

1. Hot rolled sheet and strip
2. Cold rolled sheet
3. Hot-dip galvanised sheet
4. Electrolytic zinc coated sheet
5. Hot aluminised sheet

Limitations, parameters for testing and exceptional arrangements are to be taken from the pertinent standard. In doubt the technical standards apply.

## 1 Hot rolled sheet and strip

### Grades and properties

#### Mild steel grades

continuous hot rolled mild steel strip and sheet for cold forming, DIN 10111

Designation to		Mechanical properties					Chemical composition			
EN 10111 Material No.	EN 10027-2	R <sub>e</sub> [N/mm <sup>2</sup> ]		R <sub>m</sub> [N/mm <sup>2</sup> ] max.	A <sub>80</sub> min. [%]		C [%] max.	Mn [%] max.	P [%] max.	S [%] max.
		1,5 ≤ e < 2	2 ≤ e ≤ 8		1,5 ≤ e < 2	2 ≤ e < 3				
DD11	1.0332	170 to 360	170 to 340	440	23	24	0.12	0.60	0.045	0.045
DD12	1.0398	170 to 340	170 to 320	420	25	26	0.10	0.45	0.035	0.035
DD13	1.0335	170 to 330	170 to 310	400	28	29	0.08	0.40	0.030	0.030
DD14	1.0389	170 to 310	170 to 290	380	31	32	0.08	0.35	0.025	0.025

#### Micro-alloyed grades

hot rolled high yield strength steels for cold forming, DIN EN 10149 Part 1 - Part 2

Designation to			Mechanical properties				Chemical composition									
EN 10149	EN 10027-2 Material No.	SEW 092	R <sub>e</sub> [N/mm <sup>2</sup> ] min.	R <sub>m</sub> [N/mm <sup>2</sup> ]	A <sub>80</sub> min. [%]		C [%] max.	Mn [%] max.	Si [%] max.	P [%] max.	S [%] max.	Al [%] min.	Nb [%] max.	V [%] max.	Ti [%] max.	
					< 3	≥ 3										
					L <sub>0</sub> =80 mm	L <sub>0</sub> =5.65·√S <sub>0</sub>										
S 315 MC	1.0972	–	315	390 to 510	20	24	0.12	1.3	0.5	0.025	0.02	0.015	0.09	0.2	0.15	
–	1.0974	QSIE 340 TM	340	420 to 540	19	23	0.12	1.3	0.5	0.03	0.03	0.015	0.09	–	0.22	
S 355 MC	1.0976	–	355	430 to 550	19	23	0.12	1.5	0.5	0.025	0.02	0.015	0.09	0.2	0.15	
–	1.0978	QSIE 380 TM	380	450 to 590	18	21	0.12	1.4	0.5	0.03	0.03	0.015	0.09	–	0.22	
S 420 MC	1.0980	QSIE 420 TM	420	480 to 620	16	19	0.12	1.6	0.5	0.025	0.015	0.015	0.09	0.2	0.15	
S 460 MC	1.0982	QSIE 460 TM	460	520 to 670	14	17	0.12	1.6	0.5	0.025	0.015	0.015	0.09	0.2	0.15	
S 500 MC	1.0984	QSIE 500 TM	500	550 to 700	12	14	0.12	1.7	0.5	0.025	0.015	0.015	0.09	0.2	0.15	

Other grades and delivered states available on request

#### Structural steels

hot rolled unalloyed structural steels, DIN EN 10025

Designation to		Mechanical properties				Chemical composition					
EN 10025	EN 10027-2 Material No.	R <sub>e</sub> [N/mm <sup>2</sup> ] min.	R <sub>m</sub> [N/mm <sup>2</sup> ]		A <sub>80</sub> min. [%] depending on thickness	C [%] max.	Mn [%] max.	P [%] max.	S [%] max.	N [%] max.	Cu [%] max.
			< 3	≥ 3							
S 185	1.0035	185	310 to 540	290 to 510	10 to 18	–	–	–	–	–	–
S 235 JR	1.0038	235	360 to 510	360 to 510	17 to 26	0.17	1.4	0.035	0.035	0.012	0.55
S 275 JR	1.0044	275	430 to 580	410 to 560	15 to 23	0.21	1.5	0.035	0.035	0.012	0.55
S 355 JR	1.0045	355	510 to 680	470 to 630	14 to 22	0.24	1.6	0.035	0.035	0.012	0.55

Other grades and groups available on request

## Multi-phase steel

hot rolled multi-phase steel for cold forming, pr DIN EN 10338

Designation to		Mechanical properties					Chemical composition											
EN 10338	EN 10027-2 Material No.	R <sub>e</sub> [N/mm <sup>2</sup> ] across	BH <sub>2</sub> [N/mm <sup>2</sup> ] across min.	R <sub>m</sub> [N/mm <sup>2</sup> ] across min.	A <sub>80</sub> [N/mm <sup>2</sup> ] across min.	n across min.	C [%] max.	Si [%] max.	Mn [%] max.	P [%] max.	S [%] max.	Al [%] min. max.		Cr+Mo [%] max.	Nb+Ti [%] max.	V [%] max.	B [%] max.	
FB-Steel																		
HDT450F	1.0961	320 to 420	30	450	23	–	0.180	0.500	1.200	0.030	0.010	0.015	–	0.30	0.05	0.15	0.005	
HDT560F	1.0959	460 to 570	30	560	16	–	0.180	0.500	1.800	0.025	0.010	0.015	–	0.30	0.15	0.15	0.005	
DP-Steel																		
HDT580X	1.0936	330 to 460	30	580	19	0.13	0.170	0.800	2.200	0.080	0.015	–	2.00	1.00	0.15	0.20	0.005	
CP-Steel																		
HDT750C	1.0956	620 to 760	30	750	10	–	0.180	0.800	2.200	0.080	0.015	–	2.00	1.00	0.15	0.20	0.005	
HDT780C	1.0957	680 to 830	30	780	10	–	0.180	0.800	2.200	0.080	0.015	–	2.00	1.00	0.15	0.20	0.005	
HDT950C	1.0958	720 to 920	30	950	9	–	0.230	0.800	2.200	0.080	0.015	–	2.00	1.20	0.15	0.20	0.005	
MS-Steel																		
HDT1200M	1.0665	900 to 1150	30	1200	5	–	0.250	0.800	2.000	0.060	0.015	–	2.00	1.20	0.15	0.22	0.005	

Grade availability has to be checked individually.

## Surface treatment

Surface treatment	Oiling
pickled (descaled)	oiled, unoiled