

Umax® Advanced Ceramic Heat Exchanger.

**State-of-the-Art
Corrosion Resistant
Heat Exchanger Technology.**

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

CG Thermal's Umax® Advanced Ceramic heat exchanger is the high value, long life alternative to nickel alloy, reactive metal, graphite, and graphite heat exchangers with an unequalled combination of corrosion resistance, thermal efficiency, low fouling, and maintainability.

Superior Corrosion Resistance

Umax® Ceramic heat exchangers represent the ultimate solution for your most corrosive heat transfer applications. It is universally corrosion resistant against virtually all chemicals up to 400° F. They are particularly well suited for processes involving mixed acids, HF, HCL, high concentration H2SO4, bromine, fluorine or caustics.

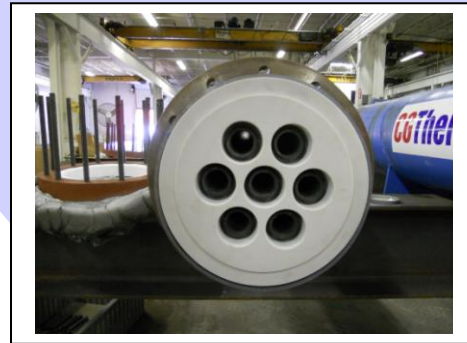
Umax Ceramic is extremely hard, immune to thermal shock, has excellent strength properties, is corrosion-proof, and is non-contaminating.

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 tantalum. The thermal properties are just as impressive, with a thermal conductivity 2x that of tantalum and low thermal expansion.



Coupled with our unique “no load” tubesheet the aforementioned properties result in a unit that has exceptional mechanical shock resistance and is 100% immune to thermal shock.



	Umax Ceramic	Graphite	Tantalum
Specific Gravity	3.1	1.9	16.6
Flexural (psi)	60,000	6,380	50,750
Compressive (psi)	560,000	11,310	NA
CTE (10-6 in/in f)	2.2	1.04	5.8
Conductivity (btu/ft-hr F)	72.6	58	32

Superior Erosion Resistance without using an oxide film.

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 thermal efficiency by increasing acid flow velocities well above the industry standard safe operating limits of graphite and metal exchangers, knowing that short and/or long term erosion damage/failure is not a concern.

This can result in greatly increased heat transfer rates and lower fouling rates compared to your current exchanger. This increases your process production rates and reduces the amount of downtime required for cleaning.

Umax® advanced ceramic heat exchangers consistently deliver greatly extended service life compared to competing materials.

Superior Operational Value

- ✓ *2 year unconditional guarantee on tubing against erosion and corrosion.*
- ✓ Not susceptible to pin hole leaks.
- ✓ Superior strength properties.
- ✓ Excellent thermal conductivity, 2x higher than tantalum.
- ✓ 50% harder than tungsten carbide.
- ✓ Easily and economically field repairable if required.

Our Umax® tubing is combined with proprietary TFE tubesheets using a proven, highly reliable o-ring design.

If 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 quick and convenient making process side cleaning or a clogged tube replacement simple, safe, and economical. The extreme hardness and inherent low adhesion properties of the tubing make hydro-blasting effective without worry of damaging the tubes.



Summary of Features

- *Corrosion-proof tubing coupled with PTFE tubesheets and highly corrosion resistant o-rings.*
- *Erosion-proof. Tubing is 1.5 times harder than tungsten carbide.*
- *High efficiency heat transfer. Thermal conductivity is twice that of tantalum, 5 times that of stainless steel, 10 times that of nickel alloys and 15 times that of glass.*
- *Immune to thermal shock throughout its operating range.*
- *Not susceptible to pin hole leaks.*
- *Completely field repairable with common shop tools.*

CGThermal