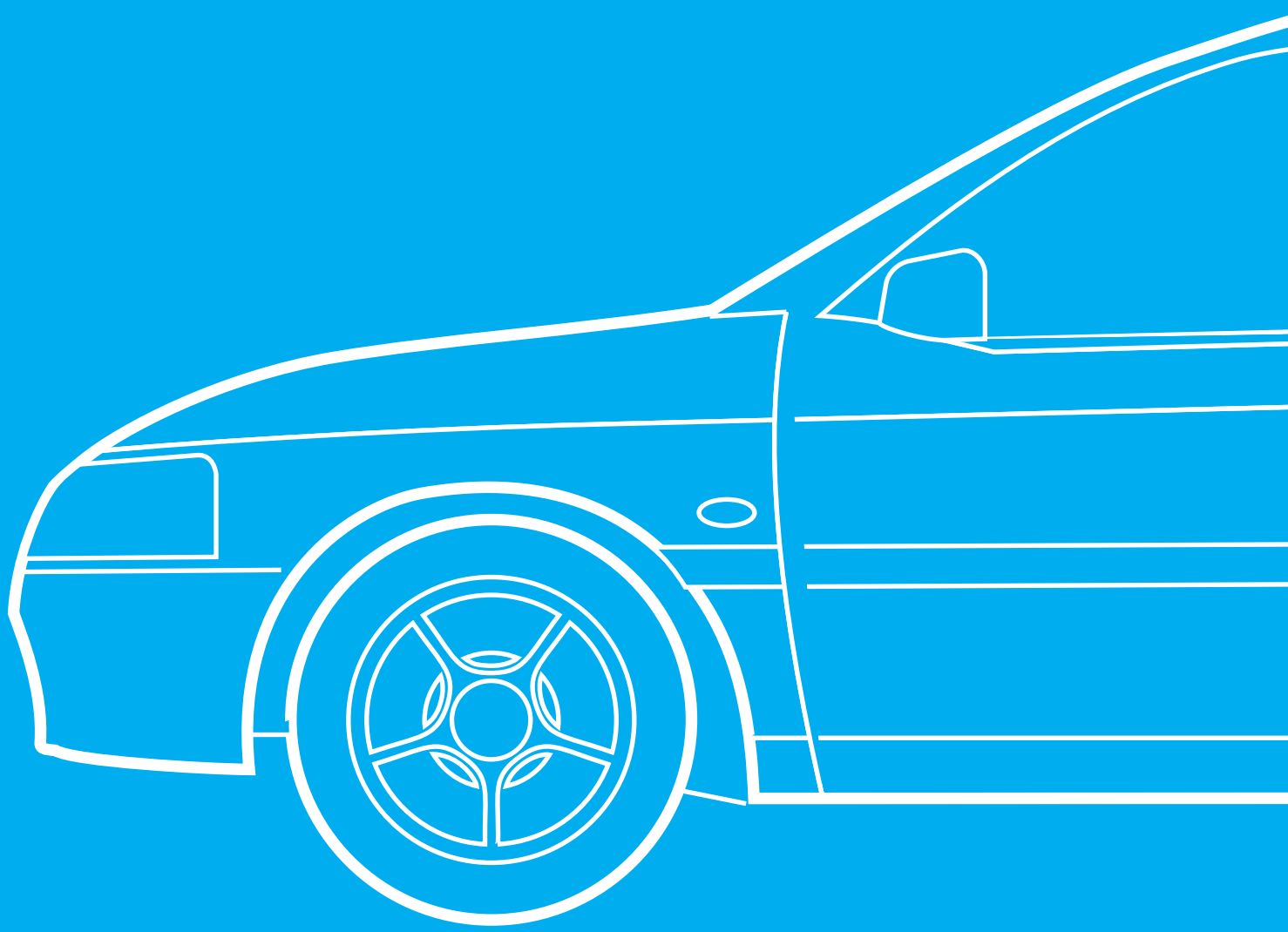
Cold-rolled products



Cold-rolled products

Cold rolling at Corus produces processed strip steel products in a range that offers reduced thicknesses, enhanced surface finishes and forming characteristics, and high-strength grades. Many of these products are specially developed for demanding applications.

General

The cold-rolled strip steel products offered in this section are listed below.

Grades

This section of the catalogue shows the standard grades of cold-rolled steel offered by Corus.

Typical applications

- automotive components and body panels
- components for building and construction
- tubes and sections
- drums and boilers
- radiators
- bathtubs
- furniture
- domestic appliances
- electrical goods

Most cold-rolled steel grades are suitable for:

- electrolytic coating
- hot-dip coating
- post-galvanising
- organic coating
- powder coating

Coil condition

Corus can supply cold-rolled steel in the conditions shown below:

Annealed and skin-passed
Full hard (on request)

Overall thickness and width limits

The overall thickness and width limits for cold-rolled products are shown in table 1 below. The limits for specific products are shown under individual product headings throughout the cold-rolled section.

Coil diameters

The coil diameters that apply to cold-rolled coil are shown in table 2 below.

Coil weight

The maximum weight of cold-rolled coils offered by Corus is determined by three factors:

- Manufacturing limit: Maximum 21kg/mm of width up to 33 tonnes
- Maximum safe outside diameter of coil (mm): 10/7 x coil width (limit of 2800mm)
- Maximum weight allowed by road/rail transport

Corus will discuss these factors with the customer to ensure compatibility with the quantity ordered.

Particular cold-rolled products may have maximum coil weights that differ from the range as a whole (see individual product sections).

If a minimum coil weight has not been specified by the customer and agreed with Corus, then it will be 50% of the agreed maximum weight.

Tolerances on dimensions and shape

Thickness

The thickness tolerances shown in table 3 on page 36 are from EN 10131 : 1991. Corus can offer tolerances closer than the special tolerances (S) shown in the table. They must be agreed with Corus before ordering.

Coil width

The coil width tolerances in table 4 on page 36 are from EN 10131 : 1991.

Flatness

Flatness complies with EN 10131 : 1991 as shown in table 5 for steel grades with R_{eL}<280N/mm^2 and table 6 for steel grades with R_{eL}≥280N/mm^2 and <360N/mm^2, both on page 36.

Edge camber

The deviation over a length of 2 metres will not exceed 6mm.

Table 1: Thickness and width limits

Product form	Thickness		Width	
	Min	Max	Min	Max
Mill edges	0.35	3.1	750	2000
Trimmed edges	0.35	3.1	750	2040

Note: Dimensions are in millimetres.

Table 2: Diameter of cold-rolled coil

Inside diameter	610mm standard, 508mm on request
Outside diameter	Max 10/7 x width (limit 2800mm)

Table 3: Thickness tolerances: EN 10131 : 1991

Nominal thickness		Normal tolerances for a nominal width of			Special tolerances (S) for a nominal width of		
		≤1200	>1200 ≤1500	>1500	≤1200	>1200 ≤1500	>1500
>	≤	±	±	±	±	±	±
0.35	0.40	0.04	0.05	–	0.025	0.035	–
0.40	0.60	0.05	0.06	0.07	0.035	0.045	0.05
0.60	0.80	0.06	0.07	0.08	0.040	0.05	0.05
0.80	1.00	0.07	0.08	0.09	0.045	0.06	0.06
1.00	1.20	0.08	0.09	0.10	0.055	0.07	0.07
1.20	1.60	0.10	0.11	0.11	0.070	0.08	0.08
1.60	2.00	0.12	0.13	0.13	0.080	0.09	0.09
2.00	2.50	0.14	0.15	0.15	0.100	0.11	0.11
2.50	3.10	0.16	0.17	0.17	0.110	0.12	0.12

Note: Dimensions are in millimetres.

Table 4: Tolerances on coil width: EN 10131 : 1991

Nominal width		Normal tolerances		Special tolerances (S)	
		lower –	upper +	lower –	upper +
≥750	≤1200	0	4	0	2
>1200	≤1500	0	5	0	2
>1500	≤2040	0	6	0	3

Note: Dimensions are in millimetres.

Table 5: Flatness tolerances R_{eL}<280N/mm²

EN 10131 : 1991

Tolerance class	Nominal width		Nominal thickness		
			<0.7	≥0.7<1.2	≥1.2
Normal	≥750	<1200	12	10	8
	≥1200	<1500	15	12	10
	≥1500	≤2040	19	17	15
Special (FS)	≥750	<1200	5	4	3
	≥1200	<1500	6	5	4
	≥1500	≤2040	8	7	6

Notes:

1. If sheet is ordered non skin-passed, only the normal tolerances are applicable.
2. The tolerances in this table represent maximum deviation from flatness.
3. Dimensions are in millimetres.

Table 6: Flatness tolerances R_{eL}≥280N/mm² <360N/mm²

EN 10131 : 1991

Tolerance class	Nominal width		Nominal thickness		
			< 0.7	≥0.7<1.2	≥1.2
Normal	≥750	<1200	15	13	10
	≥1200	<1500	18	15	13
	≥1500	≤2040	22	20	19
Special (FS)	≥750	<1200	8	6	5
	≥1200	<1500	9	8	6
	≥1500	≤2040	12	10	9

Notes:

1. If sheet is ordered non skin-passed, only the normal tolerances are applicable.
2. The tolerances in this table represent maximum deviation from flatness.
3. Dimensions are in millimetres.

Surface

Surface Quality

Cold-rolled steels are available in surface quality A or B to EN 10130 : 1999.

Surface quality A

Defects that do not influence the formability or the application of surface coatings are permitted. They are defects such as pores, minor scratches, slight indentations, small grooves or slight discoloration.

Surface quality B

The better side must be free of defects that can spoil the uniform appearance of a high-quality paint or of an electrolytic coating. The other side must at least conform to surface quality A.

Inspected side

As a rule, the upper side of the strip is inspected; on request, the strip can be turned over so that the underside is the inspected side.

Surface texture

Cold-rolled steel is available in several surface textures. Unless specified otherwise, Corus will supply normal roughness. Surface texture cannot be guaranteed for steel that has not been skin passed. Table 7 below shows the range of surface textures according to EN 10130 : 1999. Other surface textures may be available depending upon your requirement.

Preservative oil

The standard oil applied by Corus acts as a protective coating. Other kinds of oil may be available depending upon your requirement.

Corus offers a range of oiling levels from 0.25-1.7g/m^2 per side. Other levels are available on request.

Corus is not responsible for the risk of corrosion if material is ordered in the un-oiled condition.

Table 7: Roughness: EN 10130 : 1999

Grade	Symbol	R_a (µm) cut off 0.8mm
bright	b	≤0.4
semi-bright	g	≤0.9
normal	m	0.6-1.9
rough	r	>1.6

Steel for forming

Cold-rolled steel for forming and deep drawing is available in a range of qualities, each designed for particular applications.

Typical applications

- automotive components and body panels
- components for building
- domestic appliances
- electrical goods
- furniture
- radiators
- tubes

Standards

Cold-rolled steel for forming complies with European standard EN 10130 : 1999 shown in table 8 below. Former national standards and nearest related grades are also shown in the table.

Mechanical properties

The values shown for the mechanical properties in table 9 below are for skin-passed material and are for test pieces taken transverse to the rolling direction.

Chemical composition

Cold-rolled steel for forming meets the requirements of the cast analysis in the standard, as shown in table 10 on page 39.

Dimensions

The width and thickness limits are shown in table 11 on page 39. The minimum width is 750mm.

Table 8: Standards

European	National			
EN 10130 : 1999	**UK**	**France**	**Germany**	**Italy**
Grade	BS 1449 part 1	NFA 36-401	DIN 1623 part 1	UNI 5866
DC01	CR4	C	St 12	FeP01
DC03	CR2/3	E	St 13	FeP02
DC04	CR1/2	ES	St 14	FeP04
DC05	–	SES	St 15	–
DC06	–	IF	IF 18 (SEW095)	–

Table 9: Mechanical properties: EN 10130 : 1999

Grade	R_{eL} (N/mm²)	R_m (N/mm²)	A_{80} (%)	r_{90}	$\bar{r}$	n_{90}	$\bar{n}$
	Max	Min-max	Min	Min	Min	Min	Min
DC01	280	270-410	28	–	–	–	–
DC03	240	270-370	34	1.3	–	–	–
DC04	210	270-350	38	1.6	–	0.180	–
DC05	180	270-330	40	1.9	–	0.210	–
DC06	180	270-350	38	–	1.8	–	0.220

Notes:

1. For thicknesses greater than 0.5mm and less than or equal to 0.7mm, maximum yield strength is increased by 20N/mm² and minimum elongation after fracture is decreased by 2 units.
2. For thicknesses less than or equal to 0.5mm, maximum yield strength is increased by 40N/mm² and minimum elongation after fracture is decreased by 4 units.
3. The values shown for r and n are for thicknesses greater than or equal to 0.5mm.
4. For thicknesses greater than 2mm, r_{90} and $\bar{r}$ are decreased by 0.2 units.
5. For design purposes, the minimum yield strength for DC01, DC03, DC04 and DC05 is 140N/mm².
6. For design purposes, the minimum yield strength for DC06 is 120N/mm².

Table 10: Chemical composition: EN 10130 : 1999

Grade	C	Mn	P	S	Ti
	Max	Max	Max	Max	Max
DC01	0.12	0.60	0.045	0.045	–
DC03	0.10	0.45	0.035	0.035	–
DC04	0.08	0.40	0.030	0.030	–
DC05	0.06	0.35	0.025	0.025	–
DC06	0.02	0.25	0.020	0.020	0.30

Note: Values are in weight percentages.

Table 11: Dimensions: EN 10130 : 1999

Thickness		Width			
		DC01	DC03 DC04	DC05	DC06
>	≤	Max	Max	Max	Max
0.35	0.40	1400	1400	1250	–
0.40	0.43	1650	1650	1550	–
0.43	0.50	1650	1650	1595	1075
0.50	0.60	1850	1850	1700	1850
0.60	0.75	2040	2040	1850	1850
0.75	0.95	2040	2040	2040	1850
0.95	1.10	2040	2040	1810	1850
1.10	1.20	2040	2040	1650	1850
1.20	1.25	2040	2040	1550	1850
1.25	1.40	1900	1900	1525	1850
1.40	1.60	1900	1900	1525	1625
1.60	1.75	1900	1900	1525	1525
1.75	1.80	1850	1850	1525	1525
1.80	1.95	1850	1850	1525	1525
1.95	2.00	1800	1800	1525	1525
2.00	2.05	1800	1800	1525	–
2.05	2.25	1700	1700	1525	–
2.25	2.40	1500	1500	1525	–
2.40	2.65	1300	1300	1525	–
2.65	2.80	1275	1275	–	–
2.80	3.00	1275	1275	–	–
3.00	3.10	1275	–	–	–

Notes:

1. The minimum width is 750mm.
2. Dimensions are in millimetres.

Steel for enamelling

This is cold-rolled steel that has been manufactured with specific properties for enamelling. It has a special chemical composition and has been processed for this application.

The Vitrostaal range comprises steel grades for direct enamelling. Other grades for conventional enamelling and for one-coat or two-coat enamelling are also available. These products are tested for susceptibility to fish-scaling. If a product is to be enamelled directly, then it is also tested for its pickling qualities.

Typical applications

- bathtubs and sinks
- washing machines
- cookers
- architectural wall panels

Standards

Steels for conventional and one-coat or two-coat enamelling comply with European standard EN 10209 : 1996 shown in table 12 below. Former national standards and nearest related grades are also shown in the table. Corus Vitrostaal grades and the nearest related grades from the European standard and from a former national standard are shown in table 13 below.

Mechanical properties

The values shown for the mechanical properties in table 14 below are for skin-passed material and are for test pieces taken in the rolling direction.

Chemical composition

Steels for conventional enamelling meet the requirements of the cast analysis in the standard, as shown in table 15 on page 41. The chemical composition of Vitrostaal direct enamelling grades is shown in table 16 on page 41.

Table 12: Standards: conventional enamelling

European	National	
EN 10209 : 1996	**Germany**	**UK**
Grade	DIN 1623 part 3	BS 1449 part 1
DC01EK	EK 2	CR 4 VE
–	–	CR 3 VE
DC04EK	EK4	CR 2 VE, CR 1 VE
DC04EK (bathtubs)	–	–
DC06EK	–	–

Table 13: Standards: direct enamelling

Corus	European	National
		Germany
Grade	EN 10209 : 1996	DIN 1623 part 3
Vitrostaal 1	DC03ED	ED 3
Vitrostaal 2	DC04ED	ED 4
Vitrostaal IF	DC06ED	–

Table 14: Mechanical properties: EN 10209 : 1996

Grade	R_{eL} (N/mm²)[1,2]	R_m (N/mm²)	A_{80} (%)[1,2]	$\bar{r}$[3]
	Max	Min-max	Min	Min
DC01EK	270[5]	270-390	30	–
DC04EK	220[5]	270-350	36	–
DC04EK (bathtubs)	210	270-350	38	–
DC06EK	190[6]	270-350	38	1.6
DC03ED	240[5]	270-370	34	–
DC04ED	210[4,5]	270-350	38	–
DC06ED	190[6]	270-350	38	1.6

Notes:

1. For thicknesses greater than 0.5mm and less than or equal to 0.7mm, maximum yield strength is increased by 20N/mm² and minimum elongation after fracture is decreased by 2 units.
2. For thicknesses less than or equal to 0.5mm, maximum yield strength is increased by 40N/mm² and minimum elongation after fracture is decreased by 4 units.
3. The values shown for r are for thicknesses greater than or equal to 0.5mm. For thicknesses greater than 2mm, $\bar{r}$ is decreased by 0.2 units.
4. For thicknesses greater than or equal to 1.5mm in DC04ED, maximum yield strength is 225N/mm².
5. For design purposes, the minimum yield strength for DC01EK, DC03ED, DC04EK and DC04ED is 140N/mm².
6. For design purposes, the minimum yield strength for DC06EK and DC06ED is 120N/mm².

Dimensions

The width and thickness limits are shown in table 17 below. The minimum width for all products is 750mm.

Coil weight

The maximum coil weight for Vitrostaal 1, Vitrostaal 2, DC03ED and DC04ED is 28 tonnes, subject to the maximum safe outside diameter of the coil and to road/rail transport (see page 35). The maximum coil weight of other enamelling grades is as shown on page 35.

Surface

Steel for enamelling has a roughness of R_a=1.5-2.0µm. Steels for direct enamelling, i.e. Vitrostaal 1, Vitrostaal 2, DC03ED and DC04ED, normally have a rhombic pattern. Vitrostaal IF and DC06ED normally have a stripe pattern. If a different roughness is ordered, then there is no rhombic or stripe pattern.

Table 15: Chemical composition: EN 10209 : 1996

Grade	C	Mn	S	Ti
	Max	Max	Max	Max
DC01EK	0.08	–	–	–
DC04EK (bathtubs)	0.08	–	–	–
DC06EK	0.02	–	–	0.30
DC03ED	0.004[1]	–	–	–
DC04ED	0.004[1]	–	–	–
DC06ED	0.02	–	–	0.30

Notes:
1. These values are after decarburisation annealing.
2. All values are in weight percentages.

Table 16: Chemical composition: Vitrostaal

Grade	C	Mn	S	Ti
	Max	Max	Max	Max
Vitrostaal 1	0.004[1]	0.45	0.025	–
Vitrostaal 2	0.004[1]	0.45	0.025	–
Vitrostaal IF	0.005	0.25	0.020	0.08

Notes:
1. These values are after decarburisation annealing.
2. All values are in weight percentages.

Table 17: Dimensions : EN 10209 : 1996 and Vitrostaal

Thickness		Width				
		DC01EK	DC04EK	DC04EK Bathtubs	Vitrostaal 1 & 2 DC03ED, DC04ED	Vitrostaal IF DC06EK, DC06ED
>	≤	Max	Max	Max	Max	Max
0.35	0.40	1400	1400	–	–	–
0.40	0.50	1650	1650	–	1650	–
0.50	0.60	1850	1850	–	1680	1850
0.60	0.75	2040	2040	–	1680	1850
0.75	1.25	2040	2040	–	1680	1850
1.25	1.40	1900	1900	1500	1680	1850
1.40	1.75	1900	1900	1500	1680	1400
1.75	1.80	1850	1850	1500	1680	1400
1.80	1.95	1850	1850	1500	1680	–
1.95	2.05	1800	1800	1500	1680	–
2.05	2.25	1700	1700	1500	–	–
2.25	2.40	1500	1500	1650	–	–
2.40	2.65	1300	1300	1650	–	–
2.65	2.80	1275	1275	1650	–	–
2.80	3.00	1275	1275	1650	–	–
3.00	3.10	1275	–	–	–	–

Notes:
1. The minimum width for all products is 750mm.
2. Dimensions are in millimetres.

High-strength steel

Cold-rolled high-strength steel is available in Corus' own Tenform grades and to European and specific national standards.

High-strength steel allows the user to increase the strength of the finished component or reduce the steel thickness, or both.

Tenform grades
Cold-rolled Tenform is available in high-strength low-alloy grades (Tenform CXK) and in a carbon-manganese grade (Tenform CMN).

Tenform CXK is cold-rolled high-strength low-alloy steel which combines high strength with improved formability for less difficult cold-formed applications that require steels with good surface finish and impact resistance.

Tenform CMN combines high strength with excellent formability for the most difficult cold-forming applications.

Other high-strength steel grades
Corus can also supply cold-rolled high-strength low-alloy steel grades to comply with EN 10268 : 1999 and high-strength rephosphorised steel grades to meet the German SEW 094 : 1987 standard.

Typical applications

- automotive suspension components
- internal structural parts
- welded tube

Standards

Tenform grades
Tenform CXK is available in the grades shown in table 18 below.

Tenform CMN is available in the grade shown in table 19 below.

High-strength low-alloy steel
Corus offers cold-rolled high-strength low-alloy steel to EN 10268 : 1999 as shown in table 20 below. A former national standard and nearest related grades are also shown in the table.

High-strength rephosphorised steel
Corus offers cold-rolled high-strength rephosphorised steel to comply with SEW 094 : 1987 in the grades shown in table 21 below.

Table 18: Standard

Tenform CXK
Grade
CXK300
CXK350

Table 19: Standard

Tenform CMN
Grade
CMN300

Table 20: Standards

European	**Germany**
EN 10268 : 1999	**SEW 093**
Grade	
H240LA	ZSt E260
H280LA	ZSt E300
H320LA	ZSt E340
H360LA	ZSt E360

Table 21: Standard

Germany
SEW 094 : 1987
Grade
ZSt E220P
ZSt E260P

Mechanical properties

Tenform grades

The values shown for the mechanical properties in tables 22 and 23 below are for skin-passed material and are for test pieces taken in the rolling direction.

High-strength low-alloy steel

The values shown for the mechanical properties in table 24 below are for skin-passed material and are for test pieces taken in the rolling direction.

Table 22: Mechanical properties: Tenform CXK

Grade	R_p (N/mm²)	R_m (N/mm²)	A_{80} (%)
	Min-max	Min-max	Min
CXK300	300-450	400-550	22
CXK350	350-500	430-580	20

Table 23: Mechanical properties: Tenform CMN

Grade	R_p (N/mm²)	R_m (N/mm²)	A_{80} (%)
	Min-max	Min-max	Min
CMN300	280-360	440-500	26

Table 24: Mechanical properties: EN 10268 : 1999

Grade	R_p (N/mm²)	R_m (N/mm²)	A_{80} (%)
	Min-max	Min	Min
H240LA	240-310	340	27
H280LA	280-360	370	24
H320LA	320-410	400	22
H360LA	360-460	430	20

High-strength rephosphorised steel

The values shown for the mechanical properties in table 25 below are for test pieces taken transverse to the rolling direction.

Table 25: Mechanical properties: SEW 094 : 1987

Grade	R_p (N/mm²)	R_m (N/mm²)	A_{80} (%)	Bend test mandrel diameter
	Min-max	Min-max	Min	Min
ZSt E220P	220-280	340-420	30	0t
ZSt E260P	260-320	380-460	26	0t

Note: Material thickness, t, is in millimetres.

Chemical composition

Tenform grades

Tenform CXK meets the requirements of the cast analysis as shown in table 26 below.

Tenform CMN meets the requirements of the cast analysis shown in table 27 below.

High-strength low-alloy steel

Cold-rolled high-strength low-alloy steel meets the requirements of the cast analysis in the standard, as shown in table 28 below.

High-strength rephosphorised steel

Cold-rolled high-strength rephosphorised steel meets the requirements of the cast analysis in the standard, as shown in table 29 below.

Dimensions

The width and thickness limits are shown in table 30 on page 45. The minimum width is 750mm for all products except CMN300, which has a minimum width of 900mm.

Table 26: Chemical composition: Tenform CXK

Grade	C	Mn	Si	P	S	Nb+V+Ti
	Max	Max	Max	Max	Max	Max
CXK300	0.10	1.20	0.50	0.025	0.020	0.30
CXK350	0.10	1.20	0.50	0.025	0.020	0.30

Note: Values are in weight percentages.

Table 27: Chemical composition: Tenform CMN

Grade	C	Mn	Si	P	S
	Max	Max	Max	Max	Max
CMN300	0.18	0.90	0.02	0.025	0.012

Note: Values are in weight percentages.

Table 28: Chemical composition: EN 10268 : 1999

Grade	C	Mn	Si	Al	P	S	Nb	Ti
	Max	Max	Max	Min	Max	Max	Max	Max
H240LA	0.10	0.60	0.50	0.015	0.025	0.025	0.090	0.15
H280LA	0.10	0.95[1]	0.50	0.015	0.025	0.025	0.090	0.15
H320LA	0.10	1.10[1]	0.50	0.015	0.025	0.025	0.090	0.15
H360LA	0.10	1.65[1]	0.50	0.015	0.025	0.025	0.090	0.15

Notes:

1. These values do not conform to EN 10268 : 1999.
2. Values are in weight percentages.

Table 29: Chemical composition: SEW 094 : 1987

Grade	C	Mn	Si	Al	P	S
	Max	Max	Max	Min	Max	Max
ZSt E220P	0.075	0.70	0.500	0.020	0.080	0.030
ZSt E260P[1]	0.080	0.70	0.500	0.020	0.100	0.030

Notes:

1. %C + %P ≤ 0.16
2. Values are in weight percentages.

Table 30: Dimensions : Tenform CXK, Tenform CMN, EN 10268 : 1999, SEW 094 : 1987

Thickness		Width						
		CXK300 CXK350	CMN300	H240LA	H280LA	H320LA	H360LA	ZSt E220P ZSt E260P
>	≤	Max	Max	Max	Max	Max	Max	Max
0.45	0.50	–	–	–	–	–	–	1400
0.50	0.60	–	–	–	–	–	–	1500
0.60	0.70	1300	–	1450	–	–	–	1800
0.70	0.75	1300	1370	1450	1500	1432	–	1800
0.75	0.90	1300	1370	1550	1500	1432	–	1800
0.90	1.00	1300	1370	1600	1500	1432	–	1800
1.00	1.10	1300	1400	1600	1550	1432	–	1800
1.10	1.25	1300	1400	1700	1550	1523	–	1800
1.25	1.50	1300	1400	1700	1600	1600	1090	1800
1.50	1.60	1300	1400	1700	1600	1600	1330	1800
1.60	1.75	1300	–	1700	1600	1600	1330	1800
1.75	2.00	1300	–	1600	1500	1500	1500	1800
2.00	2.25	–	–	1600	1500	1500	1500	1800
2.25	2.45	–	–	1500	1200	1200	1200	1800
2.45	2.50	–	–	1500	1200	1200	1200	1600
2.50	2.60	–	–	1500	1100	1100	1100	1600
2.60	2.70	–	–	1500	–	–	–	1600
2.70	2.75	–	–	1500	–	–	–	1400
2.75	3.00	–	–	1400	–	–	–	1400
3.00	3.10	–	–	–	–	–	–	1250

Notes:

1. The minimum width is 750mm for all products except CMN300, which has a minimum width of 900mm.
2. Dimensions are in millimetres.

Structural steel

Cold-rolled structural steel has guaranteed minimum strength and good welding properties, making it suitable for a broad range of applications.

Typical applications

- tubing
- domestic appliances
- steel furniture
- warehouse shelving

Standards

Cold-rolled structural steel complies with the standards shown in table 31 below. Other national standards and nearest related grades are also shown in the table.

Mechanical properties

The values shown for the mechanical properties in tables 32, 33 and 34 below are for skin-passed material and are for test pieces taken transverse to the rolling direction.

Table 31: Standards

Corus	National	
	UK	Germany
Grade	BS 1449 : 1991	DIN 1623-2 : 1986
CA200	CR 34/20	–
CA240	CR 37/23	St37-2G
–	–	RRSt37-3G
CA260	–	–

Table 32: Mechanical properties: Corus grades

Grade	R_p (N/mm²)	R_m (N/mm²)	A_{80} (%)
	Min-max	Min-max	Min
CA200	200-260	320-380	30
CA240	240-300	300-400	28
CA260	260-340	350-450	24

Table 33: Mechanical properties: BS 1449 : 1991

Grade	R_p (N/mm²)	R_m (N/mm²)	A_{80} (%)
	Min	Min	Min
CR 34/20	200	340	27
CR 37/23	230	370	26

Table 34: Mechanical properties: DIN 1623-2 : 1986

Grade	R_p (N/mm²)	R_m (N/mm²)	A_{80} (%)
	Min	Min-max	Min
St37-2G	215	360-510	20
RRSt37-3G	215	360-510	20

Chemical composition

Cold-rolled structural steel meets the requirements of the cast analysis in each of the standards, as shown below in tables 35, 36 and 37.

Table 35: Chemical composition: Corus grades

Grade	C	Mn	P	S	Sol. Al
	Max	Max	Max	Max	Min-max
CA200	0.120	0.60	0.045	0.045	–
CA240	0.085	0.55	0.035	0.030	0.020-0.080
CA260	0.100	0.60	0.035	0.030	0.015-0.080

Note: Values are in weight percentages.

Table 36: Chemical composition: BS 1449 : 1991

Grade	C	Mn	P	S
	Max	Max	Max	Max
CR 34/20	0.15	1.20	0.050	0.050
CR 37/23	0.20	1.20	0.050	0.050

Note: Values are in weight percentages.

Table 37: Chemical composition: DIN 1623-2 : 1986

Grade	C	Mn	P	S
	Max	Max	Max	Max
St37-2G	0.17	–	0.040	0.035
RRSt37-3G	0.17	–	0.040	0.035

Note: Values are in weight percentages.

Dimensions

The width and thickness limits are shown in table 38 below. The minimum width for all products is 750mm, except for CA200, CA240 and CA260, which have a minimum width of 900mm.

Table 38: Dimensions : BS 1449 : 1991, DIN 1623-2 : 1986, Corus grades

Thickness		Width			
		CR 34/20	St37-2G RRSt37-3G CR 37/23	CA200 CA240	CA260
>	≤	Max	Max	Max	Max
0.35	0.40	1400	–	–	–
0.40	0.45	1650	–	–	–
0.45	0.50	1650	1400	–	–
0.50	0.60	1700	1500	1530	1360
0.60	0.65	2010	1800	1530	1360
0.65	0.70	2010	1800	1630	1360
0.70	0.75	2010	1800	1670	1360
0.75	1.00	2040	1800	1810	1360
1.00	1.25	2040	1800	1810	1500
1.25	1.60	1900	1800	1810	1500
1.60	1.75	1900	1800	–	–
1.75	1.95	1850	1800	–	–
1.95	2.05	1800	1800	–	–
2.05	2.25	1700	1800	–	–
2.25	2.40	1500	1800	–	–
2.40	2.45	1300	1800	–	–
2.45	2.65	1300	1600	–	–
2.65	2.70	1275	1600	–	–
2.70	2.80	1275	1400	–	–
2.80	3.00	1275	1400	–	–
3.00	3.10	1275	1250	–	–

Notes:

1. The minimum width for all products is 750mm except for CA200, CA240 and CA260, which have a minimum width of 900mm.
2. Dimensions are in millimetres.