GB

NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

ICS 13.110

J 09

GB/T 26118.3-2010

Safety of Machinery - Assessment and Reduction of Risks Arising from Radiation Emitted by Machinery - Part 3: Reduction of Radiation by Attenuation or Screening

机械安全 机械辐射产生的风险的评价与减小

第 3 部分：通过衰减或屏蔽减小辐射

Issued on: January 10, 2011 **Implemented on: October 1, 2011**

Issued by: General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China;

Standardization Administration of the People's Republic of China.

Table of Contents

Foreword

GB/T 26118 *Safety of Machinery - Assessment and Reduction of Risks Arising from Radiation Emitted by Machinery* consists of the following three parts:

---Part 1: General Principles;

---Part 2: Radiation Emission Measurement Procedure;

---Part 3: Reduction of Radiation by Attenuation or Screening.

This is Part 3 of GB/T 26118.

This Part was drafted in accordance with the rules provided in GB/T 1.1-2009.

This Part identically adopts the European Standard EN 12198-3:2002 *Safety of Machinery - Assessment and Reduction of Risks Arising from Radiation Emitted by Machinery - Part 3: Reduction of Radiation by Attenuation or Screening* (English version).

This Part identically translates EN 12198-3:2002. For ease of use, this Part makes the following editorial modifications:

---"this Part" is used to replace "this European Standard";

---The EN Foreword is deleted, and the Foreword is re-written;

---In accordance with the requirements of GB/T 1.1-2009, the order of expression of the clauses in the Scope is modified;

---The introduction of Normative References is modified in accordance with GB/T 1.1-2009, and the standards cited in EN 12198-3:2002 are modified into the corresponding national standards;

---"(see EN 292-1:1991, Appendix A)" is deleted from Chapter 4;

---"(European Economic Area: –40 °C in North, to +40 °C in South)" is deleted from 6.5;

---Appendix ZA is deleted.

This Part was proposed by and shall be under the jurisdiction of National Technical Committee 208 on Mechanical Safety of Standardization Administration of China (SAC/TC 208).

The drafting organizations of this Part: Rugao Packaging Food Machinery Co., Ltd.; Shenzhen Center Testing International Group Co., Ltd.; China Machinery Productivity Promotion Center; Optomechanical and Electrical Engineering Research Institute of Nanjing Forestry University.

The main drafters of this Part: Shi Chuanmin, Xu Jiang, Li Qin, Ning Yan, Wang Li, Zhu Ping, Ju Ronghua, Wu Jian, Fu Rui, Zhang Xiaofei, Chen Nengyu, Liu Zhiyong, Wang Xiwei, Xu

Safety of Machinery - Assessment and Reduction of Risks Arising from Radiation Emitted by Machinery - Part 3: Reduction of Radiation by Attenuation or Screening

1 Scope

The purpose of this Part of GB/T 26118 is to provide means to enable manufacturers of machinery concerned by a radiation hazard to design and manufacture efficient safeguards against radiations. Specific technical details of the design of shields for the different types of radiation and machines will be provided in other standards.

This Part deals with a design strategy for reducing the radiation flux by attenuation or screening.

This Part applies to machinery as defined by GB/T 15706.1.

NOTE GB/T 26118.1 contains the general principles of risk assessment of radiation emission by machinery. Details of the measurement of the radiation emission are given in GB/T 26118.2.

2 Normative References

The following documents are indispensable to the application of this document. 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/T 2900.60-2002 Electrotechnical Terminology - Electromagnetism (IEC 60050(121):1998, EQV)

GB/T 2900.61-2008 Electrotechnical Terminology - Physics and Chemistry (IEC 60050-(111):1996, MOD)

GB/T 4365-2003 Electrotechnical Terminology - Electromagnetic Compatibility (IEC 60050(161):1990, IDT)

GB/T 8196-2003 Safety of Machinery – Guards – General Requirements for the Design and Construction of Fixed and Movable Guards (ISO 14120:2002, MOD)

GB/T 15706.1-2007 Safety of Machinery - Basic Concepts, General Principles for Design - Part 1: Basic Terminology, Methodology (ISO 12100-1:2003, IDT)

GB/T 15706.2-2007 Safety of Machinery - Basic Concepts, General Principles for Design -

time for the source.

6.3 Radiation Fields, Beam Geometry Access and Enclosure

The manufacturers shall take account of the following considerations.

6.3.1 Radiation field or beam geometry

a) The field or beams size should be as small as possible considering such factors as the area of the interaction between radiation and material and the uniformity needed across that area.

b) The distance which the intended field or beam has to traverse should be minimized. This will be after taking account of the divergence and any access required to the field.

6.3.2 Access to the irradiated area

Wherever possible the field or beam should be enclosed to prevent inadvertent access to levels of radiation above the design target level.

As part of the routine maintenance or setting of a machine, it may be necessary to measure the field or beam profiles or intensity. The position of beams may also need to be adjusted.

If there is a need for access to the field or beam then access points should be included during the design stage.

The construction of access points shall not create leakage of radiation above the level specified in the design targets.

6.3.3 Design of guards

Guards enclosing fields or beam may be required to exhibit attenuation properties or only prevent access to the beam. If the guard is to be a shield then its design shall also follow the steps listed in Chapter 5. If it is only to prevent human access then any openings shall be as small as possible and comply with Table 3, 4 or 5 of GB 23821-2009 as appropriate.

Manufacturers should be aware that reflectors may be inserted accidentally even through small openings. If it is possible to reflect significant proportions of the beam which would cause the design target to be exceeded then the guard shall be without opening.

6.4 Review Available of Attenuating Material

6.4.1 The manufacturer shall review materials, considering factors such as absorbing, attenuating and other properties.

In particular, consideration shall be given to the following properties:

---chemical composition;

This is an excerpt of the PDF (Some pages are marked off intentionally)

------ The End ------