euro inox
The European Stainless Steel Development Association

What is stainless steel?

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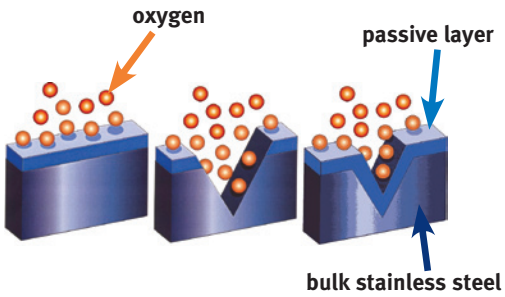
Iron alloy bearing ≥ 10,5 % chromium and ≤ 1,2 % carbon, necessary to ensure the build-up of a self-healing surface layer (passive layer) which provides the corrosion resistance



Main families

Austenitic:	Iron-chromium-nickel, carbon ‹ 0,1 % (including grade 1.4301/304, often referred to as 18/8; 18/10) , non-magnetic in the as-delivered condition; › 65 % of world stainless use
Ferritic:	Iron-chromium, carbon ‹ 0,1%, magnetic
Martensitic:	Iron-chromium, carbon › 0,1%, magnetic and hardenable
Duplex:	Iron-chromium-nickel, combined austenitic-ferritic structure, magnetic

Main properties

Corrosion resistance – aesthetic appeal – heat resistance – low life cycle cost – full recyclability biological neutrality – ease of fabrication and cleaning – strength-to-weight ratio

Commonly available finishes and process routes [1)]

Hot rolled, heat treated, pickled

Cold rolled, heat treated, pickled, skinpassed

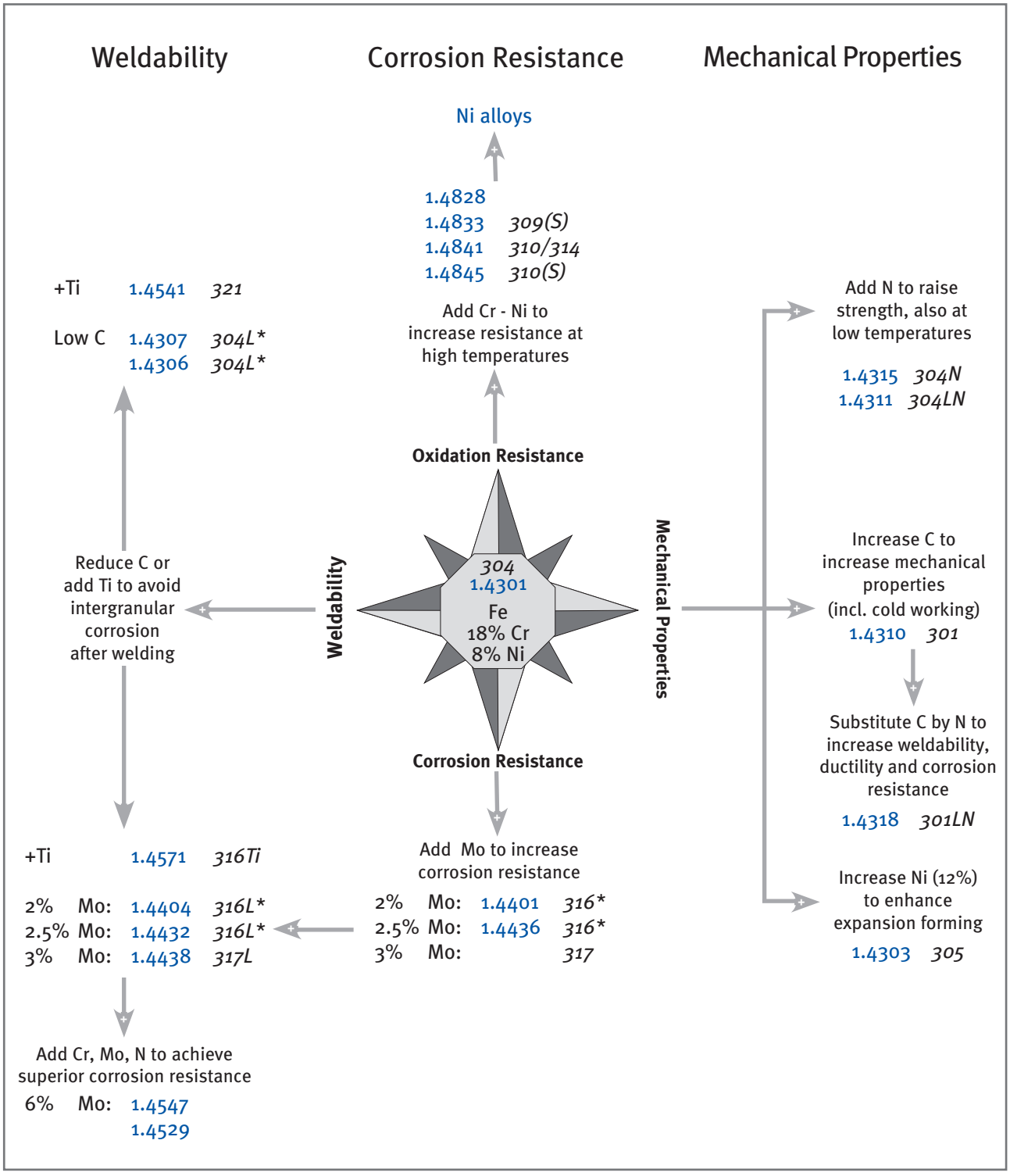
Work hardened

Cold rolled, bright annealed, may be skinpassed

1) See also: Guide to Stainless Steel Finishes (Building Series, Volume 1), L uxembourg: E uro Inox, 2005.
EN 10088-2, Stainless steels. Technical delivery conditions for sheet/plate and strip of corrosion resisting steel for general purposes, 2005

How are austenitic grades interrelated?

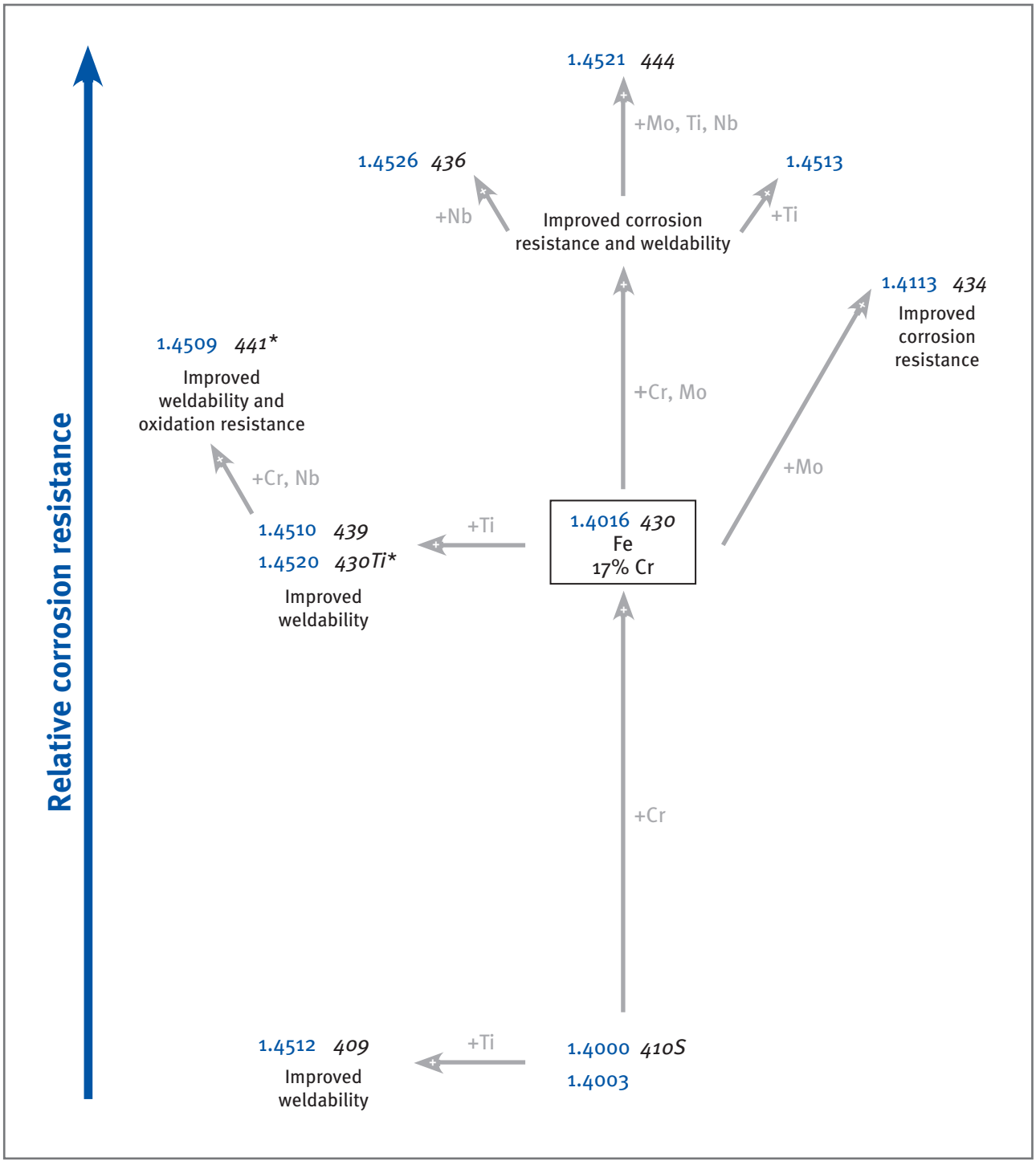
Starting from the universal commodity grade 1.4301, the alloying content can be adapted to modify the steel's characteristics:



Designations according to EN 10088 and *AISI. Please note that there is no 1:1 relationship between AISI and EN grades (*).* For details about chemical composition and equivalence, please consult www.euro-inox.org/technical_tables.

What are the ferritic options?

The most popular grade is EN 1.4016 (AISI 430). Low chromium alloys can be chosen in non-severe environments and where appearance is not a priority. Chromium and molybdenum increase corrosion resistance. Titanium and niobium improve weldability.



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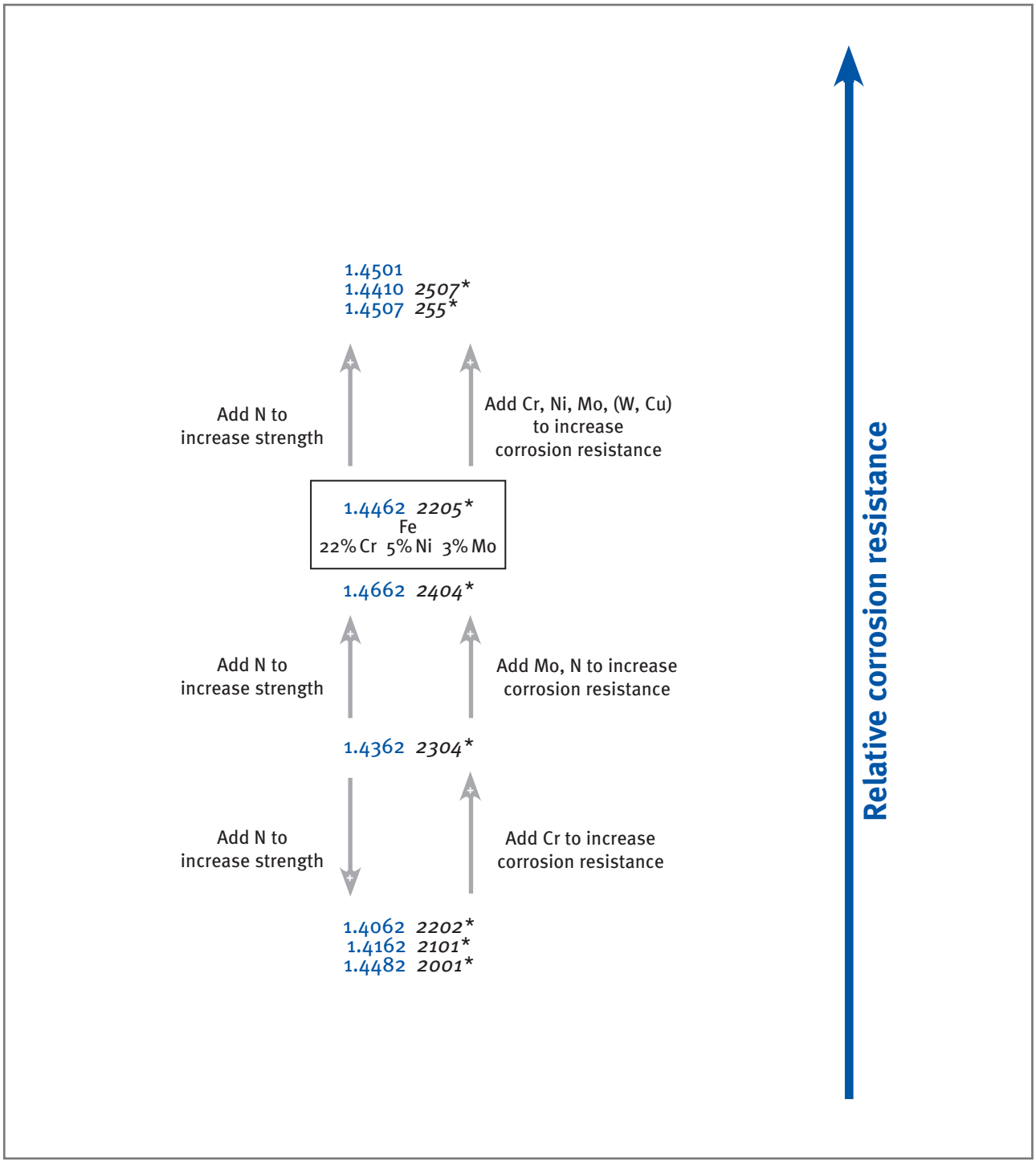
* common designations

And what about duplex?

Duplex stainless steels typically show higher mechanical properties and corrosion resistance than the most common ferritic and austenitic grades. The relative differences between duplex stainless steel grades – of which EN 1.4462 is the most popular one – should be viewed in this context.



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