

CG Thermal

Ceramic. Graphite. Heat Exchangers. Process Equipment.

State-of-the-Art Heat Transfer Technology for HF/Nitric acid Service.

2 year unconditional guarantee on tubing against erosion and corrosion

Umax[®] Advanced Ceramic Heat Exchanger.

The Industries Most Reliable and Advanced Heat Transfer Technology for HF/Nitric Acid Service

- Maximum Corrosion Resistance.
- Maximum Thermal Efficiency.
- Maximum Heat Exchanger Life.



Umax Advanced Ceramic

heat exchanger is the high value, long life alternative to TFE Impregnated graphite and TFE heat exchangers with an unequalled combination of corrosion resistance, thermal efficiency, low fouling, and maintainability.

Superior Corrosion Resistance

The mixed nitric - hydrofluoric acid most commonly used in chemical milling titanium and pickling stainless steel is highly corrosive to most metals, and will deteriorate glass as well. The Umax[®] Ceramic heat exchanger is the ultimate solution to these corrosion concerns. It is universally corrosion resistant against virtually all chemicals up to 400° F providing a long, corrosion free operating life. For this reason, process engineers specify the Umax for their sulfuric acid, hydrochloric acid, bromine, and other highly corrosive acids process applications as well.

Transfer Rates		
	Umax	Teflon
Wall Thickness	0.06"	0.025"
Heater (Steam)	246	44
Cooler (Water)	197	42

Superior Thermal and Mechanical Shock Resistance

The compressive and flexural strengths of Umax[®] are 50x and 10x those of graphite, respectively. The flexural strength is even higher than that of many metals. Coupled with our unique "no load" tubesheet design these properties result in a unit that has exceptional mechanical shock resistance.

	Umax Ceramic	Graphite	Teflon
Specific Gravity	3.1	1.9	.78
Flexural (psi)	60,000	6,380	Non Break
Compressive (psi)	560,000	11,310	3500
CTE (10-6 in/in F)	2.2	2.4	75
Conductivity (btu/ft-hr F)	72.6	58	.142

Superior Heat Transfer Efficiency

The Umax thermal properties are equally impressive, with a thermal conductivity slightly higher than graphite and 100x greater than that of TFE.

Superior Erosion Resistance without using an oxide film or TFE Coating

Umax® advanced ceramic tubing is over 50% harder than tungsten carbide making it for all practical purposes immune to erosion. It can even be sandblasted without damaging the tube surface. Therefore, we can maximize the thermal efficiency by increasing acid flow velocities well above the industry standard operating limits assigned to other heat transfer materials, knowing that short and/or long term erosion damage/failure is not a concern.

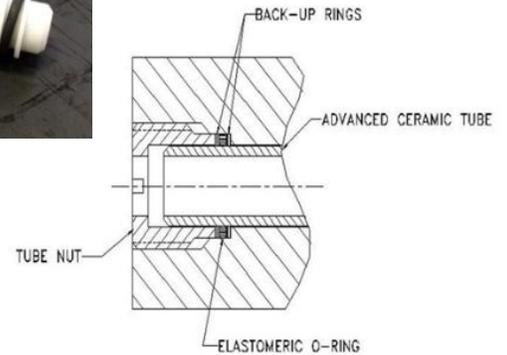
Proprietary Self-Contained Elastomeric Sealing System

The proven tube to tube sheet seal system utilizes a combination of specifically selected elastomeric seals and Teflon support rings. When coupled together with the close tolerance tube nut and tube sheet hole, the result is a highly reliable, static, self-contained seal that is 100% leak free with exceptional service life. Units in service have proven that after over 20 years the seal is still performing leak free without the need of maintenance or replacement.



Completely Field Repairable

If ever required, individual tubes can be replaced in the field simply and economically without the need for special tools and/or highly specialized welding procedures. Gaining access to the tubes is quickly and easily accomplished. A single tube can be removed and replaced without disturbing any other tubes. This can be accomplished on site, with a simple, straightforward operation eliminating shipping concerns and minimizing downtime.



Superior Operational Value

- ✓ **2 year unconditional guarantee on tubing against erosion and corrosion**
- ✓ Superior strength properties.
- ✓ Excellent thermal conductivity - 2x higher than tantalum and 100x higher than TFE.
- ✓ Resistant to fouling.
- ✓ Easily cleaned without damage to the tubes.
- ✓ Completely field repairable with common tools.
- ✓ Immune to thermal shock

CGThermal

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