	0.65	-	0.050	0.050	—	—
80222	EN 10111	DD 11	Standard	0.14	0.65	-	0.050	0.050	—	—

Explanations

1) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm	A (%)
			N/mm²		A_5
			min.	min.	min.
81222	EN 10111	DD 11	215	300-440	35
80122	EN 10111	DD 11	215	300-440	35
80222	EN 10111	DD 11	340	440	28

HIGH STRENGTH WHEEL STEEL GRADES SUITABLE FOR COLD FORMING AND SPINNING

Standard : EN 10149-2-2013

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Al	Nb (1)	V(1)	Ti (1)
				max	max	max	max	max	min	max	max	max
83355	EN 10149-2	S355MC	Standard	0.12	1.50	0.50	0.025	0.020	0.015	0.09	0.20	0.15
84355	EN 10149-2	S355MC	Standard	0.12	1.50	0.50	0.025	0.010	0.020	0.09	0.20	0.15
83420	EN 10149-2	S420MC	Standard	0.12	1.60	0.50	0.025	0.015	0.015	0.09	0.20	0.15
83460	EN 10149-2	S460MC	Standard	0.12	1.60	0.50	0.025	0.015	0.015	0.09	0.20	0.15

Explanations

1) Nb+V+Ti = % 0.22 max.

2) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re(1)	Rm(1)	A(%)		Impact (long.)(2)		Bending
			N/mm²	N/mm²	A_{80}	A_5	Temp.	KVc	(en.;180°)
					d<3	d≤T		min	mdb
			min.	min.	min.	min.	°C	J	(d=thickness)
83355	EN 10149-2	S355MC	355	430-550	19	23	-20	40	0.5d
84355	EN 10149-2	S355MC	340-430	470-560	25	-	-40	27	0.5d
83420	EN 10149-2	S420MC	420	480-620	16	19	-20	40	0.5d
83460	EN 10149-2	S460MC	450-550	550-650	-	22	-	-	1d

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.

2) Impact tests are carried out if it is customer's request in order. Impact tests are not carried out if nominal thickness is lesser than 6 mm.

3) Bending test values are applied to "Transversal" test samples.

HIGH STRENGTH DUAL PHASE STEEL GRADES SUITABLE FOR COLD FORMING

Standard : EN 10338-2015

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Al	Mo	Nb	N ppm	Cu	Cr
				max.	max.	max.	max.	max.	max.	max.	max.	max.	max.	max.
83500	EN 10338	**HCT500X (DP 500)**	Standard	0.06-0.08	1.10-1.20	0.20-0.30	0.020	0.005	0.030-0.060	0.05	0.005	100	0.15-0.20	0.10-0.20

Explanations

1) The values are applied to strips with thickness T≤6 mm

HIGH STRENGTH DUAL PHASE WHEEL STEEL SUITABLE FOR COLD FORMING AND SPINNING

Standard : EN 10338-2015

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Al	Mo+Cr	V	Nb+Ti	B ppm	Cu	Cr
				max.	max.	max.	max.	max.	min.	max.	max.	max.	max.	max.	max.
83600	EN 10338	**HDT580X (DP 600)**	Standard	0.17	2.20	0.80	0.080	0.015	2.0	1.00	0.20	0.15	50	-	-
83601	EN 10338	**HDT580X (DP 600)**	Standard	0.17	2.20	0.80	0.080	0.015	2.0	1.00	0.20	0.15	50	-	-

Explanations

1) The values are applied to strips with thickness T≤6 mm

2) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re(1)	Rm(1)	A(%)	Strain hardening exponent
			N/mm²		A_{80}	n
			min.	min.	min.	min.
83600	EN 10338	**HDT580X (DP 600)**	330-480	580	19	0.13
83601	EN 10338	**HDT580X (DP 600)**	330-480	580	19	0.13

Explanations

1) Tensile tests are applied to "Transversal" test samples.

HOT ROLLED HIGH STRENGTH DUAL PHASE STEEL SUITABLE FOR COLD FORMING

Standard : EN 10338-2015

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Al	Mo+Cr	V	Nb+Ti	B ppm	Cu	Cr
				max.	max.	max.	max.	max.	min.	max.	max.	max.	max.	max.	max.
83610	EN 10338	**HCT600X (DP 600)**	Standard	0.07-0.01	1.30-1.45	0.20-0.30	0.020	0.008	0.025-0.06	0.75	0.01	0.020	100	0.15-0.20	0.50-0.70
83780	EN 10338	**HCT780X (DP 780)**	Standard	0.09-0.11	1.70-1.90	0.20-0.30	0.020	0.005	0.03-0.06	-	-	-	5	0.10-0.20	0.20-0.30

Explanations

1) The values are applied to strips with thickness T≤6 mm

BOILER STEEL GRADES

Standard: EN 10028-2-2017

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Si	Mn	P	S	Al	Nb	N	Cr[1]	Cu[1]	Mo[1]	Ni[1]
				max	max	max	max	max	min	max	max	max	max	max	max
86235[2]	EN 10028-2	**P235GH**	Standard	0.16	0.35	0.60 - 1.20	0.025	0.010	0.020	0.030	0.012	0.30	0.30	0.08	0.30
86265[2]	EN 10028-2	**P265GH**	Standard	0.20	0.40	0.80 - 1.20	0.025	0.010	0.020	0.030	0.012	0.30	0.30	0.08	0.30
86295[2]	EN 10028-2	**P295GH**	Standard	0.08 - 0.20	0.40	0.90 - 1.50	0.025	0.010	0.020	0.030	0.012	0.30	0.30	0.08	0.30
86355	EN 10028-2	**P355GH**	Standard	0.10 - 0.22	0.60	1.10 - 1.70	0.025	0.010	0.020	0.040	0.012	0.30	0.30	0.08	0.30
88355	EN 10028-2	**P355GH+N**	Standard	0.10 - 0.22	0.60	1.10 - 1.70	0.025	0.015	0.020	0.040	0.012	0.30	0.30	0.08	0.30
86163	EN 10028-2	**16Mo3**	Standard	0.12 - 0.20	0.35	0.40 - 0.90	0.025	0.010	-	0.020	0.012	0.30	0.30	0.25-0.35	0.30

Explanations

1) Cr+Cu+Mo+Ni≤ % 0.70

2) Mn content can be decreased as 0.20 % if the thickness is under 6 mm.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re (min) N/mm²		Rm[1] N/mm²	A_5 (%) min	Impact[2] (tran.)		Rp 0.2[1] (min) T: 300°C N/mm² (kg / mm²)	
							Temp.	KVc (min)		
			d ≤ 16	16< d ≤ 40			°C		d ≤ 16	16< d ≤ 40
86235	EN 10028-2	**P235GH**	235	225	360 - 480	24	-20	27	153	147
86265	EN 10028-2	**P265GH**	265	255	410 - 530	22	-20	27	173	166
86295	EN 10028-2	**P295GH**	295	290	460 - 580	22	-20	27	192	189
86355	EN 10028-2	**P355GH**	355	345	510 - 650	20	-20	27	232	225
88355	EN 10028-2	**P355GH+N**	355	345	510 - 650	20	-20	27	232	225
86163	EN 10028-2	**16Mo3**	275	270	440 - 590	22	+20	31	175	172

Explanations

1) Tensile tests are applied to "Transversal" test samples.

2) Impact tests are not carried out if nominal thickness is lesser than 6 mm.

BOILER STEEL GRADES

Standard: EN 10028-3-2017

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Si	Mn	P	S	Al	Cr	Ni	Cu	Mo	V	Ti	Nb
				max	max	max	max	max	min	max	max	max	max	max	max	max
87355	EN 10028-3	**P355NL1**	Standard	0.18	0.50	1.10-1.70	0.025	0.008	0.02	0.30	0.50	0.30	0.08	0.10	0.03	0.05
87460	EN 10028-3	**P460NL2**	Standard	0.20	0.60	1.10-1.70	0.020	0.005	0.02	0.30	0.80	0.70	0.10	0.20	0.03	0.05

Explanations

2) Mn content could be 0.60 % if the thickness is less than 6 mm.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re (min.) N/mm²		Rm[1] N/mm²	A_5 (%) min	Impact[2] (tran.)		Rp 0.02[1] (min.) T: 300°C N/mm² (kg / mm²)
							Temp.	KVc (min)	
			d ≤ 16	16< d ≤ 40			°C	J	d ≤ 16
87355	EN 10028-3	**P355NL1**	355	345	490-630	22	-40	27	232
87460	EN 10028-3	**P460NL2**	460	445	570-730	16	-40	30	300

STEEL GRADES SUITABLE TO USE UNDER LOW PRESSURE

Standard : EN 10207-2017

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Si	Mn	P	S	Al
				max	max	max	max	max	min
86275	EN 10207	P275SL	Standard	0.16	0.40	0.50-1.50	0.025	0.020	0.02

Explanations
1) If the chemical composition includes Nb, V, Ti, %Al min. value does not valid.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re(1)			Rm(1)	A (%)		Impact (long.)2	
			N/mm²			N/mm²			Temp.	KVc
							l	t		min
			min.			min.	min.	min.	°C	J
			d ≤ 16	16< d ≤ 40	40< d ≤ 60					
86275	EN 10207	P275SL	275	265	255	390-510	17	18	-50	28

BOILER PIPE STEEL GRADES

Standard : EN 10217-2-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Si	Mn	P	S	Al	Cr(1)	Cu(1)	Mo(1)	Nb(1)	V	Ti
				max	max	max	max	max	min	max	max	max	max	max	max
86435	EN 10217-2	P235GH	Standard	0.16	0.35	1.20	0.025	0.020	0.020	0.30	0.30	0.08	0.010	0.020	0.030

Explanations
1) Cr+Cu+Mo+Ni≤ % 0.70

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re(1)	Rm(1)	A (%)		Impact (long.)2		Impact (tran.)2	
			N/mm²	N/mm²			Temp.	KVc	Temp.	KVc
					l	t		min		min
			min.	min.	min.	min.	°C	J	°C	J
86435	EN 10217-2	P235GH	235	360-500	25	23	0	40	0	27

Explanations
1) Tensile tests are applied to "Transversal" test samples.
2) Impact test values are valid upto ≤16 mm in thickness. Impact tests can be carried out in transversal and longitudinal directions of coils.
3) l: longitudinal, t: transversal

BOILER PIPE STEEL GRADES

Standard : EN 10217-3-2019

Chemical Composition (%)

Colakoglu Quality ID	Std.	Quality		C	Si	Mn	P	S	Al	Cr	Cu	Mo	Nb	V	Ti
				max	max	max	max	max	min	max	max	max	max	max	max
86475	EN 10217-3	**P275NL1**	Standard	0.16	0.40	0.50-1.50	0.025	0.020	0.02	0.30	0.30	0.08	0.05	0.05	0.03

Mechanical Properties

Colakoglu Quality ID	Std.	Quality	Re[1]	Rm[1]	A (%)		Impact (long.)[2]		Impact (tran.)[2]	
			N/mm²	N/mm²			Temp.	KVc	Temp.	KVc
					l	t		min.		min.
			min.	min.	min.	min.	°C	J	°C	J
86475	EN 10217-3	**P275NL1**	275	390-530	24	22	-40	40	-40	27

LPG TUBE STEEL GRADES

Standard : EN 10120-2017

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Si	Mn	P	S	Al	N[1]	Nb	Ti
				max	max	min	max	max	min	max	max	max
85245	EN 10120	**P245NB**	Standard	0.16	0.25	0.30	0.025	0.015	0.020	0.009	0.050	0.03
85265	EN 10120	**P265NB**	Standard	0.19	0.25	0.40	0.025	0.015	0.020	0.009	0.050	0.03
85310	EN 10120	**P310NB**	Standard	0.20	0.50	0.70	0.025	0.015	0.020	0.009	0.050	0.03
85355	EN 10120	**P355NB**	Standard	0.20	0.50	0.70	0.025	0.015	0.020	0.009	0.050	0.03

Explanations

1) N content can be % 0.012 if (Al/N) ≥ 2.2 or the steel includes Nb and Ti additions.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm[1]	A(%)	
			N/mm²	N/mm²	A_{80} (min)	A_5 (min)
			(min)		d<3	3≤ d ≤< 5
85245	EN 10120	**P245NB**	245	360 - 450	26	34
85265	EN 10120	**P265NB**	265	410 - 500	24	32
85310	EN 10120	**P310NB**	310	460 - 550	21	28
85355	EN 10120	**P355NB**	355	510 - 620	19	24

Explanations

1) Tensile tests are applied to "Transversal" test samples.

GENERAL STRUCTURAL STEEL GRADES SUITABLE FOR HEAT TREATMENT

Standard : EN ISO 683-1-2018

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Cr	Ni	Mo	Cr+Mo+Ni
				max	max	max	max	max	max	max	max	max
98628	EN ISO 683-1	**28Mn6**	Standard	0.25-0.32	1.30-1.65	0.40	0.030	0.010	0.40	0.40	0.10	0.63
98035	EN ISO 683-1	**C35E**	Standard	0.32-0.39	0.5-0.8	0.40	0.030	0.030	0.40	0.40	0.10	0.63
98135	EN ISO 683-1	**C35E**	Standard	0.32-0.39	0.5-0.8	0.40	0.030	0.030	0.40	0.40	0.10	0.63
98145	EN ISO 683-1	**C45E**	Standard	0.42-0.50	0.5-0.8	0.40	0.030	0.030	0.40	0.40	0.10	0.63
98060	EN ISO 683-1	**C60E**	Standard	0.57-0.65	0.6-0.9	0.40	0.030	0.030	0.40	0.40	0.10	0.63
98160	EN ISO 683-1	**C60E**	Standard	0.57-0.65	0.6-0.9	0.40	0.030	0.030	0.40	0.40	0.10	0.63
98260	EN ISO 683-1	**C60E**	Standard	0.57-0.65	0.6-0.9	0.40	0.030	0.030	0.20-0.40	0.40	0.10	0.63

Explanations

1) There is no mechanical test guarantee for heat treatment steel grades

2) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

GENERAL STRUCTURAL STEEL GRADES SUITABLE FOR HEAT TREATMENT

Standard : EN ISO 683-2-2018

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	B	Cr	V
				max	max	max	max	max	ppm	max	max
98430	EN ISO 683-2	**30MnB5**	Standard	0.27-0.33	1.15-1.45	0.40	0.035	0.040	8-50	-	-
98530	EN ISO 683-2	**30MnB5**	Standard	0.27-0.33	1.15-1.45	0.40	0.035	0.040	8-50	-	-
98534	EN ISO 683-2	**34MnB5**	Standard	0.33-0.37	1.15-1.45	0.40	0.035	0.040	8-50	-	-
98527	EN ISO 683-2	**27MnCrB5-2**	Standard	0.24-0.30	1.10-1.40	0.40	0.035	0.040	8-50	0.30-0.60	-
98526	EN ISO 683-2	**26MnB5**	Standard	0.27-0.33	1.15-1.45	0.40	0.035	0.040	8-50	-	-
98522	EN ISO 683-2	**22MnB5**	Standard	0.18-0.23	1.15-1.45	0.40	0.035	0.040	8-50	-	-
98630	EN ISO 683-2	**30MnB5**	Standard	0.27-0.33	1.15-1.45	0.40	0.035	0.040	8-50	-	-
98551	EN ISO 683-2	**51CrV4**	Standard	0.47-0.55	0.70-1.10	0.40	0.025	0.025	-	0.90-1.20	0.10-0.25

Explanations

1) There is no mechanical test guarantee for heat treatment steel grades.

HIGH STRENGTH STEEL GRADES SUITABLE FOR COLD FORMING AND BENDING

Standard: EN 10149-2-2013

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Al	V[2]	Ti[2]	Nb[2]	Mo	B
				max	max	max	max	max	min	max	max	max	max	ppm
36315	EN 10149-2	**S315MC**	Standard	0.12	1.30	0.50	0.025	0.020	0.015	0.20	0.15	0.09	-	-
36355	EN 10149-2	**S355MC**	Standard	0.12	1.50	0.50	0.025	0.020	0.015	0.20	0.15	0.09	-	-
36356	EN 10149-2	**S355MC**	Standard	0.12	1.50	0.50	0.025	0.020	0.015	0.20	0.15	0.09	-	-
36420	EN 10149-2	**S420MC**	Standard	0.12	1.60	0.50	0.025	0.015	0.015	0.20	0.15	0.09	-	-
36421	EN 10149-2	**S420MC**	Standard	0.12	1.60	0.50	0.025	0.015	0.015	0.20	0.15	0.09	-	-
36460	EN 10149-2	**S460MC**	Standard	0.12	1.60	0.50	0.025	0.015	0.015	0.20	0.15	0.09	-	-
36461	EN 10149-2	**S460MC**	Standard	0.12	1.60	0.50	0.025	0.015	0.015	0.20	0.15	0.09	-	-
36500	EN 10149-2	**S500MC**	Standard	0.12	1.70	0.50	0.025	0.015	0.015	0.20	0.15	0.09	-	-
36501	EN 10149-2	**S500MC**	Standard	0.12	1.70	0.50	0.025	0.015	0.015	0.20	0.15	0.09	-	-
36550	EN 10149-2	**S550MC**	Standard	0.12	1.80	0.50	0.025	0.015	0.015	0.20	0.15	0.09	-	-
36551	EN 10149-2	**S550MC**	Standard	0.12	1.80	0.50	0.025	0.015	0.015	0.20	0.15	0.09	-	-
36600	EN 10149-2	**S600MC**	Standard	0.12	1.90	0.50	0.025	0.015	0.015	0.20	0.15	0.09	0.5	50
36650	EN 10149-2	**S650MC**	Standard	0.12	2.00	0.60	0.025	0.015	0.015	0.20	0.22	0.09	0.5	50
36700	EN 10149-2	**S700MC**	Standard	0.12	2.10	0.60	0.025	0.015	0.015	0.20	0.22	0.09	0.5	50
36900	EN 10149-2	**S900MC**	Standard	0.20	2.20	0.60	0.025	0.015	0.015	0.20	0.22	0.09	0.5	50

Explanations

1) All grades are produced by thermo mechanical rolling method.
2) Nb+Ti+V≤ % 0,22
3) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm[1]	A(%)		Impact[2]	Bending
					d<3	d≥ 3	KVc (long.)	tran.,180°
			N/mm²		A_{80}	A_5	Temp. -20°C	mdb
			min	min	min	min	min	d: thickness
36315	EN 10149-2	**S315MC**	315	390 - 510	20	24	40 J	0
36355	EN 10149-2	**S355MC**	355	430 - 550	19	23	40 J	0.5 d
36356	EN 10149-2	**S355MC**	355	430 - 550	19	23	40 J	0.5 d
36420	EN 10149-2	**S420MC**	420	480 - 620	16	19	40 J	0.5 d
36421	EN 10149-2	**S420MC**	420	480 - 620	16	19	40 J	0.5 d
36460	EN 10149-2	**S460MC**	460	520 - 670	14	17	40 J	1 d
36461	EN 10149-2	**S460MC**	460	520 - 670	14	17	40 J	1 d
36500	EN 10149-2	**S500MC**	500	550 - 700	12	14	40 J	1 d
36501	EN 10149-2	**S500MC**	500	550 - 700	12	14	40 J	1 d
36550	EN 10149-2	**S550MC**	550	600 - 760	12	14	40 J	1.5 d
36551	EN 10149-2	**S550MC**	550	600 - 760	12	14	40 J	1.5 d
36600	EN 10149-2	**S600MC**	600	650-820	11	13	40 J	1.5 d
36650	EN 10149-2	**S650MC**	650	700-880	10	12	40 J	2d
36700	EN 10149-2	**S700MC**	700	750-950	10	12	40 J	2d
36900	EN 10149-2	**S900MC**	900	930-1200	7	8	40 J	8d

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.
2) Impact tests are not carried out if nominal thickness is lesser than 6 mm.

MICRO ALLOYED STEEL GRADES SUITABLE FOR COLD FORMING AND GALVANIZING

Standard : EN 10149-2-2013

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Al	V[2]	Ti[2]	Nb[2]
				max	max	max	max	max	min	max	max	max
37315	EN 10149-2	**S315MC**	Standard	0.12	1.30	0 .50	0.025	0.020	0.015	0.20	0.15	0.09
37355	EN 10149-2	**S355MC**	Standard	0.12	1.50	0.50	0.025	0.020	0.015	0.20	0.15	0.09
37352	EN 10149-2	**S355MC**	Standard	0.12	1.50	0.50	0.025	0.020	0.015	0.20	0.15	0.09
37420	EN 10149-2	**S420MC**	Standard	0.12	1.60	0.50	0.025	0.015	0.015	0.20	0.15	0.09
37421	EN 10149-2	**S420MC**	Standard	0.12	1.60	0.50	0.025	0.015	0.015	0.20	0.15	0.09
37422	EN 10149-2	**S420MC**	Standard	0.12	1.60	0.50	0.025	0.015	0.015	0.20	0.15	0.09
37460	EN 10149-2	**S460MC**	Standard	0.12	1.60	0.50	0.025	0.015	0.015	0.20	0.15	0.09
37462	EN 10149-2	**S460MC**	Standard	0.12	1.60	0.50	0.025	0.015	0.015	0.20	0.15	0.09

Explanations

1) All grades are produced by thermo mechanical rolling method.

2) Nb+Ti+V≤ % 0,22

3) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm[1]	A(%)		Impact[2]	Bending
					d<3	d≥ 3	KVc (long.)	tran.,180°
			N/mm²		A_{80}	A_5	Temp. =20°C	mdb
			min	min	min	min	min	d: thickness
37315	EN 10149-2	**S315MC**	315	390 - 510	20	24	40 J	0
37355	EN 10149-2	**S355MC**	355	430 - 550	19	23	40 J	0.5 d
37352	EN 10149-2	**S355MC**	355	430 - 550	19	23	40 J	0.5 d
37420	EN 10149-2	**S420MC**	420	480 - 620	16	19	40 J	0.5 d
37421	EN 10149-2	**S420MC**	420	480 - 620	16	19	40 J	0.5 d
37422	EN 10149-2	**S420MC**	420	480 - 620	16	19	40 J	0.5 d
37460	EN 10149-2	**S460MC**	460	520 - 670	14	17	40 J	1 d
37462	EN 10149-2	**S460MC**	460	520 - 670	14	17	40 J	1 d

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.

2) Impact tests are not carried out if nominal thickness is lesser than 6 mm.

NORMALISE ROLLED STEEL GRADES SUITABLE FOR COLD FORMING

Standard: BS 10149-3-2013

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	V	Ti	Al	Nb
				max.	max.	max.	max.	max.	max.	max.	min.	max.
38280	BS 10149-3	S280NC	Standard	0.16	1.20	0.50	0.025	0.020	0.10	0.15	0.015	0.09

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re		Rm	A(%)		Bending
			N/mm²			d<3	d≥ 3	tran.,180°
						A_{80}	A_5	mdb
			min.	min.	max.	min.	min.	d: thickness
38280	BS 10149-3	S280NC	280	370	490	24	30	0

PRESSURE PIPE STEEL GRADES

Standard:EN 10217-1-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Cr	Ni	Al	Cu	Mo
				max.	max.	max.	max.	max.	max.	max.	min.	max.	max.
94235	EN 10217-1	P235TR1	Standard	0.16	1.20	0.35	0.025	0.020	0.30	0.30	-	0.30	0.08
94236	EN 10217-1	P235TR2	Standard	0.16	1.20	0.35	0.025	0.020	0.30	0.30	0.02	0.30	0.08
94035	EN 10217-1	P235TR1	Standard	0.16	1.20	0.35	0.025	0.020	0.30	0.30	-	0.30	0.08
94036	EN 10217-1	P235TR2	Standard	0.16	1.20	0.35	0.025	0.020	0.30	0.30	0.02	0.30	0.08

Explanations

1) Cu+Cr+Mo+Ni = 0.70 max

2) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re(1)		Rm(1)	A(%)		Impact (long.-tran.)² min					
			N/mm²					Sıc.	KVc	Temp.	KVc	Temp.	KVc
			d≤16	16<d≤40		l	t		l		l		t
			min.	min.	min.	min.	min.	°C	J	°C	J	°C	J
94235	EN 10217-1	P235TR1	235	225	360-500	25	23	0	-	-10	-	0	-
94236	EN 10217-1	P235TR2	235	225	360-500	25	23	0	40	-10	28	0	27
94035	EN 10217-1	P235TR1	235	225	360-500	25	23	0	-	-10	-	0	-
94036	EN 10217-1	P235TR2	235	225	360-500	25	23	0	40	-10	28	0	27

Explanations

1) Tensile tests are applied to "Transversal" test samples.

2) Impact tests are applied to "Transversal" and "Longitudinal" test samples.

UNALLOYED STRUCTURAL STEEL GRADES SUATABLE FOR HOT FORMING (SRM PIPE PRODUCTION), COLD ROLLING, NORMALIZING AND GALVANIZING

Standard: EN 10025-2-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C (max)		Mn	P	S	Cu	Al[1]	N[1]	Ceq[2]
				d≤16	16<d≤40	max	max	max	max	min	max	max
41235	EN 10025-2	**S235JR+N**	Standard	0.17	0.17	1.4	0.035	0.035	0.55	—	0.012	0.35
42235	EN 10025-2	**S235J2+N**	Standard	0.17	0.17	1.4	0.025	0.025	0.55	0.020	—	0.35
41275	EN 10025-2	**S275JR+N**	Standard	0.21	0.21	1.5	0.035	0.035	0.55	—	0.012	0.40
42275	EN 10025-2	**S275J2+N**	Standard	0.18	0.18	1.5	0.025	0.025	0.55	—	0.012	0.40

Explanations

1) The maximum value for nitrogen does not apply if the chemical composition shows a minimum aluminium content of 0.020 %.
2) Ceq is calculated by %CE (IIW) = C+Mn/6+(C+Mo+V)/5+(Ni+Cr)/15 formula.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re		Rm[2]		A(%), min.					Impact (long)[3]	
			N/mm²				A_{80}				A_5	Temp.	KVc
			min.	min.	d : thickness, mm		d : thickness, mm						min.
			d : thickness, mm										
			≤16	16<d≤40	<3	3≤d<40	1<d≤1.5	1.5<d≤2	2<d≤2.5	2.5<d≤3	3≤d≤40	°C	J
41235	EN 10025-2	**S235JR+N**[1]	235	225	360 - 510	360 - 510	16	17	18	19	24	+20	27[4]
42235	EN 10025-2	**S235J2+N**[1]	235	225	360 - 510	360 - 510	16	17	18	19	24	-20	27
41275	EN 10025-2	**S275JR+N**[1]	275	265	430-580	410-560	14	15	16	17	21	+20	27[4]
42275	EN 10025-2	**S275J2+N**[1]	275	265	430-580	410-560	14	15	16	17	21	-20	27

Explanations

1) Grades with N code can be normalized and/or hot formed by customers.
2) Tensile tests are applied to "Transversal" test samples.
3) Impact tests are not carried out if nominal thickness is lesser than 6 mm.
4) Impact tests are carried out if it is customer's request in order.

UNALLOYED STRAP STEEL GRADES FOR COLD ROLLING AND GALVANIZING

Standard: EN 10025-2-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C (max)		Mn	Si	P	S	Cu	Al[1]	N[1]	Ceq[2]
				d≤16	16<d≤40	max	max	max	max	max	min	max	max
51238	EN 10025-2	**S235JR**	Standard	0.17	0.17	1.4	—	0.035	0.035	0.55	—	0.012	0.35
54238	EN 10025-2	**S235JR**	Standard	0.21	0.21	1.5	—	0.035	0.035	0.55	—	0.012	0.35

Explanations

1) The maximum value for nitrogen does not apply if the chemical composition shows a minimum aluminium content of 0.020 %.
2) Ceq is calculated by %CE (IIW) = C+Mn/6+(C+Mo+V)/5+(Ni+Cr)/15 formula.
3) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re		Rm[1]		A(%), min					Impact (long)[2]	
			N/mm²				A_{80}				A_5	Temp.	KVc
			min.	min.	d : thickness, mm		d : thickness, mm						min
			d : thickness, mm										
			≤16	16<d≤40	<3	3≤d<40	1<d≤1.5	1.5<d≤2	2<d≤2.5	2.5<d≤3	3≤d≤40	°C	J
51238	EN 10025-2	**S235JR**	235	225	360 - 510	360 - 510	16	17	18	19	24	+20	27(3)
54238	EN 10025-2	**S235JR**	235	**225**	360 - 510	360 - 510	16	17	18	19	24	+20	27(3)

Explanations

1) Tensile tests are applied to "Transversal" test samples.
2) Impact tests are not carried out if nominal thickness is lesser than 6 mm.
3) Impact tests are carried out if it is customer's request in order.

STRUCTURAL STEEL GRADES FOR SHIP BUILDING

Standard: ABS-Part 2-2021

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Si	Mn	P	S
				max	max	max	max	max
57701	ABS-Part 2	ABS Grade A	Standard	0.21	0.50	2.5XC	0.035	0.035
57702	ABS-Part 2	ABS Grade B	Standard	0.21	0.35	0.60	0.035	0.035

Explanations

1) C+(Mn/6) value should be max. %0.40.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re(min)	Rm(1)	A_5 (%)	Impact(2) (tran.)	
						Temp.	KVc (min)
			N/mm²		min.	° C	J
57701	ABS-2	ABS Grade A	235	400-520	22	20	-
57702	ABS-2	ABS Grade B	235	400-520	22	0	27

UNALLOYED GENERAL STRUCTURAL STEEL

Standard :JIS G 3101-2024

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S
				max	max		max	max
93400	JIS G 3101	SS400	Standard	-	-	-	0.050	0.050

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re (1)		Rm(1)	A (%)			Bending
			N/mm²		N/mm²	(d=thickness)			(long.;180°)
			≤16	16<d≤40		d≤5	5<d≤16	16<d≤50	(d=thickness)
			min.	min.	min.	min.	min.	min.	mrb
93400	JIS G 3101	SS400	245	235	400-510	21	17	21	1.5d

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.

CHROME ADDED GENERAL STRUCTURAL STEEL GRADES

Standard : JIS G 3101-2024

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S
				max	max		max	max
93430	JIS G 3101	SS400	Standard	-	-	-	0.050	0.050

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re [1] N/mm²		Rm[1] N/mm²	A (%) (d=thickness)			Bending (long.;180°)
			≤16	16<d≤40		d≤5	5<d≤16	16<d≤50	(d=thickness)
			min.	min.	min.	min.	min.	min.	mrb
93430	JIS G 3101	SS400	245	235	400-510	21	17	21	1.5d

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.

BORON ADDED GENERAL STRUCTURAL STEEL GRADES

Standard : JIS G 3101-2024

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	B
				max	max		max	max	ppm
93420	JIS G 3101	SS400	Standard	-	-	-	0.050	0.050	20-50

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re[1] N/mm²		Rm[1] N/mm²	A (%) (d=thickness)			Bending (long.;180°)
			≤16	16<d≤40		d≤5	5<d≤16	16<d≤50	(d=thickness)
			min.	min.	min.	min.	min.	min.	mrb
93420	JIS G 3101	SS400	245	235	400-510	21	17	21	1.5d

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.

HOT ROLLED LOW CARBON COMMERCIAL QUALITY STEEL GRADES SUITABLE FOR COLD FORMING

Standard : JIS G 3131-2018

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S
				max	max		max	max
93111	JIS G 3131	SPHC	Standard	0.15	0.60	-	0.050	0.050

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Rm(1)	A (%)						Bending
			N/mm²	(d=kalınlık)						(long.;180°) (mrb)
				1.2≤d<1,6	1.6≤d<2.0	2.0≤d<2.5	2.5≤d<3.2	3.2≤d<4.0	4.0≤d	(d=thickness 3.2≤d)
			min.	min.	min.	min.	min.	min.	min.	
93111	JIS G 3131	SPHC	270	27	29	29	29	31	31	0.5d

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.

LOW CARBON STEEL GRADES WITH BORON SUITABLE FOR COLD FORMING

Standard :JIS G 3131-2018

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	B
				max	max		max	max	ppm
93211	JIS G 3131	SPHC	Standard	0.15	0.60	-	0.050	0.050	20-50

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Rm(1)	A (%)						Bending
			N/mm²	(d=thickness)						(long.;180°) (mrb)
				1.2≤d<1,6	1.6≤d<2.0	2.0≤d<2.5	2.5≤d<3.2	3.2≤d<4.0	4.0≤d	(d=thickness 3.2≤d)
			min.	min.	min.	min.	min.	min.	min.	
93211	JIS G 3131	SPHC	270	27	29	29	29	31	31	0.5d

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.

HOT ROLLED LOW CARBON PIPE AND PROFILE STEEL GRADES SUITABLE FOR COLD FORMING AND GALVANIZING

Standard : JIS G 3132-2018

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S
				max	max	max	max	max
93270	JIS G 3132	SPHT-1	Standard	0.10	0.50	0.040	0.040	0.040
93340	JIS G 3132	SPHT-2	Standard	0.18	0.60	0.35	0.040	0.040

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Rm[1]	A (%)				Bending	
			N/mm²	(d=thickness)				(long.;180°) (mrb)	
				1.2≤d<1,6	1.6≤d<3.0	3.0≤d<6.0	6.0≤d≤13	(d=thickness)	
			min.	min.	min.	min.	min.	3.0≤d	3.0<d≤13
93270	JIS G 3132	SPHT-1	270	30	32	35	37	-	0.5d
93340	JIS G 3132	SPHT-2	340	25	27	30	32	1d	1.5d

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.

ATMOSPHERE CORROSION RESISTANT STEEL GRADES

Standard: JIS G 3125-2021

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Si	Mn[1]	P	S	Cu	Cr	Ni
				max		max		max			max
93125	JIS G 3125	SPA - H	Standard	0,12	0.20 - 0.75	0,60	0.070-0.150	0,035	0.25 - 0.55	0.30 - 1.25	0,65

Explanations

1) Upper limit for Mn can be 1 % by agreement.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Sample Thickness	Re	Rm[1]	A (%)		Bending
				N/mm²		A_{50}	A_{200}	(long.; 180°) mrb
			(d=thickness)	min.	min.	min.	min.	(d=thickness)
93125	JIS G 3125	SPA - H	d≤6	355	490	22	15	0.5 d
			6<d≤16	355	490			1.5 d

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.

UNALLOYED GENERAL STRUCTURAL STEEL GRADES SUITABLE FOR GALVANIZING AND BENDING

Standard: AS NZS 1594-2002

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Cr	Ni	Cu	Al	Ti	N ppm	Ceq
				max.	max.	max.	max.	max.	max.	max.	max.	min.	max.	max.	max.
94250	AS NZS 1594	**HA250**(1)	Standard	0.20	1.20	0.35	0.040	0.030	0.25	0.25	0.25	0.10	0.040	120	0.39
94350	AS NZS 1594	**HA350**(2)	Standard	0.20	1.6	0.35	0.040	0.030	0.25	0.25	0.25	0.10	-	120	0.44

Explanations

1) Nb + V = % 0.03 max.

2) V = % 0.10 max. or Nb + V + Ti = % 0.15 max.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm(1)	A(%)						Bending		
			N/mm²		d≤3			3<d			(tran.; 180°, (d=thickness) (mdb))		
			min.	min.	A_{50}	A_{80}	A_{200}	A_{50}	A_{80}	A_{200}	d≤3	3<d≤5	5<d
94250	AS NZS 1594	**HA250**	250	350	22	20	16	26	24	17	d	d	2d
94350	AS NZS 1594	**HA350**	350	430	18	16	14	22	20	15	2d	2d	3d

Explanations

1) Tensile tests are applied to "Longitudinal" test samples.

2) Bending tests are applied to "Transverse" test samples.

UNALLOYED GENERAL STRUCTURAL STEEL GRADES

Standard: CSA G40-2013

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Cu	Al	N ppm
				max	max	max	max	max	max	min	max
96350	CSA G40	**350 WT**	Standard	0.22	0.80-1.50	0.15-0.40	0.03	0.04	0.20-0.60	0.02	120
96450	CSA G40	**44W/50W**	Standard	0.22	0.50-1.50	0.40	0.040	0.050	-	-	-

Explanations
1)Nb + V = % 0.15 max.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm		A(%)		Impact (long.)	
			N/mm²			A_{50}	A_{200}	Temp.	KVc (min)
			min.	min.	max.	min	min	°C	J
96350	CSA G40	**350 WT**	350	450	650	22	19	-20	27
96450	CSA G40	**44W/50W**	345	450	655	22	19	-	-

HIGH STRENGHT AND MICROALLOYED STEEL GRADES SUITABLE FOR COLD FORMING AND BENDING

Standard: SAE J2340-2017

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	P	S	Cr	Ni	Cu	Mo	V	Ti	Nb
				max.	max.	max.	max.	max.	max.	max.	min	min.	min
38340	SAE J2340	**340XF**	Standard	0.13	0.060	0.015	0.150	0.200	0.200	0.060	0.005	0.005	0.005
38420	SAE J2340	**420XF**	Standard	0.13	0.060	0.015	0.150	0.200	0.200	0.060	0.005	0.005	0.005

Explanations
1) Combinations of V, Nb, Ti elements or any of them can be added at the rates specified in the table.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm	A(%)
			min.	min.	A_{50}
			N/mm²		
38340	SAE J2340	**340XF**	340-440	410	25
38420	SAE J2340	**420XF**	420-520	490	22

Explanations
1) Tensile tests are applied to "Longitudinal" test samples.

HOT ROLLED CARBON STEEL GRADES

Standard : SAE J403-2024

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	P	S	Cu	Ni	Cr	Mo
						max	max	max	max	max	max
91006	SAE J403	**SAE 1006**	Standard	0.08	0.25-0.40	0.030	0.050	0.20	0.25	0.20	0.06
91008	SAE J403	**SAE 1008**	Standard	0.10	0.30-0.50	0.030	0.050	0.20	0.25	0.20	0.06
91108	SAE J403	**SAE 1008 - Mod**	Standard	0.10	0.30-0.50	0.030	0.050	0.20	0.25	0.20	0.06
91010	SAE J403	**SAE 1010**	Standard	0.08 - 0.13	0.30 - 0.60	0.030	0.050	0.20	0.25	0.20	0.06
91110	SAE J403	**SAE 1010 - Mod**	Standard	0.08 - 0.13	0.30 - 0.60	0.030	0.050	0.20	0.25	0.20	0.06
91210	SAE J403	**SAE 1010**	Standard	0.08 - 0.13	0.30 - 0.60	0.030	0.035	0.20	0.25	0.20	0.06
91012	SAE J403	**SAE 1012**	Standard	0.10 - 0.15	0.30 - 0.60	0.030	0.050	0.20	0.25	0.20	0.06
91112	SAE J403	**SAE 1012**	Standard	0.10 - 0.15	0.30 - 0.60	0.030	0.050	0.20	0.25	0.20	0.06
91015	SAE J403	**SAE 1015**	Standard	0.13 - 0.18	0.30 - 0.60	0.030	0.050	0.20	0.25	0.20	0.06
91115	SAE J403	**SAE 1015 - Mod**	Standard	0.13 - 0.18	0.30 - 0.60	0.030	0.050	0.20	0.25	0.20	0.06
91017	SAE J403	**SAE 1017**	Standard	0.15 - 0.20	0.30 - 0.60	0.030	0.050	0.20	0.25	0.20	0.06
91018	SAE J403	**SAE 1018**	Standard	0.15 - 0.20	0.60 - 0.90	0.030	0.050	0.20	0.25	0.20	0.06
91118	SAE J403	**SAE 1018 - Mod**	Standard	0.15 - 0.20	0.60 - 0.90	0.030	0.050	0.20	0.25	0.20	0.06
91020	SAE J403	**SAE 1020**	Standard	0.18 - 0.23	0.30 - 0.60	0.030	0.050	0.20	0.25	0.20	0.06
91120	SAE J403	**SAE 1020**	Standard	0.18 - 0.23	0.30 - 0.60	0.030	0.050	0.20	0.25	0.20	0.06
91121	SAE J403	**SAE 1020**	Standard	0.18 - 0.23	0.60 - 0.90	0.030	0.050	0.20	0.25	0.20	0.06
91022	SAE J403	**SAE 1022 - Mod**	Standard	0.18 - 0.23	0.70 - 1.00	0.030	0.050	0.20	0.25	0.20	0.06
91222	SAE J403	**SAE 1022**	Standard	0.17 - 0.22	0.70 - 1.60	0.030	0.050	0.20	0.25	0.20	0.06
91122	SAE J403	**SAE 1022**	Standard	0.18 - 0.23	0.70 - 1.00	0.030	0.050	0.20	0.25	0.20	0.06
91025	SAE J403	**SAE 1025**	Standard	0.22 - 0.28	0.30 - 0.60	0.030	0.050	0.20	0.25	0.20	0.06
91026	SAE J403	**SAE 1026**	Standard	0.22 - 0.28	0.60 - 0.90	0.030	0.050	0.20	0.25	0.20	0.06
91030	SAE J403	**SAE 1030**	Standard	0.28 - 0.34	0.60 - 0.90	0.030	0.050	0.20	0.25	0.20	0.06

Explanations

1) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

HOT ROLLED MEDIUM AND HIGH CARBON STEEL GRADES

Standard : SAE J403-2024

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Cu	Ni	Cr	Mo
				max	max	max	max	max	max	max	max	max
91040	SAE J403	**SAE 1040**	Standard	0.37- 0.44	0.60 - 0.90	0.15 - 0.35	0.030	0.035	0.20	0.25	0.20	0.06
91045	SAE J403	**SAE 1045**	Standard	0.43 - 0.50	0.60 - 0.90	0.15 - 0.35	0.030	0.035	0.20	0.25	0.20	0.06
91145	SAE J403	**SAE 1045**	Standard	0.42 - 0.48	0.50 - 0.80	0.15 - 0.35	0.030	0.035	0.20	0.25	0.20 - 0.35	0.06
91050	SAE J403	**SAE 1050**	Standard	0.48 - 0.55	0.60 - 0.90	0.15 - 0.35	0.030	0.035	0.20	0.25	0.20	0.06
91055	SAE J403	**SAE 1055**	Standard	0.5 - 0.6	0.6 - 0.9	0.15 - 0.35	0.030	0.035	0.20	0.25	0.20	0.06
91060	SAE J403	**SAE 1060**	Standard	0.55 - 0.65	0.60 - 0.90	0.15 - 0.35	0.030	0.035	0.20	0.25	0.20	0.06
91070	SAE J403	**SAE 1070**	Standard	0.65 - 0.76	0.60 - 0.90	0.20 - 0.35	0.030	0.035	0.20	0.25	0.20	0.06
91080	SAE J403	**SAE 1080**	Standard	0.75 - 0.88	0.60 - 0.90	0.20 - 0.35	0.030	0.035	0.20	0.25	0.20	0.06

Explanations

1) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

HOT ROLLED MEDIUM AND HIGH CARBON STEEL GRADES

Standard: SAE J404-2009

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality	C	Mn	P	S	Si	Ni	Cr	Mo
			max	max	max	max	max	max	max	max
92130	SAE J404	SAE 4130	0.28-0.33	0.40-0.60	0.030	0.040	0.15-0.35	-	0.80-1.10	0.15-0.25

STEEL GRADES FOR PIPE LINES

Standard: API 5L 46th Edition-2018/ISO 3183-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C[3]	Mn[3]	P	S	Cr	Ni	Cu	Mo	B
				max	max	max	max	max	max	max	max	ppm, max
95130[5]	API 5L/ ISO 3183	A / L210 / PSL1	Standard	0.22	0.90	0.030	0.030	0.50	0.50	0.50	0.15	10
95135[1,2,5]	API 5L/ ISO 3183	B / L245 / PSL1	Standard	0.26	1.20	0.030	0.030	0.50	0.50	0.50	0.15	10
95142[1,5]	API 5L/ ISO 3183	X42 / L290 / PSL1	Standard	0.26	1.30	0.030	0.030	0.50	0.50	0.50	0.15	10
95146[1,5]	API 5L/ ISO 3183	X46 / L320 / PSL1	Standard	0.26	1.40	0.030	0.030	0.50	0.50	0.50	0.15	10
95152[1,5]	API 5L/ ISO 3183	X52 / L360 / PSL1	Standard	0.26	1.40	0.030	0.030	0.50	0.50	0.50	0.15	10
95156[1,5]	API 5L/ ISO 3183	X56 / L390 / PSL1	Standard	0.26	1.40	0.030	0.030	0.50	0.50	0.50	0.15	10
95652[1,6]	API 5L/ ISO 3183	X52 / L360 / PSL1	Standard	0.26	1.40	0.030	0.030	0.50	0.50	0.50	0.15	10
95160[1,6]	API 5L/ ISO 3183	X60 / L415 / PSL1	Standard	0.26	1.40	0.030	0.030	0.50	0.50	0.50	0.15	10
95165[1,6]	API 5L/ ISO 3183	X65 / L450 / PSL1	Standard	0.26	1.45	0.030	0.030	0.50	0.50	0.50	0.15	10
95170[1,6]	API 5L/ ISO 3183	X70 / L485 / PSL1	Standard	0.26	1.65	0.030	0.030	0.50	0.50	0.50	0.15	10

Explanations

1) Nb+V+Ti≤0.15
2) Nb+V≤0.06
3) For each reduction of 0.01 % for carbon, an increase of 0.05 % for manganese is permitted, up to a maximum of 1.65 % for L245, L290, L320 and L360 grades, 1.75 % for X56, X60 and X65 grades, 2.00% for X70 grade.
4) For L360/X52 and lower grades, 0.5 % , Cr : % 0.5, Ni : % 0.5 and Mo : % 0.15 is permitted.
5) Suitable for ERW Pipe Manufacturing
6) Suitable for Spiral Welded Pipe Manufacturing

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm[1]	A_t(%)
			N/mm²		
			min.	min.	min.
95130	API 5L / ISO 3183	A / L210 / PSL1	210	335	"2"
95135	API 5L / ISO 3183	B / L245 / PSL1	245	415	"2"
95142	API 5L / ISO 3183	X42 / L290 / PSL1	290	415	"2"
95146	API 5L / ISO 3183	X46 / L320 / PSL1	320	435	"2"
95152	API 5L / ISO 3183	X52 / L360 / PSL1	360	460	"2"
95156	API 5L / ISO 3183	X56 / L390 / PSL1	390	490	"2"
95652	API 5L / ISO 3183	X52 / L360 / PSL1	390	490	"2"
95160	API 5L / ISO 3183	X60 / L415 / PSL1	415	520	"2"
95165	API 5L / ISO 3183	X65 / L450 / PSL1	450	535	"2"
95170	API 5L / ISO 3183	X70 / L485 / PSL1	485	570	"2"

Explanations

1) Tensile tests are applied to "Transversal" test samples.
2) Af % = 1940 $Axc^{0.2}$ / $U^{0.9}$ (Axc : Cross sectional area,mm^2 ; U : Minimum tensile strength, N / mm^2)

STEEL GRADES FOR PIPE LINES WITH STANDARD YIELD STRENGTH/TENSILE STRENGTH RATIO

Standard: API 5L 46th Edition-2018/ISO 3183-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C[5]	Mn[5]	Si	P	S	Cr	Ni	Cu	Mo	Ti	V	Nb	B	C equivalence	
				max	max	max	max	max	max	max	max	max	max	max	max	ppm, max	CE_{IIW}	CE_{PCM}
95035[1,2,6]	API 5L/ISO 3183	**BM / L245M / PSL2**	Standard	0.22	1.20	0.45	0.025	0.015	0.30	0.30	0.50	0.15	0.04	0.05	0.05	10	0.43	0.25
95735[1,2,7]	API 5L/ISO 3183	**BM / L245M / PSL2**	Standard	0.22	1.20	0.45	0.025	0.015	0.30	0.30	0.50	0.15	0.04	0.05	0.05	10	0.43	0.25
95036[1,2,6]	API 5L/ISO 3183	**BM / L245M / PSL2**	Standard	0.22	1.20	0.45	0.025	0.015	0.30	0.30	0.50	0.15	0.04	0.05	0.05	10	0.43	0.25
95042[2,6]	API 5L/ISO 3183	**X42M / L290M / PSL2**	Standard	0.22	1.30	0.45	0.025	0.015	0.30	0.30	0.50	0.15	0.04	0.05	0.05	10	0.43	0.25
95046[2,3,6]	API 5L/ISO 3183	**X46M / L320M / PSL2**	Standard	0.22	1.30	0.45	0.025	0.015	0.30	0.30	0.50	0.15	0.04	0.05	0.05	10	0.43	0.25
95752[2,3,6]	API 5L/ISO 3183	**X52M / L360M / PSL2**	Standard	0.22	1.40	0.45	0.025	0.015	0.30	0.30	0.50	0.15	"3"	"3"	"3"	10	0.43	0.25
95052[2,3,7]	API 5L/ISO 3183	**X52M / L360M / PSL2**	Standard	0.22	1.40	0.45	0.025	0.015	0.30	0.30	0.50	0.15	"3"	"3"	"3"	10	0.43	0.25
95056[2,3,7]	API 5L/ISO 3183	**X56M / L390M / PSL2**	Standard	0.22	1.40	0.45	0.025	0.015	0.30	0.30	0.50	0.15	"3"	"3"	"3"	10	0.43	0.25
95060[4,7]	API 5L/ISO 3183	**X60M / L415M / PSL2**	Standard	0.12	1.60	0.45	0.025	0.015	0.50	0.50	0.50	0.50	"3"	"3"	"3"	10	0.43	0.25
95065[4,7]	API 5L/ISO 3183	**X65M / L450M / PSL2**	Standard	0.12	1.60	0.45	0.025	0.015	0.50	0.50	0.50	0.50	"3"	"3"	"3"	10	0.43	0.25
95070[4,7]	API 5L/ISO 3183	**X70M / L485M / PSL2**	Standard	0.12	1.70	0.45	0.025	0.015	0.50	0.50	0.50	0.50	"3"	"3"	"3"	10	0.43	0.25

Explanations

1) Nb+V≤0.06
2) Cu 0.5 % , Cr 0.3 %, Ni 0.3 % and Mo 0.15%
3) Nb+V+Ti≤0.15
4) Cu 0.5 % , Cr 0.5 %, Ni 0.5 % and Mo 0.5%
5) For each reduction of 0.01 % for carbon, an increase of 0.05 % for manganese is permitted, up to a maximum of 1.50 for X42PSL2, X46PSL2 and X52PSL2
1.65 % for X56PSL2, X60PSL2 and X65PSL2 grades and up to a maximum 2.00 % for X70PSL2 grade.
6) Suitable for ERW Pipe Manufacturing
7) Suitable for Spiral Welded Pipe Manufacturing
8) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	$Rt_{0.5}$ N/mm²		Rm[1] N/mm²		$Rt_{0.5}/Rm$	A_{50}(%)	Impact[3][4] (tran.)		DWTT (tran)
									Temp.	KVc (min)	%Shear Area
			min.	max.	min.	max.		min.	°C	J	min.
95035	API 5L/ISO 3183	**BM / L245M / PSL2**	245	450	415	760	0,93	"2"	0	40	85
95735	API 5L/ISO 3183	**BM / L245M / PSL2**	245	450	415	760	0,93	"2"	0	40	85
95036	API 5L/ISO 3183	**BM / L245M / PSL2**	245	450	415	760	0,93	"2"	0	40	85
95042	API 5L/ISO 3183	**X42M / L290M / PSL2**	290	495	415	760	0,93	"2"	0	40	85
95046	API 5L/ISO 3183	**X46M / L320M / PSL2**	320	525	435	760	0,93	"2"	0	40	85
95752	API 5L/ISO 3183	**X52M / L360M / PSL2**	360	530	460	760	0,93	"2"	0	40	85
95052	API 5L/ISO 3183	**X52M / L360M / PSL2**	360	530	460	760	0,93	"2"	0	40	85
95056	API 5L/ISO 3183	**X56M / L390M / PSL2**	390	545	490	760	0,93	"2"	0	40	85
95060	API 5L/ISO 3183	**X60M / L415M / PSL2**	415	565	520	760	0,93	"2"	0	40	85
95065	API 5L/ISO 3183	**X65M / L450M / PSL2**	450	600	535	760	0,93	"2"	0	54	85
95070	API 5L/ISO 3183	**X70M / L485M / PSL2**	485	635	570	760	0,93	"2"	0	68	85

Explanations

1) Tensile tests are applied to "Transversal" test samples.
2) A50 % = 1944 $So^{0.2}$ / $U^{0.9}$ (S_o: Cross sectional area,mm² ; U : tensile strength N / mm²)
3) Impact tests are not carried out if nominal thickness is lesser than 6 mm.
4) Impact tests are carried out if it is customer's request in order.
5) DWT tests are applied to "Transverse" test samples.

STEEL GRADES FOR PIPE LINES WITH LOW YIELD STRENGTH/TENSILE STRENGTH RATIO

Standard: API 5L 46th Edition-2018/ISO 3183-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C [4]	Mn [4]	Si	P	S	Cr	Ni	Cu	Mo	Ti	V	Nb	B	C equivalence	
				max	max	max	max	max	max	max	max	max	max	max	max	ppm, max	CE_{IIW}	CE_{PCM}
95835[1,2,5]	API 5L/ISO 3183	**BM / L245M / PSL2**	Standard	0.22	1.20	0.45	0.025	0.015	0.30	0.30	0.50	0.15	0.04	0.05	0.05	10	0.43	0.25
95842[2,5]	API 5L/ISO 3183	**X42M / L290M / PSL2**	Standard	0.22	1.30	0.45	0.025	0.015	0.30	0.30	0.50	0.15	0.04	0.05	0.05	10	0.43	0.25
95846[2,3,5]	API 5L/ISO 3183	**X46M / L320M / PSL2**	Standard	0.22	1.30	0.45	0.025	0.015	0.30	0.30	0.50	0.15	0.04	0.05	0.05	10	0.43	0.25
95852[2,3,5]	API 5L/ISO 3183	**X52M / L360M / PSL2**	Standard	0.22	1.40	0.45	0.025	0.015	0.30	0.30	0.50	0.15	"3"	"3"	"3"	10	0.43	0.25
95952[2,3,6]	API 5L/ISO 3183	**X52M / L360M / PSL2**	Standard	0.22	1.40	0.45	0.025	0.015	0.30	0.30	0.50	0.15	"3"	"3"	"3"	10	0.43	0.25

Explanations

1) Nb+V≤0.06
2) Cu 0.5 % , Cr 0.3 %, Ni 0.3 % and Mo 0.15%
3) Nb+V+Ti≤0.15
4) For each reduction of 0.01 % for carbon, an increase of 0.05 % for manganese is permitted, up to a maximum of 1.50 for X42PSL2, X46PSL2 and X52PSL2 .
5) Suitable for ERW Pipe Manufacturing
6) Suitable for Spiral Welded Pipe Manufacturing
7) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	$Rt_{(0.5)}$ N/mm²		Rm[1] N/mm²		$Rt_{(0.5)}/Rm$	A_{50}(%)	Impact[3][4] (tran.)		DWTT (tran.)
									Temp.	KVc (min)	%Shear Area
			min.	max.	min.	max.		min.	°C	J	min.
95835	API 5L/ISO 3183	**BM / L245M / PSL2**	245	450	415	760	0,93	"2"	0	40	85
95842	API 5L/ISO 3183	**X42M / L290M / PSL2**	290	495	415	760	0,93	"2"	0	40	85
95846	API 5L/ISO 3183	**X46M / L320M / PSL2**	320	525	435	760	0,93	"2"	0	40	85
95852	API 5L/ISO 3183	**X52M / L360M / PSL2**	360	530	460	760	0,93	"2"	0	40	85
95952	API 5L/ISO 3183	**X52M / L360M / PSL2**	360	530	460	760	0,93	"2"	0	40	85

Explanations

1) Tensile tests are applied to "Transversal" test samples.
2) A_{50} % = 1944 $So^{0.2}$ / $U^{0.9}$ (S_o: Cross sectional area,mm² ; U : tensile strength N / mm²)
3) Impact tests are not carried out if nominal thickness is lesser than 6 mm.
4) Impact tests are carried out if it is customer's request in order.
5) DWT tests are applied to "Transverse" test samples.

STEEL GRADES FOR PIPE LINES WITH LOW YIELD STRENGTH/TENSILE STRENGTH RATIO

Standard: API 5L 46th Edition-2018/ISO 3183-2019

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C [4]	Mn [4]	Si	P	S	Cr	Ni	Cu	Mo	Ti	V	Nb	B	C equivalence	
				max	max	max	max	max	max	max	max	max	max	max	max	ppm, max	CE_{IIW}	CE_{PCM}
95535[1,2]	API 5L/ISO 3183	**BN / L245N / PSL2**	Standard	0.22	1.20	0.45	0.025	0.015	0.30	0.30	0.50	0.15	0.04	0.05	0.05	10	0.43	0.25
95536[1,2]	API 5L/ISO 3183	**BN / L245N / PSL2**	Standard	0.22	1.20	0.45	0.025	0.015	0.30	0.30	0.50	0.15	0.04	0.05	0.05	10	0.43	0.25
95542[2]	API 5L/ISO 3183	**X42N / L290N / PSL2**	Standard	0.22	1.30	0.45	0.025	0.015	0.30	0.30	0.50	0.15	0.04	0.05	0.05	10	0.43	0.25
95546[2,3]	API 5L/ISO 3183	**X46N / L320N / PSL2**	Standard	0.22	1.30	0.45	0.025	0.015	0.30	0.30	0.50	0.15	0.04	0.05	0.05	10	0.43	0.25

Explanations

1) Nb+V≤0.06
2) Cu 0.5 % , Cr 0.3 %, Ni 0.3 % and Mo 0.15%
3) Nb+V+Ti≤0.15
4) For each reduction of 0.01 % for carbon, an increase of 0.05 % for manganese is permitted, up to a maximum of 1.50 for X42PSL2 and X46PSL2 .
5) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	$Rt_{0.5}$ N/mm²		Rm[1] N/mm²		$Rt_{0.5}/Rm$	A_{50}(%)	Impact[3][4] (tran.)		DWTT (tran.)
									Temp.	KVc (min)	%Shear Area
			min.	max.	min.	max.		min.	°C	J	min.
95535	API 5L/ISO 3183	**BN / L245N / PSL2**	245	450	415	760	0,93	"2"	0	40	85
95536	API 5L/ISO 3183	**BN / L245N / PSL2**	245	450	415	760	0,93	"2"	0	40	85
95542	API 5L/ISO 3183	**X42N / L290N / PSL2**	290	495	415	760	0,93	"2"	0	40	85
95546	API 5L/ISO 3183	**X46N / L320N / PSL2**	320	525	435	760	0,93	"2"	0	40	85

Explanations

1) Tensile tests are applied to "Transversal" test samples.
2) A_{50} % = 1944 $So^{0.2}$ / $U^{0.9}$ (S_o: Cross sectional area,mm² ; U : tensile strength N / mm²)
3) Impact tests are not carried out if nominal thickness is lesser than 6 mm.
4) Impact tests are carried out if it is customer's request in order.
5) DWT tests are applied to "Transverse" test samples.

STEEL GRADES FOR PIPE LINES

Standard: EN ISO3183-2019 Annex A

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Cr	Ni	Cu	Al	Mo	Ti	V	Nb	N
				max	max	max	max	max	max	max	max	min	max	max	max	max	ppm, max
95552	EN ISO3183-2019 Annex A	L360NE PSL2 (API 5L X52NE)	Standard	0.22	1.40	0.45	0.025	0.015	0.30	0.30	0.25	0.015-0.060	0.10	0.04	0.10	0.05	120
95560	EN ISO3183-2019 Annex A	L415NE PSL2 (API 5L X60NE)	Standard	0.23	1.40	0.45	0.025	0.015	0.30	0.30	0.25	0.015-0.060	0.10	0.04	0.10	0.05	120
95565	EN ISO3183-2019 Annex A	L450ME PSL2(API 5L X65ME)	Standard	0.12	1.60	0.45	0.025	0.015	0.30	0.50	0.50	0.015-0.060	0.35	0.07	0.09	0.08	120
95570	EN ISO3183-2019 Annex A	L485ME PSL2(API 5L X70ME)	Standard	0.12	1.70	0.45	0.025	0.015	0.30	0.50	0.50	0.015-0.060	0.35	0.07	0.11	0.08	120

Explanations
1) Nb+V+Ti ≤ 0.15

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	$Rt_{(0.5)}$		Rm		$Rt_{(0.5)}/Rm$	A_5(%)	Impact (tran.)		Bending
			N/mm²						Temp.	KVc (min)	mdb
			min.	max.	min.	max.		min.	°C	J	d: thickness
95552	EN ISO3183-2019 Annex A	L360NE PSL2 (API 5L X52NE)	360	530	460	760	0.85	20	0	40	-
95560	EN ISO3183-2019 Annex A	L415NE PSL2 (API 5L X60NE)	415	565	520	760	0.85	18	0	min. tek: 31 min. ort. :42	5d
95565	EN ISO3183-2019 Annex A	L450ME PSL2(API 5L X65ME)	450	570	535	760	0,87	18	0	min. tek: 40 min. ort. :54	6d
95570	EN ISO3183-2019 Annex A	L485ME PSL2(API 5L X70ME)	485	605	570	760	0,90	18	0	min. tek: 51 min. ort. :68	6d

STEEL GRADES FOR CASING AND/OR TUBING

Standard: API 5CT 11th Edition-2023

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C	Mn	Si	P	S	Cr	Ni	Sn	Cu	Al	Mo	V	Ti	N	B	Ca	Nb
				max.	max.	max.	max.	max.	max.	max.	max.	max.	min.	max.	max.	max.	ppm max	ppm max	ppm	max.
95254	API 5CT	**J55 Upgradeable (Tubing)**	Standard	0.25-0.30	1.20-1.40	0.15-0.25	0.015	0.005	0.10	0.07	0.012	0.15	0.015-0.050	0.030	0.008	0.010	90	5	15-50	-
95255	API 5CT	**J55 Upgradeable (Casing)**	Standard	0.23-0.27	1.20-1.40	0.15-0.30	0.020	0.005	0.15-0.35	0.07	0.012	0.15	0.045 max	0.030	0.008	0.010	100	5	15-50	-
95256	API 5CT	**J55 Upgradeable**	Standard	0.23-0.27	1.20-1.40	-	0.020	0.010	-	-	-	-	-	-	0.010	-	-	5	-	-
95257	API 5CT	**J55 Upgradeable**	Standard	0.24-0.27	1.25-1.35	0.15-0.25	0.020	0.005	0.20-0.30	-	-	-	-	.08-.12	.010	-	-	5	15-50	-
95355	API 5CT	**J55 regular**	Standard	0.17-0.23	0.90-1.45	0.30	0.020	0.015	0.10	0.10	0.015	0.15	0.015-0.050	0.080	0.06	0.020	100	5	15-50	0.05
95356	API 5CT	**J55 regular**	Standard	0.22-0.26	1.10-1.30	0.15-0.30	0.020	0.008	0.10	0.07	0.012	0.15	0.015-0.050	0.040	0.008	0.010	90	5	15-50	-
95455	API 5CT	**5CT J55 Upgradeable**	Standard	0.025-0.029	1.25-1.40	0.20-0.25	0.015	0.005	-	0.07	0.012	0.15	0.045 max	0.030	0.008	0.018-0.035	100	10-25	15-50	-

Explanations

1) Please contact our sales representative for chemical analysis differences in qualities sharing identical names.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re N/mm² min.	Re N/mm² max.	Rm[1] N/mm² min.	Rm[1] N/mm² max.	A_{50}(%) min.	Impact (long.)[2] Temp. °C	Impact (long.)[2] KVc (min) J
95254	API 5CT	**J55 Upgradeable (Tubing)**	379	552	517	—	(3)	-20	27
95255	API 5CT	**J55 Upgradeable (Casing)**	379	552	517	—	(3)	-20	27
95256	API 5CT	**J55 Upgradeable**	379	552	517	—	(3)	-20	27
95257	API 5CT	**J55 Upgradeable**	379	552	517	—	(3)	-20	27
95355	API 5CT	**J55 regular**	379	552	517	—	(3)	-20	27
95356	API 5CT	**J55 regular**	379	552	517	—	(3)	-20	27
95455	API 5CT	**5CT J55 Upgradeable**	379	552	517	—	(3)	-20	27

Explanations

1) Tensile and Impact tests are applied to "Longitudinal" test samples.

2) Impact tests are not carried out if nominal thickness is lesser than 6 mm.

3) A_{50} (%) = $1944\ 50^{0.2}\ /\ U^{0.9}$ (S_o : sectional area, mm^2 ; U : tensile strenght, N/mm^2)

UNALLOYED GENERAL STRUCTURAL STEEL GRADES (FLOOR PLATE)

Standard: ASTM A36-2019 Floor Plate Standard: ASTM A786-2015

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C[2]	Mn[1,2]	Si	P	S
				max		max	max	max
56435[3]	ASTM A36 ASTM A786	**ASTM A786 (ASTM A36)**	Standard	0.26	0.80-1.20	0.40	0.040	0.050

Explanations

1) Upper limit for Mn does not apply if the thickness of strips are 20 mm and thinner.
2) For each reduction of 0.01 % for carbon, an increase of 0.06 % for manganese is permitted, up to a maximum of 1.35
3) Optionally, Cu 0.20 % is permitted.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm[1]	A (%)		Impact [2][3]	
			N/mm²		A_{50}	A_{200}	Temp.	KVc
			(min)	(min)	min	min	C	J
56435	ASTM A36 ASTM A786	**ASTM A786 (ASTM A36)**	250	400 - 550	23	20	-20	40

Explanations

1) Tensile tests are applied to "Transversal" test samples.
2) Impact tests are not carried out if nominal thickness is lesser than 6 mm.
3) Impact tests are carried out if it is customer's request in order.

UNALLOYED GENERAL STRUCTURAL STEEL GRADES SUITABLE FOR GALVANIZING (FLOOR PLATE)

Standard: ASTM A36-2019 Floor Plate Standard: ASTM A786-2015

Chemical Composition (%)

Colakoglu Quality ID	Standard	Quality		C[2]	Mn[1,2]	Si	P	S
				max		max	max	max
ASTM A36 ASTM A786	ASTM A786 (ASTM A36)	Standard	0.26	0.80-1.20	0.40	0.040	0.050	0.050

Explanations

1) Upper limit for Mn does not apply if the thickness of strips are 20 mm and thinner.
2) For each reduction of 0.01 % for carbon, an increase of 0.06 % for manganese is permitted, up to a maximum of 1.35
3) Optionally, Cu 0.20 % is permitted.

Mechanical Properties

Colakoglu Quality ID	Standard	Quality	Re	Rm[1]	A (%)		Impact [2][3]	
			N/mm²		A_{50}	A_{200}	Temp.	KVc
			(min)	(min)	min	min	C	J
56437	ASTM A36 ASTM A786	**ASTM A786 (ASTM A36)**	250	400 - 550	23	20	-20	40

Explanations

1) Tensile tests are applied to "Transversal" test samples.
2) Impact tests are not carried out if nominal thickness is lesser than 6 mm.
3) Impact tests are carried out if it is customer's request in order.

Symbols and Abbreviations Used for Chemical Elements

Symbol	Element
C	Carbon
Mn	Manganese
P	Phosphorus
S	Sulphur
Si	Silicon
Al	Aluminum
Cu	Copper
N	Nitrogen
O	Oxygen
H	Hydrogen
Ca	Calcium
Ti	Titanium
V	Vanadium
Cr	Chromium
Ni	Nickel
Mo	Molybdenum
Nb	Niobium
B	Boron
Sn	Tin
Fe	Iron
Zn	Zinc
Pb	Lead
As	Arsenic
W	Wolfram (Tungsten)
Zr	Zirconium

Symbols and Abbreviations Used for Mechanical Tests

Symbol	Explanation
R_e	Yield strength (N/mm2)
R_m	Tensile strength (N/mm2)
$R_{p0,2}$	Yield strength at high temperature (N/mm2)
A	Elongation (%)
A_5	Elongation (L0=5,65x√S0)
A_{50}	Elongation (L0=50 mm)
A_{80}	Elongation (L0=80 mm)
A_{100}	Elongation (L0=100 mm)
A_{200}	Elongation (L0=200 mm)
S_0	Cross-sectional area of the specimen (mm2)
L_0	Original gauge lenght of the specimen (mm)
d	Nominal thickness (mm)
t	Ton
Impact	Impact test
KV_c	Impact energy, joule (J)
Temp.	Test temperature (0C)
Bend	Bend test
mrb	Mandrel radius for bending (mm)
mdb	Mandrel diameter for bending (mm)
tran.	Transverse test piece
long.	Longitudinal test piece
HRB	Hardness of Rockwell-B
min.	Minimum
max.	Maximum
=	Equal to
<	Smaller than
≤	Smaller than or equal to
>	Bigger than
≥	Bigger than or equal to
ppm	Parts per million
DWTT	Drop weight tear test


4

HOT ROLLED FLAT STEEL PRODUCTS

CHEMICAL & MECHANICAL PROPERTIES

Group No.	STEEL GRADES
1	**DIN 1614-Part1-1986** (St 22, RRSt 23, RRSt 23, St 24) **DQ, DDQ ve EDDQ** (DQ-Ti (DC04), DDQ-Ti (DC05), EDDQ -Ti (DC06), EDDQ-Ti+Nb (DC06)) **EN 10111-2008** (DD11, DD12, DD13) **SAE J403-2024** (SAE 1006, SAE 1006 - Mod) **ASTM A1011-2023** (CS Type B) **JIS G 3131-2018** (SPHC, SPHT-1)
2	**SAE J403-2024** (SAE 1008, SAE 1010, SAE 1012 - Mod) **ASTM A53-2024** (Grade A, Grade B) **ASTM A283-2024 (Grade C)** **ASTM A1011-2023** (SS Grade 33, SS 36 Type 1) **ASTM A1018-2023** (CS Type B, SS Grade 33, SS 36 Type 1) **EN 10025-2-2019** (S235JR, S235JR+N, S235J2+N, S235J0, S235J2, S235JRC, S235J2C, S235JRC+N, S235J2C+N) API 5L 46th Edition-2018/ISO 3183-2019 (A / L210 / PSL1, B / L245 / PSL1, BN / L245N / PSL2) **AS NZS 1594-2002** (HA250) **EN 10025-5-2019** (S235J0W, S235J2W) **EN 10028-2-2017** (P235GH) **EN 10120-2008** (P245NB) **EN 10217-1-2019** (P235TR1, P235TR2) **EN 10217-2-2019** (P235GH) **JIS G 3132-2018** (SPHT-2)
3	**ABS-Part 2-2021** (ABS Grade A, ABS Grade B) **API 5L 46th Edition-2018/ISO 3183-2019** (X42 / L290 / PSL1,X46 / L320 / PSL1, X42N PSL2 / L290N PSL2, X46 / L320 / PSL1) **ASTM A1011-2023** (SS 36 Type 2, HSLAS Grade 45 Class 2, HSLAS Grade 50 Class 2) **ASTM A1018-2023** (SS 36 Type 2, SS Grade 40, HSLAS Grade 45 Class 1, HSLAS Grade 45 Class 2) **ASTM A36-2019** (A36) **ASTM A36-2019 & ASTM A786-2015** (ASTM A786 (ASTM A36)) **ASTM A500-2023** (Grade B) **BS 10149-3-2013** (S280NC - Mod) **EN 10025-2-2019** (S275JR, S275JRC, S275J0, S275J2+N, S275J2, S275J2C, S275JRC+N, S275J2C+N, S275JR+N, E295) **EN 10028-2-2017** (P265GH, P295GH) **EN 10120-2017** (P265NB, P310NB) **EN 10149-2-2013** (S280MC, S315MC, S355MC) **EN 10207-2017** (P275SL) **EN 10217-3-2019** (P275NL1) **JIS G 3101-2024** (SS400) **JIS G 3125-2021** (SPA-H) **SAE J2340-2017** (340XF, 420XF) **SAE J403-2024** (SAE 1015, SAE 1017, SAE 1018, SAE 1018 - Mod, SAE 1019 - Mod, SAE 1020, SAE 1022, SAE 1022 Mod)

Group No.	STEEL GRADES
4	**AS NZS 1594-2002** (HA350) **ASTM A1011-2023** (SS Grade 50, SS Grade 55, HSLAS Grade 50 Class 1, HSLAS Grade 55 Class 1, HSLAS Grade 55 Class 2, HSLAS Grade 55 Class 1 / Class 2) **ASTM A1018-2023** (HSLAS Grade 50 Class 1, HSLAS Grade 55 Class 1, HSLAS Grade 50 Class 2, HSLAS Grade 55 Class 2) **ASTM A500-2023** (Grade C) **ASTM A606-2023** (Type 2, Type 4) **ASTM A572-2021** (Grade 50 Type 1, Grade 50 Type 2, Grade 55 Type 1, Grade 55 Type 2) **CSA G40-2013** (350 WT, 44W/50W) **EN 10025-2-2019** (E335, S355JR, S355JRC, S355JR+N, S355J0, S355J0C, S355J2, S355J2C, S355J2+N, S355J2C+N, S355K2C+N, S355JR+N **EN 10025-5-2019** (S355J0W, S355J2W, S355J0WP, S355J2WP) **EN 10028-2-2017** (P355GH, P355GH+N, 16Mo3) **EN 10028-3-2017** (P355NL1) **EN ISO 683-1-2018** (28Mn6) **EN ISO 683-2-2018** (30MnB5, 34MnB5, 27MnCrB5-2, 26MnB5, 22MnB5) **EN 10120-2017** (P355NB) **EN 10338-2015** (HCT500X (DP 500), HDT580X (DP 600), HCT600X (DP 600)) **SAE J403-2024** (SAE 1025, SAE 1026, SAE 1030) **SAE J404-2009** (SAE 4130)
5	**API 5CT-2023** (J55 Upgradeable (Tubing), J55 Upgradeable (Casing), J55 Upgradeable, J55 regular, 5CT J55 Upgradeable) **EN 10025-Part 3-2019** (S355N) **EN 10083- Part 2 -2006** (C35E,C45E) **SAE J404-2009** (SAE 1040, SAE 1045)
6	**EN ISO 683-1-2018 (C60E)** **SAE J403-2024 (SAE 1050, SAE 1055, SAE 1060)**
7	**API 5L 46th Edition-2018/ISO 3183-2019** (X52 / L360 / PSL1, X56 / L390 / PSL1, X60 / L415 / PSL1, X52M / L360M / PSL2, X56M / L390M / PSL2, X60M / L415M / PSL2) **EN ISO3183-2019 Annex A** (L360NE PSL2 (API 5L X52NE), L415NE PSL2 (API 5L X60NE)) **SAE J403-2024** (SAE 1070, SAE 1080) **ASTM A1011-2023** (HSLAS Grade 60 Class 1, HSLAS Grade 60 Class 2) **ASTM A1018-2023** (HSLAS Grade 60 Class 1, HSLAS Grade 60 Class 2) **ASTM A516-2017** (Grade 60) **ASTM A572-2021** (Grade 60 Type 1) **EN 10025-5-2019** (S420J0W, S420J2W, S460J0W, S460J2W) **EN 10149-2-2013** (S420MC)
8	**API 5L 46th Edition-2018/ISO 3183-2019** (X65 / L450 / PSL1, X65 / L450 / PSL2, X70 / L485 / PSL1, X70 / L485 / PSL2) **EN ISO3183-2019 Annex A** (L450ME PSL2(API 5L X65ME), L485ME PSL2(API 5L X70ME)) **ASTM A1018-2023** (HSLAS Grade 65 Class 2) **ASTM A572-2021** (Grade 65 Type 1) **EN 10028-3-2017** (P460NL2) **EN 10025-3-2019** (S420N) **EN 10149-2-2013** (S460MC)
9	**EN 10088 /ASTM A240** (EN 1.4307 ASTM-AISI 304L, EN 1.4301 ASTM-AISI 304H) **EN ISO 683-1-2018** (51CrV4) **ASTM A1011-2023** (HSLAS Grade 70 Class 2, HSLAS-F Grade 80) **ASTM A1018-2023** (HSLAS Grade 70 Class 2) **EN 10025-3-2019** (S460N) **EN 10149-2-2013** (S500MC, S550MC,S600MC, S650MC, S700MC, S900MC) **EN 10338-2015** (HCT780X (DP 780))

STANDARD HOT ROLLED PRODUCTION LIMITS

Thickness (mm)	Maximum Width								
	Group-1	Group-2	Group-3	Group-4	Group-5	Group-6	Group-7	Group-8	Group-9
1.00-1.14	1000**	1000**							
1.15-1.19	1000	1000							
1.20-1.29	1250	1250							
1.30-1.39	1250*	1250*							
1.40-1.49	1400*	1400*	1150						
1.50-1.59	1500*	1500*	1250	1250					
1.60-1.69	1550	1550	1300	1300					
1.70-1.79	1550	1550	1350*	1350*	1000				
1.80-1.99	1650	1550	1400*	1400	1200	1000	1000		
2.00-2.09	1650	1600	1500*	1500*	1250	1000	1200*	1000*	1000*
2.10-2.19	1650	1600	1500*	1500*	1250	1000	1250	1250*	1000
2.20-2.29	1650	1600	1550	1550	1250	1100	1450	1450	1200
2.30-2.39	1650	1650	1650	1650	1450	1150	1450	1450	1200
2.40-2.49	1650	1650	1650	1650	1450	1250	1450	1450	1250
2.50-2.59	1650	1650	1650	1650	1450	1250	1450	1450	1250*
2.60-2.89	1650	1650	1650	1650	1450	1250	1450	1450	1250
2.90-2.99	1650	1650	1650	1650	1650	1450	1450	1450	1250*
3.00-3.09	1650	1650	1650	1650	1650	1450	1650	1650	1650
3.10-3.39	1650	1650	1650	1650	1650	1450	1650	1650	1650
3.40-3.89	1650	1650	1650	1650	1650	1450	1650	1650	1650
3.90-3.99	1650	1650	1650	1650	1650	1650	1650	1650	1650
4.00-4.39	1650	1650	1650	1650	1650	1650	1650	1650	1650
4.40-4.99	1650	1650	1650	1650	1650	1650	1650	1650	1650
5.00-5.79	1650	1650	1650	1650	1650	1650	1650	1650	1650
5.80-18.99	1650	1650	1650	1650	1650	1650	1650	1650	1650
19.00-26.00	1650	1650	1650	1650	1650	1650	1650	1500	1500

* There may be limit differences for some steel grades in the groups with * sign
** The limits in the marked groups are valid only for domestic market orders. Export orders are subject to negotiation.

Note:

For the coils with 1,5 mm and lower strip thickness, there may be the coil telescopy, folded and some damage at the inner and outer wraps

HOT ROLLED PRODUCTION LIMITS FOR THE CUSTOMERS THAT SURFACE SENSITIVITY IS IMPORTANT

Thickness (mm)	Hot Roll Production Limits for the Customers That Surface Sensitivity is Important								
	Group-1	Group-2	Group-3	Group-4	Group-5	Group-6	Group-7	Group-8	Group-9
1.35-1.39	1250								
1.40-1.49	1250								
1.50-1.59	1350	1350	1200						
1.60-1.69	1450	1450	1300	1200*					
1.70-1.79	1500	1500	1350*	1250*					
1.80-1.99	1500	1550	1400*	1300*					
2.00-2.09	1500	1600	1500*	1400*	1250	1000	1200	1000*	
2.10-2.19	1500	1600	1500*	1500*	1250	1000	1250	1250	
2.20-2.29	1500	1600	1550	1550	1250	1100	1450	1450	
2.30-2.39	1500	1650	1650	1650	1450	1150	1450	1450	
2.40-2.49	1500	1650	1650	1650	1450	1250	1450	1450	
2.50-2.59	1550	1650	1650	1650	1450	1250	1450	1450	
2.60-2.89	1550	1650	1650	1650	1450	1250	1450	1450	
2.90-2.99	1550	1650	1650	1650	1650	1450	1450	1450	
3.00-3.09	1650	1650	1650	1650	1650	1450	1650	1650	1650
3.10-3.39	1650	1650	1650	1650	1650	1450	1650	1650	1650
3.40-3.89	1650	1650	1650	1650	1650	1450	1650	1650	1650
3.90-3.99	1650	1650	1650	1650	1650	1650	1650	1650	1650
4.00-4.39	1650	1650	1650	1650	1650	1650	1650	1650	1650
4.40-.4.99	1650	1650	1650	1650	1650	1650	1650	1650	1650
5.00-5.79	1650	1650	1650	1650	1650	1650	1650	1650	1650
5.80-18.99	1650	1650	1650	1650	1650	1650	1650	1650	1650
19.00-26.00*	1650	1650	1650	1650	1650	1650	1650	1500	1500*

(*) There may be limit changes in marked groups based on quality.

Note:

In orders under 1.5 mm, there may be telescoping, damaged and folded windings in the inner and outer windings of the coil.

Minimum order width is 800 mm.
Production limits may vary based on slab lengths according to the table below.

AVAILABLE SLAB LIMITS ACCORDING TO STRIP THICKNESS

Coil Thickness	Width (mm)			
	1000-1050	1200-1270	1500	1550
	Slab Length (mm)			
1,1	5800			
1,2	5800			
1,3-1,49	12050	12050		
1,5	12050	12050	10800	
1,8	12050	12050	10800	10100
2	12050	12050	10800	10100
3	12050	12050	10800	10100
4 mm and above	12050	12050	10800	10100

Note:
1. Those shown in red are written in the specified lengths due to the legal obligation on the highway.
2. Production with 5800 length slabs with thicknesses of 1,3 mm and below is preferred.

APPROXIMATE COIL WEIGHTS ACCORDING TO SLAB DIMENSIONS

	Slab Size												
HRC Width (mm)	5800	7300	8000	9000	9800	10100	10450	10800	11150	11550	11800	11950	12050
900	8,9	11,2	12,2	13,8	15	15,5	16	16,5	17,1	17,7	18,1	18,3	18,4
950	9,4	11,8	12,9	14,5	15,8	16,3	16,9	17,5	18	18,7	19,1	19,3	19,5
1000	9,9	12,4	13,6	15,3	16,7	17,2	17,8	18,4	19	19,6	20,1	20,3	20,5
1050	10,4	13	14,3	16,1	17,5	18	18,7	19,3	19,9	20,6	21,1	21,3	21,5
1100	10,9	13,7	15	16,8	18,3	18,9	19,6	20,2	20,9	21,6	22,1	22,4	22,5
1150	11,3	14,3	15,7	17,6	19,2	19,8	20,4	21,1	21,8	22,6	23,1	23,4	23,6
1200	11,8	14,9	16,3	18,4	20	20,6	21,3	22	22,8	23,6	24,1	24,4	24,6
1250	12,3	15,5	17	19,1	20,8	21,5	22,2	23	23,7	24,6	25,1	25,4	25,6
1300	12,8	16,1	17,7	19,9	21,7	22,3	23,1	23,9	24,7	25,5	26,1	26,4	26,6
1350	13,3	16,8	18,4	20,7	22,5	23,2	24	24,8	25,6	26,5	27,1	27,4	27,7
1400	13,8	17,4	19,1	21,4	23,3	24,1	24,9	25,7	26,6	27,5			
1450	14,3	18	19,7	22,2	24,2	24,9	25,8	26,6	27,5				
1500	14,8	18,6	20,4	23	25	25,8	26,7	27,6					
1550	15,3	19,2	21,1	23,7	25,8	26,6	27,6						
1600	15,8	19,9	21,8	24,5	26,7	27,5							
1650	16,3	20,5	22,5	25,3	27,5								

*For special grades, the maximum slab lengths based on coil thickness and width are determined separately from the table

HOT ROLLED COIL TOLERANCES

General Application

The specified values for tolerances shall not apply to the uncropped ends of the coil for a total length "l" which is calculated using the formula:

$$l(m) = \frac{90}{nominal\ thickness(mm)}$$

provided that the result does not exceed 20 meters. (EN 10051-2024)

Thickness Tolerances (DIN EN 10051-2024)

1) The tolerances on thickness for continuously hot-rolled low carbon steel sheet/plate for cold forming:

Nominal thickness (mm)	w ≤ 1200	1200 < w ≤ 1500	1500 < w ≤ 1650
t ≤ 2,00	±0,13	±0,14	±0,16
2,00 < t ≤ 2,50	±0,14	±0,16	±0,17
2,50 < t ≤ 3,00	±0,15	±0,17	±0,18
3,00 < t ≤ 4,00	±0,17	±0,18	±0,20
4,00 < t ≤ 5,00	±0,18	±0,20	±0,21
5,00 < t ≤ 6,00	±0,20	±0,21	±0,22
6,00 < t ≤ 8,00	±0,22	±0,23	±0,23
8,00 < t ≤ 11,00	±0,24	±0,25	±0,25

2) Tolerances on thickness for strip and sheet/plate of steel grades with a specified minimum yield strength Re ≤ 300 MPa (category A)

Nominal Thickness (mm)	Tolerances for a nominal width (mm)		
	W≤1200	1200<W≤1500	1500<W≤1650
<= 2.00	± 0.17	± 0.19	± 0.21
> 2.00 <= 2.50	± 0.18	± 0.21	± 0.23
> 2.50 <= 3.00	± 0.20	± 0.22	± 0.24
> 3.00 <= 4.00	± 0.22	± 0.24	± 0.26
> 4.00 <= 5.00	± 0.24	± 0.26	± 0.28
> 5.00 <= 6.00	± 0.26	± 0.28	± 0.29
> 6.00 <= 8.00	± 0.29	± 0.30	± 0.31
> 8.00 <= 10.00	± 0.32	± 0.33	± 0.34
> 10.00 <= 12.50	± 0.35	± 0.36	± 0.37
> 12.50 <= 15.00	± 0.37	± 0.38	± 0.40
> 15.00 <= 25.00	± 0.40	± 0.42	± 0.45

3) Tolerances on thickness for strip and sheet/plate of steel grades with a specified minimum yield strength 300 MPa < Re ≤ 360 MPa (category B)

Nominal thickness (mm)	Tolerances for a nominal width (mm)		
	w ≤ 1200	1200 < w ≤ 1500	1500 < w ≤ 1650
t ≤ 2,00	±0,20	±0,22	±0,24
2,00 < t ≤ 2,50	±0,21	±0,24	±0,26
2,50 < t ≤ 3,00	±0,23	±0,25	±0,28
3,00 < t ≤ 4,00	±0,25	±0,28	±0,30
4,00 < t ≤ 5,00	±0,28	±0,30	±0,33
5,00 < t ≤ 6,00	±0,30	±0,32	±0,33
6,00 < t ≤ 8,00	±0,33	±0,35	±0,36
8,00 < t ≤ 10,00	±0,37	±0,38	±0,40
10,00 < t ≤ 12,50	±0,40	±0,41	±0,44
12,50 < t ≤ 15,00	±0,43	±0,44	±0,46
15,00 < t ≤ 25,00	±0,46	±0,48	±0,52

4)Tolerances on thickness for strip and sheet/plate of steel grades with a specified minimum yield strength 360 MPa < Re ≤ 420 MPa (category C)

Nominal thickness (mm)	Tolerances for a nominal width (mm)		
	w ≤ 1200	1200 < w ≤ 1500	1500 < w ≤ 1650
t ≤ 2,00	±0,22	±0,25	±0,27
2,00 < t ≤ 2,50	±0,23	±0,27	±0,30
2,50 < t ≤ 3,00	±0,26	±0,29	±0,31
3,00 < t ≤ 4,00	±0,29	±0,31	±0,34
4,00 < t ≤ 5,00	±0,31	±0,34	±0,36
5,00 < t ≤ 6,00	±0,34	±0,36	±0,38
6,00 < t ≤ 8,00	±0,38	±0,39	±0,40
8,00 < t ≤ 10,00	±0,42	±0,42	±0,44
10,00 < t ≤ 12,50	±0,46	±0,47	±0,48
12,50 < t ≤ 15,00	±0,48	±0,49	±0,52
15,00 < t ≤ 25,00	±0,52	±0,55	±0,59

5) Tolerances on thickness for strip and sheet/plate of steel grades with a specified minimum yield strength 420 MPa < Re ≤ 960 MPa (category D)

Nominal thickness (mm)	Tolerances for a nominal width (mm)		
	w ≤ 1200	1200 < w ≤ 1500	1500 < w ≤ 1650
t ≤ 2,00	±0,24	±0,27	±0,29
2,00 < t ≤ 2,50	±0,25	±0,29	±0,32
2,50 < t ≤ 3,00	±0,28	±0,31	±0,34
3,00 < t ≤ 4,00	±0,31	±0,34	±0,36
4,00 < t ≤ 5,00	±0,34	±0,36	±0,39
5,00 < t ≤ 6,00	±0,36	±0,39	±0,41
6,00 < t ≤ 8,00	±0,41	±0,42	±0,43
8,00 < t ≤ 10,00	±0,45	±0,46	±0,46
10,00 < t ≤ 12,50	±0,49	±0,50	±0,52
12,50 < t ≤ 15,00	±0,52	±0,53	±0,56
15,00 < t ≤ 25,00	±0,56	±0,59	±0,63

Not:
Thickness tolerances of steel grades with a minimum specified yield strength > 960 MPa need to be agreed at the time of enquiry and order. If no agreement is made, the thickness tolerances of such products are at the discretion of the manufacturer.

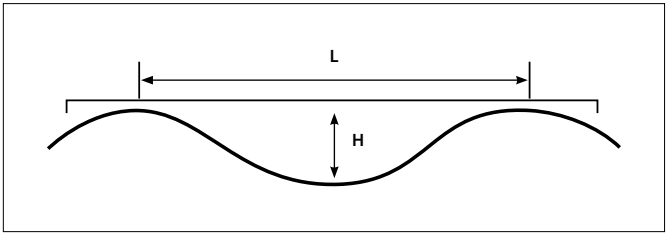
TOLERANCES ON WIDTH

The width shall be measured at right angles to the longitudinal axis of the product.

Nominal Width (mm)	Tolerance (mm)	
	Mill Edges	
	Lower (mm.)	Upper (mm)
W≤1200	0	+20
1200<W≤ 1650	0	+20

TOLERANCES ON FLATNESS ON SHEET

Deviation from flatness shall be determined by measuring the deviation in distance between the product and a flat horizontal surface on which it is placed.



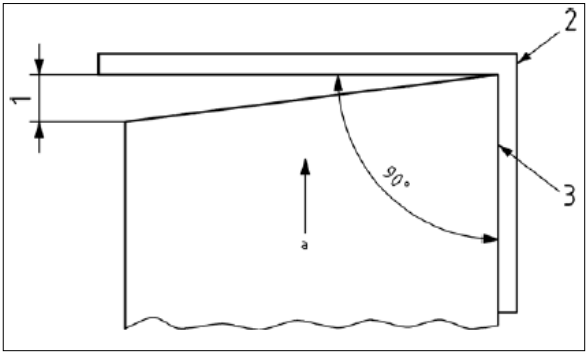
Nominal width (mm)	Nominal thickness (mm)	Normal flatness tolerances Low carbon steel, categories A, B and C Measuring length 1000 mm	Category D Measuring length 1000 mm
w ≤ 1200	t ≤ 2,00	18	To be agreed with the customer
	2,00 < t ≤ 2,50	15	
	2,50 < t ≤ 3,00		
	3,00 < t ≤ 5,00		18
	5,00 < t ≤ 8,00	13	16
	8,00 < t ≤ 15,00		16
	15,00 < t ≤ 25,00		16
1200 < w ≤ 1500	t ≤ 2,00	21	To be agreed with the customer
	2,00 < t ≤ 2,50	18	
	2,50 < t ≤ 3,00		
	3,00 < t ≤ 5,00		21
	5,00 < t ≤ 8,00	16	19
	8,00 < t ≤ 15,00		
	15,00 < t ≤ 25,00		
w > 1500	t ≤ 2,00	26	To be agreed with the customer
	2,00 < t ≤ 2,50	22	
	2,50 < t ≤ 3,00		
	3,00 < t ≤ 5,00		25
	5,00 < t ≤ 8,00	19	22
	8,00 < t ≤ 15,00		22
	15,00 < t ≤ 25,00		22

Note:
Flatness tolerances of steel grades with a minimum specified yield strength > 960 MPa need to be agreed at the time of enquiry and order. If no agreement is made, the flatness tolerances of such products are at the discretion of the manufacturer.

OUT OF SQUARENESS TOLERANCES

The out-of-squareness 'u' is the orthogonal projection of a transverse edge over a longitudinal edge.

The out-of-squareness 'u' measured shall not be exceed 1% of the actual width of sheet/ plate.



1 Out-of-squareness (u)
2 Square
3 Side edge
a Rolling direction

EDGE CAMBER

Edge camber shall not exceed 20 mm for any length of 5 000 mm in the case of strip with mill edges.

COIL DIMENSIONS AND WEIGHTS

Tolerances on coil inside diameter and maximum values for outside diameter and coil weigth are given in following table.

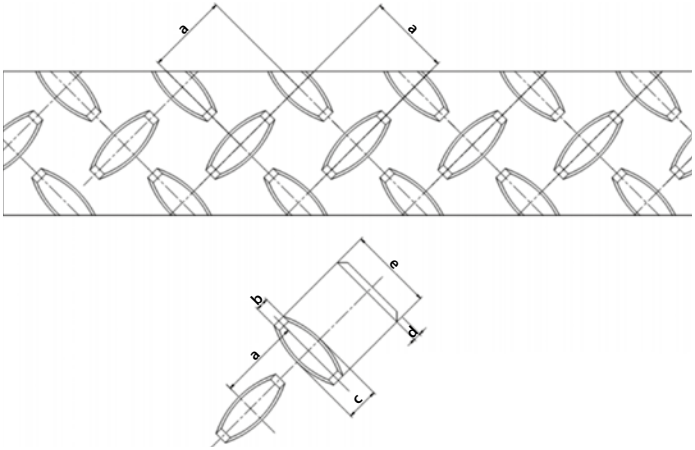
Inside Diameter	**762 +0/-50**
Outside Diameter	**Max. 2100mm**
Coil Weigth	**Max. 28 Tonnes**

FLOOR PLATES (TEARDROP PATTERN) PRODUCTION LIMITS AND TOLERANCES

Floor plates produce according to ASTM A786/A786M(2009) with the Pattern No:4. Production limits are as in follows;

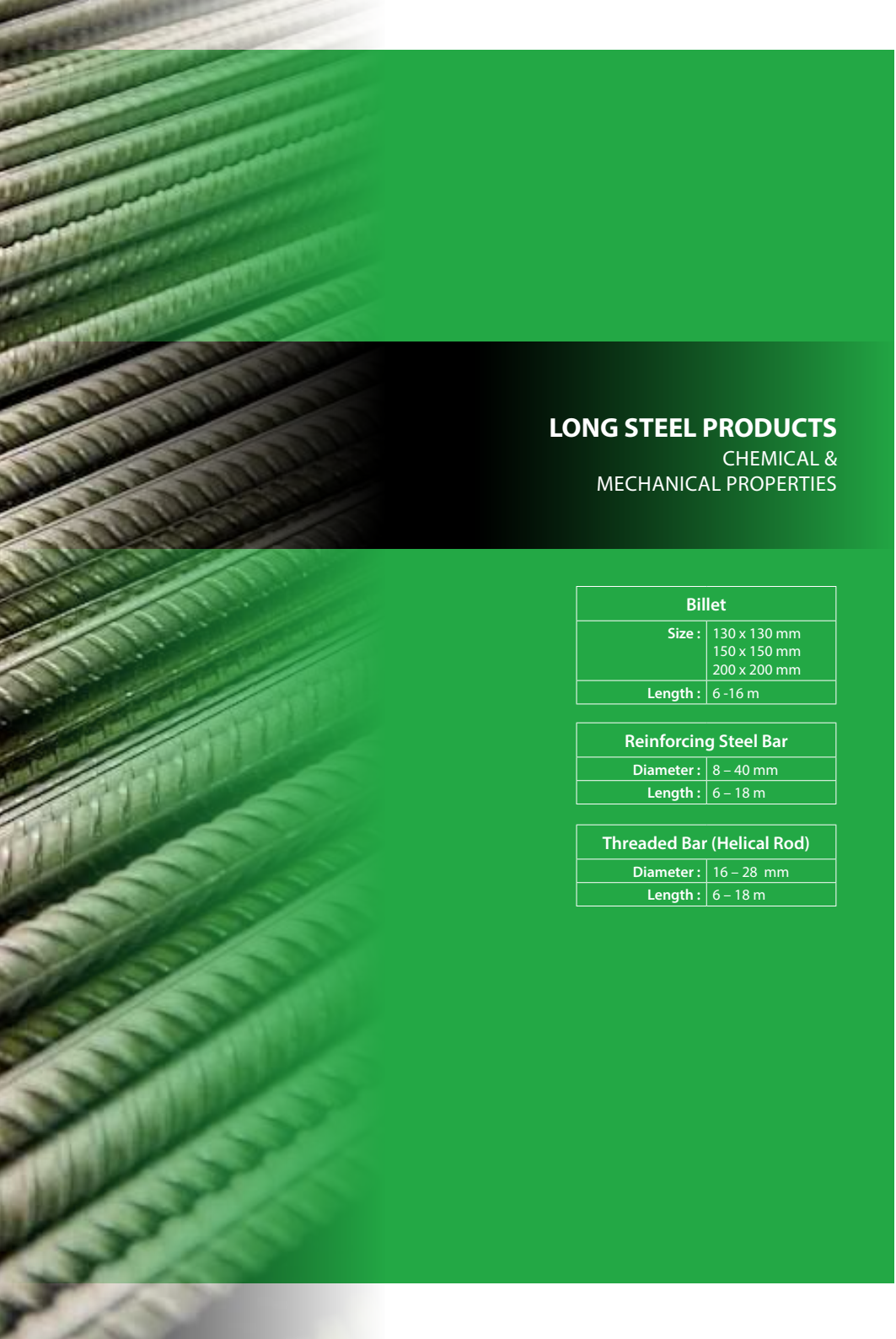
Thicknes (mm)	Maximum Width (mm)								
	Group-1	Group-2	Group-3	Group-4	Group-5	Group-6	Group-7	Group-8	Group-9
2,0-2,99		1250							
3,0-3,99		1550							
4,0-4,99		1550							
5,0-5,99		1550							
6,0-12,0		1550							

Minimum order width is 800mm.
Production in other quality groups should be discussed at the order stage.
Minimum rolling campaign is 2000 mton.



	Dimension (mm)	Dimension (Inch)
a	22.3 (-/+1)mm	~7/8″
b	3.4 (-/+0.5)mm	~9/64″
c	9.3 (-0.5 / +1.5)mm	~23/64″
d	1 (-/+0.3)mm (Hedeflenen)	~1/32″ ≤ d ≤ ~3/64″
e	25,4 (-/+2)mm	~1″

* Except the core thickness between 4 - 2.5 mm for which the height of patern (d) may vary 0.7 mm to 2 mm and core thickness of less than 2.5 mm for which the height of patern (d) may vary 0.5 mm to 2 mm.



LONG STEEL PRODUCTS

CHEMICAL &
MECHANICAL PROPERTIES

Billet	
Size :	130 x 130 mm 150 x 150 mm 200 x 200 mm
Length :	6 -16 m

Reinforcing Steel Bar	
Diameter :	8 – 40 mm
Length :	6 – 18 m

Threaded Bar (Helical Rod)	
Diameter :	16 – 28 mm
Length :	6 – 18 m

BILLET- CARBON STEEL QUALITIES CHEMICAL COMPOSITION (%)

Qualities	Standard	C	Mn	Si	P	S	Cr	Ni	Cu	Mo	V	N	Ceq
				max.	max.	max.	max.	max.	max.	max.	max.	max.	max.
SAE 1005	SAE J 403 : 2014	0.06 max.	0.35 max	-	0,040	0,050	0.20	0.25	0.35	0.060	-	-	-
SAE 1006	SAE J 403 : 2014	0.08 max.	0.45 max	-	0,040	0.050	0.20	0.25	0.35	0.060	-	-	-
SAE 1008	SAE J 403 : 2014	0.10 max.	0.50 max	-	0,040	0.050	0.20	0.25	0.35	0.060	-	-	-
SAE 1010	SAE J 403 : 2014	0.08-0.13	0.30-0.60	-	0,040	0.050	0.20	0.25	0.35	0.060	-	-	-
SAE 1012	SAE J 403 : 2014	0.10-0.15	0.30-0.60	-	0,040	0.050	0.20	0.25	0.35	0.060	-	-	-
SAE 1015	SAE J 403 : 2014	0.13-0.18	0.30-0.60	-	0,040	0.050	0.20	0.25	0.35	0.060	-	-	-
SAE 1018	SAE J 403 : 2014	0.15-0.20	0.60-0.90	-	0,040	0.050	0.20	0.25	0.35	0.060	-	-	-
SAE 1020	SAE J 403 : 2014	0.18-0.23	0.30-0.60	-	0,040	0.050	0.20	0.25	0.35	0.060	-	-	-
SAE 1030	SAE J 403 : 2014	0.28-0.34	0.60-0.90	-	0,040	0.050	0.20	0.25	0.35	0.060	-	-	-
SAE 1035	SAE J 403 : 2014	0.32-0.38	0.60-0.90	-	0,040	0.050	0.20	0.25	0.35	0.060	-	-	-
SAE 1040	SAE J 403 : 2014	0.37-0.44	0.60-0.90	-	0,040	0.050	0.20	0.25	0.35	0.060	-	-	-
SAE 1045	SAE J 403 : 2014	0.43-0.50	0.60-0.90	-	0,040	0.050	0.20	0.25	0.35	0.060	-	-	-
SAE 1050	SAE J 403 : 2014	0.48-0.55	0.60-0.90	-	0,040	0.050	0.20	0.25	0.35	0.060	-	-	-
SAE 1055	SAE J 403 : 2014	0.50-0.60	0.60-0.90	-	0,040	0.050	0.20	0.25	0.35	0.060	-	-	-
SAE 1060	SAE J 403 : 2014	0.55-0.65	0.60-0.90	-	0,040	0.050	0.20	0.25	0.35	0.060	-	-	-

BILLET FOR REINFORCING STEEL BAR QUALITIES CHEMICAL COMPOSITION (%)

Qualities	Standard	C	Mn	Si	P	S	Cr	Ni	Cu	Mo	V	N	Ceq
		max.	max.	max.	max.	max.	max.	max.	max.	max.	max.	max.	max.
CA 50	ABNT NBR 7480:2022	0,35	1,50	0,50	0,050	0,050	-	-	-	-	-	-	0,50
500 N	AS/NZS 4671:2019	0,22	-	-	0,050	0,050	-	-	-	-	-	-	0,44
500 E	AS/NZS 4671:2019	0,22	-	-	0,050	0,050	-	-	-	-	-	-	0,49
GR 40	ASTM A 615:2022	-	-	-	0,060	-	-	-	-	-	-	-	-
GR 60	ASTM A 615:2022	-	-	-	0,060	-	-	-	-	-	-	-	-
GR 75	ASTM A 615:2022	-	-	-	0,060	-	-	-	-	-	-	-	-
GR 60	ASTM A 706:2022	0,30	1,50	0,50	0,035	0,045	-	-	-	-	-	-	0,55
B 500B	BDS 9252:2007	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500C	BDS 9252:2007	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 B	BS 4449:2005	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 C	BS 4449:2005	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
GR 400R	CAN/CSA G30.18-21	-	-	-	0,050	-	-	-	-	-	-	-	-
GR 400W	CAN/CSA G30.18-21	0,30	1,60	0,50	0,035	0,045	-	-	-	-	-	-	0,55
GR 500W	CAN/CSA G30.18-21	0,30	1,60	0,50	0,035	0,045	-	-	-	-	-	-	0,55
St 50	DIN 17100:1980	0.24-0.33	0.60-0.90	0.10-0.40	0.050	0.050	0.30	0.30	0.50	0.050	0.010	-	-
St 60	DIN 17100:1980	0.34-0.43	0.60-0.90	0.10-0.40	0.050	0.050	0.30	0.30	0.50	0.050	0.010	-	-
St 37-2	DIN 17100:1980	0,05-0.19	0.30-0.6	0.05-0.30	0.050	0.050	0.30	0.30	0.50	0.050	0.010	-	-
B 500 B	DIN 488:2009	0,22	-	-	0,050	0,050	-	-	0,60	-	-	0,012	0,50
A 400 NR	E 449:2010	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
A 500 NR	E 450:2010	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
3SP	GOST 380:2005	0.14-0.22	0.40-0.65	0.15-0.30	0.040	0.050	0.30	0.30	0.30	0.050	0.010	0.010	-
5SP	GOST 380:2005	0.28-0.37	0.50-0.80	0.15-0.30	0.040	0.050	0.30	0.30	0.30	0.050	0.010	0.010	-
A 500 C	GOST-R 52544:2006	0,22	1,60	0,90	0,050	0,050	-	-	0,50	-	-	0,012	0,50
GR 40	INTE C400:2020	-	-	-	0,060	-	-	-	-	-	-	-	-
GR 60	INTE C400:2020	-	-	-	0,060	-	-	-	-	-	-	-	-
GR 60	INTE C401:2020	0,30	1,50	0,50	0,035	0,045	-	-	-	-	-	-	0,55
B 500 BWR	IS 6935-2 :2007	0,22	1,60	0,60	0,050	0,050	-	-	-	-	-	0,012	0,50
GR 300	JS 33 : 2013	-	-	-	0,050	-	-	-	-	-	-	-	0,40
GR 400	JS 33 : 2013	0,30	1,50	0,50	0,035	0,045	-	-	-	-	-	-	0,55
B 500 B	LVS 191-1:2012	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 C	LVS 191-1:2012	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500B	MS 146 : 2014	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
BE500S	NBN_A_24-301-304:1986	0,22	-	-	0,050	0,050	-	-	-	-	-	0,012	0,50
A 440- 280H	NCh 204:2020	-	-	-	0,045	-	-	-	-	-	-	-	-
A 630- 420H	NCh 204:2020	-	-	-	0,045	-	-	-	-	-	-	-	-
B 500 B	NEN 6008:2020	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 B	NF A35-080-1:2020	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 NB	NS3576-2: 2012	0,22	1,60	0,60	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 NC	NS3576-3: 2012	0,22	1,60	0,60	0,050	0,050	-	-	0,80	-	-	0,012	0,50
GR 60	NTC 2289:2015	0,30	1,50	0,50	0,035	0,045	-	-	-	-	-	-	0,55
B 500 SP	PN-H-93220:2018	0,22	1,60	0,55	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 B	SFS 1300:2020	0,22	-	-	0,050	0,050	-	-	0,60	-	-	0,012	0,50
B 500 C	SFS 1300:2020	0,22	-	-	0,050	0,050	-	-	0,60	-	-	0,012	0,50
S 400	SI 4466-3:2013	0,38	-	-	0,050	0,050	-	-	-	-	-	-	0,60
S 400W	SI 4466-3:2013	0,24	-	-	0,050	0,050	-	-	-	-	-	-	0,55
S 500 W-C	SI 4466-3:2013	0.24	1.80	0.55	0.050	0.050	-	-	-	-	-	-	0.55
OB 37	SR 438-1:2012	0,23	0,75	0,07	0,045	0,045	0,30	0,30	-	-	-	-	-
PC 52	SR 438-1:2012	0,22	1,60	0,55	0,045	0,045	0,30	0,30	0,50	-	-	-	0,50
B 500 B	SRPS EN 10080:2008	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 C	SRPS EN 10080:2008	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
K 500 B-T	SS212540:2014	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
K 500 C-T	SS212540:2014	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 B (C)	ST 009: 2001	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 420 B	TS 708 : 2016	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 420C	TS 708 : 2016	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 B	TS 708 : 2016	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 C	TS 708 : 2016	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
S 420	TS 708 : 2016	0,45	-	-	0,050	0,050	-	-	-	-	-	-	-

REINFORCING STEEL BAR QUALITIES CHEMICAL COMPOSITION (%) - 1

Qualities	Standard	C	Mn	Si	P	S	Cr	Ni	Cu	Mo	V	N	Ceq
		max.	max.	max.	max.	max.	max.	max.	max.	max.	max.	max.	max.
CA 50	ABNT NBR 7480:2022	0,35	1,50	0,50	0,050	0,050	-	-	-	-	-	-	0,50
500 N	AS/NZS 4671:2019	0,22	-	-	0,050	0,050	-	-	-	-	-	-	0,44
500 E	AS/NZS 4671:2019	0,22	-	-	0,050	0,050	-	-	-	-	-	-	0,49
GR 40	ASTM A 615:2022	-	-	-	0,060	-	-	-	-	-	-	-	-
GR 60	ASTM A 615:2022	-	-	-	0,060	-	-	-	-	-	-	-	-
GR 75	ASTM A 615:2022	-	-	-	0,060	-	-	-	-	-	-	-	-
GR 60	ASTM A 706:2022	0,30	1,50	0,50	0,035	0,045	-	-	-	-	-	-	0,55
B 500B	BDS 9252:2007	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500C	BDS 9252:2007	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 B	BS 4449:2005	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 C	BS 4449:2005	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
GR 400R	CAN/CSA G30.18-21	-	-	-	0,050	-	-	-	-	-	-	-	-
GR 400W	CAN/CSA G30.18-21	0,30	1,60	0,50	0,035	0,045	-	-	-	-	-	-	0,55
GR 500W	CAN/CSA G30.18-21	0,30	1,60	0,50	0,035	0,045	-	-	-	-	-	-	0,55
B 500 B	DIN 488:2009	0,22	-	-	0,050	0,050	-	-	0,60	-	-	0,012	0,50
A 400 NR	E 449 : 2010	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
A 500 NR	E 450 : 2010	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
A 500 C	GOST-R 52544:2006	0,22	1,60	0,90	0,050	0,050	-	-	0,50	-	-	0,012	0,50
GR 40	INTE C400:2020	-	-	-	0,060	-	-	-	-	-	-	-	-
GR 60	INTE C400:2020	-	-	-	0,060	-	-	-	-	-	-	-	-
GR 60	INTE C401:2020	0,30	1,50	0,50	0,035	0,045	-	-	-	-	-	-	0,55
B 500 BWR	IS 6935-2 :2007	0,22	1,60	0,60	0,050	0,050	-	-	-	-	-	0,012	0,50
GR 300	JS 33 : 2013	-	-	-	0,050	-	-	-	-	-	-	-	0,40
GR 400	JS 33 : 2013	0,30	1,50	0,50	0,035	0,045	-	-	-	-	-	-	0,55
B 500 B	LVS 191-1:2012	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 C	LVS 191-1:2012	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500B	MS 146 : 2014	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
BE500S	NBN_A_24-301-304:1986	0,22	-	-	0,050	0,050	-	-	-	-	-	0,012	0,50

REINFORCING STEEL BAR QUALITIES MECHANICAL PROPERTIES - 1

Qualities	Standard	Yield Strength (Re) N/mm²	Tensile Strength (Rm) N/mm²	Elongation %	Agt %	R_m / Re	Re,act / Re,nom
CA 50	ABNT NBR 7480 : 2007	≥ 500	-	≥ 8	≥ 5	≥ 1,10	-
500 N	AS/NZS 4671:2019	≥ 500 ≤ 650	-	-	≥ 5	≥ 1,08	-
500 E	AS/NZS 4671:2019	≥ 500 ≤ 600	-	-	≥ 10	≥ 1,15 ≤ 1,40	-
GR 40	ASTM A 615:2022	≥ 280	≥ 420	≥ 11 - 12	-	≥ 1,10	-
GR 60	ASTM A 615:2022	≥ 420	≥ 550	≥ 7 - 9	-	≥ 1,10	-
GR 75	ASTM A 615:2022	≥ 520	≥ 690	≥ 6 - 7	-	-	-
GR 60	ASTM A 706:2022	≥ 420 ≤ 540	≥ 550	≥ 10 - 14	-	≥ 1,25	-
B 500 B	BDS 9252:2007	≥ 500	≥ 550	-	≥ 5	≥ 1,08	≤ 1,25
B 500 C	BDS 9252:2007	≥ 500	≥ 575	-	≥ 7,5	≥ 1,15 ≤ 1,35	≤ 1,25
B 500 B	BS 4449:2005	≥ 500 ≤ 650	-	-	≥ 5	≥ 1,08	-
B 500 C	BS 4449:2005	≥ 500 ≤ 650	-	-	≥ 7,5	≥ 1,15 < 1,35	-
GR 400R	CAN/CSA G30.18-21	≥ 400	≥ 540	≥ 7 - 10	-	≥ 1,15	-
GR 400W	CAN/CSA G30.18-21	≥ 400 ≤ 525	≥ 540	≥ 12 - 13	-	≥ 1,15	-
GR 500W	CAN/CSA G30.18-21	≥ 500 ≤ 625	≥ 625	≥ 10 - 12	-	≥ 1,15	-
B 500 B	DIN 488 : 2009	≥ 500	-	-	≥ 5	≥ 1,08	≤ 1,30
A 400 NR	E 449 : 2010	≥ 400	-	-	≥ 5	≥ 1,08	-
A 500 NR	E 450 : 2010	≥ 500	-	-	≥ 5	≥ 1,08	-
A 500 C	GOST-R 52544:2006	≥ 500	≥ 600	≥ 14	-	≥ 1,08	-
GR 40	INTE C400:2020	≥ 280	≥ 420	≥ 11 - 12	-	≥ 1,10	-
GR 60	INTE C400:2020	≥ 420	≥ 550	≥ 7-9	-	≥ 1,10	-
GR 60	INTE C401:2020	≥ 420 ≤ 540	≥ 550	≥ 10 - 14	-	≥ 1,25	-
B 500 BWR	IS 6935-2 :2007	≥ 500	-	≥ 14	≥ 5	≥ 1,08	-
GR 300	JS 33 : 2013	≥ 300 ≤ 425	-	≥ 10 - 12	-	≥ 1,25	-
GR 400	JS 33 : 2013	≥ 400 ≤ 525	-	≥ 7 - 9	-	≥ 1,25	-
B 500 B	LVS 191-1:2012	≥ 500	-	-	≥ 5	≥ 1,08	≤ 1,30
B 500 C	LVS 191-1:2012	≥ 500	-	-	≥ 7,5	≥ 1,15 ≤ 1,35	≤ 1,30
B 500 B	MS 146 :2014	≥ 500	-	-	≥ 5	≥ 1,08	-
BE500S	NBN_A_24-301-304:1986	≥ 500	≥ 550	-	≥ 5	≥ 1,08	-

REINFORCING STEEL BAR QUALITIES CHEMICAL COMPOSITION (%) - 2

Qualities	Standard	C	Mn	Si	P	S	Cr	Ni	Cu	Mo	V	N	Ceq
		max.	max.	max.	max.	max.	max.	max.	max.	max.	max.	max.	max.
A 440- 280H	NCh 204:2020	-	-	-	0,045	-	-	-	-	-	-	-	-
A 630- 420H	NCh 204:2020	-	-	-	0,045	-	-	-	-	-	-	-	-
B 500 B	NEN 6008:2020	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 B	NF A35-080-1:2020	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 NB	NS3576-2: 2012	0,22	1,60	0,60	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 NC	NS3576-3: 2012	0,22	1,60	0,60	0,050	0,050	-	-	0,80	-	-	0,012	0,50
GR 60	NTC 2289:2015	0,30	1,50	0,50	0,035	0,045	-	-	-	-	-	-	0,55
B 500 SP	PN-H-93220:2018	0,22	1,60	0,55	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 B	SFS 1300:2020	0,22	-	-	0,050	0,050	-	-	0,60	-	-	0,012	0,50
B 500 C	SFS 1300:2020	0,22	-	-	0,050	0,050	-	-	0,60	-	-	0,012	0,50
S 400	SI 4466-3:2013	0,38	-	-	0,050	0,050	-	-	-	-	-	-	0,60
S 400W	SI 4466-3:2013	0,24	-	-	0,050	0,050	-	-	-	-	-	-	0,55
S 500 W-C	SI 4466-3:2013	0.24	1.80	0.55	0.050	0.050	-	-	-	-	-	-	0.55
OB 37	SR 438-1:2012	0,23	0,75	0,07	0,045	0,045	0,30	0,30	-	-	-	-	-
PC 52	SR 438-1:2012	0,22	1,60	0,55	0,045	0,045	0,30	0,30	0,50	-	-	-	0,50
B 500 B	SRPS EN 10080:2008	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 C	SRPS EN 10080:2008	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
K 500 B-T	SS212540:2014	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
K 500 C-T	SS212540:2014	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 B (C)	ST 009: 2001	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 420 B	TS 708 : 2016	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 420C	TS 708 : 2016	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 B	TS 708 : 2016	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
B 500 C	TS 708 : 2016	0,22	-	-	0,050	0,050	-	-	0,80	-	-	0,012	0,50
S 420	TS 708 : 2016	0,45	-	-	0,050	0,050	-	-	-	-	-	-	-

REINFORCING STEEL BAR QUALITIES MECHANICAL PROPERTIES - 2

Qualities	Standard	Yield Strength (Re) N/mm²	Tensile Strength (Rm) N/mm²	Elongation %	Agt %	R_m / Re	Re,act / Re,nom
A 440- 280H	NCh 204 : 2020	≥ 280	≥ 440	≥ 16	-	≥ 1,25	-
A 630- 420H	NCh 204 : 2020	≥ 420 ≤ 545	≥ 630	≥ 8	-	≥ 1,25	-
B 500 B	NEN 6008 : 2020	≥ 500	-	-	≥ 5	≥ 1,08	-
B 500B	NFA 35-080:2020	≥ 500	-	-	≥ 5	≥ 1,08	≤ 1,30
B 500 NB	NS3576-2: 2012	≥ 500 ≤ 650	≥ 550	-	≥ 5	≥ 1,08	-
B 500 NC	NS3576-3: 2012	≥ 500 ≤ 650	≥ 600	-	≥ 7,5 - 8	≥ 1,15 ≤ 1,35	-
GR 60	NTC 2289:2015	≥ 420 ≤ 540	≥ 550	≥ 10 - 14	-	≥ 1,25	-
B 500 SP	PN-H-93220:2018	≥ 500 ≤ 625	-	≥ 16	≥ 8	≥ 1,15 ≤ 1,35	-
B 500 B	SFS 1300:2020	≥ 500	-	-	≥ 5	≥ 1,08	-
B 500 C	SFS 1300:2020	≥ 500	-	-	≥ 7,5	≥ 1,15 ≤ 1,35	-
S 400	SI 4466-3:2013	≥ 400 ≤ 520	-	≥ 12	≥ 8	≥ 1,25	-
S 400 W	SI 4466-3:2013	≥ 400 ≤ 520	-	≥ 12	≥ 8	≥ 1,25	-
S 500 W-C	SI 4466-3:2013	≥ 500 ≤ 650	-	≥ 11	≥ 7,5	≥ 1,15 ≤ 1,35	-
OB 37	SR 438-1:2012	6 mm≤d≤12 mm; ≥ 255 14 mm≤d≤40 mm; ≥235	≥ 360	≥ 25	-	-	-
PC 52	SR 438-1:2012	8 mm≤d≤14 mm; ≥ 355 16 mm≤d≤28 mm; ≥ 345 32 mm≤d≤40 mm; ≥ 335	≥ 510	≥ 20	-	-	-
B 500 B	SRPS EN 10080:2008	≥ 500	-	-	≥ 5	≥ 1,08	-
B 500 C	SRPS EN 10080:2008	≥ 500	-	-	≥ 7,5	≥ 1,15 < 1,35	-
K 500 B-T	SS212540:2014	≥ 500 ≤ 600	-	-	≥ 5	≥ 1,08	-
K 500 C-T	SS212540:2014	≥ 500 ≤ 600	-	-	≥ 7,5	≥ 1,15 < 1,35	-
B 500 B (C)	ST 009: 2001	≥ 500 ≤ 650	-	≥ 16	≥ 7,5	≥ 1,15 ≤ 1,35	≤ 1,30
B 420 B	TS 708 : 2016	≥ 420	-	≥ 12	≥ 5	≥ 1,08	-
B 420 C	TS 708 : 2016	≥ 420	-	≥ 12	≥ 7,5	≥ 1,15 < 1,35	≤ 1,30
B 500 B	TS 708 : 2016	≥ 500	-	≥ 12	≥ 5	≥ 1,08	-
B 500 C	TS 708 : 2016	≥ 500	-	≥ 12	≥ 7,5	≥ 1,15 < 1,35	≤ 1,30
S 420	TS 708 : 2016	≥ 420 ≤ 546	≥ 500	≥ 10	-	≥ 1,15	≤ 1,30

HELICAL ROD QUALITIES CHEMICAL COMPOSITION (%)

Qualities	Standard	C	Mn	Si	P	S	Cr	Ni	Cu	Mo	V	N	Ceq
			max		max	max	max	max	max	max	max	max	max
A 630- 420H	NCh 204 : 2020	-	-	-	0,045	-	-	-	-	-	-	-	-
A 440- 280H	NCh 204 : 2020	-	-	-	0,045	-	-	-	-	-	-	-	-

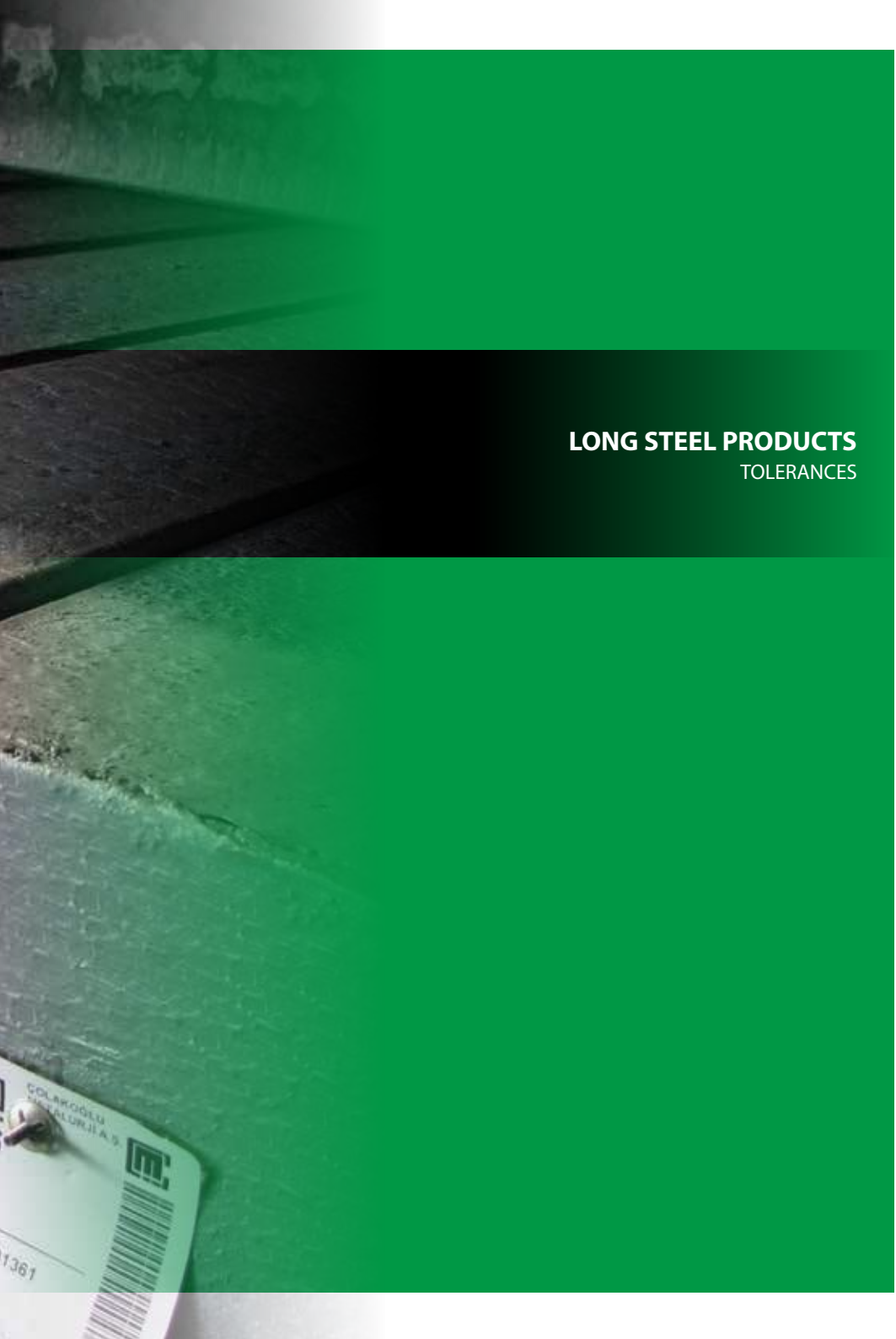
* Different chemical requirements and qualities shall be discussed.

HELICAL ROD QUALITIES MECHANICAL PROPERTIES

Qualities	Standard	Yield Strength (Re) N/mm²	Tensile Strength (Rm) N/mm²	Elongation %	Agt %	R_m/Re	Re,act /Re,nom
A 630- 420H	NCh 204 : 2020	≥ 420 ≤ 580	≥ 630	≥ 8	-	≥ 1,25	-
A 440- 280H	NCh 204 : 2020	≥ 280	≥ 440	≥ 16	-	≥ 1,25	-

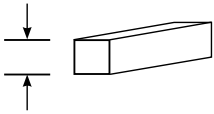
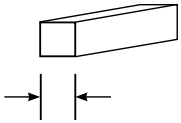
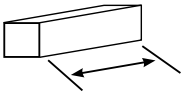
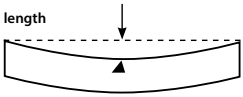
* Different requirements shall be discussed.


IA01361K025
DÖKÜM NO :IA01361
IA01361K025
DÖKÜM NO :IA0
BOY(MM) :12000.0



LONG STEEL PRODUCTS

TOLERANCES

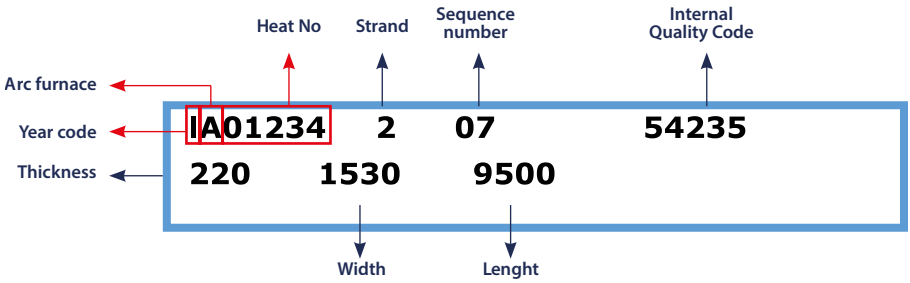
BILLET TOLERANCES		
	Tolerances	
THICKNESS	120 - 130 mm : + / - 3 mm 150 - 160 mm : + / - 5 mm	
WIDTH	120 - 130 mm : + / - 3 mm 150 - 160 mm : + / - 5 mm	
LENGTH	+ / - 100 mm	
STRAIGHTNESS	≤ 6 mm/m (Maximum 70 mm along the entire length)	
RHOMBOIDITY (Rhomboidity (%) = ((d2 - d1)/((d2 + d1)/2)) x 100) (Rhomboidity (mm) = d2 - d1)	≤ % 6 120 - 130 mm : ≤ 8 mm max 150 - 160 mm : ≤ 10 mm max	
TWIST	≤ 1 ° / m	
CORNER RADIUS	120 - 130 mm : ≤ 6 mm 150 - 160 mm : ≤ 8 mm	
INTERNAL DEFECTS IN BILLET	CLASS 1 OR/ AND 2 MAX	-- CentralCracks -- Bottom surface Cracks -- Corner and Non-Corner Cracks -- Longitudinal Cracks -- Diagonal Cracks -- Center Cracks

PACKAGING & LABELLING

FLAT STEEL PRODUCTS

SLAB

Labelling

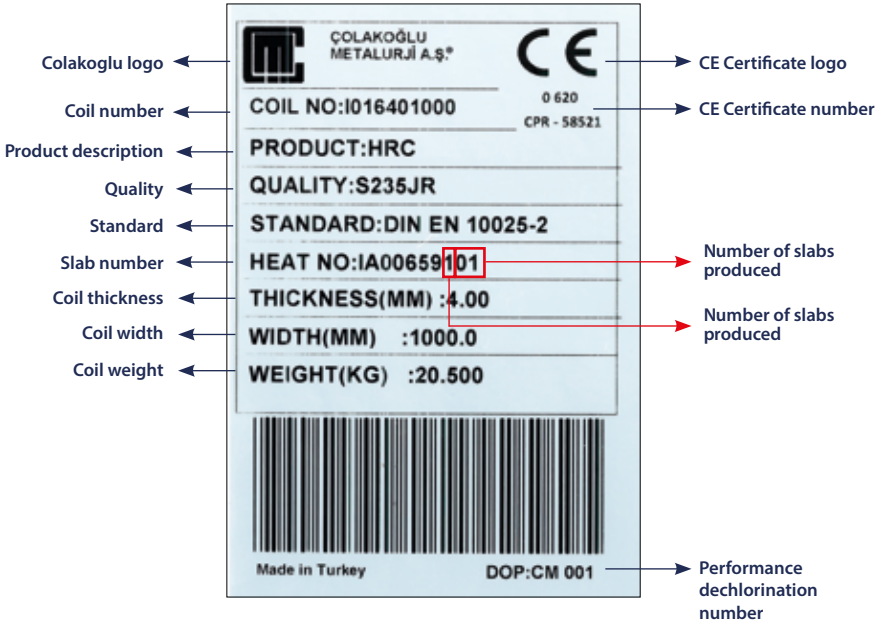


HOT ROLLED FLAT STEEL PRODUCT LABELS

HOT ROLLED COIL SHEET
CHEQUERED COIL FLAT STEEL

Labelling

- Domestic packaging one label in the coil eye.
- Export packaging, one label in coil eye, one label on outer surface.

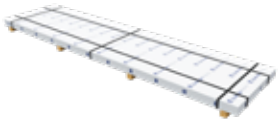


HOT ROLLED FLAT STEEL PACKAGING

HOT ROLLED COIL SHEET CHEQUERED COIL FLAT STEEL

Packaging

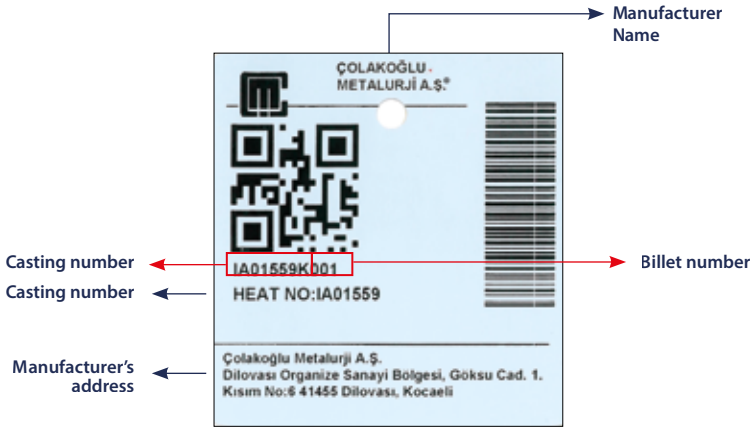
- Domestic packaging; ,two straps form coil eye, two circumferential straps.
- Export packaging; 4 straps from coil eye, two circumferential straps.
- Can be updated according to the customer demand.

Hot Rolled Sheet Products	
HRS, HRS-K, HRS-L, HRS-LS, HRS-PS, HRS-S, HRS-T, HRS-TK, HRSM Products are strapped on a wooden pallet as shown above. It may vary according to customer demand.	
Hot Rolled Pickled Sheet Products	
HRSP, HRSP-K, HRSP-S, HRSPO, HRSPO-K, HRSPO-SProducts are strapped on wooden pallets with paper packaging as shown above. It may vary according to customer demand.	
Hot Rolled Coil Products	
two straps form coil eye, two circumferential straps	
Hot Rolled Pickled Coil Products	
Craft paper, edge protection, two straps form coil eye, two circumferential straps, side protection covers on demand	
Hot Rolled Slitted Products	
HRC-S, HRC-SK, HRC-SR on pallet. 3 strap from eye, 1 strap from perimeter. Packed horizontally or vertically, according to customer demand.	

LONG STEEL PRODUCTS

BILLET

Labelling



LONG STEEL PRODUCTS

RIBBED CONSTRUCTION STEEL / HELICAL ROD

Packaging

- Tie tonnages are between 1-3 tons.
- Depending on the length of the ribbed construction steel, 4-8 ties are made.

Labelling

- Labels are prepared for the specified certificates in line with customer demands.

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2025