

Comparison of standards

Technical Terms of Delivery

Designation systems for steels

Excerpt from EN 10027-1

Snnn		Steels for general steel construction	
Pnnn			Steels for pressure vessel construction
Lnnn			Steels for pipeline construction
Ennn			Engineering steels
Bnnn			Reinforcing steels
Yzzz			Prestressing steel
Rzzz			Steels for rails or in the form of rails
Cold-rolled flat products in higher-strength drawing grades			
Hnnn..	..=	P	Phosphorus-alloyed steels
		B	Bake-hardening steels
		LA	Micro-alloyed steels
		Y	High-strength IF steels
		I	Isotropic steels
HTzzz..	..=	X	Dual-phase steels
		T	TRIP steels
		C	Complex-phase steels
Flat products made of mild steels for cold forming			
D..from	..=	C	For cold-rolled flat products
		D	Or flat hot-rolled products designated for direct cold forming
		X	For flat products with no indicated method of rolling
T(H or nnn)			Ultra-thin and tin sheet and strip as well as specially chromed sheet and strip
Electrical steel strip			
Mmmm-dd	..=	A	For non-grain oriented
		D	For unalloyed, non-final annealed
		E	For alloyed, non-final annealed
		N	For grain-oriented
		S	For grain-oriented with unlimited core losses
		P	For grain-oriented with low core losses

Legend

nnn	Minimum yield strength
zzz	Minimum tensile strength (with code letter T)
from	Figures
H	Hardness data
mmm	Hundred-fold maximum permitted loss of magnetization
dd	Hundred-fold nominal thickness

Bolded steel grades relevant to these Technical Terms of Delivery

Comparison of European material standardizations

Surface

Uncoated/electrolytically treated steel strip		Hot-dip-galvanized steel strip	
		Coating: Z (Zinc)	ZF (Galvannealed)
		NA, MA	RA
03	A	MB	RB
05	B	MC	RC
DIN 1623 DIN 17163	EN 10130 EN 10152 EN 10271 EN 10268	EN 10346	

Comparison of European material standardizations for cold-rolled flat products

Mild steels for cold forming

UNI 5866 1977 Edition	DIN 1623/ Part 1 1983 Edition	NF A 36 401 1983 Edition	Uncoated				Electrolytically treated			
			BS 1449-1.1 1991 Edition	EN 10130 1991 Edition	EN 10130 2007 Edition	Material number	Terms of Delivery voestalpine Stahl 2011	EN 10152 2001 Edition	EN 10152 2009 Edition	Terms of Delivery voestalpine Stahl 2011
Designation of steel grades										
Fe P01	St 12	C	CR 4	Fe P01	DC01	1.0330	DC01	DC01+ZE	DC01+ZE	DC01+ZE
-	Ust 13	-	CR 3	-	-	1.0333	-	-	-	-
Fe P02	RFSt 13	E	CR 2	Fe P03	DC03	1.0347	DC03	DC03+ZE	DC03+ZE	DC03+ZE
Fe P04	ST 14	ES	CR 1	Fe P04	DC04	1.0338	DC04	DC04+ZE	DC04+ZE	DC04+ZE
-	-	-	-	Fe P05	DC05	1.0312	DC05	DC05+ZE	DC05+ZE	DC05+ZE
-	- ¹⁾	-	-	Fe P06	DC06	1.0873	DC06	DC06+ZE	DC06+ZE	DC06+ZE
-	-	-	-	-	DC07	1.0898	DC07	DC07+ZE	DC07+ZE	DC07+ZE
Designation of surface types										
MA	O3	X	GP	A	A	A	A	A	A	A
MB	O5	Z	FF	B	B	B	B	B	B	B

The comparison of standards provides helpful information on reference grades. Differences in defined values are possible.

¹⁾ St 15 was in common use.

	Outdated standard
	Current standard
	voestalpine Terms of Delivery

Comparison of European material standardizations for hot-dip-galvanized flat products

Mild steels for cold forming

DIN 17162 Part 1 1977 Edition	UNI 5753 1984 Edition	NF A 36 321 Z 1985 Edition	EN 10142 1990 Edition	BS 2989 1992 Edition	EN 10142 2000 Edition	EN 10346 2009 Edition	Material number	Terms of Delivery voestalpine Stahl 2011
Designation of steel grades								
St 01 Z	Fe P01 G	-	-	Z 1	-	-	1.0022	-
St 02 Z	Fe P02 G	GC	FeP 02 G Z (ZF)	Z 2	DX51D+Z (ZF, ZA, AZ, AS)	DX51D+Z (ZF, ZA, AZ, AS)	1.0226	DX51D+Z (ZF)
St 03 Z	Fe P03 G	GE	FeP 03 G Z (ZF)	Z 3	DX52D+Z (ZF, ZA, AZ, AS)	DX52D+Z (ZF, ZA, AZ, AS)	1.0350	DX52D+Z (ZF)
St 04 Z	Fe P04 G	-	-	Z 4	-	-	-	-
St 05 Z	Fe P05 G	GES	FeP 05 G Z (ZF)	Z 5	DX53D+Z (ZF, ZA, AZ, AS)	DX53D+Z (ZF, ZA, AZ, AS)	1.0355	DX53D+Z (ZF)
-	-	-	FeP 06 G Z (ZF)	-	DX54D+Z (ZF, ZA, AZ, AS)	DX54D+Z (ZF, ZA, AZ, AS)	1.0306	DX54D+Z (ZF)
-	-	-	-	-	DX56D+Z (ZF, ZA, AS)	DX56D+Z (ZF, ZA, AS)	1.0322	DX56D+Z (ZF)
-	-	-	-	-	DX57D+Z (ZF, ZA, AS)	DX57D+Z (ZF, ZA, AS)	1.0853	DX57D+Z (ZF)
Designation of surface types								
NA, MA	NA, MA, RA	NA, MA, RA	NA, MA, RA	N, M, R	NA, MA, RA	NA, MA, RA, A	NA, MA, RA, A	NA, MA, RA
SB	SB, RB	MB, RB	MB, RB	S	MB, RB	MB, RB, B	MB, RB, B	MB, RB
SC	SC, RC	MC, RC	MC, RC	XS	MC, RC	MC, RC, C	MC, RC, C	MC, RC

The comparison of standards provides helpful information on reference grades. Differences in defined values are possible.

	Outdated standard
	Current standard
	voestalpine Terms of Delivery

Mild steels in comparison with European material standardizations

Mild steels in comparison with European material standardizations

Cold-rolled, uncoated or electrolytically treated	Hot-dip-galvanized
Designation of steel grades	
-	DX51 (+Z, ZF)
DC01 (+ZE)	DX52 (+Z, ZF)
DC03 (+ZE)	DX53 (+Z, ZF)
DC04 (+ZE)	DX54 (+Z, ZF)
DC05 (+ZE)	DX56 (+Z, ZF)
DC06 (+ZE)	DX56 (+Z, ZF)
DC07 (+ZE)	DX57 (+Z, ZF)
Designation of surface types	
-	NA, MA, RA
A	MB, RB
B	MC, RC

This comparison of standards provides a standard value for the selection of reference grades.

Other mechanical values are defined on the basis of differing manufacturing processes.

Comparison of European material standardizations for hot-dip-galvanized flat products

Structural steels

DIN 17162 Part 2 1980 Edition	BS 2989 1982 Edition	NF A 36 322 Z 1982 Edition	UNI 5753 1984 Edition	EN 10147 1991 Edition	EN 10326 2004 Edition	EN 10346 2009 Edition	Material number	Terms of Delivery voestalpine Stahl 2011
Designation of steel grades								
-	Z 22	C 230	FeE 220 G	FeE 220 G Z (ZF)	S220GD+Z (ZF, ZA, AZ, AS)	S220GD+Z (ZF, ZA, AZ)	1.0241	S220GD+Z (ZF)
StE 250-2Z	Z 25	C 250	FeE 250 G	FeE 250 G Z (ZF)	S250GD+Z (ZF, ZA, AZ, AS)	S250GD+Z (ZF, ZA, AZ, AS)	1.0242	S250GD+Z (ZF)
StE 280-2Z(3Z)	Z 28	C 280	FeE 280 G	FeE 280 G Z (ZF)	S280GD+Z (ZF, ZA, AZ, AS)	S280GD+Z (ZF, ZA, AZ, AS)	1.0244	S280GD+Z (ZF)
StE 320-3Z	-	C 320	FeE 320 G	FeE 320 G Z (ZF)	S320GD+Z (ZF, ZA, AZ, AS)	S320GD+Z (ZF, ZA, AZ, AS)	1.0250	S320GD+Z (ZF)
StE 350-3Z	Z 35	C 350	FeE 350 G	FeE 350 G Z (ZF)	S350GD+Z (ZF, ZA, AZ, AS)	S350GD+Z (ZF, ZA, AZ, AS)	1.0529	S350GD+Z (ZF)
-	Z 55	C 550	FeE 550 G	FeE 550 G Z (ZF)	S550GD+Z (ZF, ZA, AZ, AS)	S550GD+Z (ZF, ZA, AZ)	1.0531	-
Designation of surface types								
NA, MA	N, M, R	NA, MA, RA	NA, MA, RA	NA, MA, RA	NA, MA, RA, A	NA, MA, RA, A	NA, MA, RA, A	NA, MA, RA
SB	S	MB, RB	SB, RB	MB, RB	MB, RB, B	MB, RB, B	MB, RB, B	MB, RB
SC	XS	MC, RC	SC, RC	MC, RC	MC, RC, C	MC, RC, C	MC, RC, C	MC, RC

The comparison of standards provides helpful information on reference grades. Differences in defined values are possible.

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	voestalpine Terms of Delivery

Comparison of European material standardizations for steels with high yield stress for cold forming

Micro-alloyed steels

Cold-rolled, uncoated or electrolytically treated				Hot-dip-galvanized				
SEW 093 1987 Edition	NFA 36-232 1992 Edition	EN 10268 2006 Edition	Material number	Terms of Delivery voestalpine Stahl 2011	EN 10292 2007 Edition	EN 10346 2009 Edition	Material number	Terms of Delivery voestalpine Stahl 2011
Designation of steel grades								
ZStE 260	E240C, E260C	HC260LA	1.0480	HC260LA	HX260LAD	HX260LAD+Z (ZF, ZA, AZ, AS)	1.0929	HX260LAD
ZStE 300	E280C, E315C	HC300LA	1.0489	HC300LA	HX300LAD	HX300LAD+Z (ZF, ZA, AZ, AS)	1.0932	HX300LAD
ZStE 340	E555C	HC340LA	1.0548	HC340LA	HX340LAD	HX340LAD+Z (ZF, ZA, AZ, AS)	1.0933	HX340LAD
ZStE 380	-	HC380LA	1.0550	HC380LA	HX380LAD	HX380LAD+Z (ZF, ZA, AZ, AS)	1.0934	HX380LAD
ZStE 420	-	HC420LA	1.0556	HC420LA	HX420LAD	HX420LAD+Z (ZF, ZA, AZ, AS)	1.0935	HX420LAD
-	-	-	-	HC460LA	-	HX460LAD+Z (ZF, ZA, AZ, AS)	1.0990	HX460LAD
-	-	-	-	HC500LA	-	HX500LAD+Z (ZF, ZA, AZ, AS)	1.0991	HX500LAD
Designation of surface types								
-	-	-	-	-	-	NA, MA, RA	-	NA, MA, RA
O3	A	A	-	A	MB, RB, B	MB, RB, B	MB, RB, B	MB, RB
O5	-	-	-	-	MC, RC, C	MC, RC, C	MC, RC, C	-

The comparison of standards provides helpful information on reference grades. Differences in defined values are possible.

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	voestalpine Terms of Delivery

Comparison of European material standardizations for steels with high yield stress for cold forming

Bake-hardening steels

Cold-rolled, uncoated or electrolytically treated		Hot-dip-galvanized					
SEW 094 1987 Edition	EN 10268 2006 Edition	Material number	Terms of Delivery voestalpine Stahl 2011	EN 10292 2007 Edition	EN 10346 2009 Edition	Material number	Terms of Delivery voestalpine Stahl 2011
Designation of steel grades							
ZSIE 180 BH	HC180B	1.0395	HC180B	HX180BD	HX180BD+Z (ZF, ZA, AZ, AS)	1.0914	HX180BD
ZSIE 220 BH	HC220B	1.0396	HC220B	HX220BD	HX220BD+Z (ZF, ZA, AZ, AS)	1.0919	HX220BD
ZSIE 260 BH	HC260B	1.0400	HC260B	HX260BD	HX260BD+Z (ZF, ZA, AZ, AS)	1.0924	HX260BD
ZSIE 300 BH	HC300B	1.0444	HC300B	HX300BD	HX300BD+Z (ZF, ZA, AZ, AS)	1.0930	HX300BD
Designation of surface types							
-	-	-	-	NA, MA, RA, A	NA, MA, RA, A	NA, MA, RA, A	NA, MA, RA
O3	A	-	A	MB, RB, B	MB, RB, B	MB, RB, B	MB, RB
O5	B	-	B	MC, RC, C	MC, RC, C	MC, RC, C	MC, RC

The comparison of standards provides helpful information on reference grades. Differences in defined values are possible.

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Comparison of European material standardizations for steels with high yield stress for cold forming

High-strength IF steels

Cold-rolled, uncoated or electrolytically treated		Hot-dip-galvanized				
EN 10268 2006 Edition	Material number	Terms of Delivery voestalpine Stahl 2011	EN 10292 2007 Edition	EN 10346 2009 Edition	Material number	Terms of Delivery voestalpine Stahl 2011
Designation of steel grades						
HC180Y	1.0922	HC180Y	HX180YD	HX180YD+Z (ZF, ZA, AZ, AS)	1.0921	HX180YD
HC220Y	1.0925	HC220Y	HX220YD	HX220YD+Z (ZF, ZA, AZ, AS)	1.0923	HX220YD
HC260Y	1.0928	HC260Y	HX260YD	HX260YD+Z (ZF, ZA, AZ, AS)	1.0926	HX260YD
-	-	-	HX300YD	HX300YD+Z (ZF, ZA, AZ, AS)	1.0927	HX300YD
Designation of surface types						
-	-	-	NA, MA, RA, A	NA, MA, RA, A	NA, MA, RA, A	NA, MA, RA
A	-	A	MB, RB, B	MB, RB, B	MB, RB, B	MB, RB
B	-	B	MC, RC, C	MC, RC, C	MC, RC, C	MC, RC

The comparison of standards provides helpful information on reference grades. Differences in defined values are possible.

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Comparison of standards final-annealed electrical steel strip

The indicated standards cannot be directly compared in every case. In such cases the overview refers to similar grades.

Comparison of standards final-annealed electrical steel strip by voestalpine

Grade	DIN EN 10106 2008	IEC 60404-8-4 1998	JIC c 2552 2000	ASTM A 677 2007	Previous AISI designation
M 250-35 A	M 250-35 A	250-35 A5	35-A-250	36F320M	M-19
isovac 250-35 A					
M 270-35 A	M 270-35 A	270-35 A5	35-A-270	36F348M	M-22
isovac 270-35 A					
isovac 270-35 A high-perm					
M 300-35 A	M 300-35 A	300-35 A5	35-A-300	36F397M	M-27
isovac 300-35 A					
M 330-35 A	M 330-35 A	330-35 A5	35-A-330	36F419M	M-36
isovac 330-35 A					
isovac 400-35 A					
M 270-50 A	M 270-50 A	270-50 A5	50-A-270	47F370M	M-19
isovac 270-50 A					
M 290-50 A	M 290-50 A	290-50 A5	50-A-290	47F384M	M-22
isovac 290-50 A					
M 310-50 A	M 310-50 A	310-50 A5	50-A-310	47F408M	M-27
isovac 310-50 A					
M 330-50 A	M 330-50 A	330-50 A5	50-A-330	47F419M	M-36
isovac 330-50 A					
M 350-50A	M 350-50 A	350-50-A5	50-A-350	47F452M	M-43
M 400-50 A	M 400-50 A	400-50-A5	50-A-400	47F507M	
isovac 400-50 A					
isovac 400-50 A high-perm					
M 470-50 A	M 470-50 A	470-50-A5	50-A-470	47F617M	M-45
isovac 470-50 A					
M 530-50 A	M 530-50 A	530-50 A5	50-A-530		
isovac 530-50 A					
M 600-50 A	M 600-50 A	600-50-A5	50-A-600	47F672M	M-47
isovac 600-50 A					
isovac 600-50 A blue					
M 700-50 A	M 700-50 A	700-50-A5	50-A-700	47F882M	
isovac 700-50 A					
M 800-50 A	M 800-50 A	800-50-A5	50-A-800	47F992M	
isovac 800-50 A					
isovac 800-50 A blue					
M 940-50 A	M 940-50 A		50-A-1000		

Comparison of standards final-annealed electrical steel strip by voestalpine (cont.)

Grade	DIN EN 10106 2008	IEC 60404-8-4 1998	JIC c 2552 2000	ASTM A 677 2007	Previous AISI designation
M 350-65 A	M 350-65 A	350-65 A5	65-A-350	64F459M	M-22
isovac 350-65 A					
M 400-65 A	M 400-65 A	400-65 A5	65-A-400	64F496M	M-36
isovac 400-65 A					
M 470-65 A	M 470-65 A	470-65-A5	65-A-470	64F595M	M-43
isovac 470-65 A					
isovac 470-65 A high-perm					
M 530-65 A	M 530-65 A	530-65 A5	65-A-530	64F705M	
isovac 530-65 A					
M 600-65 A	M 600-65 A	600-65 A5	65-A-600		M-45
isovac 600-65 A					
M 700-65 A	M 700-65 A	700-65 A5	65-A-700	64F882M	
isovac 700-65 A blue					
M 800-65 A	M 800-65 A	800-65 A5	65-A-800	64F1102M	M-47
isovac 800-65 A blue					
isovac 850-65 A					
M 1000-65 A	M 1000-65 A		65-A-1000		
isovac 1000-65 A					
isovac 600-80 A					
M 700-100 A	M 700-100 A	700-100 A5			
M 800-100 A	M 800-100 A	800-100 A5			
isovac 940-100 A					
M 1300-100 A	M 1300-100 A	1300-100 A5			
isovac 1400-100 A high-perm					

Comparison of standards non-final-annealed electrical steel strip

The indicated standards cannot be directly compared in every case. In such cases the overview refers to similar grades.

Comparison of standards non-final-annealed electrical steel strip by voestalpine

Grade	DIN EN 10341 1996	IEC 60404-8-2&3 1998	ASTM A 683M 1999
isovac 310-50 K high-perm			
M 340-50 K	M 340-50 K	340-50-K5	47S155M
isovac 340-50 K high-perm			
M 390-50 K	M 390-50 K	390-50-K5	47S165M
isovac 420-50 K high-perm			
M 450-50 K	M 450-50 K	450-50-K5	47S175M
isovac 450-50 K high-perm			
M 660-50 K	M 660-50 K	660-50-K5	
M 890-50 K	M 890-50 K	890-50-K5	
M 390-65 K	M 390-65 K	390-65-K5	64S200M
isovac 390-65 K high-perm			
M 450-65 K	M 450-65 K	450-65-K5	64S210M
isovac 470-65 K high-perm			
M 520-65 K	M 520-65 K	520-65-K5	64S220M
isovac 520-65 K high-perm			
isovac 570-65 K high-perm			
M 800-65 K	M 800-65 K	800-65-K5	
M 1000-65 K	M 1000-65 K	1000-65-K5	

Technically more advanced. Successful together.

voestalpine Steel Division – the partner you can trust.

High-quality materials are the basis for our products. We strive to be the best partner for our customers and want to provide them with the best-possible solution. We focus our expertise on two aspects:

The personal aspect, with dedicated and highly competent employees

The technical aspect, with high-quality methods, products and services.

The companies in the voestalpine Steel Division and their employees understand partnership to be the following:

- Understanding for their customers' business
- Expertise and reliability
- Responsibility for satisfactory project completion
- Partnerships based on trust

Many years of successful partnerships with our customers prove our point.

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