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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 30790.3-2014

**Paints and varnishes -- Corrosion protection of steel structures
by protective paint systems -- Part 3: Design considerations
(English Translation)**

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Foreword

GB/T 30790, Paints and varnishes - Corrosion protection of steel structures by protective paint systems, comprises 8 parts.

- Part 1. General introduction;
- Part 2. Classification of environments;
- Part 3. Design considerations;
- Part 4. Types of surface and surface preparation;
- Part 5. Protective paint systems;
- Part 6. Laboratory performance test methods;
- Part 7. Execution and supervision of paint work;
- Part 8. Development of specification for new work and maintenance.

This Part is Part 3 of GB/T 30790.

This Part was drafted in accordance with the rules given in GB/T 1.1-2009.

This Part was redrafted by adopting ISO 12944-3:1998, Paints and varnishes - Corrosion protection of steel structures by protective paint systems - Part 3. Design considerations.

This Part has technical differences from ISO 12944-3:1998. The clauses concerning these differences are marked with vertical single lines (|) in the page margins. Annex E gives the list of corresponding technical differences and their reasons.

This Part was proposed by China Petroleum and Chemical Industry Federation.

This Part shall be under the jurisdiction of National Technical Committee 5 on Paints and Pigments of Standardization Administration of China (SAC/TC 5).

The drafting organizations of this Part. CNOOC Changzhou Paint and Chemicals Research Institute, Lanzhou Petrochemical Research Institute, Fujian Baihua Chemicals Co., Ltd., Ningbo Dada Chemicals Co., Ltd., Zhenjiang Lanbo Engineering Technology Co., Ltd., Hempel (China) Co., Ltd., Zhejiang Yu Tong New Materials Co., Ltd., Nanjing Changjiang Paint Co., Ltd., Shenzhen Grandland Decoration Group Co., Ltd., Yejian New Material Co., Ltd., COSCO Kansai Paint and Chemicals Co., Ltd., Beijing BIAM New Materials and Technological Engineering Co., Ltd., Zhejiang Feijing Paint Co., Ltd., Shandong Puntium Paint Co., Ltd.

Paints and varnishes - Corrosion protection of steel
structures by protective paint systems -

Part 3. Design considerations

1 Scope

This Part of GB/T 30790 deals with basic criteria for the design of steel structures to be coated by protective paint systems in order to avoid premature corrosion and degradation of the coating or the structure. It gives examples of appropriate and inappropriate design, indicating how problems of application, inspection and maintenance of paint systems can be avoided. Design measures which facilitate handling and transport of the steel structures are also considered.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition dated applies to this document. For undated references, the latest edition of the referenced documents (including all amendments) applies to this document.

GB/T 8923.1, Preparation of steel substrates before application of paints and related products - Visual assessment of surface cleanliness - Part 1. Rust grades and preparation grades of uncoated steel substrates and of steel substrates after

overall removal of previous coatings (GB/T 8923.1-2011, ISO 8501-1.2007, IDT)

GB/T 13912, Metallic coatings - Hot dip galvanized coatings on fabricated iron

(GB/T 13912-2002, ISO 1461.1999, MOD)

GB/T 19355, Protection against corrosion of iron and steel in structures - Zinc and aluminium coatings - Guidelines (GB/T 19355-2003, ISO 14713.1999, MOD)

GB/T 30790.1, Paints and varnishes - Corrosion protection of steel structures by protective paint systems - Part 1. General introduction (GB/T 30790.1-2014, ISO 12944-1.1998, MOD)

GB/T 30790.2, Paints and varnishes - Corrosion protection of steel structures by protective paint systems - Part 2. Classification of environments (GB/T 30790.2-2014, ISO 12944-2.1998, MOD)

GB/T 30790.5, Paints and varnishes - Corrosion protection of steel structures by protective paint systems - Part 5. Protective paint systems (GB/T 30790.5-2014, ISO 12944-5.2007, MOD)

3 Terms and definitions

For the purposes of this document, the following term and definition applies in addition to those defined in GB/T 30790.1.

3.1

design (noun)

The way in which a structure is built up, as represented by a detailed plan of the structure.

4 General

The objective of designing a structure is to ensure that the structure is suitable for its function, has adequate stability, strength and durability, is constructed at an acceptable cost and is aesthetically pleasing.

The overall design shall be planned to facilitate surface preparation, painting, inspection and maintenance.

The shape of a structure can influence its susceptibility to corrosion. Therefore,

structures should be designed such that corrosion cannot easily establish a foothold (a corrosion trap) from which it can spread. It is therefore strongly recommended that the designer consults a corrosion protection expert at a very early stage in the design process. Ideally, the corrosion protection system should be selected at that time, with due consideration to the type of service of the structure, its service life and maintenance requirements.

The shapes of the structural elements and the methods used to join them should be such that fabrication, joining and any subsequent treatment will not promote corrosion. Similarly, consideration should be given to the shape of the structure and its elements with respect to the category of its environment (see GB/T 30790.2) when specifying a protective paint system.

Designs should be simple and excessive complexity should be avoided. Where steel components are in contact, embedded or enclosed in other building materials, e.g. brickwork, they are no longer accessible, therefore, the corrosion protection measures shall be effective throughout the service life of the structure.

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