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

GB 47291-2026

**Technical requirements for compressed air self-rescue systems
in coal mines**

煤矿压风自救系统技术要求

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed and is under the jurisdiction of the National Mine Safety Administration. Technical Requirements for Coal Mine Compressed Air Self-Rescue System

1 Scope

GB 47291-2026 is the Chinese national standard covering the compressed air refuge points along an underground roadway - the pipework, the outlets and hoods, the flow and pressure at each station and the isolation valves, so that people caught by an irrespirable atmosphere have somewhere to reach. A mandatory standard, first edition, in force since 1 September 2026. It was issued on 27 February 2026 and has been in force since 1 September 2026, as a first edition. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document establishes the composition and inspection rules for coal mine compressed air self-rescue systems, and specifies the general requirements and indicator standards for such systems. The document describes the identification, management, maintenance, and inspection of compressed air self-rescue devices, as well as their classification, models, markings, and accompanying documentation. It also outlines the testing procedures for these devices. method. This document applies to the construction, management, and maintenance of coal mine compressed air self-rescue systems.

4 System Composition

The compressed air self-rescue system consists of a compressed air station, pipelines and auxiliary facilities, air supply valves and compressed air self-rescue devices, purification and filtration facilities and monitoring instruments. It consists of instruments, etc. The compressed air self-rescue system can be shared with the compressed air system used in mine production, or it can be specially constructed as needed or connected via surface drilling. Air is supplied directly to the emergency shelter via dedicated pipelines using methods such as wells. A schematic diagram of the compressed air self-rescue system is shown in Figure 1.

5.1 General Requirements

5.1.1 All underground coal mines should establish a compressed air self-rescue system.

5.1.2 The design of the compressed air self-rescue system should meet the actual conditions and safety avoidance needs of underground coal mines, and should comply with coal mine safety requirements. The gas parameters should meet the following requirements.

a) The gas supply pressure at the pipeline terminal should be within the range of 0.3MPa to 0.7MPa;

b) The air supply volume should meet the needs of the terminal gas consumption points or emergency refuge facilities, and the design should comply with the provisions of

8.4.2 in GB 50215-2015. Determine the pipeline leakage coefficient and altitude correction factor;

c) Air quality shall comply with the requirements of Table 1 in GB 31975-2025.

5.1.3 Measures to ensure a continuous and stable supply of compressed air to the self-rescue system should be included and clearly specified in the design. The compressed air station should have automatic... The start/stop and pressure replenishment functions should include measures for pipeline management and maintenance.

5.1.4 The compressed air self-rescue system shall be equipped with monitoring equipment or instruments to monitor the operating status of the compressed air self-rescue system

and parameters such as air supply pressure.

5.1.5 The compressed air self-rescue system should be replenished and improved in a timely manner as mining operations change.

5.1.6 When the equipment and facilities of the compressed air self-rescue system are shared with the compressed air system used in production, the shared equipment and facilities shall comply with the provisions of this document.

5.2 Compressed Air Station

5.2.1 A compressed air station should be built on the surface of the mine.

5.2.2 In addition to complying with the provisions of GB 50029, the design of compressed air stations shall also meet the following requirements.

a) Air compressors should be installed in areas with good airflow, away from areas emitting explosive, corrosive, toxic gases, dust, or other harmful substances. Location. Gas storage tanks should be installed outdoors or in a separate building, and should be protected from direct sunlight.

b) The nominal volumetric flow rate of the compressed air station shall be specifically designed and calculated based on emergency escape requirements, and shall not be less than that of the underground mining operation area. The air volume required for self-rescue by the maximum number of workers in the shift.

c) The air compressor should be equipped with a pressure gauge and a safety valve. The safety valve and pressure regulator should operate reliably, and the operating pressure of the safety valve should not exceed [the specified limit].

1.1 times the rated pressure.

d) The open flash point of the air compressor lubricating oil should not be lower than 215°C. Air compressors using oil lubrication should be equipped with an oil cut-off protection device. Water-cooled air compressors should be equipped with either a water shortage protection device or a water shortage signal display device.

e) The compressed air station should be equipped with an oil-water separator, and a check valve should be installed between the final exhaust port of the air compressor and the air storage tank.

f) The gas storage tank should be equipped with a pressure gauge, safety valve, drain valve, and inspection port. A pressure relief valve should be installed on the outlet pipeline of the gas storage tank. The diameter should not be less than the diameter of the outlet duct, and the release pressure should be

1.4 times the maximum working pressure of the air compressor.

g) The exhaust temperature of the air compressor and the temperature of the air tank should be monitored, and temperature sensors should be installed. These sensors should be able to detect when the temperature exceeds the limit. Light alarm.

5.2.3 Newly installed or repaired air tanks shall be subjected to a hydrostatic test at 1.5 times the working pressure of the air compressor to confirm that they meet the requirements.

5.2.4 Unattended compressed air stations should operate automatically and be equipped with automatic fire extinguishing devices, video surveillance, and connection to a ground control center. Two-way communication is established, and personnel conduct inspections.

5.3 Piping and ancillary facilities

5.3.1 The compressed air self-rescue system pipeline should be laid to all underground disaster relief sites, covering the disaster relief routes in the mining area, and connecting to refuge chambers and supply stations. Safety facilities, including those for mines with complex or extremely complex hydrogeological conditions, are extended to safe locations near mining faces and blasting sites. The highest point of the horizontal, mining area and uphill tunnel.

5.3.2 The main pipeline of the compressed air self-rescue system shall be made of metal pipe and shall be arranged in the air intake shaft or air intake tunnel.

5.3.3 The specifications of the compressed air duct should meet the air supply requirements, and should be specifically designed and calculated according to parameters such as the required air volume, air supply distance, and resistance loss. However, the diameter of the main pipeline should not be less than 100mm, and the diameter of the pipeline at the mining face should not be less than 50mm.

5.3.4 Compressed air pipelines within 20m of the entrance to the refuge chamber and within 40m of the mining face should be buried or constructed using methods that meet the requirements. Steel wire braided hoses are required for coal mine safety, but buried hoses should not be used in coal seams with a risk of rock bursts; instead, steel hoses that meet the required specifications should be used. Braided tubing is used for connection.

5.3.5 The lowest point in the undulating area of the wellhead and underground pipelines, the starting point of the ascent, and the entrance to refuge chambers and supply stations, etc. At the outlet, an oil-water separator or drain valve should be installed, and the drain valve should be easy to observe the liquid level.

5.4 Compressed air self-rescue supply valve and compressed air self-rescue device

5.4.1 Compressed air self-rescue supply valves should be installed at the following