

5 Hot-dip aluminised sheet

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

Grades and properties

Limitations, parameters for testing and exceptional arrangements are to be taken from the pertinent standard.

Mild steel grades

continuous hot-dip aluminised strip and sheet for cold forming, DIN EN 10346 (AS)

Designation to				Mechanical properties					Chemical composition					
EN 10346	EN 10027-2 Material No.	Symbol for the type of hot-dip coating	Thyssen Brochure June 96	R_e [N/mm ²]	R_m [N/mm ²]	A_{80} [%] min.	r min.	n min.	C [%] max.	Si [%] max.	Mn [%] max.	P [%] max.	S [%] max.	Ti [%] max.
DX51D	1.0226	+AS	Quality A	–	270 – 500	22	–	–	0.18	0.50	1.20	0.12	0.045	0.30
DX52D	1.0350	+AS	Quality Bg	140 – 300	270 – 420	26	–	–	0.12	0.50	0.60	0.10	0.045	0.30
DX53D	1.0355	+AS	Quality C	140 – 260	270 – 380	30	–	–	0.12	0.50	0.60	0.10	0.045	0.30
DX54D	1.0306	+AS	Quality D	120 – 220	260 – 350	34	1.4	0.18	0.12	0.50	0.60	0.10	0.045	0.30
DX55D	1.0309	+AS	Quality T	140 – 240	270 – 370	30	–	–	0.12	0.50	0.60	0.10	0.045	0.30
DX56D	1.0322	+AS	–	120 – 180	260 – 350	39	1.7	0.20	0.12	0.50	0.60	0.10	0.045	0.30
DX57D	1.0853	+AS	–	120 – 170	260 – 350	41	1.9	0.21	0.12	0.50	0.60	0.10	0.045	0.30

Micro-alloyed grades

continuous hot-dip aluminised high yield strength steel strip and sheet for cold forming, DIN EN 10346

Designation to			Mechanical properties						Chemical composition							
EN 10346	EN 10027-2 Material No.	Symbol for the type of hot-dip coating	R_e [N/mm ²] across	BH_2 [N/mm ²] across min.	R_m [N/mm ²] across	A_{80} [%] across min.	r across min.	n across min.	C [%] max.	Si [%] max.	Mn [%] max.	P [%] max.	S [%] max.	Al [%] min.	Ti [%] max.	Nb [%] max.
HX160YD	1.0910	+AS	160 to 220	–	300 to 360	37	1,9	0.20	0.01	0.15	0.70	0.06	0.025	≤ 0.10	0.12	0.09
HX180YD	1.0921	+AS	180 to 240	–	340 to 400	34	1.7	0.18	0.01	0.15	0.70	0.06	0.025	≤ 0.10	0.12	0.09
HX180BD	1.0914	+AS	180 to 240	35	290 to 360	34	1.5	0.16	0.10	0.50	0.70	0.06	0.025	≤ 0.10	0.12	0.09
HX220YD	1.0923	+AS	220 to 280	–	340 to 420	32	1.5	0.17	0.01	0.20	0.90	0.08	0.025	≤ 0.10	0.12	0.09
HX220PD*	1.0358	+AS	220 to 280	–	340 to 400	32	1.3	0.15	0.06	0.50	0.70	0.08	0.025	≥ 0,02	–	–
HX220BD	1.0919	+AS	220 to 280	35	320 to 400	32	1.2	0.15	0.10	0.50	0.70	0.08	0.025	≤ 0.10	0.12	0.09
HX260YD	1.0926	+AS	260 to 320	–	380 to 440	30	1.4	0.16	0.01	0.25	1.60	0.10	0.025	≤ 0.10	0.12	0.09
HX260PD*	1.0431	+AS	260 to 320	–	380 to 440	28	–	–	0.11	0.50	0.70	0.10	0.025	≥ 0,02	–	–
HX260BD	1.0924	+AS	260 to 320	35	360 to 440	28	–	–	0.10	0.50	0.80	0.10	0.025	≤ 0.10	0.12	0.09
HX260LAD	1.0929	+AS	260 to 330	–	350 to 430	26	–	–	0.12	0.50	0.60	0.030	0.025	≥ 0,015	0.12	0.09
HX300PD*	1.0443	+AS	300 to 360	–	400 to 480	26	–	–	0.11	0.50	0.70	0.12	0.025	≥ 0,02	–	–
HX300YD	1.0927	+AS	300 to 360	–	390 to 470	27	1.3	0.15	0.01	0.30	1.30	0.10	0.025	≤ 0,10	0.09	
HX300BD	1.0930	+AS	300 to 360	35	400 to 480	26	–	–	0.11	0.50	0.80	0.12	0.025	≤ 0,10	0.12	0.09
HX300LAD	1.0932	+AS	300 to 380	–	380 to 480	23	–	–	0.11	0.50	1.00	0.030	0.025	≥ 0,015	0.15	0.09
HX340LAD	1.0933	+AS	340 to 420	–	410 to 510	21	–	–	0.11	0.50	1.00	0.030	0.025	≥ 0,015	0.15	0.09
HX380LAD	1.0934	+AS	380 to 480	–	440 to 560	19	–	–	0.11	0.50	1.40	0.030	0.025	≥ 0,015	0.15	0.09
HX420LAD	1.0935	+AS	420 to 520	–	470 to 590	17	–	–	0.11	0.50	1.40	0.030	0.025	≥ 0,015	0.15	0.09
HX460LAD	1.0990	+AS	460 to 560	–	500 to 640	15	–	–	0.15	0.50	1.70	0.030	0.025	≥ 0.015	0.15	0.09
HX500LAD	1.0991	+AS	500 to 620	–	530 to 690	13	–	–	0.15	0.50	1.70	0.030	0.025	≥ 0.015	0.15	0.09

B bake hardening **P** phosphorous alloyed **Y** interstitial-free (IF Steel) **LA** low alloy (micro-alloyed)

* Grade not included in the latest norm (formerly: DIN EN 10292:2000)

continuous hot-dip aluminised structural steel strip and sheet for cold forming, DIN EN 10346 (AS)

Designation to				Mechanical properties			Chemical composition				
EN 10346	EN 10027-2 Material No.	Symbol for the type of hot-dip coating	Thyssen prospekt June 96	R_b [N/mm ²] min.	R_m [N/mm ²] min.	A_{80} [%] min.	C [%] max.	Si [%] max.	Mn [%] max.	P [%] max.	S [%] max.
S250GD	1.0242	+ AS	L250 Al	250	330	19	0.20	0.60	1.70	0.10	0.045
S280GD	1.0244	+ AS	M280 Al	280	360	18	0.20	0.60	1.70	0.10	0.045
S320GD	1.0250	+ AS	N320 Al	320	390	17	0.20	0.60	1.70	0.10	0.045
S350GD	1.0529	+ AS	O320 Al	350	420	16	0.20	0.60	1.70	0.10	0.045

Type of hot-dip coating

AS Aluminium silicon alloy with a silicon content of 8-11%

Surface finish

- A imperfections and small surface flaws can be present
- B cold re-rolled, improved surface, small imperfections can be present
- C cold re-rolled, best surface

After treatment (Surface protection)

- C chemically passivated
- O oiled
- CO chemically passivated and oiled
- S sealed
- U untreated