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

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Replacing GB 21522-2008

Emission standard of coalbed methane (coal mine gas)

煤层气（煤矿瓦斯）排放标准

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1 Field of application

The document fixes the drainage requirements, the emission control requirements, the monitoring requirements and the implementation and supervision of coalbed methane, that is coal mine gas.

It applies to the emission control and management of coalbed methane at existing underground coal mines and surface coalbed methane development systems, and to the environmental impact assessment, the design, the completion acceptance and the subsequent emission control management of new underground coal mines and surface coalbed methane development systems.

3 Terms and definitions

3.1 and 3.2 Coalbed methane is the natural gas held in the coal seam, associated with the coal, whose main component is methane. Coal mine gas is the natural gas, mainly a mixture of methane and air, that flows from the coal seam and surrounding rock into the working space or the drainage pipes during coal mining.

3.3 to 3.5 Gas drainage is the activity of drawing off and collecting for use the gas held in the coal seam, the rock strata and the goaf with dedicated facilities. A drainage station is the place where drainage pumps, pipework and their ancillary facilities are installed for gas drainage. A gas drainage system is made up of the drainage equipment and pipework, and chiefly comprises the drainage pump station, the drainage pipework, the monitoring and metering devices, the safety protection facilities and the energy saving and efficiency raising equipment.

3.6 to 3.8 High concentration gas is gas whose methane volume fraction is 30 % or more, low concentration gas is gas whose methane volume fraction is below 30 %, and ventilation air methane is the gas discharged from the ventilation shaft by the ventilation method used

at the mine.

3.9 and 3.10 The normal state is the state at a temperature of 273.15 K and a pressure of 101.325 kPa; the methane volume fractions given here are values in dry air at that state. Emission is the discharge of coalbed methane to the atmosphere.

3.11 to 3.14 A surface coalbed methane development system extracts coalbed methane from the coal seam through drilling, fracturing, dewatering and production and similar engineering measures, and covers mainly the production, gathering and transport, and processing stages. An existing underground coal mine and surface coalbed methane development system is one already built and in production, or whose environmental impact assessment document was approved, before the day the document comes into force; a new one is a new, rebuilt or extended mine and system whose environmental impact assessment document is approved from that day on. The pure quantity of gas drainage is the mean pure methane quantity, in the normal state, in the gas drained at an underground coal mine.

4 Drainage requirements

4.1 The conditions under which an underground coal mine sets up a gas drainage system follow GB 50471.

4.2 An underground coal mine that meets 4.1 and at the same time meets both of the following conditions establishes and operates a permanent surface gas drainage system: the pure quantity of gas drainage of the system is steadily above 2 cubic metres per minute; and the gas resource is reliable and abundant, with an expected drainage service life of more than five years.

4.3 and 4.4 The gas drainage indices of the mine follow GB 41022. The engineering design of the drainage system follows GB 50471, and the drainage methods and the management of drainage follow AQ 1027.

4.5 An underground coal mine where the conditions for large-scale surface coalbed methane development exist uses surface coalbed methane development technique so as to take the gas first and mine the coal afterwards.

4.6 The transport and emission of low concentration gas follow GB 40881, so that the safety of transport, use and emission is assured.

5 Emission control requirements

5.1 and 5.2 From 1 April 2025, and on the basis of the requirements of safe production, the coalbed methane emissions of new underground coal mines and surface coalbed methane development systems follow the emission control requirements of Table 1. From 1 April 2027 the same applies to existing underground coal mines and surface coalbed methane

development systems.

Table 1 is read across four columns, the production facility, the controlled item, the emission control requirement and the emission monitoring location. For a surface coalbed methane development system the controlled item is coalbed methane, emission is forbidden, and the monitoring locations are the vent pipes of the gathering and transport station yard, of the booster station and of the compressor station. For a mine gas drainage system four controlled items are listed. High concentration gas, that is a methane volume fraction of 30 % or more, may not be emitted, and is monitored at the vent pipe of the drainage pump station, at the discharge and emergency discharge pipes of the gas utilisation or storage facilities and at the discharge and emergency discharge pipes of the gas destruction facilities. Low concentration gas with a methane volume fraction of 8 % or more but below 30 % and a pure drainage quantity of 10 cubic metres per minute or more may not be emitted either, and is monitored at the vent pipe of the drainage pump station and at the discharge and emergency discharge pipes of the utilisation and of the destruction facilities. The same low concentration gas with a pure drainage quantity below 10 cubic metres per minute, and low concentration gas with a methane volume fraction below 8 %, carry no emission control requirement but are monitored at the same locations. For the mine return air shaft the controlled item is ventilation air methane, no emission control requirement is set, and the monitoring location is the return air shaft itself. The note to the table states that the methane concentration is the mean over any 24 h and that the pure drainage quantity is the mean over the same period.

5.3 and 5.4 The methane concentration is calculated with formula (1) and the pure drainage quantity with formula (2). Both formulas as printed are broken and are not reproduced here. The symbols of formula (1) are the mean methane concentration over the continuous monitoring period, in per cent; the methane concentration in the drained gas at a given moment of that period, in per cent; the flow of the drained gas at a given moment of that period in the normal state, in cubic metres; and the continuous monitoring period, which is 1 440 min. The symbols of formula (2) are the mean pure drainage quantity over the continuous monitoring period, in cubic metres per minute, and then the same three symbols as formula (1).

5.5 High concentration gas that can be used on the spot is used, a gas holder or a gas utilisation facility being built for the purpose; high concentration gas that cannot at present be used on the spot is used elsewhere; and high concentration gas that cannot at present be used at all is destroyed.

5.6 Low concentration gas with a methane volume fraction of 8 % or more and a pure drainage quantity of 10 cubic metres per minute or more that can be used has a utilisation facility built for it; where such gas cannot at present be used, it is destroyed.

6 Monitoring requirements

6.1 Sensors are fitted to the methane discharge pipes of the coalbed methane gathering and transport station vent pipe, the booster station vent pipe, the compressor station vent pipe, the vent pipe of the drainage pump station of the underground mine, the discharge and emergency discharge pipes of the gas utilisation and storage facilities, the discharge and emergency discharge pipes of the gas destruction facilities and the return air shaft, in order to monitor the methane concentration of coalbed methane, high concentration gas, low concentration gas and ventilation air methane, together with the related emission parameters such as flow, pressure, temperature and humidity or flow in the normal state. Methane sensors are fitted at the drainage pump station to guard against leakage.

6.2 The undertaking installs automatic monitoring equipment for coalbed methane emissions in accordance with AQ 1029 and the Measures for the Administration of Automatic Monitoring of Pollution Sources and the other relevant provisions, links it to the monitoring equipment of the competent ecology and environment authority, and keeps it running properly.

6.3 The layout and maintenance of the sensors follow AQ 1029 and the Measures for the Administration of Automatic Monitoring of Pollution Sources. Methane sensors reach the technical indices of AQ 6204 or NB/T 10182 and meet the general technical requirements for coal mine safety monitoring systems of AQ 6201.

6.4 The undertaking monitors the state of its emissions in accordance with the relevant laws and with the Measures for the Administration of Environmental Monitoring, and keeps the original monitoring records for at least five years.

7 Implementation and supervision

7.1 The competent ecology and environment authority is responsible for supervising the implementation of the document.

7.2 Where an emergency such as production beyond the planned expectation or a sudden equipment failure arises and coalbed methane genuinely has to be released directly for reasons of safety or emergency, the undertaking deals with it in accordance with the relevant safe production provisions, reports promptly to the competent ecology and environment authority of its area, and takes remedial measures promptly.