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Metal Compatibility of P-80® Temporary Assembly Lubricants

CONCLUSION: P-80® Emulsion, Thix, and RediLube lubricants offer some corrosion protection for metals. While highly polished aluminum, copper and its alloys corrode quickly in tap water P-80 Lubricants significantly reduce this corrosion; however these metals may not retain a brilliant finish after long dwell times.

P-80 Grip-it leaves copper and its alloys with a shiny but etched finish. Grip-it may leave a blue residue on these metals that can be easily washed away. After 24 hours of immersion, aluminum and steel darken significantly in Grip-it, however this is a worst-case scenario. When used as recommended and allowed to evaporate Grip-it should not affect aluminum or steel.

Change in Mass and Appearance, Room Temperature (25° C)

	Immersion	Copper 110	Bronze 220	1018 Steel	Aluminum 1100	Titanium	Monel 400	Brass 360 Alloy	304 Stainless
P-80 Emulsion	24 hrs: Δ mass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	288 hrs: Δ mass Δ appearance	-0.1% Shadowed	0.0% Shadowed	0.0% No change	0.0% Shadowed	0.0% No change	0.0% No change	0.0% Shadowed	0.0% No change
P-80 THIX	24 hrs: Δ mass Δ appearance	0.0% Shadowed	0.0% Shadowed	0.0% No change	0.0% No change	0.0% No change	0.0% No change	0.0% Shadowed	0.0% No change
	288 hrs: Δ mass Δ appearance	0.0% Shadowed	0.0% Shadowed	0.0% Slightly darkened	0.0% No change	0.0% No change	0.0% No change	0.0% Shadowed	0.0% No change
P-80 Grip-it	24 hrs: Δ mass	-0.1%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	288 hrs: Δ mass Δ appearance	-1.1% shiny, etched	-0.6% shiny, etched	-0.5% Red rust	0.0% Darkened	0.0% Shadowed	0.0% Shadowed	-0.3% shiny, etched	0.0% No change
P-80 RediLube	24 hrs: Δ mass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	288 hrs: Δ mass Δ appearance	-0.1% No change	0.0% No change	0.0% No change	0.0% No change	0.0% No change	0.0% No change	0.0% No change	0.0% No change
Tap water (control)	24 hrs: Δ mass Δ appearance	0.0% Darkened	0.0% Darkened	0.0% Red rust	0.0% Slightly darkened	0.0% No change	0.0% Pinpoints	0.0% Shadowed	0.0% No change
	288 hrs: Δ mass Δ appearance	0.0% Darkened	0.0% Darkened	-0.2% Red rust	0.0% Slightly darkened	0.0% One pinpoint	0.0% Pinpoints	0.0% Darkened	0.0% No change

Appearance Key

Shadowed: spotty color change with light and dark areas

Darkened / Slightly darkened: a uniform color change when compared to the original

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Metal Compatibility of P-80® Temporary Assembly Lubricants

Change in Mass and Appearance, 40°C

	Immersion Time	Copper 110 Alloy	Bronze 220 Alloy	1018 Steel	Aluminum 1100 Alloy	Titanium	Monel 400	Brass 360 Alloy	304 Stainless Steel
P-80 Emulsion	24 hrs: Δ mass Δ appearance	0.0% Shadowed	0.0% Shadowed	0.0% No change	0.0% No change	0.0% No change	0.0% No change	0.0% No change	0.0% No change
	288 hrs: Δ mass Δ appearance	0.0% Shadowed	0.0% Shadowed	0.0% No change	-0.1% Slightly darkened	0.0% No change	0.0% No change	0.0% No change	0.0% No change
P-80 THIX	24 hrs: Δ mass Δ appearance	0.0% Shadowed	0.0% Shadowed	0.0% No change	0.0% No change	0.0% No change	0.0% No change	0.0% Shadowed	0.0% No change
	288 hrs: Δ mass Δ appearance	0.0% Shadowed	0.0% Shadowed	-0.1% Slightly darkened	0.0% No change	0.0% No change	0.0% No change	0.0% Shadowed	0.0% No change
P-80 Grip-it	24 hrs: Δ mass Δ appearance	-0.1% shiny, etched	-0.1% shiny, etched	0.0% Red rust	0.2% Slightly darkened	0.0% No change	0.0% No change	0.0% shiny, etched	0.0% No change
	288 hrs: Δ mass Δ appearance	-0.5% shiny, etched	-0.6% shiny, etched	-0.2% Red rust	0.4% Slightly darkened	-0.1% No change	0.0% No change	-0.5% shiny, etched	0.0% No change
P-80 RediLube	24 hrs: Δ mass Δ appearance	0.0% No change	0.0% No change	0.0% No change	0.0% No change	0.0% No change	0.0% No change	0.0% No change	0.0% No change
	288 hrs: Δ mass Δ appearance	-0.1% No change	0.0% No change	0.0% No change	0.0% No change	0.0% No change	0.0% No change	-0.1% some staining	0.1% No change
Tap water (control)	24 hrs: Δ mass Δ appearance	0.0% Darkened	0.0% Darkened	0.0% Red rust	0.0% Slightly darkened	0.0% Pinpoints	0.0% Slightly darkened	0.0% Darkened	0.0% No change
	288 hrs: Δ mass Δ appearance	0.0% Darkened	0.0% Darkened	-0.2% Red rust	0.0% Slightly darkened	0.0% Pinpoints	0.0% Slightly darkened	0.0% Darkened	0.0% No change

Coupons were washed and polished before testing. Changes in mass and appearance were recorded after 24 and 288 hours of immersion. Test was done at 25°C and 40°C.

Appearance Key

Shadowed: spotty color change with light and dark areas

Darkened / Slightly darkened: a uniform color change when compared to the original

Test data is provided for comparison purposes only. Individuals should conduct their own tests for compatibility verification. Please contact International Products Corp. for compatibility information on any metal not shown.

TEST METHOD: ASTM DF483-90

Metal Coupons

Aluminum 3105 H24; Cold Rolled Steel 1010; Stainless Steel 304-2B; Commercial Bronze Alloy, 220; Titanium Alloy, 8% Mn, Mil-T-9046, Type IIIA; Nickel/Copper Monel 400, QQ-N281, Class A; Copper Alloy CA-110, QQ-C-576, Annealed, ETP; Brass Alloy 360, leaded, QQ-B-626, Comp. 360 bar

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