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ASSOCIATION STANDARD

T/CECS 24-2020

Replacing CECS 24:90

Technical specification for application of fire resistive coating for steel structure

钢结构防火涂料应用技术规程

(English Translation)

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Foreword

In accordance with the requirements of the Notice on Issuing the "First Batch of Formulation and Revision Plans of Engineering Construction Association Standards for 2017" (Jian Biao Xie Zi [2017] No. 014) of the China Association for Engineering Construction Standardization, the drafting group, through in-depth investigation and research, with reference to relevant domestic and foreign materials, by conscientiously summarizing engineering practice, with reference to relevant national standards, and on the basis of extensive solicitation of opinions, has revised this specification.

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This specification is a revision of Technical code for application of fire resistive coating for steel structure CECS 24:90.

The main technical contents of this revision are:

1. The classification of fire resistive coatings has been added; according to the film-forming substance, intumescent fire resistive coatings for steel structure are divided into non-epoxy intumescent fire resistive coatings for steel structure and epoxy intumescent fire resistive coatings for steel structure;

2. Requirements for anti-rust paint and for the selection of fire resistive coatings have been added, and the scope of application of epoxy intumescent fire resistive coatings for steel structure has been widened;

3. The method of handling cases where the design thickness is inconsistent with the thickness stated in the test report has been added;

4. Requirements for the application of fire resistive coatings with added mesh have been added;

5. The compatibility test of fire resistive coatings and anti-rust paint has been added;

6. Treatment measures for galvanized steel members before application of fire resistive coatings have been added;

7. The acceptance requirements for the control of coating thickness and number of cracks have been modified;

8. Methods of handling non-conforming quality and the archiving and filing of acceptance documents have been added.

This specification consists of 5 chapters and 1 appendix. The main technical contents include: general provisions; terms and classification; fire resistive coating design, selection and addition of mesh; construction and quality control; engineering acceptance; etc.

Attention is drawn to the possibility that some contents of this specification may directly or indirectly involve patents. The issuing body of this specification shall not be held responsible for identifying any such patents.

This specification is under the administration of the Fire and Explosion Prevention Technical Committee of the China Association for Engineering Construction Standardization, and Sichuan Fire Research Institute of the Ministry of Emergency Management is responsible for the interpretation of the specific technical contents. If any modification or supplement is found necessary during the use of this specification, please send the relevant information and suggestions to the interpreting organization for reference in future revisions.

Chief editing organization: Sichuan Fire Research Institute of the Ministry of Emergency Management

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Participating organizations: China Southwest Architectural Design and Research Institute Co., Ltd.; Sichuan Tianfu Fire-proof Materials Co., Ltd.; Shanghai Construction Engineering Supervision and Consulting Co., Ltd.; MCC Capital Engineering & Research Incorporation Limited; Tongji University; AkzoNobel Protective Coatings Co., Ltd.; National Quality Supervision and Inspection Center for Fire-fighting and Flame-retardant Products (Shandong); Chongqing University; National Quality Supervision and Inspection Center for Fire Products (Guangdong); Guizhou Chenyu Building Materials Technology Co., Ltd.; Sichuan Ruite Fire Technology Co., Ltd.; Sichuan University of Science & Engineering; Shandong Shengguang Chemical Group; Sika (China) Ltd.; Beijing Mucheng Fire-proof and Thermal Insulation Special Materials Co., Ltd.; Wuhan Wuli Coatings Co., Ltd.; Shanghai Fanjiade Coatings Co., Ltd.; Jianhu Sudong Chemical Co., Ltd.; Xinhe New Material Co., Ltd.; Jiangsu Lanling Polymer Materials Co., Ltd.; Sichuan Yulong Fire-proof Materials Co., Ltd.

1 General provisions

1.0.1

This specification is formulated in order to standardize the technical requirements for the application of fire resistive coatings for steel structure, to prevent and reduce the hazards of building fires, and to achieve safety and reliability, advanced technology and economic rationality.

1.0.2

This specification is applicable to the design, construction and acceptance of fire resistive coating application on steel structural members in newly built, rebuilt and extended industrial and civil buildings.

1.0.3

The design, construction and acceptance of fire resistive coating application on steel structures shall comply not only with this specification but also with the provisions of the current relevant national standards.

2.0.1 fire resistive coating for steel structure

Coating applied to the surface of the steel structure of a building or structure to form a fire-resistant and heat-insulating protective layer.

2.0.2 concrete-filled steel tubular column

Structural member formed by filling a steel tube with concrete, in which the steel tube and its core concrete jointly bear external loads.

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2.0.3 concealment steel structure

Steel structure building or structure that is covered and isolated by enclosure or decoration materials.

2.0.4 outdoor steel structure

Steel structure building or structure exposed to the atmosphere, without a roof protecting it from rain and wind.

2.0.5 Categories of fire resistive coatings for steel structure

Fire resistive coatings for steel structure may be classified according to place of use, dispersion medium, fire protection mechanism and film-forming substance, as given in Table 2.0.5.

Table 2.0.5 Categories of fire resistive coatings for steel structure

Place of use: indoor fire resistive coating for steel structure - applicable to indoor or concealed building (structure) works; outdoor fire resistive coating for steel structure - applicable to outdoor or open-air building (structure) works.

Dispersion medium: water-based fire resistive coating for steel structure - with water as the dispersion medium; solvent-based fire resistive coating for steel structure - with organic solvent as the dispersion medium.

Fire protection mechanism: non-intumescent fire resistive coating for steel structure - the coating does not expand or foam at high temperature and itself becomes the fire-resistant and heat-insulating protective layer; intumescent fire resistive coating for steel structure - the coating expands and foams at high temperature to form a fire-resistant and heat-insulating protective layer.

Film-forming substance: epoxy intumescent fire resistive coating for steel structure - with epoxy resin as the film-forming substance; non-epoxy intumescent fire resistive coating for steel structure - with non-epoxy materials as the film-forming substance.

3.1 General requirements

3.1.1

The fire resistance rating requirements of steel structural members shall comply with the relevant provisions of the current national standards Code for fire protection design of buildings GB 50016 and Code for fire safety of steel structures in buildings GB 51249.

3.1.2

In the fire protection design of steel structures, the corresponding category of fire resistive coating for steel structure shall be selected according to the use, location and fire type of

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