



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

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**Special gas system engineering technical standards (with text
description)**

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Table of Contents

- 1 General
- 2 terms
- 3 special gas station
 - 3.1 General provisions
 - 3.2 Layout of special gas station
 - 3.3 Arrangement of special gas equipment
- 4.1 General provisions
- 4.2 Special gas delivery system
- 4.3 Purge and exhaust system
- 4.4 Silane process system

1 General

1.0.1 In order to implement the current national laws and regulations in the engineering design, construction and acceptance of the special gas system and supporting equipment in the electronics industry factory, meet the product production requirements, ensure personal and property safety, achieve safe application, advanced technology, and protect the environment, energy saving, economical and reasonable, formulate this standard.

1.0.2 This standard is applicable to the design, construction and acceptance of special gas system engineering in the electronics industry for new construction, reconstruction and expansion.

1.0.3 This standard does not apply to the production, purification, filling and other production of special gases and the engineering design, construction and acceptance of supporting equipment.

1.0.4 The design, construction and acceptance of special gas system engineering shall not only comply with the provisions of this standard, but also comply with the relevant current national standards.

2.0.1 specialty gas

Special gases such as pyrophoric, flammable, highly toxic, poisonous, corrosive, oxidizing, inert, etc. used in epitaxy, chemical vapor deposition, etching, doping and other processes in the production of electronic products.

2.0.2 pyrophoric gas

Also known as pyrophoric gas, it refers to a flammable gas that may spontaneously ignite when it is equal to or lower than 54°C in air.

2.0.3 flammable gas flammable gas

A gas mixed with air with a certain flammability range at 20°C and a standard pressure of 101.3kPa.

2.0.4 highly toxic gas

The gas whose half-lethal concentration (inhaled in the air for 4h) is less than or equal to 100mL/m³.

2.0.5 Toxic gas

Gases with a semi-lethal concentration (inhaled in the air for 4 hours) greater than 100mL/m³ but not exceeding 2500mL/m³.

2.0.6 Corrosive gas

Gases that cause visible damage or irreversible changes to materials or human tissue through a chemical reaction.

2.0.7 Oxidizing gas oxidizing gas

Any gas that causes and promotes the combustion of other substances more than air, generally by providing oxygen.

2.0.8 inert gas inert gas

A gas that does not react chemically with other substances under normal circumstances.

2.0.9 low vapor pressure gas low vapor pressure gas

A gas whose saturated vapor pressure is less than 0.2MPa at room temperature.

2.0.10 specialty gas system

The general term for equipment, pipelines and accessories in the storage, transportation and distribution of special gases.

2.0.11 bulk silane system

Refers to the silane system including ISO standard container bottle group, long tube trailer, steel cylinder container, Y-shaped horizontal steel cylinder, or the total water volume

exceeds 250L.

2.0.12 bulk specialty gas system

Generally refers to the special gas storage and gas supply system with a single gas equipment volume greater than 400L.

2.0.13 liquid specialty gas system

Refers to the special gas system that is transported and distributed in liquid state and vaporized at the user terminal.

2.0.14 Gas detector system (GDS)

It is installed in the area covered by special gas cylinder cabinets, gas cylinder racks, valve boxes, valve discs and other special gas delivery equipment and pipelines, and judges the leakage of essential gases by detecting the concentration of essential gases or related gases in the air, so as to emit a sound Optical alarm signal, system that provides detection data.

2.0.15 gas management system (GMS)

A collective term for gas management and control systems including special gas detection systems, emergency treatment systems, work management systems, monitoring systems, data transmission and processing systems.

2.0.16 Fabrication area

The electronic production plant is equipped with production equipment and related research and development and testing areas. Some production processes will use dangerous production materials. This area is the core area of the production plant.

2.0.17 specialty gas room

The electronic production plant is a room where gas equipment such as special gas cylinder cabinets, gas cylinder racks, horizontal gas cylinders, gas cylinder containers, and tail gas treatment devices are placed, and special gases are delivered to production equipment through pipelines.

2.0.18 specialty gas station

An independent building (structure) where gas equipment such as horizontal gas cylinders, gas cylinder containers, ISO standard container groups, long-tube trailers, and exhaust gas treatment devices are placed in electronics factories, and special gases are delivered to the gas equipment in the production plant through pipelines buildings.

2.0.19 specialty gas station and room

Refers to the general term for special gas rooms and special gas stations in electronics factories.

2.0.20 silane station silane station

It refers to placing silane or silane mixed gas steel cylinders, steel cylinder containers, horizontal steel cylinders, long tube trailers or ISO standard container bottle groups, silane gasification devices, tail gas treatment devices, electrical devices, etc., and supply them to the production plant through pipelines Independent buildings (structures) or areas of silane gas.

2.0.21 The bundle of gas cylinders is fixed by a special metal frame, and the gas cylinder group unit is connected in parallel with multiple gas cylinder interfaces by a gas collecting pipe.

2.0.22 ISO standard container group ISO module

A combined container module that connects gas cylinders, long-tube steel cylinders or gas cylinder containers with gas collecting pipes and installs them on a special metal frame.

2.0.23 Gas cabinet (GC)

Closed cylinder placement and gas delivery equipment for specialty gases.

2.0.24 Gas rack (GR)

Open cylinder placement and gas delivery equipment for specialty gases.

2.0.25 valve manifold box (VMB)

An enclosed piping distribution box used in the delivery of specialty gases to provide specialty gases to one or more process equipment.

2.0.26 valve manifold panel (VMP)

An open pipe distribution device used in the delivery of specialty gases to provide specialty gases to one or more process equipment.

2.0.27 Exhaust gas treatment device local scrubber

The on-site treatment device for exhaust and purge gas of spontaneous combustion, flammability, highly toxic, corrosive gases, etc., the exhaust gas after treatment reaches the specified emission concentration, and is discharged into the exhaust pipe of the gas-using workshop.