EDMESTON AB

SX® ALLOY STRONG ACID EQUPMENT

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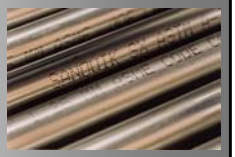
EDMESTON AB

IV BRAZILIAN CONGRESS OF SULPHURIC ACID
COBRAS 2005
CONGRESSO H_2SO_4

SANDVIK SX

Sandvik SX – Sulphuric Acid Steel

An austenitic stainless steel developed by Sandvik in the early 70's
Introduced by EDMESTON in 1984

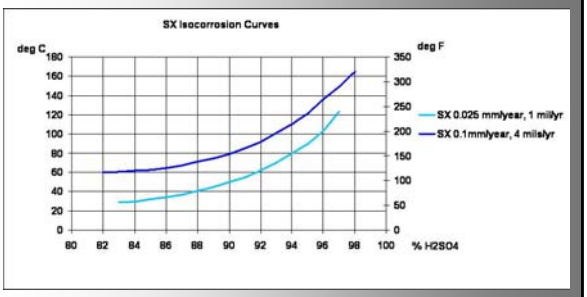


UNS S 32615, ASME Code Case 2029-3

Chemical Composition:

Cr	16.5 - 19.5 %	**C**	0.07 %
Mo	0.3 - 1.5 %	**Si**	4.8 – 6.0 %
Ni	19.0 – 22.0 %	**Mn**	2.0 %
Cu	1.5 – 2.5 %		

EDMESTON SX SYSTEM



SANDVIK SX

Bending and Forming:

- Similar to 316
- SX is harder but more ductile

Drilling and Machining:

- Similar to 316
- SX is harder, increase calculated drilling time

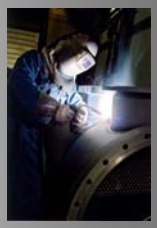
SANDVIK SX

Welding:

- Welding SX is similar to welding normal stainless steel
- Increase calculated welding time 10-20% compared to 316

Applicable welding processes:

SMAW - Covered Electrode welding
GTAW - TIG welding
GMAW - MIG welding
PAW - Plasma welding



Considerations:

- Always use SX filler material
- Weld with low heat input
- Max interpass temp 60 C / 140 F

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SX - Suitable for all applications in the absorption and drying acid circuits,

- Acid Distributors
- Acid Piping
- Acid Coolers
- Drying & Absorption Towers
- Pump Tanks
- Strainers, inserts etc.

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Acid Distributors

Cast Iron acid distributors

- Heavy
- Poor distribution
- Pressure drop
- Corrosion products
- Short lifetime
- Maintenance item

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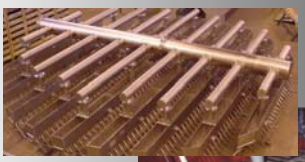
Acid Distributors

SX acid distributors

- Effective distribution
- Uniform distribution
- Low pressure drop
- No corrosion
- Light weight
- No maintenance
- Lifetime 20 years +



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Trough type distributors

- Typically 43 distribution points / m2, or more
- Suitable for high performance towers
- Flexible and reliable performance

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Pipe type distributors

- Typically 15 - 43 distribution points / m2
- Cost effective choice for replacement of old distributors or new installations
- Simple and reliable design

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Flarp distributors

- Fan shaped stream distribution
- Cost effective
- Manufactured according clients specifications

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Acid Piping

Cast Iron Piping

- High corrosion / erosion
- Flanged system, leaks
- Large and heavy
- Corrosion products
- Short lifetime for parts
- High maintenance
- Safety ?

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Acid Piping

SX Piping

- Low corrosion / erosion
  - clean acid
  - no corrosion products
  - reduced pipe size
  - low weight
  - easy installation
- Welded system
  - flanges replaced by welds
  - potential leaks reduced
  - prefab possibilities
  - field modifiactions easy
  - eliminate spare inventory

Maximum safety & plant availability
Minimum maintenance & life cycle cost

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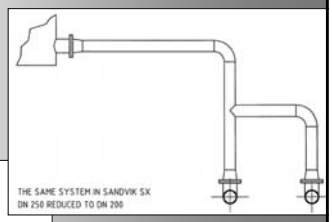
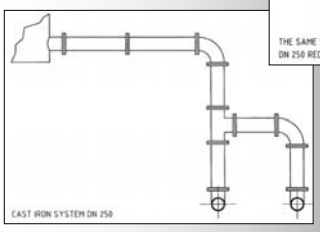
SX Piping

For full benefit:
- Replace complete line, not spools
- Consider decreased diameter
- Use standard stock items





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SX Piping Class

- Standard for Sulphuric acid piping
- Available on Internet

"www.edmeston.com"

EDMESTON SX SYSTEM

Acid Coolers

Cast Iron spray Cooler

Shell & Tube coolers with anodical protection

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Acid Coolers

Shell & tube cooler with anodical protection

Replaced by

Shell & tube cooler in SX
- no anodic protection
- long reliable performance
- low maintenance

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SX Acid Coolers

Multi-shell BFW heater in SX
- acid inlet 130°C
- water outlet 117°C
- heat exchanged 14.2 MW

Shell & tube cooler in SX
- heat exchanged 14.5 MW
- surface 725 m^2

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Acid Towers & Tanks

Old brick lined vessels

- what to replace them with ?

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SX Vessels

- Drying Towers
- Absorption Towers
- Stripping Towers
- Pump Tanks

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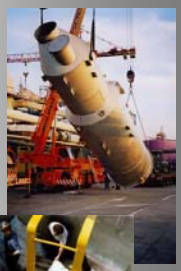
SX Vessels

- No Brick lining
- Short installation time
- Prefab possible
- Minimised shut-down time
- Low weight



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Sandvik SX

- A well proven material providing possibilities for improvements for acid plant equipment

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SX References

Towers	50
Acid Coolers	100
Acid Distributors	250
Pump Tanks	40
Pumps	>50 (Friatec, Rheinhutte)
Piping systems	>150 (>25 000 m, 16 miles)
Miscellaneous	>500

Sailing ahead with SX

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Thank You !

WWW.EDMESTON.COM