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

GB/T 43676-2024

**General technical requirements for water-cooled premixed low
NOx burners**

水冷预混低氮燃烧器通用技术要求

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Standardization Administration of the PRC**

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1 Scope

China's national general technical requirements for water-cooled premixed low NO_x burners. Nitrogen oxide formation in a flame is dominated by temperature: the thermal mechanism produces NO_x exponentially above about 1500 degrees C, so every low NO_x technique is ultimately a way of keeping the flame cooler. Premixing the fuel and air before combustion is one - it eliminates the locally stoichiometric zones that a diffusion flame always contains, where the temperature peaks. Water cooling the burner surface is another, and it works by drawing heat out of the flame at its root. Combining them reaches emission levels an order of magnitude below a conventional burner, which is what Chinese urban air quality regulation now demands of boilers. The engineering difficulty is that a premixed flame close to a cooled surface is prone to flashback and to being quenched, so stability across the turndown range is the property that has to be demonstrated.

Foreword

GB/T 43676-2024 | General technical requirements for water-cooled premixed low NO_x burner

04 National Standards of People's Republic of China General technical requirements for water-cooled premixed low-nitrogen burners Released on 2024-03-15 2024-07-

01 Implementation State Administration for Market Regulation The National Standardization Administration issued

About this edition

GB/T 43676-2024 is the current edition. It was issued on 15 March 2024 and has been in force since 1 July 2024.

The interval between issue and effect is the transition period. It exists so that producers, laboratories and buyers can requalify products, revise procedures and use up documentation before the new text becomes the one that applies. The date on this page is

the official one from the record of the Standardization Administration.

Classification and status

GB/T 43676-2024 is classified under ICS 27.010. ICS is the International Classification for Standards, the same scheme used by ISO and by the national bodies of most countries, which is what allows a Chinese standard to be placed beside its foreign counterparts on subject rather than on number.

Its Chinese Standard Classification code is CCS F 04. CCS is the domestic scheme, a letter for the sector and two digits for the subject within it, and it is the code by which the standard is filed and searched in China.

The GB/T prefix marks a recommended national standard. It is not, in itself, law: it becomes binding when a contract names it, when a regulation or a mandatory standard refers to it, or when a producer declares conformity with it. In practice that covers most of the cases in which it will be read - a purchase specification, an inspection agreement or a certification scheme.

How a Chinese national standard is set out

Chinese national standards are drafted to the rules of GB/T 1.1, which fixes the order in which a standard is set out. The document opens with a foreword recording the issuing bodies, the relationship to any previous edition and the technical committee responsible for it. Clause 1 is the scope. Clause 2 lists the normative references - the other standards that have to be applied together with this one, and without which its requirements cannot be met. Clause 3 gives the terms and definitions. The technical clauses follow: the requirements themselves, the test or measurement methods by which conformity is established, the inspection rules that say how a lot is sampled and judged, and, for a product standard, the provisions on marking, packaging, transport and storage. Annexes, normative or informative, come last.

GB/T 43676-2024 runs to 21 pages in the English translation. What is delivered is the complete document in that order: every clause, every table, every figure and every annex of the Chinese original, with the same numbering, so that a reference to a clause number in a contract or a test report points to the same place in both languages.

About this English translation

The English edition of GB/T 43676-2024 is a full translation of the official Chinese text, not a summary, an abstract or a machine rendering left unchecked. Clause and subclause numbers, table and figure numbers and annex letters are those of the original, because they are what a specification, a purchase order or a test report cites.

Technical terms are translated against the vocabulary standards of the same field, so that a term used in GB/T 43676-2024 reads the same way as in the other Chinese standards it is used beside. Where a term has an established English form in an ISO or IEC document on the same subject, that form is used; where China's term has no foreign counterpart, it is translated literally and the Chinese is kept alongside it rather than replaced by an approximation.

Quantities, units and symbols are carried over unchanged. Chinese standards use SI, so a value in the translation is the value in the original document, not a conversion, and a limit read from the English text is the limit that will be applied by a Chinese inspection body reading the Chinese one.

This page is compiled from the official publication record: the standard number and both titles, the issuing bodies, the dates of issue and effect, the ICS and CCS classification. The requirements, limits, tables and test conditions are in the document itself.