

CORROSION RESISTANCE OF ASHCROFT B, D, T, L, P SERIES SWITCH CASES

Our customers often ask how will the epoxy painted die cast Aluminum alloy cases Ashcroft uses for B-series, D-series, T-series, L-series and P-series switches hold up in a salt air / marine environment. Our switches have been very successfully used in these types of environments for the reasons stated below.

Aluminum alloys are used quite often in marine environments. Most wrought alloys can be used without protection with good results. Cast alloys tend to exhibit slightly higher corrosion rates due to the cast microstructure of the metal. Also, copper bearing alloys like 380/A380 and 2024 tend to exhibit increased corrosion rates when compared to zinc bearing alloys. [1] As such, cast and copper bearing alloys are often painted or zinc clad to assure maximum performance over time.

Actual corrosion rate in marine environments is highly dependent on weather patterns, part orientation, and part location. Naturally, wetter environments increase corrosion rates, while parts installed in direct sunlight or oriented for proper drainage tend to be drier, decreasing corrosion rate. On average, bare, unpainted aluminum alloys plates in marine atmospheres will lose between .01 mil/year (0.3µm/year) while unpainted carbon steels will lose .83 mil/year (21.0 µm/year). [2]

Ashcroft switch cases are die cast from aluminum alloy 380 and are zinc chromated and then painted for maximum corrosion resistance. The zinc chromate surface treatment cathodically protects the aluminum, preventing corrosion if the paint is compromised. Negligible corrosion is expected over the useful life of the switch in marine atmospheres. However, submerging the case in seawater or allowing the ingress of seawater or salt spray is not recommended.

References:

- 1. *Handbook of Corrosion Data.*** Published by the American Society of Materials
- 2. *ASM Handbook Volume 13C, Corrosion: Environments and Industries.***
Published by the American Society of Materials.