



## Architecture, Building and Construction

# Condensing Gas Boiler Exchangers

Location	Europe, USA
Environment	Outdoor
Fabrication process	Tube Forming and Welding
Grade/surface	EN 1.4509 (K41)/2B-2R
Main thickness or diameter	from 0.8 to 1 mm
Manufacturer	Exchangers manufacturers
Material supplier	Aperam Stainless Europe
Source of information	Aperam

1.4509 (K41) is a Niobium & Titanium stabilised ferritic grade of stainless steel, containing 18% chromium, which has been approved for use in the automotive exhaust industry for many years. Aperam has capitalised on this experience for a new application for heat exchangers in condensing gas boilers that makes them more resistant to corrosion and easier to maintain. Stainless steel is a green material par excellence: it is infinitely recyclable, environmentally neutral, and, when in contact with water, there is no leaching of its constituent metals which could alter their composition. There are many advantages from using of this grade of stainless steel for the manufacture of gas boiler exchangers. The addition of Niobium enables continued high temperature oxidation resistance, thermal fatigue resistance and creep resistance. Stainless steel oxidises lower than other commonly used materials, resulting in a longer life for the exchanger. The material also allows thinner gauges to be specified, which provides a reduction in weight for the exchanger, and, by extension, for the boiler. Its resistance to aggressive boiler condensates is better than other commonly used materials and as with all ferritic grades, it is not susceptible to stress corrosion. The dual stabilisation with titanium and niobium affords it excellent resistance to intergranular corrosion. An added advantage is that ferritic stainless steels have a more stable price structure than austenitic grades.

