

## Acid Linings and Stainless Steel

### Question

Is melting stainless steel in an acid lined induction furnace to make stainless steel valves advisable ?

If this is not feasible, please furnish the details with a metallurgical explanation and recommendations for a proper lining.

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### Answer

In the production of Hi-Alloy steel, a refractory lining faces a hostile environment and must withstand highly corrosive conditions. Chemical attacks exacerbated by the addition of alloying materials, turbulent surging action of the molten metal in the bath causing erosion of the lining and the basic condition of the bath that attacks the acid refractory all conspire to erode the lining.

An acid lining due to its weaker bonding and lower temperature tolerance, comparatively will not withstand either the chemical or mechanical attacks of the molten metal in the bath nearly as well as a magnesite based ramming mass. Therefore considering the time, cost of material and the downtime as well as the laborious task of ramming the mass in an induction furnace it is well worth the extra cost to use a basic ramming mass. Recommended for the production of Hi-Alloy steel in an induction furnace would be a mix of Spinel forming refractory material containing low iron and electrically fused Corundum or a Magnesite -Chrome material. Make sure a complete Heat-Up curve is obtained for the purchased product.

*This answer was provided by M. Tehrani who can be contacted at [MARK502@aol.com](mailto:MARK502@aol.com) for more information on refractories.*