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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 26731-2024

Replacing GB/T 26731-2011

Treatment and processing of end-of-life tyres

废轮胎加工处理

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1 Scope

GB/T 26731-2024 is the Chinese standard for the treatment and processing of end-of-life tyres. China produces several hundred million scrap tyres a year, and the industry that handles them ranges from well-run rubber powder plants to backyard pyrolysis, which is what the standard exists to separate. It covers the classification of the end-of-life tyres and of the processing routes, retreading, whole tyre use, cutting, crumb rubber and rubber powder production, reclaimed rubber and thermal cracking, and for each sets the requirements on the process and the equipment, on the quality of the input material and of the products obtained, on the removal and handling of the steel and textile fractions, on the environmental protection requirements covering emissions, effluent, noise and solid residues, on occupational safety and fire prevention, and on the records and the traceability. The 2024 edition replaces GB/T 26731-2011. For a tyre recycler, a rubber powder buyer or an environmental authority in China, this is the governing text.

This document specifies the methods and safety and environmental protection requirements for the treatment and processing of end-of-life tyres. This document applies to the treatment and processing of end-of-life tyres.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB 4655 Safety Rules of Static Electricity in the Rubber Industry

GB 8978 Integrated Wastewater Discharge Standard

GB 12348 Emission Standard for Industrial Enterprises Noise at Boundary

GB 14554 Emission Standards for Odor Pollutants

GB 15577 Safety Regulations for Dust Explosion Prevention and Protection

GB 16297 Integrated Emission Standard of Air Pollutants

GB 31571 Emission Standard of Pollutants for Petroleum Chemistry Industry

GB 50058 Code for Design of Electrical Installations in Explosive Atmospheres

GB 50469 Code for Design of Environmental Protection of Rubber Factory

3 Terms and Definitions

The following terms and definitions are applicable to this document.

3.1 end-of-life tyres Tyres that have lost their original use value and cannot be retreaded for continued use on vehicle wheels or machine wheels.

3.2 pyrolysis The process of thermally decomposing end-of-life tyres under oxygen-free or oxygen-depleted conditions.

4 Treatment and Processing Methods

4.1 General The main treatment and processing methods for end-of-life tyres include producing vulcanized rubber powder, producing recycled rubber, pyrolysis and prototype utilization. Material recycling methods, such as producing vulcanized rubber powder, producing recycled rubber, and pyrolysis shall be preferred. Recycled products, such as rubber powder, recycled rubber, thermal cracking recycled carbon black and end-of-life tyre (rubber) recycled oil can replace some petrochemical-based materials and be used in the manufacture of tyres, rubber products and building materials, etc. NOTE. material recycling refers to the process of re-processing end-of-life tyres into products or materials for various purposes.

4.2 Production of Vulcanized Rubber Powder

4.2.1 Overview Crush end-of-life tyres and grind into vulcanized rubber powder of varying particle sizes. The process for producing vulcanized rubber powder involves treating the end-of-life tyres in a step- by-step pulverizing mode after bead wire separation to achieve the required particle size. The main methods for producing vulcanized rubber powder include the ambient temperature method and the freezing method.

4.2.2 Ambient temperature method Under ambient temperature conditions, through shearing, tearing and rolling compaction, make end-of-life tyres into vulcanized rubber powder. The main methods include generating method, roller method, grinding disc method

and cone grinding method. A schematic diagram of the process flow is shown in Figure 1. The main equipment for producing vulcanized rubber powder at ambient temperature includes tyre bead separator, crusher, coarse crusher, rubber breaker, magnetic separator, fiber separator (optional), fine crusher and screening machine, etc. walls, etc. A schematic diagram of the prototype utilization process is shown in Figure 5.

5 Safety and Environmental Protection Technical

5.1 Except for end-of-life tyre treatment and processing plants using the prototype utilization process, end-of-life tyre treatment and processing plants using other processes shall implement measures to prevent static electricity hazards in accordance with the provisions of GB 4655.

5.2 Measures to prevent dust hazards in end-of-life tyre treatment and processing plants shall comply with the provisions of GB 15577.

5.3 Measures to prevent noise hazards in end-of-life tyre treatment and processing plants shall comply with the provisions of GB 12348.

5.4 Wastewater discharge from end-of-life tyre treatment and processing plants shall comply with the provisions of GB 8978.

5.5 Air pollutant emissions from end-of-life tyre treatment and processing plants producing vulcanized rubber powder shall comply with the provisions of GB 16297.Air pollutant emissions from end-of-life tyre treatment and processing plants producing recycled rubber shall comply with the provisions of GB 16297 and GB 14554.Air pollutant emissions from end-of- life tyre treatment and processing plants using the thermal cracking process shall comply with the provisions of GB 31571 and GB 14554.

5.6 Construction projects for end-of-life tyre treatment and processing plants shall comply with the provisions of GB 50469.