New Generation Ferritic Stainless Steel Grade 404GP

Grade **404GP** can be used instead of grade 304 stainless steel in most applications. The corrosion resistance of grade **404GP** is at least as good as grade 304, often better: it is not affected by stress corrosion cracking in hot water, and is not subject to sensitisation when welded.

Grade **404GP** is a new generation ferritic stainless steel made by a premium Japanese mill with state-of-the-art new generation steelmaking technology by Vacuum Oxygen Decarburising (VOD) to achieve Extremely Low Carbon content (ELC). A special addition of titanium neutralises the remaining carbon.

The very high chromium content – 21% - of grade **404GP** makes it clearly superior to the common ferritic grade 430 for corrosion resistance. All ferritic grades, **404GP** and 430 included, are magnetic, which does not affect the corrosion resistance.

404GP is a general purpose stainless steel able to substitute for the workhorse grade, 304, in most applications. **404GP** is easier to cut, fold, bend and weld than 304. This gives a better-looking job – cleaner edges and bends, flatter panels, neater construction. Plus cost advantages from lower tool maintenance and longer life. And with a lower density than 304, it gives 3.5% more area per kg.

Grade **404GP** is available as coil and sheet, 1219 mm wide.

Finishes are No4 and 2B. The 2B finish on **404GP** is brighter than 304. Do not use 2B where appearance is important – the gloss may vary across the width.

404GP offers:

- Corrosion resistance as good as 304
- Easier fabrication
  - Better product quality
  - Lower fabrication costs
- Better economy

404GP is available from stock as coil & sheet

- 0.55, 0.7, 0.9, 1.2, 1.5 and 2.0 mm thickness
- 1219 mm width
- No4 and 2B finish
  - 404GP 2B does not match 304 2B

As a ferritic stainless steel, grade **404GP** has higher yield strength than 304, similar hardness, and lower tensile strength and tensile elongation. It also has much lower work hardening – which is what makes it easier to work with. It behaves like carbon steel in fabrication.

404GP is a new generation ferritic stainless steel grade made by the premium Japanese mill JFE Steel Corporation, who brand it 443CT. The grade is new, but the mill has many years of experience with similar grades.
Like all ferritic stainless steels, **404GP** should be used only between 0°C and 400°C, and should not be used in pressure vessels or structures without full qualification.

404GP can be worked by all the methods used with 304, without exception. Because it has similar work hardening to carbon steel, it should be worked with similar settings to carbon steel. Despite having lower tensile elongation than 304, it can be bent to 180° on 0t, and can be deep drawn and spun to shapes that can be made from carbon steel.

404GP is weldable by TIG, MIG, spot and seam welding. See Wakefield Metals datasheet on welding new generation ferritic grades for advice.

Typical Chemistry of 404GP compared to 304 and 430

Grade	Chromium	Copper	Carbon	Titanium	Nickel
404GP	**21.0%**	**0.4%**	**0.01%**	**0.3%**	**–**
304	18.2%	–	0.05%	–	8.2%
430	16.5%	–	0.06%	–	–

Typical Mechanical Properties of 404GP compared to 304 and 430

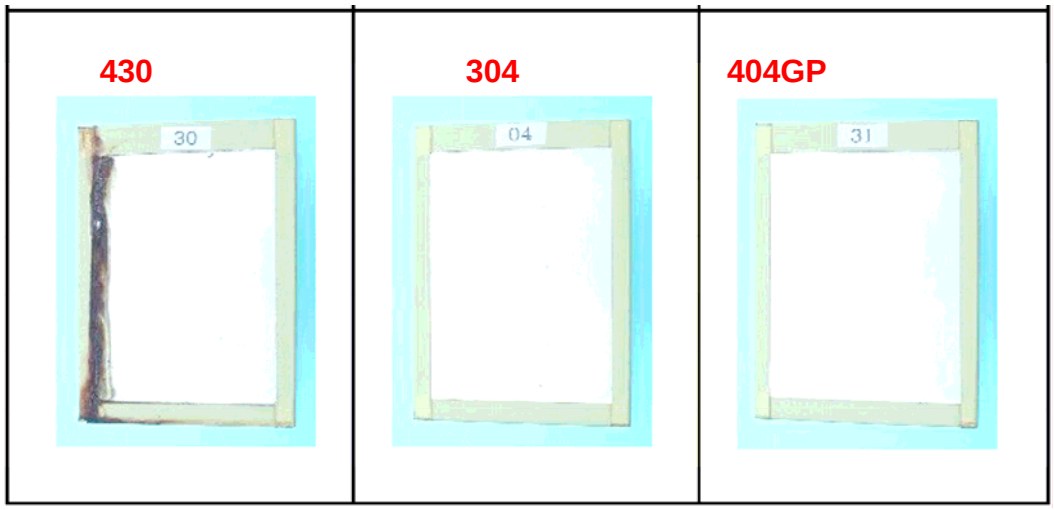
Grade	Yield Stress MPa	Tensile Strength MPa	Elongation %
404GP	**305**	**485**	**30%**
304	260	645	55%
430	320	490	30%

Typical Physical Properties of 404GP compared to 304 and 430

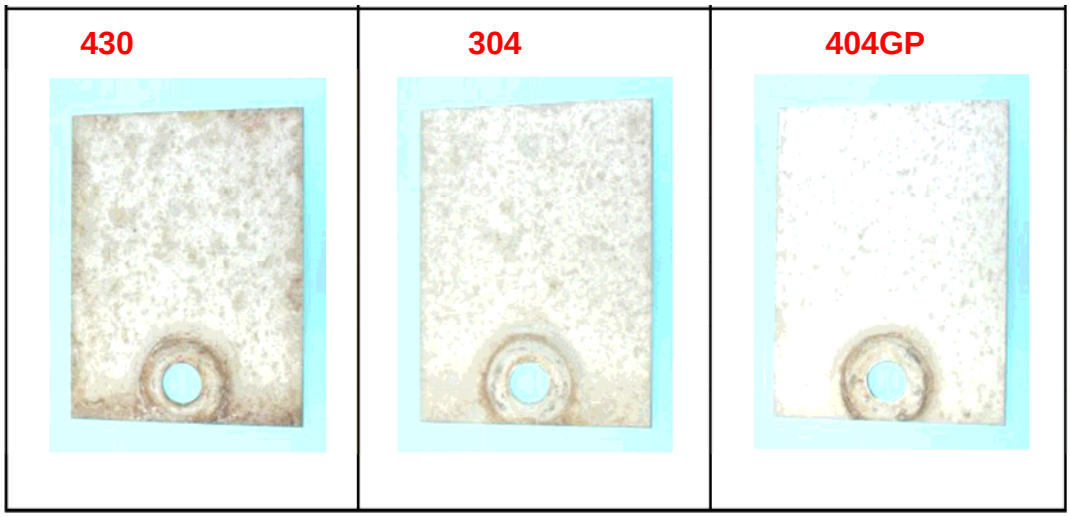
Grade	Density Kg / m^3	Thermal Conductivity W/m.°C	Thermal Expansion Coefficient /°C x 10^{-6}	Magnetism
404GP	**7,750**	**22.5**	**10.5**	**Magnetic**
304	8,027	16.2	17.3	Non-magnetic
430	7,750	23.9	10.4	Magnetic

Corrosion Performance

Salt Spray Test – Four months in 5% salt spray at 35°C



Atmospheric Corrosion – One year actual exposure next to Tokyo Bay



Technology is developing rapidly. Wakefield Metals reserves the right to change product specifications without notice.

Wakefield Metals supplies a comprehensive range of stainless steels, copper alloys, nickel alloys and other high performance metals for challenging service conditions. Our engineers and metallurgists will be pleased to provide further data and applications advice.