



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

GB/T 50046-2018

Standard for anticorrosion design of industrial constructions

工业建筑防腐蚀设计标准

(English Translation)

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1.0.1 This standard is formulated with a view to ensuring that buildings and structures subjected

corrosive medium are used normally within the design service life.

1.0.2 This standard is applicable to anticorrosion design for buildings and structures subjected to corrosive medium.

1.0.3 Anticorrosion design of industrial constructions shall follow the principle of combining

prevention with protection. According to the corrosiveness, environmental conditions, production operation management level and construction and maintenance conditions of the medium produced during the production process, the anticorrosion measures shall be taken in the light of local conditions; protection and prevention shall be strengthened for parts that endanger personal safety and are difficult to be maintained, as well as important load-bearing structures and members.

1.0.4 In addition to the requirements of this standard, the anticorrosion design of industrial constructions shall also meet the requirements of the current relevant standards of the nation.

2.0.1 Corrosiveness classification

under the long-term action of corrosive medium, according to the degree of deterioration of building materials, namely appearance change, weight change, strength loss and corrosion rate, the corrosive grade is comprehensively evaluated and divided into. strongly corrosive

("A" hereafter), moderately corrosive ("B" hereafter), weakly corrosive ("C" hereafter) and slightly corrosive ("D" hereafter)

2.0.2 Service life of protective layer

under the conditions of reasonable design, correct construction and normal use and maintenance, the service life of anticorrosion ground, coating and other protective layers

2.0.6 Resistance class to sulphate attack of concrete KS

resistance class of concrete to sulfate attack divided by the maximum number of wet-dry cycles measured with test method for resistance to sulfate attack

2.0.7 Dense concrete

fine stone concrete with impermeability grade greater than P8

3.2 General layout and architectural layout

3.2.1

In the general layout, the corrosive effects between adjacent devices or plants should be reduced. The production devices which emitting corrosive gas or dust shall be arranged on the upwind side of the annual minimum frequency wind direction of the plant area.

3.2.5

Equipment for the production or storage of corrosive media should be arranged in a centralized manner according to the nature of the medium and should not be arranged in the basement.

3.2.6 If the building or structure is partially exposed to corrosive medium, local protective

measures shall be taken.

3.2.7 The underground pipeline conveying strong corrosive medium shall be arranged in the trench; the horizontal clearance between the trench and the foundation of the plant or important equipment shall not be less than 1m.

3.2.8 Pipes and cables that pass through the floor should be arranged centrally. Pipes or cables

that are not resistant to corrosion shall not be buried under the ground floor where corrosive liquid medium acts.

3.3 Design service life period of protective layer

3.3.1

The design service life period of protective layer shall be determined comprehensively according to the corrosiveness class, working environment and maintenance and curing conditions.

4.1 General requirements

4.1.1

Under corrosive environment, the structural design shall meet the following requirements.

4 When the design service life of certain secondary members is different from that of major structure, the secondary members shall be easily replaceable.

4.2 Concrete structures

4.2.1

The concrete structure and members shall be selected according to the following requirements.

4.2.2

The design of prestressed concrete structure shall meet the following requirements.

4.2.5

The minimum thickness of the concrete protective layer with a design service life of 50 years shall comply with the requirements specified in Table 4.2.5.

4.3 Steel structures

4.3.1

In case of corrosiveness class A, lattice structure should not be adopted for the important carrying members such as the truss, columns and main beams; cold-formed thin-walled steel shall not be used.

4.3.4

The sectional thickness of steel structural members should meet the following requirements.

4.3.7

Isolation measures should be taken where different metal materials contact.

4.3.8

For welds of important steel members (such as trusses, columns, main beams) and closed section members, continuous welds shall be used. The weld leg size of fillet weld should not be less than 8mm; if the thickness of the member is less than 8mm, the weld leg size should not be less than the thickness of the member; the stiffener shall be chamfered, and the size of the chamfer shall meet the requirements of drainage, construction and maintenance.

4.6 Timberwork

4.6.1

Softwoods should be selected as timberwork materials, and laminated wood may also be used if conditions permit.

4.6.2

The connecting pieces for timberwork should be made of corrosion-resistant non-metallic or metallic materials.

5.1 Ground and floor

5.1.1

The materials used for surface course of ground/floor shall be selected according to Table 5.1.1 based on the type and action of corrosive medium, service life of protective layer, the demands for corrosion resistance and physical & mechanical performances of surface course materials in use, and considering other factors like construction, maintenance conditions, etc.

5.1.8

Precast floor slabs shall be provided with reinforced fine stone concrete casting course.

Reinforcing mesh shall be configured for fine stone concrete which shall have a strength grade not lower than C30, and a thickness not less than 40mm. The rebars should be in a diameter of not less than 4mm, spacing not greater than 200mm, and 20mm from the upper surface.

5.1.11 Corrosion-resistant skirting board which should be no less than 250mm in height

shall be arranged at the junction of ground/floor with the walls/columns.