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

GB 20055-2006

**Safety requirements of mill for rubber and plastics
(English Translation)**

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Foreword

All technical content of this Standard is mandatory.

This Standard corresponds to the British standard BS EN 1417.1997, Rubber and Plastics Machines - Two Roll Mills - Safety Requirements (English version). This Standard is nonequivalent to BS EN 1417. The major differences are as follows.

- it cancels retractable plough in the terms and definitions, cancels the term interpretations consistent with Chinese standards and directly adopts the relevant terminology standard of China;
- it changes the radian(s) to degree(s) of angle for the stopping angle;
- it adds, in the mechanical hazards related to the mill rolls, the hazards of drawing-in and crushing between the couplers between the mill rolls and the reducer, between the couplers between the motor and the reducers;
- it adds the hazards of burns and/or scalds caused by the leakage or ejection of the rotation joints in the thermal hazards;
- it changes the gap between the mill rolls and the stock guides from not exceeding

4 mm to not exceeding 2 mm;

- it adds the requirements for the value of noise.

From July 1, 2007, this national standard shall be implemented for the products

manufactured; from October 1, 2007, the distribution of products which do not conform to this national standard shall be stopped.

This Standard was proposed by China Petroleum and Chemical Industry Association.

This Standard shall be under the jurisdiction of the National Standardization Technical Committee on Rubber and Plastics Machinery (SAC/TC 31).

The responsible drafting organization of this Standard. Dalian Bingshan Rubber & Plastics Machinery Co., Ltd.

The contributory drafting organizations of this Standard. Shanghai Rubber Machinery Co., Ltd., Wuxi No.1 Rubber & Plastic Machinery Co., Ltd., Beijing Research & Design Institute of Rubber Industry.

1 Application Scope

This Standard specifies the safety requirements for two roll mills for the processing of rubber and plastics.

This Standard covers the terms and definitions, list of hazards, safety requirements and measures, and verification and information for use of safety requirements and measures of two rolls mills for the processing of rubber and plastics.

This Standard applies to all two roll mills for the processing of rubber and plastics.

This Standard does not cover the safety requirements for the design of an exhaust system.

2 Normative References

The provisions in following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB 5226.1-2002, Safety of Machinery - Electrical Equipment of Machines - Part 1.

General Requirements (IEC 60204-1:2000, IDT)

GB 12265.1-1997, Safety of Machinery - Safety Distances to Prevent Danger Zones Being Reached by the Upper Limbs (eqv EN 294.1992)

GB 12265.3-1997, Safety of Machinery - Minimum Gaps to Avoid Crushing of Parts of the Human Body (eqv EN 349.1993)

GB/T 13577-2006, Mill for Rubber and Plastics

GB/T 15706.1-1995, Safety of Machinery - Basic Concept, General Principles for Design - Part 1. Basic Terminology, Methodology (eqv ISO/TR 12100-1.1992)

GB/T 15706.2-1995, Safety of Machinery - Basic Concepts, General Principles for Design - Part 2. Technical Principles and Specifications (eqv ISO/TR 12100-2.1992)

HG/T 2149-2004, Measuring Method of Mill for Rubber and Plastics

HG/T 3223, Rubber Machinery - Terminology

JB/T 5438, Plastics Machinery - Terminology

3 Terms and Definitions

For the purposes of this document, the following terms and definitions and those defined in HG/T 3223 and JB/T 5438 apply.

3.1 Principal parts of mill

Principal parts of mill in this Standard refer to parts involving safety of mill, as shown in Figure 1.

3.2 Principal crushing zone

Principal crushing zone refers to zone extending over the full length of the mill rolls indicated by V in figure 2.

3.3 Stopping angle

Mill is equipped with a trip bar including safety bar and control button. The stopping angle is the angle through which the mill rolls rotate from the actuation of the trip bar until the rolls have come to rest. The specified stopping angle is specified by mechanical design, related to the conditions of machine unloaded and machine running at maximum speed, indicated by α_0 in Figure 2. The maximum stopping angle

is the upper limit of stopping angle, indicated by α_{max} . The measured stopping angle is the stopping angle measured, indicated by α_m .

3.4 Safety limit

For two roll mills equipped with a trip bar, the safety limit is the vertical plane indicated by line S in figure 2 demarcating the zone which is unsafe for operators who can reach into it without actuating the trip bar.

3.5 Stock guide

Stock guide can be divided into fixed type and movable type which is installed on both sides of mill rolls and used to prevent material in process from going beyond the mill roll end (see Figure 1, location 7).

3.6 Strip cutting device

A device, equipped with rotating or stationary blades, to cut off strips of the material from a mill roll and send to stock blender or next procedure (see Figure 1, location 3).

5.1.1 Hazard of drawing-in and crushing between the mill rolls during normal (forward)

operation.

5.1.1.1 The trip bar emergency stop protection shall satisfy the following requirements.

5.1.1.1.1 For the installation of the machine, the top of the mill rolls shall be at a height of not less than 1300 mm above the normal standing level of the operator.

5.1.1.1.3 The specified stopping angle α_{max} shall not exceed the maximum stopping

angle α_{max} .

5.1.1.1.4 The mill rolls shall come to rest at an angle not greater than α_{max} after actuation of the trip bar.