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*How Magnesium Almost Lost World War Two: Environmental Effects on Magnesium*

A magnesium alloy was used in the construction of the Boeing B-29 crankcase during World War Two. The development and subsequent combat deployment of the B-29 showed that the magnesium crankcase was prone to fires. Magnesium has been known to corrode with prolonged exposure to heat, humidity, and saltwater. The environmental conditions in the Northern Mariana Islands included a yearly average temperature of 28.9°C (84°F), and an average humidity of 79%. Due to its oceanic location, exposure to salt from the ocean was also highly likely. The research question investigated was: Could the environmental conditions in the Pacific Theater have led to deterioration of the magnesium crankcase on B-29s in World War Two? It was hypothesized if magnesium strips were exposed to salt humidity, corrosion would be apparent in both direct observations and in a strength test. To test the hypothesis, strips of magnesium ribbon were exposed to salt water humidity in a salt chamber for 24, 48, 72, and 96 hours. After removing the magnesium ribbon from the chamber, the magnesium strips were examined for changes in appearance and were subjected to a strength test. After the research was concluded, it was found that a general decrease in the strength of the magnesium strips occurred with prolonged exposure to the salt water humidity conditions; therefore, leading the researcher to accept the hypothesis. Magnesium strips were also analyzed by microscope (before and after exposure to the salt chamber); however, there was no conclusive evidence of corrosion from direct observation.