



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

GB 50583-2020

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**Standard for design of buildings and structures for the coal
industry**

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1 General

1.0.1 This standard is formulated in order to implement the national technical and economic policies in the design of ground buildings (structures) in the coal industry, to achieve energy conservation, environmental protection, advanced technology, safety and applicability, and economical rationality.

1.0.2 This standard is applicable to the architectural and structural design of newly-built, reconstructed and expanded ground buildings (structures) of the coal industry.

1.0.3 Building and structure design should be based on the characteristics of coal industry buildings (structures), using reliable building materials and structure types.

1.0.4 The structural design service life of the main buildings (structures) of the new coal industry shall be compatible with the design service life of the mine and the coal preparation plant. When the design service life of the mine and coal preparation plant is less than 50 years, the design service life of its main buildings (structures) shall be designed according to 50 years. The structural safety level and seismic fortification category of coal industry buildings (structures) shall meet the following requirements.

1 The structural safety level and seismic fortification category of the main buildings (structures) in the coal industry shall be adopted in accordance with the provisions in Table 1.0.4.

2 The safety level of various structural components of coal industry buildings (structures) during use shall not be lower than the safety level of the entire structure, and the safety level of all components shall not be lower than Level 3 at each stage.

3 When a joint building is adopted and the importance of each section of the building is

significantly different, the seismic fortification category shall be divided by section. The seismic category of the lower section should not be lower than that of the upper section.

1.0.5 For the reconstructed and expanded coal industry ground buildings (structures), the design service life after reinforcement and reconstruction shall be compatible with the remaining design service life of coal mines and coal preparation plants after reconstruction and expansion.

1.0.6 The design of ground buildings (structures) in the coal industry shall not only comply with this standard, but also comply with the current relevant national standards.

2.1 General provisions

2.1.1 The architectural design should implement the principles of applicability, safety, economy, greenness and beauty, and the buildings in the site should be adapted to local conditions and rationally laid out.

2.1.2 Buildings (structures) shall meet the basic requirements of functions, fire protection, explosion protection, safety and sanitation during the whole life of the building, and shall meet the requirements of energy saving, land saving, water saving, material saving and environmental protection. design requirements.

2.1.3 The architectural design shall have original data such as earthquake, meteorology, recently measured topographic maps, engineering geology, hydrogeology, and downhole water erosion analysis at the corresponding stage.

2.1.4 The mine ground structure should be designed as a combined building and a multi-story (high) building centered on the main shaft and the auxiliary shaft.

2.1.5 The plane layout and space combination of buildings (structures) shall meet the requirements of use function and production technology, and should meet the requirements of structural conceptual design.

2.1.6 The building (structure) facade shape and exterior decoration materials and colors should be selected in harmony with the surrounding environment.

2.1.7 Building materials should adopt energy-saving and environment-friendly materials encouraged by the state.

2.1.8 The daylighting design of buildings (structures) shall comply with the relevant provisions of the current national standard "Architecture Daylighting Design Standard" GB 50033, and shall also meet the following provisions.

1 The daylighting level of machine repair workshops, fully mechanized mining equipment warehouses, hoisting machine rooms, well tower hoisting halls, and general control rooms should not be lower than level III;

2 The daylighting level of forging and riveting workshops, wood processing rooms and substations should not be lower than level IV;

3 The lighting level of coal preparation plant building, air compression station, ventilator room, electric (internal combustion) locomotive garage, wellhead room, gangue selection building, water pump room, various warehouses, conveyor trestle, transfer station, and coal storage yard should not be low at level V;

4 Where natural lighting is insufficient, artificial lighting should be used to supplement it.

2.2 Building fire protection design

2.2.1 The fire hazard classification and fire resistance class of buildings (structures) shall not be lower than those specified in Table 2.2.1.

2.2.2 The setting of safety exits of buildings (structures) shall comply with the following regulations.

1 The setting of safety exits of general buildings shall comply with the relevant provisions of the current national standard "Code for Fire Protection Design of Buildings" GB 50016;

2 The number of safety exits of the production system plant shall not be less than 2;

3 When the construction area of each floor of the production system plant does not exceed 400m², and the number of people in production at the same time does not exceed 15, and the total number of people in production does not exceed 30, one safety exit may be set up, and the stairwell may not be closed;

4 For well towers, reloading stations, coal falling silos, and coal bunkers of the production system, when the number of production operators on each floor does not exceed 3, and the total number of production operators does not exceed 10, the usable width is not less than 800mm and the slope is not greater than 60°. The metal working ladder doubles as an evacuation ladder;

5 In trestle bridges and tunnels, the distance between the operating point and the safety exit should not be greater than 75m.

2.2.3 The fire protection design of closed coal storage yards shall meet the following requirements.

1 The maximum permissible building area of each fire compartment in the enclosed coal storage yard shall comply with the relevant provisions of the current national standard "Code for Fire Protection Design of Buildings" GB 50016 for Category C factory buildings;

2 The distance between the roof load-bearing member of the closed coal storage yard and the coal pile should not be less than 5m;

3 An automatic fire extinguishing system shall be installed in the closed coal storage yard; when fire monitors are used, the fire monitors should be installed on the top of the coal retaining wall, and climbing ladders shall be installed on the outside of the coal retaining wall. The spacing should not be greater than 150m; when the fire monitor is installed on the roof structure, a horseway leading to the fire monitor maintenance platform should also be arranged;

4 When the roof structure of the closed coal storage yard adopts a steel structure, fire protection measures shall be taken for the load-bearing members of the roof steel structure within 5m from the surface of the coal pile, and its fire resistance rating shall not be less than 1.0h.

2.2.4 Fireproof water curtains or other protective facilities should be installed at the joints between closed trestle bridges and buildings (structures) such as workshops, coal bunkers, and transfer stations.

2.2.5 When an automatic fire extinguishing system is installed on a closed trestle bridge, fire protection measures may not be taken for its steel structure.

2.3.8 The ground buildings (structures) of the coal industry should adopt natural ventilation, and the underground parts should be provided with ventilation channels or shafts. When natural ventilation cannot meet the requirements, mechanical ventilation can be used. Conveyor trestles, transfer stations, coal bunkers, coal storage yards and other places where gas is easy to accumulate and dust is relatively large, ventilation devices should be installed.

2.3.9 The raw coal preparation workshop, the raw coal screening and flotation part of the main workshop, and the drying workshop should be equipped with mechanical dust removal and mechanical ventilation.

2.3.10 When the dumper room is partly protected by the ground of the coal pit, ventilation and dust removal facilities should be provided.

2.4.1 The noise control design of buildings (structures) shall meet the following requirements.

1 The main working and living places inside the building (structure) should avoid strong noise sources; for workshops with strong noise equipment, it is advisable to adopt noise reduction measures for the equipment, and sound absorption and sound insulation measures should be taken when necessary;

2 The noise limit value of the workplace shall not exceed 85dB; the noise limit value of the duty room inside the factory building and the general control room shall not exceed 70dB;

3 The design of noise control shall not only meet the requirements of paragraphs 1 and 2 of this article, but also meet the relevant provisions of the current national standard "Code for