



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

GB 50058-2014

**Code for design of electrical installations in explosive
atmospheres**

(English Translation)

Issued on: January 29, 2014

Implemented on: October 1, 2014

Issued by: Ministry of Housing and Urban-Rural Development of the

Table of Contents

Foreword	
1 General provisions	
2 Terms	
3 Explosive gas atmosphere	
3.1 General requirement	
3.2 Classification of hazardous area in explosive gas atmosphere	
3.3 Extension of hazardous area in explosive gas atmosphere	
3.4 Grading and grouping of explosive gas mixture	
4 Explosive dust atmosphere	
4.1 General requirement	
4.2 Classification of hazardous area in explosive dust atmosphere	
4.3 Extension of hazardous area in explosive dust atmosphere	
5 Electrical installations in explosive atmosphere	
5.1 General requirement	
5.2 Selection of electrical equipment in explosive atmosphere	
5.3 Erection of electrical equipment in explosive atmosphere	
5.4 Design of electrical wiring in explosive atmosphere	
5.5 Grounding design in explosive atmosphere	
Annex A Example drawing and condition of classification of explosive hazardous area	
Annex B Typical example drawing of extension of hazardous area in explosive gas Atmosphere	
Annex C Grading and grouping of explosive gas or vapor mixture	
Annex D Typical example drawing of extension of hazardous area in explosive dust Atmosphere	
Annex E Example of characteristics of combustible dust	
Explanation of wording in this Code	
List of quoted standard	
1 General provisions	
1.0.1 In order to standardize the design of electrical installations in explosive	

1 General provisions

1.0.1

In order to standardize the design of electrical installations in explosive atmosphere, make electrical installations in explosive atmosphere follow the policies of prevention first, guarantee the personal and property safety and take preventive measures according to circumstances, this Code is hereby developed.

1.0.2

This Code applies to the classification of explosive hazardous areas of new, expanded and reconstructed projects where explosive hazardous environment emerges or may emerge during production, processing, handling, transshipment and storage process as well as design of electrical installations.

The Code does not apply to the following environments.

1.0.3

This Code does not consider the effect of indirect harm on classification of explosive hazardous areas and design of related electrical installations.

1.0.4 Classification of explosive hazardous areas shall be negotiated to complete

jointly by professional personnel who are in charge of production technology processing media properties, equipment and processing properties and engineering technical personnel who are in charge of safety and electrical engineering.

1.0.5 Besides conforming to the Code, design of electrical installations in explosive

atmosphere shall also comply with the provisions of existing related national standards.

2.0.1 Flash point

Minimum liquid temperature that the amount of making liquid become vapor can form flammable gas or air mixture under standard conditions.

2.0.2 Ignition temperature

Minimum temperature that mixture of flammable gas or vapor is ignited by hot surface under specified conditions.

2.0.3 Ambient temperature

Referring to the average maximum temperature of the hottest months over years in designated area.

2.0.4 Flammable material

Referring to that the material itself is flammable and can produce flammable gas, vapor or mist.

2.0.5 Flammable gas or vapor

Gas or vapor that will form an explosive gas atmosphere after mixing with air at a certain percentage.

2.0.6 Flammable liquid

Liquid that can produce flammable vapor or mist under the foreseeable conditions of use.

2.0.7 Flammable mist

Flammable liquid droplets that form an explosive atmosphere by volatile in the air.

2.0.8 Explosive gas mixture

Under atmospheric conditions, combustion will spread over the whole scope after mixture of gas, vapor or mist-like flammable material and air is ignited.

2.0.9 Highly volatile liquid

Highly volatile liquid refers to the liquid that absolute vapor pressure exceeds 276 kPa at a temperature of 37.8 °C. These liquids include butane, ethane, ethylene, propane, propylene, liquefied natural gas, natural gas liquids and their mixture.

2.0.10 Explosive gas atmosphere

The environment that mixture of gas or vapor can spread combustion voluntarily after being ignited under atmospheric conditions.

2.0.12 Hazardous area

The area that the quantity of existing explosive mixture or expected quantity of existing explosive mixture is sufficient to take precautionary measures for the structure, erection and use of electrical equipment.

2.0.13 Non-hazardous area

The area where the quantity of existing explosive mixture is insufficient to take precautionary measures for the structure, erection and use of electrical equipment.

2.0.14 Area

All or part of explosive hazardous area. It can be classified into several areas in different degrees of danger according to the emerging frequency and duration of explosive mixture.

2.0.15 Source of release

Position or location of the material that can form explosive mixture.

2.0.16 Natural ventilation atmosphere

The area where fresh air can replace the original mixture due to the role of natural wind or temperature difference.

2.0.17 Artificial ventilation atmosphere

The area where air fan, exhaust fan and other installations are used to replace original mixture with fresh air.

2.0.18 Normal operation

Refer to the operating conditions of equipment within the range of design parameters.

2.0.22 Conductive dust

Dust that resistivity is equal to or less than $1 \times 10^3 \text{ ohm} \cdot \text{m}$.

2.0.23 Non-conductive dust

Dust that resistivity is greater than $1 \times 10^3 \text{ ohm} \cdot \text{m}$.

2.0.24 Explosive dust atmosphere

Under atmospheric conditions, the environment that can keep voluntary spread of burning after the mixture of combustible dust and air is ignited.

2.0.25 Heavier-than-air gases or vapors

Gas or vapor that relative density is greater than 1.2.