

ABSTRACT

COMPOSITE COATED ZINC-CONTAINING PLATED STEEL MATERIAL SUPERIOR
IN CORROSION RESISTANCE, BLACKENING RESISTANCE, COATING ADHESION,
AND ALKALI RESISTANCE

The present invention provides a composite coated zinc-containing plated steel material different from the plated steel materials treated by conventional chromate replacement technologies and superior in all of corrosion resistance, blackening resistance, coating adhesion, and alkali resistance. The composite coated zinc-containing plated steel material of the present invention is characterized by having a composite coating formed by coating and drying on the surface of a plated steel material a treatment solution containing a basic zirconium compound, vanadyl (VO^{2+})-containing compound, phosphoric acid compound, cobalt compound, organic acid, and water and having a pH7 to 14, the composite coating containing, with respect to the Zr element as 100 mass%, V in an amount of 10 to 45 mass%, P in 5 to 100 mass%, Co in 0.1 to 20 mass%, and an organic acid in 10 to 90 mass%.