

Technologies

Heat Exchanger Material in Benchmark Boilers

While 304L & 316L SS are quality materials frequently used in the industry, these materials do not offer the same high performance characteristics of 439 Stainless Steel.

- 439 SS offers greater thermal conductivity than 304L or 316L SS; 33% greater heat transfer per sq.ft. resulting in lower metal temperatures and lower thermal stresses. This translates to higher efficiency in a more compact package and extended service life
- 439 SS offers lower thermal expansion rates than 304L & 316L SS; 37% lower than 304L & 29% lower than 316L. This is significant since it further reduces thermal stresses within the 439SS
- 439 SS contains 1.1% Ti while 316Ti contains, at maximum 0.9% Ti
- There is no real benefit to 316Ti over 316L SS (ref: <https://www.rolle-dalloys.com/technical-resources/blog/why-why-why-316ti-uns-s31635>)

Due to its higher performance properties, 439SS is more resistant to extreme cycling and stress corrosion cracking than either 304L and 316L. As a result, a longer heat exchanger life is provided.

316 and 316Ti SS will have higher Pitting Resistance Equivalent number (PREn) than 439 SS, however the PREn is only relative to chloride pitting, which should not be a major issue in hydronic heating; especially as there is minimal O₂ for the chloride to react with in a closed loop system (SS/ PREn, 316L/ 22.6, 316Ti/ 23.7, 439/ 17.0).

439 SS is a better HX material from a thermal expansion, heat transfer, and corrosion resistance perspective for hydronic heating applications.

We offer a standard 15yr warranty on the BMK Platinum product; that is the same HX as the BMK standard product. We believe this speaks well of the quality compared to the alternatives in the commercial condensing boiler market.

