

MATERIAL INFORMATION

Material		Unalloyed steel	C-steel soft	C-steel	C-steel	Tool steel	Cr-steel	CrMo-steel	Cr-steel	Cr-steel	CrNi-steel	CrNiMo-steel	CrNiMo-steel	Heat resist:steel	Heat resist:steel	Copper	Brass	Bronze
Material number		1.0338	1.1248	1.1274	1.2003	1.2379	1.4021	1.4031Mo	1.4034 (1.2083)	1.4037	1.4310	1.4404	1.4529	1.4767	1.4828	2.0070	2.0321	2.1020
Designation	DIN/EN AISI UNS	DC04 1008 G 10080	C75S LC+MA 1075 G 10750	C100S+QT 1095 G 10950	75Cr1+QT 1075 G 10780	X155CrVMo12-1 D2 T 30402	(420) S42000	X39CrMo14-1 (420) S42000	X46Cr13 420 S 42000	X65Cr13 420 high Carbon S42000	X12CrNi17-7 301 S 30100	X2CrNiMo17-12-2 316L S 31603	X1 NiCrMoCuN25-20-7 926 N08926	X8CrAl20-5	X15CrNiSi20-12 309 S 30900	SE-Cu58/CW021A C 10300	CuZn 37 C 27200	CuSn6/CW452K C 51900
Dimensions	Widths Thicknesses Width tol. Thickness tol	150 + 305 0,025 - 1,00 mm DIN EN 10 140	300 - 305 mm 0,20 - 3,00 mm DIN EN 10 140	6 - ca. 600 mm 0,02 - 2,00 mm B 2 T 3	350 + 610 mm 0,60 - 5,03 mm - T 3	ca. 630x1000mm 2,3 - 5,5 mm -0/+0,5mm	380 x 2000 0,50 - 2,0 mm EN 9445 T 3	70 - 310 0,076 - 2,00 EN 9445 T1-T3	360 mm 1,00 - 10,5 mm EN 10258 R T 3	165 - 290 mm 0,25 - 0,40 mm EN 9445	10 - 1000 mm 0,003 - 3,00 mm EN 10258 R T 3 (teilw. EN 10258)	ca. 300 mm 0,01 - 1,00 EN 10258 R EN 10258	ca. 400 mm 0,15 - 0,50 EN 10258 R EN 10258	ca. 300 mm 0,03 - 0,20 mm	ca. 300 mm 0,15 - 0,30 mm	150 + 305 mm 0,005 - 0,50 mm +/- 10%	150 + 305 mm 0,01 - 1,00 mm DIN 1791 T 3	150 + 305 mm 0,05 - 0,30 mm
Surface		Bright	Bright	White polished	Bright	Scaled	Ground	White polished	Ground	Polished	2H	2R/2H	2R/2H	Bright	Bright	Bright	Bright	Bright
Edge form		Cut	Cut	cut (in a width of 12,7mm rounded from a thickness of 0,25mm)	Cut	Rolled edge	Cut	Cut	Cut	Cut	Cut	Cut	Cut	Cut	Cut	Cut	Cut	Cut
Straightness		Normal		Normal	Normal		Normal	Normal	Normal	Normal	SR	Normal	Normal					DIN 13599
Flatness		Normal		Extra precise	Extra precise	0,2% of the strip width	P2/P3	P2/P3	Extra precise	Normal	Wave height max. 1 mm	DIN	DIN					DIN 13599
Rolled condition		Temper rolled	Temper rolled	Hardened and tempered (H+A)	Hardened and tempered (H+A)	Hardened and tempered (H+A)	Hardened and tempered (H+A)	Hardened and tempered (H+A)	Hardened and tempered (H+A)	Hardened and tempered (H+A)	Cold rolled – spring tempered	Cold rolled, an- nealed or spring tempered	Cold rolled, annealed or spring tempered	Temper rolled	Annealed	Temper rolled	Spring tempered	Spring tempered
Tensile strength/ Hardness		>590 N/mm ² , z.T.>490 N/mm ²	490-650 N/mm ²	See tensile strengths table	HRC 48-50	HRC 59-61	HRC 43-47	1700-1950 N/ mm ²	HRC 50-54	1900-2100 N/ mm ²	See tensile strengths table	540-750 N/ mm ² (annealed) >1100 N/mm ²	650-900 N/mm ² 1250-1500 N/mm ² (hard)	ca. 1000 N/mm ²	540 – 750 N/mm ²	>300 N/mm ²	See tensile strengths table	HV 160-190
Material composition	C:	max.0,08%	0,70-0,80%	0,95-1,05%	0,70-0,80%	1,45-1,60%	0,16-0,25%	0,35-0,42%	0,43-0,50%	0,58-0,70%	0,05-0,15%	max. 0,03%	max. 0,02%	max. 0,10%	max. 0,20%			
	Si:		0,15-0,35%	0,15-0,35%	0,25-0,50%	0,10-0,60%	max. 1%	max. 1,0%	max. 1%	max. 1%	max. 2,0%	max. 1,0%	max. 0,5%	max. 1,0%	1,5-2,5%			
	Mn:	max. 0,4%	0,60-0,90%	0,30-0,60%	0,60-0,80%	0,20-0,60%	max. 1,5%	max. 1,0%	max. 1,0%	max. 1,0%	max. 2,0%	max. 2,0%	max. 1,0%	max. 1,0%	max. 2,0%			
	P:	max. 0,03%	max. 0,025%	max. 0,025%	max. 0,03 %	max. 0,03%	max. 0,040%	max. 0,04%	max. 0,04%	max. 0,040%	max. 0,045%	max. 0,045%	max. 0,03%	max. 0,045%	max. 0,045%	0,002-0,007%		0,01-0,4%
	S:	max. 0,03%	max. 0,025%	max. 0,025%	max. 0,03%	max 0,03%	max. 0,015%	max. 0,015%	max. 0,015%	max. 0,015%	max. 0,015%	max. 0,015%	max. 0,01%	max. 0,03%	max. 0,015%			
	Cr:		max. 0,40%	max. 0,40%	0,30-0,40%	11-12%	12-14%	12,5-14,5%	12,5-14,5%	12,5-14,5%	16-19%	16,50-18,50%	19-21%	19,0 – 22,0 %	19,0-21,0%			
	Ni:		max. 0,40%	max. 0,40%			-	-	-	-	6,0-9,5%	10,0-13,0%	24-26%	max. 0,30%	11,0-13,0%			max. 0,2%
	Mo:		max. 0,10%	max. 0,10%		0,7-0,9%	-	0,60-1,0%	-	-	max. 0,80%	2,0-2,5%	6-7%					
	Al:						-		-	-				4,00-6,50%				
	Cu:						-		-	-			0,5-1,5%					balance
	Pb:						-		-	-						>99,95%	62-64%	balance
	Sn:						-		-	-						max. 0,005%	max. 0,1%	max. 0,02%
	Zn:						-		-	-								5,5-7,0%
	Fe:	balance	balance	balance	balance	balance	balance	balance	balance	balance	balance	balance	balance	balance	balance		balance	max. 0,2%
	N:					V: 0,7-1,0%	-		-	-			0,15-0,25%	max. 0,01%	max. 0,11%			max. 0,1%
														Traces of Zr+Y+Hf		max. 0,03%		max. 0,2%

Material		Alloy I	Alloy K	Nickel	Alloy Mu	Alloy 718	Al-Alloy	Aluminium
Material number		1.3912	1.3981	2.4068	2.4545	2.4668		3.0205
Designation	DIN/EN UNS	FeNi36 K93600/K93603	FeNi29Co18Mn K94610	LC-Ni 99,2% N 02201	NiFe15Mo N14080	NiCr19Fe19N- b5Mo3 N07718	EN-AW 8079 A98079	EN-AW 1200 A91200
Dimensions	Widths Thicknesses Width tolerance Thickness tol.	200-340 0,10-0,35 mm DIN 59746 DIN 59746	305-340 0,10-0,50 mm DIN 59746 DIN 59746	100-320 mm 0,01 – 0,30 mm DIN 59746 DIN 59746	305-340 mm 0,10-0,64 mm DIN 59746 DIN 59746	300-310 mm 0,10-0,50 mm DIN 59746 DIN 59746	150 mm 0,025 mm	150 mm 0,05 – 0,20 mm
Surface		Bright	Bright	Bright	Bright	Bright	Bright	Bright
Edge form		Cut	Cut	Cut	Cut	Cut	Cut	Cut
Straightness		DIN 59746	DIN 59746	DIN 59746	DIN 59746	DIN 59746		
Flatness		DIN 59746	DIN 59746	DIN 59746	DIN 59746	DIN 59746		
Rolled condition		Cold rolled	Cold rolled	Hard or half hard	Annealed	Annealed	Temper rolled	Temper rolled
Tensile strength/ Hardness		HV 120-190	max. 170 HV	ca. 500-1000 N/ mm ²	max. 170 HV	ca. 850 N/mm ²	>180 N/mm ²	> 150 N/mm ²
Material- composition	C:	<0,05%	<0,05%	max. 0,02%	max. 0,05%	max. 0,08%		
	Si:	max. 0,30%	<0,30%	max. 0,25%	max. 0,5%	max. 0,35%	0,05-0,3%	Si+Fe max. 1%
	Mn:	max. 0,50%	<0,50%	max. 0,35%	max. 1%	max. 0,35%		max. 0,05%
	P:	<0,015%			max. 0,02%	max. 0,015%		
	S:	<0,015%		max. 0,005%	max 0,01%	max. 0,015%		
	Cr:	<0,25%			max. 0,3%	17-21%		
	Ni:	35-37%	28-30%	> 99,0%	80-82%	50-55%		
	Mo:				2-6%	2,8-3,3%		
	Al:					0,30-0,70%	balance	>99,0%
	Cu:			max. 0,25%	max. 0,3%	max. 0,30%	max. 0,05%	max. 0,05%
	Pb:					max. 5ppm		
	Sn:							
	Zn:						max.0,1%	max. 0,1%
	Fe:	balance	balance	max. 0,4%	balance	balance	0,7-1,3%	Si+Fe max. 1%
	N:							
			Co: 16-18%	Ti: max. 0,1%		V: 0,7 - 0,9% Nb: 4,7-5,5%	max. 0,15%	max. 0,15%