

# SEVERE ENVIRONMENT GUIDE



Max-Air offers a wide variety of actuator coatings which extend the limits of service for aluminum actuators. These coatings provide economical alternatives to stainless steel in a wide variety of applications, extending the boundaries of the traditional service limits for aluminum actuators. From salt spray to immersion to caustic washdown environments, our specialty coatings can solve your actuation problems without the extreme cost of stainless steel.

*Increased Corrosion Resistance*

<i>Material/Finish</i>	Aluminum: Hard Anodized	Aluminum: Anodized w/ Polyamide Epoxy coating	Aluminum: Electroless Nickel Infused	Aluminum: PTFE/PFA Coating	Stainless Steel
<i>Appearance</i>	Silver-gray with a low gloss appearance	Black with a medium gloss finish	Medium gloss silver finish	Glossy black/ optional white finish	Silver; low to medium gloss unless polished
<i>General Properties</i>	Good general corrosion properties in most "natural" environments with pH from 4.5 to 8.5. Good resistance to salt air environments. The coating is extremely hard and resistant to abrasion.	This epoxy coating is a relatively thick coating which creates a barrier against many of the chemicals which anodizing alone cannot adequately resist. It will resist more acidic or basic environments than anodizing alone.	Uniformly thick coating with essentially no porosity and a reasonably high hardness. The coating is pure, tough, hard, and resistant to many types of corrosion media.	This coating provides complete surface coverage and exhibits excellent corrosion resistance properties in a wide variety of applications. In addition, it is FDA approved for food contact.	304 and 316 stainless steel are the most commonly used alloys. Both have good corrosion resistance but 316 is generally considered superior, however more expensive.
<i>Relative Purchase Cost</i>	Lowest cost option	Moderate	Moderately high	Moderately high	Highest cost option by a significant margin
<i>Performance Limitations</i>	Highly acidic or basic environments will break down the coating.	Good general corrosion resistance, particularly in salt or alkaline environments. Limited resistance to acids. Surface chalking will occur when exposed to UV radiation. Also suitable for low concentrations of caustic washdown solutions.	The coating will provide enhanced corrosion protection in very acidic environments but will not withstand attack from strong alkaline media. Also suitable for low to medium concentrations of caustic washdown solutions.	These coatings are resistant to any environment into which an actuator would be installed. Provided the integrity of the surface is intact, the coating can resist a broad array of chemical environments at temperatures ranging from sub-zero to over 300° F.	Although stainless steel does offer enhanced corrosion resistance, it also is dramatically higher in both cost and weight. The weight differential will often necessitate the use of special support bracketry. Corrosion resistance is superior.
<i>View</i>					

# SEVERE ENVIRONMENT GUIDE

WITH  
**MAX-AIR**  
 THERE ARE **NO**  
 LIMITS

The service guidelines presented here are intended to provide general information about the service limitations and performance of coated actuators. There are many variations in service conditions; Max-Air should be contacted to verify the suitability of the coating in a specific environment. Additionally, as coatings can be damaged from rough handling, care must be taken with certain coated products to assure that the integrity of the coating is not compromised as a result of handling issues.

Material/Finish	Aluminum: Hard Anodized	Aluminum: Anodized w/ Polyamide Epoxy coating	Aluminum: Electroless Nickel Infused	Aluminum: PTFE/PFA Coating	Stainless Steel: 300 series
General Indoor Atmosphere	AR	BR	BR	BR	BR
Outdoor Atmosphere, Non-Exposed	AR	BR	BR	BR	BR
Outdoor Atmosphere, Exposed	AR	BR	BR	BR	BR
Outdoor Atmosphere, Exposed with Salt Spray	AR	AR	BR	AR	BR
Caustic Washdown: Low Concentration	NR	LL	AR	AR	BR
Caustic Washdown: High Concentration	NR	LL	LL	AR	AR



## LEGEND

**BR** – Better than required; may cost significantly more than necessary for reliable long term service in this environment

**AR** – Acceptable and recommended

**LL** – Limited Life; Actuator will function in this environment for a period of time, however, the life will be shortened due to external corrosive attack

**NR** – Not recommended

Max-Air Technology, Inc.  
 751 Hoff Rd  
 O'Fallon, MO 63366  
 Toll Free: 888.842.8588  
 Toll Free Fax: 866.842.3144  
 www.max-airtechnology.com

Max-Air pushes the limits even further with our engineered polymer actuators in a number of sizes. Our engineered polymer actuators can be directly mounted on metal or plastic valves, further extending the application boundaries. Please call Max-Air for more details.

