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Nota di contenuto	1: Corrosion and Corrosion Protection; 1.1 Corrosion; 1.1.1 Causes of Corrosion; 1.1.2 Types of Corrosion; 1.1.3 Corrosion Phenomena; 1.1.4 Corrosive Stress; 1.1.4.1 Atmospheric Corrosion; 1.1.4.2 Corrosion in the Soil; 1.1.4.3 Corrosion in Water; 1.1.4.4 Special Corrosive Stress; 1.1.4.5 Avoidance of Corrosion Damages; 1.2 Corrosion Protection; 1.2.1 Procedures; 1.2.1.1 Active Procedures; 1.2.1.2 Passive Procedures; 1.2.2 Commercial Relevance; 1.2.3 Corrosion Protection and Environmental Protection; Appendix 1.A; 2: Historical Development of Hot-dip Galvanizing; References 3: Surface-preparation Technology3.1 As-delivered Condition; 3.1.1 Basic Material; 3.1.1.1 Steel Composition; 3.1.2 Surface Finish; 3.1.2.1 Similar Contaminants; 3.1.2.2 Dissimilar Contaminants; 3.1.2.3 Defects on Steel Substrates; 3.1.3 Steel Surface Roughness; 3.2 Mechanical Surface-preparation Methods; 3.2.1 Blast Cleaning; 3.2.2 Barrel Finishing; 3.3 Chemical Cleaning and Degreasing; 3.3.1 Alkaline Cleaner; 3.3.1.1 Composition; 3.3.1.2 Water; 3.3.1.3 Working

Conditions; 3.3.1.4 Analytical Control, Service Life, Recycling; 3.3.2 Biological Cleaning; 3.3.3 Pickle Degreasing
 3.3.4 Other Cleaning Methods 3.4 Rinsing of the Parts; 3.4.1 Carryover; 3.4.1.1 Surface Data; 3.4.1.2 Withdrawal, Dripping; 3.4.1.3 Carryover; 3.4.2 Calculation of Rinsing Processes; 3.4.3 Rinsewater Recirculation; 3.5 Pickling; 3.5.1 Material and Surface Condition; 3.5.1.1 Structure of the Oxide Layer; 3.5.1.2 The Material Steel; 3.5.1.3 Topography; 3.5.2 Hydrochloric-acid Pickle; 3.5.2.1 Composition; 3.5.2.2 Pickling Conditions; 3.5.2.3 Inhibition and Hydrogen Embrittlement; 3.5.2.4 Analytical Control, Recycling, Utilization of Residual Material; 3.5.3 Preparation of Cast Materials
 3.5.4 Dezincification 3.6 Hot-dip Galvanizing Fluxes; 3.6.1 Fluxes on ZnCl_2 / NH_4Cl Basis; 3.6.1.1 Dry Galvanizing; 3.6.1.2 Wet Galvanizing; 3.6.2 The ZnCl_2 / NaCl / KCl System; 3.6.3 Flux-induced Residues; References; Standards; Lifting Devices; 4: Hot-dip Galvanizing and Layer-formation Technology; 4.1 Process Variants; 4.1.1 Continuous Hot-dip Galvanizing of Steel Strips and Steel Wire; 4.1.2 Batch Galvanizing; 4.1.2.1 Dry Galvanizing Process; 4.1.2.2 Wet Galvanizing Process; 4.1.3 Special Processes; 4.2 Layer Formation in Hot-dip Batch Galvanizing Between 435°C and 620°C; 4.2.1 General Notes 4.2.1.1 Low-silicon Range (0.28% Si); 4.2.2 Influence of Melting Temperature and Immersion Time on Layer Thickness; 4.2.3 Influence of Heat Treatment of Steels Prior to Galvanizing; 4.2.4 High-temperature Galvanizing above 530°C; 4.2.5 Structural Analyses; 4.2.5.1 Crystalline Structure in the Temperature Range of 435-490°C; 4.2.5.2 Crystalline Structure in the Temperature Range of 490-530°C; 4.2.5.3 Crystalline Structure in the High-temperature Range of 530-620°C
 4.2.6 Holistic Theory of Layer Formation

Sommario/riassunto

Hot-dip galvanization is a method for coating steel workpieces with a protective zinc film to enhance the corrosion resistance and to improve the mechanical material properties. Hot-dip galvanized steel is the material of choice underlying many modern buildings and constructions, such as train stations, bridges and metal domes. Based on the successful German version, this edition has been adapted to include international standards, regulations and best practices. The book systematically covers all steps in hot-dip galvanization: surface pre-treatment, process and systems technology, environm
