



## NO12-1180N Data sheet

thin non-oriented electrical steel

The Hi-Lite grade NO12-1180N fulfils all requirements in the standards EN 10303:2015 and IEC 60404-8-8:2017. In many cases the minimum / maximum properties are better than those of the grades with the same nominal thickness in these standards.

### Magnetic properties

	Min / Max values	Typical values
Specific total loss at 1.0 T and 50 Hz	-	1.00 W/kg
Specific total loss at 1.5 T and 50 Hz	-	2.61 W/kg
Specific total loss at 1.0 T and 400 Hz	Max 11.8 W/kg	10.9 W/kg
Specific total loss at 1.5 T and 400 Hz	Max 29.3 W/kg	27.2 W/kg
Specific total loss at 1.0 T and 700 Hz	Max 24.2 W/kg	22.1 W/kg
Specific total loss at 1.0 T and 2500 Hz	-	131 W/kg
Peak magnetic polarisation at 2500 A/m and 50 Hz	Min 1.54 T	1.58 T
Peak magnetic polarisation at 5000 A/m and 50 Hz	Min 1.64 T	1.67 T
Peak magnetic polarisation at 10000 A/m and 50 Hz	Min 1.77 T	1.80 T
Relative peak permeability at 1.5 T and 50 Hz	-	880
Relative peak permeability at 1.0 T and 400 Hz	-	6780

Guaranteed values for losses are maximum total specific losses and guaranteed values for magnetic polarisations are minimum peak polarisations

### Physical and mechanical properties

Nominal thickness 0.12 mm  
Density (assumed) 7.65 kg/dm<sup>3</sup>

	Min / Max values	Typical values
Electrical resistivity at 23 °C	-	51 μΩ·cm
Thermal conductivity at 23 °C	-	23 W/(m·K)
Thermal expansion 0-100 °C	-	12·10 <sup>-6</sup> /°C
Yield strength R <sub>p0.2</sub>	Min 330 MPa	370 MPa
Tensile strength R <sub>m</sub>	Min 430 MPa	470 MPa
Elongation at fracture A <sub>80</sub>	Min 14 %	19 %
Young's modulus	-	190 GPa

Values for the yield strength, tensile strength and Young's modulus are given for the rolling direction. Corresponding values for the transverse direction are approximately 2 % higher.

For more information and contact:  
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### Typical specific total loss

J <sub>peak</sub> (T)	Typical specific total loss (W/kg)								
	50 Hz	100 Hz	200 Hz	400 Hz	700 Hz	1000 Hz	2500 Hz	5000 Hz	10000 Hz
0.1	0.02	0.05	0.08	0.18	0.35	0.56	2.03	5.32	16.3
0.2	0.08	0.17	0.31	0.68	1.37	2.16	7.43	21.1	59.2
0.3	0.15	0.33	0.64	1.42	2.83	4.43	15.6	44.1	127
0.4	0.23	0.49	1.05	2.33	4.67	7.40	26.3	73.6	213
0.5	0.33	0.69	1.51	3.39	6.84	10.9	38.9	109	318
0.6	0.44	0.92	2.03	4.58	9.28	14.8	53.5	151	441
0.7	0.56	1.18	2.60	5.91	12.0	19.2	69.9	198	
0.8	0.70	1.46	3.23	7.37	15.0	24.1	88.2	252	
0.9	0.83	1.77	3.94	9.01	18.4	29.5	108	313	
1.0	1.00	2.12	4.75	10.9	22.1	35.5	131	381	
1.1	1.21	2.55	5.65	13.0	26.4	42.3	156		
1.2	1.45	3.06	6.76	15.5	31.4	50.2	184		
1.3	1.76	3.71	8.16	18.6	37.5	59.9	218		
1.4	2.15	4.54	9.90	22.6	45.5	72.4	261		
1.5	2.61	5.38	11.9	27.2	54.7	87.0	313		
1.6	3.04	6.26	13.7	31.5	63.5	101	369		
1.7	3.50	7.09							
1.8	3.95	7.93							
1.9	4.46	9.08							

### Typical peak magnetic polarisation (magnetisation curve)

H <sub>peak</sub> (A/m)	Typical peak magnetic polarisation, J <sub>peak</sub> (T)								
	50 Hz	100 Hz	200 Hz	400 Hz	700 Hz	1000 Hz	2500 Hz	5000 Hz	10000 Hz
20	0.024	0.024	0.023	0.023	0.022	0.022	0.022	0.019	0.017
30	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.02
50	0.30	0.29	0.27	0.25	0.23	0.20	0.15	0.11	0.09
70	0.66	0.66	0.63	0.60	0.55	0.49	0.31	0.19	0.15
100	0.95	0.95	0.92	0.91	0.89	0.87	0.61	0.37	0.24
150	1.14	1.14	1.13	1.13	1.12	1.11	0.99	0.69	0.43
200	1.23	1.23	1.23	1.22	1.22	1.22	1.14	0.99	0.65
400	1.37	1.37	1.37	1.36	1.36	1.36	1.36	1.28	1.14
800	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.41	
1500	1.52	1.52	1.52	1.52	1.52	1.52	1.51		
2500	1.58	1.58	1.58	1.58	1.58	1.58	1.58		
5000	1.67	1.67	1.67	1.67	1.67				
7500	1.74	1.74							
10000	1.80	1.80							
20000	1.91	1.91							

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**TATA STEEL**

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