Steel Properties

	LDX 2101®	SS370 (EN1.4003)	304(EN1.4301)	316(EN1.4401)	43B(ENS275JR)
Physical & Mechanical Properties					
Yield Stress (0.2% Proof) (MPa):	480 min. (570 typ.)	320 min. (376 typ.)	210 min. (290 typ.)	205 min. (310 typ.)	275 min. (308 typ.)
Ultimate Tensile Stress (MPa):	680 min. (770 typ.)	450 min. (520 typ.)	520 min. (621 typ.)	515 min. (580 typ.)	430 min. (485 typ.)
Density:	7750 kg/m3	7740 kg/m3	8000 kg/m3	7990 kg/m3	7850 kg/m3
Elastic Tension Modulus (E):	200 GPa	200 GPa	193 GPa	193 GPa	205 GPA
Torsion Modulus (G):	77 GPa	77 GPa	78 GPa	77 GPa	80 GPa
Yield Stress (0.2% Proof) (MPa):	480 min. (570 typ.)	320 min. (376 typ.)	210 min. (290 typ.)	205 min. (310 typ.)	275 min. (308 typ.)
Poisson's Ratio	0.30	0.32	0.31	0.29	0.29
Elongation at fracture:	30% min. (38% typ)	20% min. (23% typ)	45% min. (55% typ.)	40% min. (50% typ.)	20% min. (23% typ.)
Hardness (Rockwell B)	106 max (98 typ.)	88 max.. (82 typ.)	92 max. (82 typ.)	95 max. (84 typ.)	96 max. (87 typ.)
Specific heat Capacity (20OC:	500 J/kg.K	478 J/kg.K	500 J/kg.K	500 J/kg.K	486 J/kg.K
Thermal Conductivity (20OC):	14.9 W/m.K	30.5 W/m.K	16.2 W/m.K	16.3 W/m.K	64 W/m.K
Thermal Expan. Coeff. (20-100OC):	13.0 ìm/m.K	11.1 ìm/m.K	16.5 ìm/m.K	15.9 ìm/m.K	12.0 ìm/m.K
Electrical Resistivity:	80 µΩ/cm	68 µΩ/cm	73 µΩ/cm	74 µΩ/cm	16.3 µΩ/cm
Relative Magnetic Permiablity:	(Ferromagnetic)	(Ferromagnetic)	(non-magnetic)	(non-magnetic)	(Ferromagnetic)
Chemical Composition by mass (Typical unless shown otherwise. The balance is Fe)					
Carbon	0.04% Max	0.03% Max	0.08% Max	0.08% Max	0.21% Max
Silicon	1.00% Max	1.00% Max	0.75%	0.75%	-
Manganese	4.00% -6.00%	1.50% Max	2.00%	2.00%	1.50% Max
Phosphorus	0.040% Max	0.040% Max	0.05%	0.05%	0.045% Max
Sulphur	0.030% Max	0.015% Max	0.03%	0.03%	0.045% Max
Copper	0.10% -0.80%	-	-	-	-
Chromium	21.0% -22.0%	10.50% - 12.50%	18.0% -20.0%	16.0% -18.0%	-
Nickel	1.35% -1.70%	0.30% -1.00%	10.50%	10.0% -14.0%	-
Molybdenum	0.15% -0.80%	-	-	2.0% -3.0%	-
Nitrogen	0.20% -0.25%	0.03% Max	0.10%	0.10%	-
Corrosion Rate Guide* (Initial Corrosion rates, expressed as mm average material loss per 10 years)					
Rural Atmosphere exposure:	<0.001	<0.001	<0.001	<0.001	0.109 (zinc: 0.002)
Coastal (marine) Atmosphere exp.:	<0.001	0.002	<0.001	<0.001	0.559 (zinc: 0.024)
Industrial Atmosphere exposure:	<0.001	0.002	<0.001	<0.001	0.467 (zinc: 0.032)
Severe Marine (splash or spray):	0.001	0.013	0.001	<0.001	2.600 (zinc: 0.145)
Galv. Assoc. Corrosion Cat. 3+	<0.001	0.001	<0.001	<0.001	0.349 (zinc: 0.015)
Galv. Assoc. Corrosion Cat. 5+	<0.001	0.002	<0.001	<0.001	0.568 (zinc: 0.025)

* Use as an approximate guide for comparative purposes (information only) . Localised conditions may cause significant variation from these figures.
+ Corrosion rates of zinc are listed next to mild steel to enable comparison of galvanised coating performance. Caution: corrosion rates listed are relative indicator 'background' rates as published by the Galvanising Association. Actual rates may be significantly higher due to uneven galvanising distribution and localised factors such as prevailing weather and interaction with adjacent materials and chemicals.

Stainless Steel Comparative Corrosion Tests

Uniform Corrosion Resistance[1]:	14% H_2SO_4	(Data unavailable)	5% H_2SO_4	23% H_2SO_4	Low
Pitting/Crevice Corrosion[2]:	PREN = 28	PREN = 12	PREN= 21	PREN= 26	N/A
Stress Corrosion Cracking[3]:	>500hrs	>500hrs	150hrs	150hrs	N/A
Intergranular Corrosion[4]:	High resistance	High resistance	Moderate resistance	Moderate resistance	N/A

1. Concentration of Sulphuric Acid required to induce corrosion rate of 0.1mm/year at 20^{O}C; (ISO general corrosion test). Atmospheric corrosion resistance is usually considered to be reliably indicated by combination of this and the pitting corrosion result. **2**. Comparative resistance to pitting in a chloride environment is indicated by the Pitting Resistance Equivalent Number (PREN) = %Cr+3.3%Mo+30%N (by mass) (for duplex use +16%N); Alternative method to ASTM G 150 using the Avesta Cell & measuring critical pitting temperature places LDX2101 just under grade 316 and over twice the resistance of grade 304. Crevice corrosion is a similar mechanism, avoided by good product design. **3**. Hours until stress corrosion cracks (separate from uniform corrosion) appear in a U-bend immersed in 40% CaCl solution at 100^{O}C. **4**. Harvey Stainless products are relatively light gauge, effecting rapid cooling which prevents formation of Chromium Carbides at grain boundaries, so intergranular corrosion resistance is high for all our products. LDX2101 & SS370 base materials (indicated in the table) are naturally more resistant due to lower carbon content.