

SESEC V

Development of Mandatory Standards for Home Appliances in China

Report Date | January 2024

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1. Background:

In recent years, China has made substantial efforts to streamline and consolidate its abundant pool of mandatory standards. Within the household appliance industry, a wide range of mandatory standards are in the process of being eliminated, transformed (i.e., from mandatory to voluntary), integrated, or revised. This initiative seeks to resolve significant issues within the current mandatory standards system, including redundancy, overreach, and even conflicts. Of particular note are the three prominent mandatory national standards: the "*Household and similar electrical appliances – Product safety specification*" (hereinafter, referred to as the "Safety Standard"), the "*Household and similar electrical appliances – Energy saving and environment protection specification*" (hereinafter, referred to as the "Environmental Protection Standard"), and the "*Household and similar electrical appliances – Health safety specification*" (hereinafter, referred to as the "Health Standard"). These standards are attracting significant attention from the industry as they aim to consolidate more than a hundred of existing mandatory standards in the sector.

In fact, the development of these three mandatory national standards marks the most substantial overhaul of the standards system so far in the sector. These will not only consolidate and substitute previously scattered standards, but also introduce new technical requirements that are expected to profoundly impact the industry.

2. Overview of the Three Standard Projects:

Currently, the three mandatory standards are in the public consultation phase – therefore the content is not yet final. The key points reflected in the draft proposals are summarized below:

● The Safety Standard

This standard will delineate the requirements for the safety, installation, maintenance, and repair of household and similar electrical appliances, including specifications for labeling and instructions. It describes the corresponding compliance verification methods, establishes relevant terms and definitions, and is applicable to a range of 98 products, encompassing household (and similar use) appliances, the electrical components of sporting goods, and the design, production, testing, use, installation, maintenance, and repair of electric toys.

This standard will represent a consolidation and refinement of technical requirements of 102 currently existing mandatory standards in the field of household appliance safety; consequentially, the latter will be transformed into voluntary standards to support the implementation of this standard. Specifically:

- In terms of product safety requirements (electrical, temperature, mechanical, durability, structure, components), this standard integrates requirements from the original GB 4706 series (safety of household and similar electrical appliances), "*GB 19865 Electric toys – Safety*, and *GB 31187 Sporting goods – General requirements for electrical parts*". It also proposes requirements that consider the impact of the usage environment on product safety in accordance with the current international standardization efforts of IEC 60335.
- The section on safety requirements throughout the product lifecycle is enhanced, based on the requirements of "*GB 8877 Safety requirements for the installation, operation and maintenance of household and similar electrical appliances*". These primarily address the requirements for installation, maintenance, and repair.
- The section on safety labeling and instructions integrates labeling-related content from the original GB 4706 series, GB 19865, and GB 31187. It also introduces labeling and instructional requirements for installation, maintenance, and repair activities.

● The Environmental Protection Standard

This standard will be China's first general standard for energy-saving and environment-related requirements for household appliance products. It stipulates general principles, lifecycle stage requirements, and product requirements for energy-saving and environmentally friendly household appliances and other similar electrical appliances.

Key points from the draft include:

- In the general principles, the standard proposes to consider and identify potential impacts on the environment, resources, and energy during each stage of the product lifecycle, especially in the design and development stage. It emphasizes compliance with energy-saving and environmental protection requirements in materials, technology, processes, equipment, packaging, maintenance, or repair.
- In the lifecycle stage requirements, the standard proposes energy-saving and environmental protection requirements during the production, installation, and recycling/reuse stages.
- In the product requirements section, based on existing energy efficiency, water efficiency standards, regulations on refrigerants, and restrictions on harmful substances, the standard sets requirements for energy efficiency, water efficiency, refrigerants, foaming agents, and renewable utilization during the product's use.

This standard aligns with the Montreal Protocol regarding the restriction of refrigerant use. It is also consistent with the EU RoHS in terms of restrictions on harmful substances and labeling.

- The Health Standard

This standard will integrate and replace the existing eight mandatory standards, including "GB 21551.1~6 Antibacterial, Deodorizing, and Purification Functions of Household and Similar Electrical Appliances"; "GB 17988-2008 Safety and Hygiene Requirements for Tableware Disinfection Cabinets"; and "GB 19606-2004 Noise Limits for Household and Similar Electrical Appliances". The standard stipulates general principles, basic safety, health protection functions, requirements for markings and instructions related to the health safety of household appliances and similar electrical appliances. It also provides corresponding test methods.

Key points from the draft include:

- General principles state that, when installed, used, maintained, and repaired according to the appliance's instructions, there should be no hazards that affect human and environmental health; or, alternatively, the risk level of hazards should be within an acceptable range.
- Safety technical indicators include ultraviolet (UVC) leakage, noise, electromagnetic fields (EMF), ozone leakage, total volatile organic compound (TVOC) concentration, hygiene safety of food contact materials, and antibacterial environments. The content integrates and summarizes the requirements from the original GB 21551 series standards (Antibacterial and cleaning function for household and similar electrical appliances), as well as from "GB 17988 Safety and sanitation requirements for disinfecting tableware cabinet", and "GB 19606 Noise limit value for household and similar electrical appliances". New electromagnetic radiation requirements are introduced for appliances that use electromagnetic induction for heating.
- Health protection functions include whole-machine air purification, antibacterial, antiviral functions, and material antibacterial, antifungal, and antiviral functions. The content integrates and summarizes the requirements from the original GB 21551 series standards and GB 17988, and specifies minimum requirements for appliances with air purification and antiviral functions.
- The section on markings and instructions requirements integrates marking-related requirements from the original GB 21551 series standards, as well as from GB 17988 and GB 19606. In addition, it adds requirements for markings and instructions corresponding to potential health hazards of ultraviolet and ozone during appliance use.

3. Major Challenges Faced by the Three Standards

Due to the deep and intricate connections of the three mandatory national standards for home appliances with over a hundred original supporting standards, unprecedented challenges in coordination have emerged. This delayed the progress of the three standards – which were originally set to be completed by 2021.

- The Safety Standard

The initial consideration for this standard was to define safety requirements at various stages of a product's lifecycle. However, in practice, not every stage is closely linked to product safety. For instance, electrical safety issues are not relevant during the recycling stage. In reality, the primary focus of safety requirements for a product is in the design phase, addressing how to ensure the safety of users throughout the usage process, using effective solutions based on existing scientific methods and under foreseeable circumstances. This involves managing safety risks, i.e., effectively handling the size and probability of potential hazards. Throughout the entire lifecycle, from design to recycling, it is not feasible to identify safety factors that need precautionary measures at every stage, especially when there is no scientifically effective method for verification. Some questions remain largely unanswered, for instance regarding how safety supervision is implemented in activities such as maintenance, installation, and recycling, or how responsibilities are defined among stakeholders, and whether they should be within the scope of certification assessment before product launch.

- The Environmental Protection Standard

This newly formulated standard is the first of its kind in the Chinese home appliance industry, covering energy efficiency and environmental standards for all categories of home appliances. Its technical coverage is extensive, not limited to product design as seen in traditional standards, but also including production processes, transportation, maintenance, and recycling. The development of this standard aligns with China's goals of implementing green and low-carbon strategies; it also reflects the global trend in the development of technical regulations for home appliances. However, the standard not only requires products to meet basic safety and certification requirements; it also mandates considerations of recyclability, energy efficiency, and water-saving performance. In practice, balancing these stringent environmental considerations while ensuring product performance and a positive consumer experience remains challenging.

- The Health Standard

In the health standard, there is a notable shift from initially recommended "performance indicators", to mandatory requirements. Performance indicators related to health – such as air purification, water purification, sterilization, and antibacterial properties – have been made mandatory. Making product performance mandatory could excessively affect market competition, and present more drawbacks than benefits for future technological innovations and personalized market demands in related industries.

Additionally, the discussions on the draft three standards have also persistently focused on the mandatory implementation of product safety usage lifespan and performance indicators. These two indicators are generally opposed by a majority of enterprises due to various reasonable technical and industry development reasons. Although the call for the mandatory usage lifespan is currently on hold, the compulsory performance indicators have largely been retained in these standards.

4. Implications for Overseas Manufacturers

To date, many of the requirements in the three standards are beyond the direct compliance capability of products currently in the market. To meet all the technical requirements of the three stringent standards, companies will need to increase investment in research and development.

Furthermore, while the new stringent standards cite CCC standards, they also cite some originally non-mandatory standards. This transforms these standards into *de facto* mandatory standards, thus expanding list of standards that home appliance products must comply with. For example, GB/T 4206 was originally a voluntary standard, but its citation by the mandatory Safety Standard means that all subsequent wire identification numbers must comply with this standard. Similarly, GB/T 36932, initially a voluntary standard, is now mandated for compliance in the installation process through its inclusion in the mandatory Safety Standard.

Lastly, the transition period will pose new pressures on businesses. Although the current versions of the three standards provide a two to three years transition period for new products, this timeframe may not be sufficient for existing stock products, thus creating significant compliance pressures for companies.

As these mandatory standards introduce new requirements, overseas home appliance manufacturers will need to face different compliance demands in China, potentially increasing product and management costs, while creating new trade barriers. Therefore, it is recommended that overseas stakeholders closely monitor the development of the three standards and provide feedback.

Introduction of SESEC Project



The Seconded European Standardisation Expert in China (SESEC) is a visibility project co-financed by the European Commission (EC), the European Free Trade Association (EFTA) secretariat and the three European Standardisation Organizations (CEN, CENELEC and ETSI). Since 2006, there has been four SESEC projects in China, SESEC I (2006-2009), SESEC II (2009- 2012), SESEC III (2014-2017), SESEC IV (2018- 2022) and SESEC V (2022-2025). Dr. Betty XU is nominated as the SESEC expert and will spend the next 36 months on promoting EU-China standardisation information exchange and EU-China standardisation cooperation.

The SESEC project supports the strategic objectives of the European Union, EFTA and the European Standardisation Organizations (ESOs). The purpose of SESEC project is to:

- Promote European and international standards in China;

- Improve contacts with different levels of the Chinese administration, industry and standardisation bodies;
- Improve the visibility and understanding of the European Standardisation System (ESS) in China;
- Gather regulatory and standardisation intelligence.

The following areas have been identified as sectorial project priorities by the SESEC project partners: Internet of Things (IoT) & Machine-to-Machine(M2M) communication, communication networks & services, cybersecurity & digital identity, Smart Cities (including transport, power grids & metering), electrical & electronic products, general product safety, medical devices, cosmetics, energy management & environmental protection (including eco-design & labeling, as well as environmental performance of buildings).

Abbreviations

SAMR	State Administration for Market Regulation	国家市场监督管理总局
CAS	China Association	中国标准化协会
CCC	China Compulsory Certification	中国强制认证
CCSA	China Communication Standardization Association	中国通信标准化协会
CEC	China Electricity Council	中国电力企业联合会
CEEIA	China Electrical Equipment Industrial Association	中国电器工业协会
CELC	China Energy Labeling Center	中国能效标识中心
CESI	China Electronic Standardization Institute	中国电子标准化研究所
CMDSA	Center for Medical Device Standardization Administration	医疗器械标准管理中心
CNCA	Certification and Accreditation Administration of China	中国国家认证认可监督管理委员会
CNIS	China National Institute of Standardization	中国国家标准化研究院
CNREC	China National Renewable Energy Center	中国国家可再生能源中心
EPPEI	Electric Power Planning and Engineering Institute	电力规划设计总院
IEC	International Electrotechnical Commission	国际电工委员会
ITEI	Instrumentation Technology and Economy Institute	机械工业仪器仪表综合技术与经济研究所
MEE	Ministry of Ecology and Environment	中国生态环境部
MIIT	Ministry of Industry and Information Technology of People's Republic of China	中国工业和信息化部
MoH	Ministry of Health	卫生部
MoHURD	Ministry of Housing and Urban-Rural Development	住房与建设部
MOT	Ministry of Transport	中国交通运输部
MOST	Ministry of Science and Technology	中国科学技术部
NDRC	National development and reform commission People's Republic of China	中国国家发改委
NIFDC	National Institute of Food and Drug Control	中国食品药品检定研究院
SAC	Standardization Administration of China	国家标准化管理委员
SGCC	State Grid Corporation of China	国家电网
TC	Technical Committee for Standard Development	标准化技术委员会