NORAM SXTM in HNO3 Service

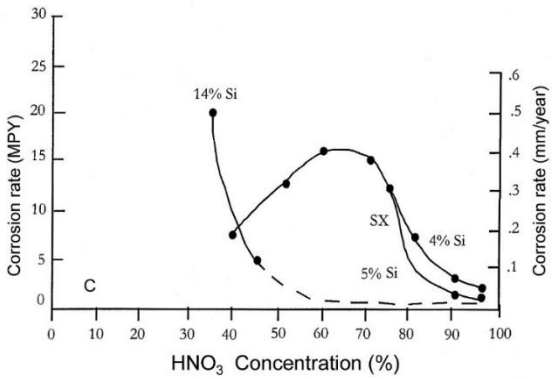
Noram SX™ is the trademark for the austenitic stainless steel, UNS S32615, which was developed by Sandvik in Sweden specifically for the use in hot concentrated Sulphuric Acid. SX steel is considered the benchmark in sulphuric acid service with over 25 years of unparalleled performance offering numerous advantages over other materials of construction.

NORAM SX™, which has been widely used for many years in the sulphuric acid industry, has also shown the same, excellent performance in strong nitric acid. NORAM SX™ is therefore a cost-effective alternative for replacing aluminium and other alloys, which have been the common material of choice in high concentrations of nitric acid.

To achieve a satisfactory corrosion resistance at H2SO4 and HNO3 concentrations (90-100%) it is well known that stainless steel needs alloying with silicon (Si). In strongly oxidising acids, Si will be enriched on the material surface, forming a durable protective layer of SiO2.

The corrosion rate for NORAM SX™ is zero in the typical operating range of the concentrated (90-100%) nitric acid circuits. Corrosion properties are equally good for the base material and the welds also in dynamic conditions.

Approvals:
· ASME II, Part D
· ASME VIII, Div 1
· PMA-EN



NORAM SX™ / SANDVIK SX COMPOSITION					
Cr	**Ni**	**Si**	**Mn**	**Cu**	**Mo**
16.5-19.5%	19.0-22.0%	4.8-6.0%	2.0%	1.5-2.5%	0.3-1.5%

The excellent mechanical and corrosion properties, and the available forms of the material, allows for easy and cost effective fabrication of equipment. The extensive experience of NORAM as a major provider of proprietary acid plant technology assures a safe and reliable design of NORAM SX™ acid plant equipment.

NORAM SX™ equipment includes:
· Acid Piping & Fittings
· Acid Condensers - without need for anodic protection
· Surge and storage vessels
· Absorptions towers and tower internals

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