

IM-Series Immersible Ultrasonic Transducers

The Sonalloy Option

For cleaning applications requiring –

- The use of acidic cleaning agents
- Exceptionally high throughput or long hours of operation

Ultrasonic cleaning systems utilize high frequency sound waves, or ultrasound, to enhance chemical cleaning. Mechanical vibrations are produced by transducer elements attached to a radiating diaphragm — the outside surface of an immersible ultrasonic transducer. This surface, in contact with the liquid to be ultrasonically activated, couples the energy from the transducer elements into the cleaning tank. For most cleaning applications, the immersible transducer is formed in 316L hard chrome-plated stainless steel.



Over time, cavitation erosion of the transducer surface occurs as the normal result of

the high energy levels produced when a transducer vibrates at ultrasonic frequency in the presence of a liquid. Most transducers can operate for up to 5,000 hours before erosion of the transducer surface becomes severe enough to destroy the diaphragm.

The life and performance of the transducer can be significantly extended, however, by constructing the immersible from Sonalloy.

This cobalt-based alloy has been tested to be 75 to 100 times more resistant to visible cavitation erosion than unprotected 316L stainless steel. In addition, Sonalloy transducers can perform successfully in acidic or very strong caustic solutions that would normally attack and destroy stainless steel. Sonalloy is also recommended for applications in which the presence of high iron content is undesirable.

Consult a Blackstone~NEY Ultrasonics Applications Engineer to determine if Sonalloy is advisable for your cleaning application.

Liquid	Recommended Construction for Normal Life	
	Base Alloy of IM	Surface Coating
Acetic Acid 20%	316L Stainless Steel	Hard Chrome
Sulfuric Acid <2% >2% - 30% @ 140°F	316L Stainless Steel Sonalloy	Hard Chrome None
Phosphoric Acid <5% 0 - 80% @ 200°F	316L Stainless Steel Sonalloy	Hard Chrome None
Sodium Hydroxide <20% >20% - 50% @ 150°F	316L Stainless Steel Sonalloy	Hard Chrome None
Nitric Acid < 30% @ room temp > 30% - 70% to 212°F	316L Stainless Steel Sonalloy	Hard Chrome None
Hydrochloric Acid 5% - 10% @ room temp >10% - 30% to 122°F >1% @ 212°F	316L Stainless Steel Sonalloy Sonalloy	None None None
Note: Hard chrome plating is not recommended for applications requiring hydrochloric acids or solutions with high chloride concentrations.		
All Aqueous Cleaning Chemistries with High Duty Cycle	Sonalloy	None