

# Gemaco specification for urea applications

The manufacturing process of urea used for nitrogenised fertiliser and melamine requires special stainless steels able to withstand severe production conditions. Indeed, the cocktail of corrosive attacks, high pressure (160 bars) and high temperatures (200°C) forces producers to use special stainless steels such as 316 L UG and 25.22.2 (1.4465/1.4466 - S 31050). 316 L UG is a modified 316 L with very low silicon content, a higher molybdenum content and a very low ferrite level. 25.22.2 grade is a modified 310 L with low carbon,

low silicon, high nitrogen additions and also a very low ferrite level.

Concentrated nitric solutions (→ 90 %) also require special stainless steel grades without any trace of molybdenum. Addition of silicon to austenitic stainless steels type 304 L influences favourably the resistance to intergranular corrosion; WNR.1.4361 - UNS S 30600 is an 18% Cr - 15 % Ni with 4 % Si. Moreover, in this industry, boiling nitric acid solutions (50-65%) require WNR.1.4335, which is a 310 L modified grade with silicon

← 0.3 % and carbon ← 0.015 %.

As a consequence, well-known licensees' specifications have been developed by engineering companies in order to guarantee the lifetime of their installations. These specifications concern the chemical composition, the micrographic structure, the mechanical properties and the corrosion resistance (Huey test) of the steel grade.

Ten years ago, GEMACO decided to stock these grades in the shape of pre-material such as slabs, billets, plates, condenser

and heat exchanger tubes, seamless pipes and bars. In order to maintain its position in this specific field and to offer a complete service to its customers,

Now, GEMACO offers its own specification which satisfies three engineering company specifications (Snamprogetti, Stamicarbon and Urea casale). This GEMACO specification ensures the customer not only the Snamprogetti specification (SPC-UR-510 REV3) but also a guarantee regarding other specifications.



## Stainless steels - Nickel alloys - Alloy steels

### Specialities

Urea grades: 316 L UG - 1.4466 (25.22.2 - UNS S 31050)  
Nitric grades: 1.4361 - 1.4335  
High carbon: 304 H - 316 H - 321 H - 347 H  
Heat resisting steels: 309/S - 310/S - P5 - P9 - P11 - P22 - P91 - ...  
Low temperatures: Gr. 2 - Gr. 3 - ...

### Expertise

Emergencies  
Packages  
Tailor made products  
Extended stocks

### Programme

Welded and seamless pipes & tubes, flanges, fittings, bars, forgings, plates & sheets, bolting, gaskets,...

**GEMACO S.A.**  
Zoning Industriel des Hauts-Sarts  
Rue de Hermée, 245  
4040 Herstal  
Belgium (Europe)  
TEL : +32/43.70.99.70  
FAX : +32/43.70.99.71  
E-mail: info@gemac.com  
[www.gemac.com](http://www.gemac.com)

