E10 - Electrogalvanised steels

The surface quality of electrogalvanised steels makes them ideal for the manufacture of visible components. Typical applications include indoor building, electrical and electronic appliances, metal furniture etc.

E10

Properties

ArcelorMittal's electrogalvanised steel is a cold rolled flat carbon steel product, coated on one or both sides with a pure zinc layer.
This coating is characterised by its uniform and regular thickness.

E10

Advantages

ArcelorMittal's electrogalvanised steel has good resistance to corrosion for indoor applications.
It offers outstanding deep drawing formability with reduced powdering and also has excellent weldability, due to the uniformity and regularity of the zinc coating.

Electrogalvanised products are an excellent substrate for painting, both in terms of adhesion and appearance. This advantage is further enhanced by the use of post-coating surface treatments: phosphating and/or passivation, Easyfilm® thin organic coating (please see data sheet E80 for the specific properties of Easyfilm®).

E10

Applications

Electrogalvanised products are particularly suitable for industrial and domestic appliances. Some of the most common applications include:

- Domestic appliances: washing machines, dryers, dish washers, cookers, microwave ovens, refrigerators etc
- Teletronics: computers, laptop and hi-fi casings, casings for TVs, video and CD players, decoders etc
- Furniture: cupboards, desks, shelves, electrical cabinets etc
- Miscellaneous: air conditioners, road signs, electric motors, toys, construction items etc

E10

Recommendations for use

Storage

ArcelorMittal's electrogalvanised steel is supplied passivated and/or phosphated and/or oiled to temporarily limit the risk of white rust formation. During transport and storage, all necessary precautions must be taken to keep the material dry and to prevent the formation of condensation. Rust prevention can be further improved by the application of an Easyfilm® thin organic coating.

Forming and joining

The forming and joining techniques mainly used for uncoated steel sheets are also suitable for steel sheet with electrogalvanised coatings, even in the case of extreme forming operations.
Forming performance is improved if electrogalvanised steel is coated with an Easyfilm® thin organic coating.

Painting

Electrogalvanised steel can be painted after degreasing and surface treatment when supplied oiled.
When phosphated or coated with an Easyfilm® thin organic coating, electrogalvanised steel can be painted directly, without any prior surface treatment. However, the paint must be compatible with the Easyfilm® resin.

E10

Weldability

In electrical resistance welding, the welding current must be suitably regulated and regularly adjusted. Electrode life can be extended by regularly stepping up the welding current and periodically dressing (machining) the electrodes.

E10

Coating weight and typical thickness

		Thickness (µm per side)	Weight (g/m² per side)
One-sided coating	ZE 0/25	0.0/2.5	0/18
	ZE 0/50	0.0/5.0	0/36
Two-sided coating	ZE 25/25	2.5/2.5	18/18
	ZE 50/50	5.0/5.0	36/36

For other or intermediate layer thicknesses, please contact us.

E10

Brand correspondence

Steels for cold forming and deep drawing applications

	EN 10268:2006	EN 10268:2006+A1:2013	UNE 36122	NF A36-232	ASTM	ASTM 607	DIN 1623/1	BS 1449/1	SIS	JIS G 3313	EN 10152:2009	NF A36-401	EN 10152:2017	Old brand names
DC01 +ZE EN 10152					A 366		St 12	CR 4	14 11 42	SECC	DC01+ZE	C	DC01+ZE	
DC03 +ZE EN 10152					A 619		RRSt 13	CR 2	14 11 48	SECD	DC03+ZE	E	DC03+ZE	Solstamp® 03+ZE
DC04 +ZE EN 10152					A 620		St 14	CR 1	14 11 47	SECE	DC04+ZE	ES	DC04+ZE	Solstamp® 04+ZE
DC04 AM FCE +ZE					A 620		St 14	CR 1	14 11 47	SECE	DC04+ZE	ES	DC04+ZE	Solstamp® 04+ZE
DC05 +ZE EN 10152					A 621		(St 15)				DC05+ZE	SES	DC05+ZE	Solstamp® 05+ZE
DC06 +ZE EN 10152											DC06+ZE		DC06+ZE	
DC07 +ZE EN 10152											DC07+ZE		DC07+ZE	

() Closest grade as no fully equivalent grade exists.

High Strength Low Alloy steels

	EN 10268:2006	EN 10268:2006+A1:2013	UNE 36122	NF A36-232	ASTM	ASTM 607	DIN 1623/1	BS 1449/1	SIS	JIS G 3313	EN 10152:2009	NF A36-401	EN 10152:2017	Old brand names
HC260LA +ZE EN 10268	HC260LA	HC260LA		E 260 C										Profilar® 260+ZE/MA 240L/HQE240+ZE/ZStE 260
HC300LA +ZE EN 10268	HC300LA	HC300LA		E 280 C										Profilar® 300+ZE/MA 280L+ZE/Sidca® M-300/HQE280+ZE/Soldur 280+ZE/ZStE 300
HC340LA +ZE EN 10268	HC340LA	HC340LA	AE 335 HF	E 315 C										Profilar® 340+ZE/MA 320L+ZE/Sidca® M-340/Soldur® 320+ZE/ZStE 340
HC380LA +ZE EN 10268	HC380LA	HC380LA	AE 390 HF	E 355 C		Grade 607-50								Profilar® 380+ZE/MA 360L+ZE/Soldur® 360+ZE/ZStE 380
HC420LA +ZE EN 10268	HC420LA	HC420LA												
HC460LA +ZE EN 10268		HC460LA												
HC500LA +ZE EN 10268		HC500LA												

E10

Dimensions

Steels for cold forming and deep drawing applications

Thickness (mm)	Min width	DC01 +ZE EN 10152, DC03 +ZE EN 10152, DC04 +ZE EN 10152, DC04 AM FCE +ZE, DC05 +ZE EN 10152, DC06 +ZE EN 10152, DC07 +ZE EN 10152
		Max width
0.40 ≤ th < 0.50	600	1500
0.50 ≤ th < 0.60		1670
0.60 ≤ th < 2.00		1865
2.00 ≤ th < 2.25		1770
2.25 ≤ th < 2.75		1590
2.75 ≤ th < 3.00		1500

High Strength Low Alloy steels

Thickness (mm)	Min width	HC260LA +ZE EN 10268	HC300LA +ZE EN 10268	HC340LA +ZE EN 10268	HC380LA +ZE EN 10268	HC420LA +ZE EN 10268	HC460LA +ZE EN 10268, HC500LA +ZE EN 10268
		Max width	Max width	Max width	Max width	Max width	Max width
0.40 ≤ th < 0.50	600	1495	1495	1495	1495	1495	1310
0.50 ≤ th < 0.60		1685	1685	1685	1685	1685	1500
0.60 ≤ th < 0.70		1850	1850	1850	1850	1850	1565
0.70 ≤ th < 0.80		1865					1635
0.80 ≤ th < 0.90							1655
0.90 ≤ th < 1.60							
1.60 ≤ th < 2.00				1795	1795	1680	1360
2.00 ≤ th < 2.30		1760	1760	1760	1740	1640	-
2.30 ≤ th < 2.50		1700	1700	1700	1660	1560	
2.50 ≤ th < 3.00		1500	1500	1500	1465	1365	
3.00 ≤ th < 3.20		-	-	-	-	-	

E10

Mechanical properties

The choice of direction for the mechanical properties should be specified when ordering.

Steels for cold forming and deep drawing applications

	Direction	Thickness (mm)	R_e **(MPa)**	R_m **(MPa)**	A_{80} **(%)**	MP guarantees **(Months)**	r_{90}	n_{90}
DC01 +ZE EN 10152	T	0.3 - 0.5	140 - 320	270 - 410	≥ 24	-	-	-
		0.5 - 0.7	140 - 300		≥ 26			
		0.7 - 3	140 - 280		≥ 28			
DC03 +ZE EN 10152	T	0.3 - 0.5	140 - 280	270 - 370	≥ 30	≤ 6	-	-
		0.5 - 0.7	140 - 260		≥ 32		≥ 1.3	
		0.7 - 2	140 - 240		≥ 34			
		2 - 3					≥ 1.1	
DC04 +ZE EN 10152	T	0.3 - 0.5	140 - 260	270 - 350	≥ 33	≤ 6	-	-
		0.5 - 0.7	140 - 240		≥ 35		≥ 1.6	≥ 0.170
		0.7 - 2	140 - 220		≥ 37			
		2 - 3					≥ 1.4	
DC04 AM FCE +ZE	T	0.3 - 0.5	140 - **250**	270 - 350	**≥ 34**	≤ 6	-	-
		0.5 - 0.7	140 - **230**		**≥ 36**		**≥ 1.8**	**≥ 0.190**
		0.7 - 2	140 - **210**		**≥ 38**			
		2 - 3					**≥ 1.6**	
DC05 +ZE EN 10152	T	0.3 - 0.5	140 - 240	270 - 330	≥ 35	≤ 6	-	-
		0.5 - 0.7	140 - 220		≥ 37		≥ 1.9	≥ 0.190
		0.7 - 2	140 - 200		≥ 39			
		2 - 3					≥ 1.7	
DC06 +ZE EN 10152	T	0.3 - 0.5	130 - 220	270 - 350	≥ 37	≤ 6	-	-
		0.5 - 0.7	130 - 200		≥ 39		≥ 2.1	≥ 0.210
		0.7 - 2	130 - 180		≥ 41			
		2 - 3					≥ 1.9	
DC07 +ZE EN 10152	T	0.5 - 0.7	110 - 180	250 - 310	≥ 41	≤ 6	≥ 2.5	≥ 0.220
		0.7 - 2	110 - 160		≥ 43			
		2 - 3					≥ 2.3	

Values in bold: tighter than the standard

High Strength Low Alloy steels

	Direction	Thickness (mm)	R_e **(MPa)**	R_m **(MPa)**	A_{80} **(%)**	MP guarantees **(Months)**
HC260LA +ZE EN 10268	L	0.5 - 0.7	240 - 310	340 - 420	≥ 25	≤ 6
		0.7 - 3			≥ 27	
	T	0.5 - 0.7	260 - 330	350 - 430	≥ 24	≤ 6
		0.7 - 3			≥ 26	
HC300LA +ZE EN 10268	L	0.5 - 0.7	280 - 360	370 - 470	≥ 22	≤ 6
		0.7 - 3			≥ 24	
	T	0.5 - 0.7	300 - 380	380 - 480	≥ 21	≤ 6
		0.7 - 3			≥ 23	
HC340LA +ZE EN 10268	L	0.5 - 0.7	320 - 410	400 - 500	≥ 20	≤ 6
		0.7 - 3			≥ 22	
	T	0.5 - 0.7	340 - 420	410 - 510	≥ 19	≤ 6
		0.7 - 3			≥ 21	
HC380LA +ZE EN 10268	L	0.5 - 0.7	350 - 450	430 - 550	≥ 18	≤ 6
		0.7 - 3			≥ 20	
	T	0.5 - 0.7	380 - 480	440 - 580	≥ 17	≤ 6
		0.7 - 3			≥ 19	
HC420LA +ZE EN 10268	L	0.5 - 0.7	390 - 500	460 - 580	≥ 16	≤ 6
		0.7 - 3			≥ 18	
	T	0.5 - 0.7	420 - 520	470 - 600	≥ 15	≤ 6
		0.7 - 3			≥ 17	
HC460LA +ZE EN 10268	L	0.5 - 0.7	420 - 560	480 - 630	≥ 12	≤ 6
		0.7 - 3			≥ 14	
	T	0.5 - 0.7	460 - 580	510 - 660	≥ 11	≤ 6
		0.7 - 3			≥ 13	
HC500LA +ZE EN 10268	L	0.5 - 0.7	460 - 600	520 - 690	≥ 11	≤ 6
		0.7 - 2			≥ 13	
	T	0.5 - 0.7	500 - 620	550 - 710	≥ 10	≤ 6
		0.7 - 2			≥ 12	

E10

Chemical composition

Steels for cold forming and deep drawing applications

	C (%)	Mn (%)	P (%)	S (%)	Ti (%)
DC01 +ZE EN 10152	≤ 0.120	≤ 0.60	≤ 0.045	≤ 0.045	-
DC03 +ZE EN 10152	≤ 0.100	≤ 0.45	≤ 0.035	≤ 0.035	-
DC04 +ZE EN 10152	≤ 0.080	≤ 0.40	≤ 0.030	≤ 0.030	-
DC04 AM FCE +ZE	≤ 0.080	≤ 0.40	≤ **0.025**	≤ **0.025**	-
DC05 +ZE EN 10152	≤ 0.060	≤ 0.35	≤ 0.025	≤ 0.025	-
DC06 +ZE EN 10152	≤ 0.020	≤ 0.25	≤ 0.020	≤ 0.020	≤ 0.300
DC07 +ZE EN 10152	≤ 0.010	≤ 0.20	≤ 0.020	≤ 0.020	≤ 0.200

Values in bold: tighter than the standard

High Strength Low Alloy steels

	C (%)	Mn (%)	P (%)	S (%)	Si (%)	Al (%)	Nb (%)	Ti (%)
HC260LA +ZE EN 10268	≤ 0.100	≤ 1.00	≤ 0.030	≤ 0.025	≤ 0.50	≥ 0.015	≤ 0.090	≤ 0.150
HC300LA +ZE EN 10268	≤ 0.120	≤ 1.40	≤ 0.030	≤ 0.025	≤ 0.50	≥ 0.015	≤ 0.090	≤ 0.150
HC340LA +ZE EN 10268	≤ 0.120	≤ 1.50	≤ 0.030	≤ 0.025	≤ 0.50	≥ 0.015	≤ 0.090	≤ 0.150
HC380LA +ZE EN 10268	≤ 0.120	≤ 1.60	≤ 0.030	≤ 0.025	≤ 0.50	≥ 0.015	≤ 0.090	≤ 0.150
HC420LA +ZE EN 10268	≤ 0.140	≤ 1.60	≤ 0.030	≤ 0.025	≤ 0.50	≥ 0.015	≤ 0.090	≤ 0.150
HC460LA +ZE EN 10268	≤ 0.140	≤ 1.80	≤ 0.030	≤ 0.025	≤ 0.60	≥ 0.015	≤ 0.090	≤ 0.150
HC500LA +ZE EN 10268	≤ 0.140	≤ 1.80	≤ 0.030	≤ 0.025	≤ 0.60	≥ 0.015	≤ 0.090	≤ 0.150

Any questions?
Ask them via our contact form on https://industry.arcelormittal.com/getintouch