Stainless-Steel BSSA Statement

Excerpt from:
BRITISH STAINLESS-STEEL ASSOCIATION

Stainless Steel in Swimming Pools – Non-Critical Applications

By far the bulk of stainless steel in swimming pools is used for its decorative properties and durability. For these applications, the key issue is not SCC but rather ensuring that the material retains its initial finish throughout its life. The standard stainless steels like 1.4301 (304) and 1.4401 (316) have proven effective in many pools. However, examples of badly stained stainless steel are reported from time to time and it is worth examining the factors which can cause this and the remedial action which might be taken.
The surface finish is just as critical in determining the corrosion resistance of stainless steel as the grade. As with coastal applications, poor quality polished finishes can lead to disappointing performance of stainless steel. A full explanation of this phenomenon can be found at:

Importance of Surface Finish in the Design of Stainless Steel

Swimming pools have the additional complication of the large variations in conditions which can exist in a pool. The corrosivity is influenced by:

- Ventilation and air recirculation
- Disinfection regime
- Cleaning and maintenance regime
- Temperature control
- Bather loading and behaviour
- Local “mini-climates” within the pool hall

These factors can lead to variations in performance in components in difference places within the pool hall made from the same grade and surface finish.
A combination of grade 1.4401 with a bright polished surface will give the best performance in any specific environment.

Conclusion

Stainless steel is a suitable choice of material for swimming pool applications provided that:

- The possibility of failure by Stress Corrosion Cracking is properly assessed for load bearing components
- The grade and surface finish is chosen to give optimum corrosion resistance