

### Material Introduction: Duplex Stainless Steel, SUS329J4L

Duplex Stainless Steel is used for the shaft material of Tsurumi's seawater resistant sewage pump series.

Stainless steel SUS329J4L is a 25% chromium duplex ferritic-austenitic stainless steel designed to provide a superior combination of high strength and excellent corrosion resistance for a wide variety of applications, especially in corrosive seawater usage. This alloy consist a microstructure of a balanced mixture of austenite and ferrite. The combination of these phases develops the unique combination of strength and chloride stress-corrosion cracking resistance of this alloy.

### Chemical composition of different stainless steel by weight%

	C	Si	Mn	Cr	Ni	Mo	N	PREN
<b>SUS329J4L</b>	0.01	0.5	0.7	24.9	6.8	2.8	0.12	36
<b>SUS316</b>	0.06	1.0	2.0	17.0	12.0	2.5	-	25
<b>SUS304</b>	0.06	1.0	2.0	18.5	8.0	-	-	18.5

$$\text{PREN} = \text{Cr}\% + 3.3 \times \text{Mo}\% + 16 \times \text{N}\%$$

**Pitting resistance equivalent number (PREN)** is a predictive measurement of a stainless steels resistance to localized pitting corrosion based on their chemical composition. Higher **PREN**-value means more resistant to localized pitting corrosion by chloride. Seawater has chloride concentration of about 2% (about 2000 times more than normal fresh water)

### Strength and Hardness

	Tensile strength (N/mm <sup>2</sup> )	Yield Strength (N/mm <sup>2</sup> )	Hardness (HBW)
<b>SUS329J4L</b>	>620	>450	<302
<b>SUS316</b>	>520	>205	<187
<b>SUS304</b>	>520	>205	<187

Duplex stainless steel, SUS329J4L is stronger and harder than ordinary stainless steels, SUS304 and SUS316