



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

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Design code for carbon plant

炭素厂工艺设计规范

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Foreword

This code was compiled by Guiyang Aluminum-Magnesium Design and Research Institute Co., Ltd. together with the organizations concerned in accordance with the requirements of the "Notice on Printing and Distributing the Plan for the Formulation and Revision of Engineering Construction Standards and Codes in 2006 (Second Batch)" (JIANBIAO [2006] No. 136) issued by the former Ministry of Construction.

During the compilation of this code, the drafting group carried out extensive investigation and research, conscientiously summarized practical experience, referred to relevant domestic and foreign standards and, on the basis of widely soliciting opinions, finally finalized the code through review.

This code consists of 6 chapters. The main technical contents include: general provisions; terms; raw materials, auxiliary materials and fuels; process procedures and technical requirements; main equipment selection; workshop design, etc.

The provisions printed in bold type in this code are compulsory provisions and shall be strictly implemented.

The Ministry of Housing and Urban-Rural Development is in charge of the administration of this code and the explanation of the compulsory provisions, the Administration Office of Engineering Construction Standards and Codes of the China Nonferrous Metals Industry is responsible for routine management, and Guiyang Aluminum-Magnesium Design and Research Institute Co., Ltd. is responsible for the explanation of specific technical contents. If there are any opinions or suggestions during the implementation of this code, please send them to Guiyang Aluminum-Magnesium Design and Research Institute Co., Ltd. (address: No. 2 Jinzhu Road, Jinyang New District, Guiyang, Guizhou Province; postcode: 550081) for reference in future revision.

Chief development organization and participating development organizations of this code:

Chief development organization: Guiyang Aluminum-Magnesium Design and Research Institute Co., Ltd.

Participating development organizations: Shenyang Aluminum-Magnesium Design and Research Institute Co., Ltd.; Guizhou Branch of Aluminum Corporation of China; Ningxia Qingtongxia Aluminum Co., Ltd.

1 General provisions

1.0.1

This code is formulated with a view to unifying the technical requirements for the process design of carbon plants, promoting technical progress and improving design quality and efficiency.

1.0.2

This code is applicable to the process design of newly built, reconstructed and expanded large and medium-sized metallurgical and chemical carbon plants.

1.0.3

The process design of carbon plants shall actively adopt advanced new processes, technologies, equipment and materials. The adoption of a new process shall be supported by an appraisal certificate of a semi-industrial test or industrial test approved by the competent authority.

1.0.4

The process design of carbon plants shall achieve comprehensive utilization of resources; nonconforming materials and waste heat arising in production shall be recovered and utilized.

1.0.5

The selection of the main equipment of carbon plants and the design of special-purpose furnaces and kilns shall, provided that process needs are satisfied, meet the requirements of high efficiency, energy saving, reliability, durability and ease of maintenance, and standard and type-approved equipment and materials shall be adopted.

1.0.6

Carbon plants shall be provided with metering devices at three levels: plant, workshop and process.

1.0.7

The process design of carbon plants shall meet the relevant requirements for safety, occupational health, environmental protection and fire prevention, and corresponding protective measures shall be taken.

1.0.8

The process design of carbon plants shall comply not only with this code but also with the current relevant standards of the nation.

2.0.1 primary crushing

The process in which the main raw materials in carbon material production, such as green petroleum coke or anthracite, are crushed to the particle size required by the various types of calcining. It also includes the process in which large lumps of green products, baked products or graphitized products returned to the flow in production are crushed to a particle size suitable for conveying by general-purpose conveying equipment.

2.0.2 calcining

The process in which various carbonaceous raw materials are heat-treated at high temperature to drive off their moisture and volatile matter and correspondingly improve the physical and chemical properties of the raw materials.

2.0.3 middle crushing

The process in which calcined petroleum coke or anthracite and the various materials returned to the flow undergo a second or third crushing to reach the particle size required by the dry material formula.

2.0.4 grinding

The process in which the main raw materials, such as calcined petroleum coke or anthracite, are milled to the particle size required for proportioning.

2.0.5 screening

The process in which calcined petroleum coke, anthracite, etc. and the various materials returned to the flow are classified during production to obtain the various particle sizes required for proportioning or for the next process step in production.

2.0.6 pitch melting

The process in which solid coal tar pitch used as a binder or impregnant is converted into liquid pitch by indirect heating.

2.0.7 mixing

The process in which carbonaceous dry materials of various size fractions in specified proportions and a fixed quantity of binder are mixed and kneaded at a certain temperature into a plastic paste.