

## ZERO WASTE PHOSPHATING PROCESS

Title of Technology to be offered	Zero waste phosphating process
Type of Technology	Surface modification
Area of Technology	Metal finishing, Metal pre-treatment, Surface engineering
Details of Collaborating Agency	Nil
Uses	Pre-treatment for paint coating Corrosion protection
Salient Features	No solid or liquid waste is generated in the process Contains no toxic chemical accelerators Energy efficient and eco-friendly Continuous operation with easy replenishment and control Composite coating offers corrosion protection by barrier layer and sacrificial protection mechanisms
Scale of Development	Laboratory and pilot scale
Major Raw Materials	Mineral acids, consumable anodes
Major Plant Equipment/Machinery	Direct current source (Rectifier) having a potential range of 0-60 V Metal anodes of suitable geometry
Details of specification application	Pre-treatment for paint coating Corrosion protection
Status of Development	Ready for commercialization (Process can be optimized according to customer requirements)
Ecological/Environmental Impact (if any, specify briefly)	Acidic solutions. They should be neutralized before discharge.
Patenting details	Patent filing in process
Commercialisation Status	Yet to commercialize
Techno-Economics	Installation cost: Rs. 2 Lakhs
Key words	Phosphate coating, composite coating, zero waste process, paint pre-treatment, corrosion protection



Comparison of the corrosion performance of untreated mild steel (a); mild steel phosphated using conventional method (b); and mild steel phosphated using the zero waste phosphating process (c) after subjecting them to salt spray test for 96 h. The untreated and phosphated mild steel substrates were finished with a paint coating (DFT: 50  $\mu\text{m}$ ) and scribed to the base metal before testing.