

Table 6.4.3 C: Summary of Alternatives for Passivation of Zinc and Zinc Galvanized Steel

Assessment Criteria		Cr(VI) (Reference)	Comparison Relative to Cr(VI)		
			Molybdates ¹	Trivalent Chromium	Mineral Tie-Coat
Technical/ Performance Criteria	Corrosion Resistance (time to white rust)	Very Good	-	-/=/+ ²	+ (with topcoat) ³
	Heat Resistance	Poor	+	+	+
	Torque/Tension	Good	?	?	+
Environmental Criteria	Toxic to Aquatic Species	Varies – toxic to some species	Varies – chemicals used in some formulations are toxic to aquatic life	+	+
	Drinking water MCL	~ 1 ppm	Varies	=	+
	Carcinogenicity	EPA Group A IARC Group 1	+	+	+
Human Health Criteria	Occupational Exposure: PEL (8-hour TWA)	~ mg/m ³	+	+	+
	Skin Irritant/Sensitizer	Yes	+/=	-/=	=

COMPARISON KEY							
+	Better	=	Similar	-	Worse	?	Unknown

¹ This assessment is for the molybdate only, not the coating that it is applied in.

² Performance of trivalent chromium depended on thickness of coating, plating method, additives and whether a topcoat was used.

³ Not suitable for barrel plating