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Food processing machinery - Basic concepts - Hygiene requirements

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Foreword

The clause 1, clause 2, clause 3, Appendix A, Appendix B, Appendix C of this standard are recommended, the rest is mandatory.

This standard, through revision, adopts the European standard EN 1672-2:2005 “Food processing machinery - Basic concepts - Part 2: Hygiene requirements” (in English), AND makes editorial changes in accordance with Chinese standard writing rules GB/T 1.1-2000. The main differences between this standard and EN 1672-2:2005 are as follows:

- DELETE the foreword of EN 1672-2:2005;
- DELETE the Appendix ZA of EN 1672-2:2005;
- DELETE the references of EN 1672-2:2005;
- CHANGE the referenced European standards and international standards into the corresponding national standards.

The Appendix A, Appendix B and Appendix C of this standard are informative appendixes.

This standard was proposed by the People's Republic of China Ministry of Commerce.

This standard shall be under the jurisdiction of the National Food Processing Device Standardization Technical Committee.

The drafting organizations of this standard: Beijing Institute of Service Machinery, Zhejiang Technology and Business University, Hangzhou Aibo Mechanical Engineering Co., Ltd.

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Introduction

Mechanical safety standard series of structures are:

- Type A standard (basic safety standards), giving the basic concepts, design principles and characteristics which are applicable to all machinery;
- Type B standard (general safety standard), involving a safety feature of the machine or a wide range of use of a class of safety devices:
 - a) Type B1, specific safety characteristics (such as safety distance, surface temperature, noise) standards;
 - b) Type B2, safety devices (such as two-handed control device, interlocking device, pressure-sensitive devices, guards) standards.
- Type C standard (machine safety standard), giving detailed safety requirements for a specific machine or a group of machines.

This standard belongs to the type C standard.

The relevant machinery and hazards, dangerous accidents are also included in the scope of this standard.

This standard describes the differences between the hazards to operators and the risks to foods (it refers to mechanically processed foods) during food processing.

This standard addresses those hazards of all (or most) food processing machinery (as covered by different technical specifications). The hazard conditions as proposed here shall be included in the scope of this standard.

In almost all hazardous situations, at least one risk reducing design, safety protection or other safety measures can be adopted. These measures shall satisfy the basic requirements for safety and hygiene, AND completely control the risks. Even the hygiene risk or safety risk is not significant, it shall also satisfy the safety and hygiene requirements, it shall take the corresponding measures to minimize risk.

The first choice is to select a design method which removes both hygiene and safety risks through design; if the risk is not within the scope of design of the technical process, it shall use the protective measures to remove the hygiene and safety risks; if there is residual risk after taking the design measures and protective measures, it shall notice or guide the user to take measures to avoid or minimize risk. The assessment against safety and hygiene risk can reflect

Food processing machinery - Basic concepts - Hygiene requirements

1 Scope

This standard specifies the hygiene requirements for the machinery used in preparing and processing food for human and animal consumption, analyzes the possible hazards when using this type of machinery, AND proposes the requirements for design measures and use information.

This standard does not deal with the hygiene related risks to personnel arising from the use of machine.

This standard applies to food processing machinery and device, including food processing complete machinery and device. Appendix B provides the information of the food processing machinery and device applicable to this standard.

The basic concepts involved in this standard apply to food processing machinery and device with similar risks.

This standard does not apply to the machinery and device manufactured before the release and implementation of this standard.

NOTE: Examples of hygiene risks and solutions are given in Appendix A.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) 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/T 1031 Geometrical product specifications(GPS) - Surface texture: Profile method - Surface roughness parameters and their values

GB/T 10610 Geometrical product specifications(GPS) - Surface texture: Profile method - Rules and procedures for the assessment of surface texture (GB/T 10610-1998, eqv ISO 4288:1996)

3.4.1

Food area

Area composed of surfaces in contact with food, through which the food or other materials may enter into the food or food container in such forms as inflow, dripping in, infiltration, or inhalation (automatic backflow) (SEE Figure A.1).

3.4.2

Splash area

Area composed of surfaces on which part of the food may splash or flow along under intended conditions of use and does not return into the product (SEE Figure A.1).

3.4.3

Non food area

Any area other than those specified above (SEE Figure A.1).

3.5

Cleaning

Removal of soils.

3.6

Contamination

Presence of soils.

3.7

Corrosion resistant material

Material resistant to normally occurring action of chemical or electrochemical nature. It includes food processing, cleaning and disinfection in accordance with the instructions for use.

3.8

Crevice

An obvious surface defect such as crack which adversely affects cleanability.

The surface design and finish shall be such that the product is prevented as far as possible from becoming accidentally separated from the food area and from returning to it, if that return would cause a hazard to the processed food.

Surfaces shall have a finish so that no particle of product becomes trapped in small crevices, thus becoming difficult to dislodge and so introduce a contamination hazard.

Note: Surface finish in accordance with GB/T 10610 shall comply with technical requirements, limited to measuring methods Rz and Ra, given in the machinery specific C standard.

5.3.1.2 Joints

5.3.1.2.1 Permanent joints

Joints shall be sealed and hygienic. Recesses, gaps, crevices, protruding ledges, inside shoulders and dead spaces shall be avoided (SEE Figure A.3, Figure A.4 and Figure A.5).

If technically unavoidable, adequate solutions shall be given (such as cleaning, disinfection, instructions, etc.).

5.3.1.2.2 Dismountable joints

Dismountable joints shall present a reliable and hygienic fit (SEE Figure A.6, Figure A.7, Figure A.8 and Figure A.9).

5.3.1.3 Fasteners

Fasteners such as screws, bolts, rivets and so on, shall be avoided. If technically unavoidable, they shall be provided with adequate solutions (such as cleaning, disinfection, and instruction, etc.) (SEE figure A.10).

5.3.1.4 Drainage

It shall be ensured that the machinery is preferably self draining, or that the residual liquid can be removed by other means (SEE Figure A.11, Figure A.12 and Figure A.13).

5.3.1.5 Internal angles and corners

The internal angles and corners shall be so constructed that they are effectively cleanable and where required capable of being disinfected (SEE Figure A.14).

Internal angles and corners shall comply with technical requirements which are given in machinery specific C standards.

As the spilled food does not return to the food area, the technical design criteria may be less stringent in the following areas provided that there is no adverse effect on the food:

- Technical requirements for surface finish may allow for higher Rz and Ra values;
- Internal angles and corners may be of smaller radius than specified for the food area, provided they are still cleanable and, where required, capable of being disinfected;
- Bearings, seals, moving shafts, etc., located in a splash area, may be lubricated by non-food grade lubricants, provided there is no adverse influence on the food.

The requirements of fasteners are as shown in Figure A.22.

5.3.3 Non-food area

In addition to the general requirements (SEE 5.2.1) exposed surfaces used in the non-food area shall be made of corrosion resistant material or material that is treated (coated or painted) so as to be corrosion resistant. These surfaces shall be cleanable and, where required, capable of being disinfected and shall not contaminate or have any adverse influence on the food.

Equipment shall be designed and constructed in such a manner to prevent the retention of moisture, ingress and harbourage of vermin and accumulation of soils, and to facilitate inspection, servicing, maintenance, cleaning and, where required, disinfection. Tubular framing shall be totally closed or effectively sealed.

5.3.4 Services

Services, pipes, connections and related devices forming an integral part of the machinery shall meet the requirements of 5.3.1, 5.3.2 and 5.3.3 of this standard, in accordance with the area where they are situated, AND not introduce any hazard as defined in clause 4.

6 Verification of hygiene requirements and measures

Verification of compliance with hygienic requirements shall be undertaken using one or more of the verification methods given in Table 1.

7 Information for use

7.1 General

The intended use of the food machinery and its limits shall be specified in the manufacturer's instructions.

For the risks that mechanical design and protection cannot eliminate, users shall be advised to take appropriate measures to avoid risks, including professional training.

Instructions shall comply with the requirements of clause 6 of GB/T 15706.2-2007.

7.2 Instructions

7.2.1 General

The manufacturer shall provide instructions complying with the requirements and recommendations of clause 6.5 of GB/T 15706.2-2007, AND it shall include special additional information relating to the following points.

7.2.2 Installation information

Particularly:

- Space needed for use and maintenance, for example measures to be taken when installing machinery. Care shall be taken to ensure that there is adequate access for servicing machinery and cleaning service systems and their adjacent areas so that the required level of hygiene can be maintained;
- Permissible environmental conditions and, if necessary, measures to be taken so that the food, when exposed to open air during processing, is not adversely influenced by for example air currents, dust, or liquids derived from leakage, condensation or aerosols.

7.2.3 Information of machine itself

It includes the special instructions for using the machine (SEE 5.1.5).

7.2.4 Cleaning and disinfection information

The instructions shall provide the recommended cleaning agents and disinfectants, instructions on machine disassembly (if necessary), cleaning, disinfection, online cleaning and inspection, including the machine

Appendix B

(Informative)

Examples of machinery which may be covered by this standard

Examples of food processing machinery:

- Bakery machines, baking ovens, pasta machines;
- Machinery for the manufacture and processing of bakery products, confectionery and pasta;
- Ovens and baking machinery;
- Machinery for processing cereals and animal feed;
- Machinery for slaughterhouse and processing of meat products;
- Butchers' machines;
- Slaughterhouse machines;
- Cooking vessels;
- Smoking installations;
- Seafood processing machines;
- Machines for fruit and vegetable processing;
- Autoclaves;
- Machinery for catering and large kitchens;
- Machinery for alcoholic and non-alcoholic drinks;
- Machinery for milk industry;
- Machinery for dairy products;
- Whipped cream machines and ice cream machines;
- Machines for processing edible oils and fats;
- Machines for confectionery and chocolates;

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