STC | Your Global Testing, Inspection & Certification Partner

STC Technical Intelligence

STC Technical Intelligence 技術智匯

Issue 2026/01

A Toys & Children's Products

B Amazon Compliance Requirements

C Rail Transit

STC | Your Global Testing, Inspection & Certification Partner

STC Technical Intelligence

STC Technical Intelligence 技術智匯

Issue 2026/01

D Food & Food-related Products

E Textiles & Furniture

F Cosmetics

Your Global Testing, Inspection & Certification Partner

STC Technical Intelligence

STC Technical Intelligence 技術智匯 Issue 2026/01

G Electronic and Electrical Products

STC Technical Intelligence

A | Toys & Children's Products

A.1 China Mandatory Toy Standard GB 6675 Updated to 2025 Edition

On October 5, 2025, the State Administration for Market Regulation and the Standardisation Administration of China jointly issued the 2025 edition of the GB 6675 series standards, which are scheduled to come into force on November 1, 2026, replacing the 2014 edition of the GB 6675 series standards.

The new edition sets more stringent requirements for the safety performance and material safety of toy products, covering mechanical and physical properties, flammability, electrical properties, and chemical properties. Technically, the series is mainly based on international toy safety standards ISO 8124-1 (Mechanical and physical properties), ISO 8124-2 (Flammability), ISO 8124-3 (Migration of certain elements), and IEC 62115 (Safety of electric toys), with some revisions to parameters and requirements .

Key Technical Changes:

Mechanical and Physical Properties

- Fill regulatory gaps for new and special toys: Added requirements and corresponding test methods for yo-yos, flying toys, simulated food toys, toys attached to food, inflatable toys, functional toys, and toy scooters. Clarified safety specifications for special toys or components such as "straps intended to be worn around the neck in whole or in part" and "sleds with drawstrings".

- Refine safety parameters for existing toys: Revised requirements for core clauses such as "small parts", "cords", and "projectile toys"; adjusted the speed limit standard for "electric ride-on toys"; revised the description of the scope of application for "mouth-operated toys"; added explanations for the size measurement method of flexible plastic bags to improve the operability of safety determination for such common toys.

- Refine safety parameters for existing toys: Revised requirements for core clauses such as "small parts", "cords", and "projectile toys"; adjusted the speed limit standard for "electric ride-on toys"; revised the description of the scope of application for "mouth-operated toys"; added explanations for the size measurement method of flexible plastic bags to improve the operability of safety determination for such common toys.

- Adjust existing test rules: Revised original test methods such as "thickness test of plastic films and sheets", "cord test", "toppling test of large and heavy toys", and "sound pressure level measurement" to make test results more accurate and reliable.

- Revise some existing terms: Adjusted the definitions of multiple existing terms such as "ball", "cord", and "projectile mechanism" to make their expressions more accurate and adapt to the development of current toy categories. For example, redefined the scope of "functional magnets" and "large and heavy toys" to fit the current design and manufacturing status of such toys.

- Add a number of key new terms: Added more than 20 terms including "arrow", "flying toy", "remote-controlled flying toy", "toy scooter", and "yo-yo". These new terms correspond to popular toys and components on the market in recent years or those previously lacking clear definitions, providing basic definition support for the safety regulation of related toys.

Flammability

- Add multiple key definitions: Supplemented term definitions for new market toys and scenarios such as chemical toys, extremely flammable liquids, fluttering materials, molded head masks, toy costumes, and toys for children to enter, providing definition support for the flammability control of such toys.

- Revise and delete some old definitions: Revised the four original definitions of flammable gas, flammable liquid, highly flammable liquid, and highly flammable solid to make their expressions more accurate.

- Update requirements for soft-filled toys: Fully revised the technical requirements for soft-filled toys, further refined their flammability compliance standards, and reduced the combustion risk of such popular children's toys.

A | Toys & Children's Products

A.1 China Mandatory Toy Standard GB 6675 Updated to 2025 Edition

- Supplement special test methods: Added specific test methods including loose fillings for toy costume samples, solving the test operation problems of such toys with special structures.
- Adjust multiple test determination rules: Not only revised the determination provisions for test results of toy costumes, but also improved the relevant test specifications for the corresponding sample holders, and optimised the test method for soft-filled toys to make the determination of test results more scientific and rigorous.

Electrical Properties

- Add electromagnetic radiation value clause: This content was not involved in the 2014 edition. With the popularisation of toys with electronic communication functions such as remote-controlled toys and intelligent connected toys, excessive electromagnetic interference or radiation may affect the normal operation of toys and even pose potential risks to children's health. The addition of this clause in the 2025 edition can regulate the electrical safety of such intelligent toys.
- Improve the connection system of test methods and standards: The 2025 edition clearly establishes an electrical safety test method system, specifying that the detection of electrical performance items shall be based on GB/T 19865.

Chemical Properties

GB 6675.1-2025 Toy Safety - Part 1:

- Revised requirements for migratable elements, added control over slime, toy cosmetics, crystal mud, and similar toys; added control over boron.
- Revised plasticisers: Increased from the original 6 phthalates (6P) to 10 phthalates (10P), combining the requirements of the original national standard 6P, EU REACH Annex 17 7P, and US CPSIA 8P.
- For specific toys or materials: Added limits for harmful substances such as formaldehyde, decomposable harmful aromatic amine dyes, polycyclic aromatic hydrocarbons (PAHs), N-nitrosamines and their precursors, formamide, short-chain chlorinated paraffins (SCCPs), total volatile organic compounds (TVOC), and sensitizing fragrances, significantly expanding the coverage of chemical harmful substances in toy products.

GB 6675.4-2025 Toy Safety - Part 4:

- Revised the definition of paper and cardboard, added definitions of crystal mud, modeling clay, and slime.
- Added the definition of accessible and explanations of accessible parts.
- Added limit requirements and correction factors for boron .
- Added dewaxing procedure.

A | Toys & Children's Products

A.2 GB/T 14747-2025: New Safety Standard for Children's Tricycles Implemented

On October 5, 2025, the State Administration for Market Regulation and the Standardisation Administration of China jointly issued GB/T 14747-2025 "Safety of Children's Riding and Activity Products - Children's Tricycles", which fully replaces the GB 14747-2006 standard that has been in use for nearly 20 years and will be officially implemented on November 1, 2026.

Core Update Points (Compared with 2006 Edition)

- Improved Terminology: Added definitions such as "children's tricycle diagram", "accessible", "locking device", and "rigid material"; revised wheelbase diagrams and fracture terms to adapt to new product forms.
- Comprehensive Strengthening of Safety Requirements
    - Completion of mechanical safety: Added safety requirements for shear points, accessibility of hole edges, hinge gaps, etc.; strengthened the firmness requirements for key structures such as folding locking devices, front wheel clamping force, foot trays, and sounding components.
    - New electrical safety: For the first time, incorporated electrical component safety requirements to adapt to electrical components with play functions.
    - Enhanced packaging safety: Added thickness and usage requirements for plastic bags/soft plastic films to prevent children from suffocation risks.
- More Accurate and Rigorous Test Methods
    - Introduced requirements such as the "worst-case principle" and "test load selection"; optimised test sample clamping and fixture attachment installation rules.
    - Improved instrument accuracy standards: Added time accuracy requirements, refined quality and angle measurement accuracy, making test results more reliable.
    - Adjusted core test processes: Updated methods for stability, handlebar stem strength, impact tests, etc.; added special tests for folding locking devices.
    - Improved determination standards: Clarified the qualification criteria after drop and impact tests to reduce ambiguous areas.
- More Standardised Marking and Instructions
    - Safety warnings: Added warning symbol examples, clarified the rules for applying warning content, and strengthened risk prompts.
    - Usage instructions: Supplemented usage instructions for protective devices, multi-person riding, folding functions, storage functions, etc.; added maintenance requirements (such as lubrication, inspection of locking devices).
    - Refined the marking specifications for the manufacturer's name and address to ensure clear traceability.
- Material Safety (Chemical Properties)
    - Revised the expression of the test scope for "maximum limits of migratable elements" and added test exemption conditions.
    - Added limit requirements and test methods for phthalates, polycyclic aromatic hydrocarbons (PAHs), and short-chain chlorinated paraffins (SCCPs).

A | Toys & Children's Products

A.3 GB/T 14748-2025: New Safety Standard for Children's Strollers Implemented

On October 5, 2025, the State Administration for Market Regulation and the Standardisation Administration of China jointly issued GB/T 14748-2025 "Safety of Children's Care Products - Children's Strollers", which fully replaces the GB 14749-2006 standard that has been in use for nearly 20 years and will be officially implemented on November 1, 2026.

The standard applies to children's strollers for one or more children, including two categories: those with a single child weight of 15kg and below, or above 15kg to 22kg. It also covers integrated rear standing boards for children with a maximum weight of 20kg to stand on.

Core Technical Changes (Compared with 2006 Edition)

- Significant Upgrade of Mechanical Safety and Structural Protection
    - Added key structural requirements: Definitions, test requirements, and methods for integrated rear standing boards; assembly, fitting, and safety requirements for matching with children's car safety seat frames.
    - Optimised existing technical clauses: Technical requirements and determination methods for the angle between the seat and backrest, and the length of the backrest; requirements and test methods for the safety of the restraint system; strengthened the reliability of the folding locking system to avoid accidental unlocking; optimised the test method for the parking/braking device to improve braking stability.
- Application Scenarios and Test Methods More in Line with Reality
    - Expanded age coverage: For the first time, incorporated safety requirements for large-weight children (15kg-22kg).
    - Added test items: Flammability test of plush fabrics, effectiveness test of the restraint system.
    - Optimised test methods: Enhanced the number of impacts and adjusted the distribution of impacts in the dynamic durability test to be more in line with daily use wear; simulated actual scenarios such as slopes and steering in the stability test to improve test scientificity; upgraded the methods for feeler gauge test, wheel strength test, and handle strength test, making test requirements and methods more stringent.
- Clearer Terminology and Marking Specifications
    - Added terms: Braking device, operating device, automatic locking device, quick-release mechanism, etc.
    - Revised terms: Optimised the definitions of "children's stroller", "restraint system", and "protected area".
    - Deleted redundant terms: "Safety belt", "cushion", etc.
    - Marking requirements: Deleted the warning note for horizontal strollers "Warning: No cotton pad with a thickness exceeding X mm should be added to the horizontal pocket"; for upright strollers suitable for children from birth with an adjustable angle between the backrest and seat greater than 150°, added the warning "Warning: For infants under 6 months old, the backrest must be adjusted to the most reclined position when in use".
- Material Safety (Chemical Properties)
    - Added limit requirements and test methods for plasticisers, formaldehyde, decomposable harmful aromatic amines, pH (shall comply with Class A requirements of GB 18401), migratable N-nitrosamines and N-nitrosamine precursors, and short-chain chlorinated paraffins (SCCPs)

A | Toys & Children's Products

A.4 GB/T 14749-2025: New Safety Standard for Baby Walkers Implemented

On October 5, 2025, the State Administration for Market Regulation and the Standardisation Administration of China jointly issued GB/T 14749-2025 "Safety of Children's Care Products - Baby Walkers", which fully replaces the GB 14749-2006 standard that has been in use for nearly 20 years and will be officially implemented on November 1, 2026.

The standard applies to baby walkers for infants from the time they can sit up to before they can walk independently, excluding medical walkers and air cushion-supported walkers.

Core Upgrade Highlights (Compared with 2006 Edition)

The 2025 edition comprehensively strengthens the standard from multiple dimensions such as chemical safety, structural protection, and test methods, more in line with current infant safety protection needs.

- Added terms: "Base", "accessible area", "parking device", "braking device".
- New Key Requirements for Structural Protection
  - Added core clauses such as parking devices and stair fall protection, filling the regulatory gap of the old edition for such key structures.
  - Optimised the standard for crotch strap width: not less than 50mm for flexible materials and not less than 20mm for rigid materials.
  - Added electrical performance requirements: If a baby walker contains electrical or electronic components, it shall comply with GB/T 19865.
- Scientific Optimisation of Test Methods
  - The dynamic stability test method has been fully upgraded to be more in line with actual usage scenarios; a special test platform for stair falls has been added, requiring that the walker does not roll dangerously when contacting the platform.
  - Supplemented the parking device test: displacement ≤50mm under a pulling force of 3.6kg is considered qualified.
  - Added flammability test, plastic film thickness test, etc., covering more safety risk points.
- Intuitive and Clear Marking Specifications
  - Added guardian care diagrams.
  - Added warning requirements: "Warning! When the baby can use this walker independently, the push handle installed on the walker should be removed in a timely manner."
- Material Safety (Chemical Properties)
  - Added limit requirements and test methods for plasticisers, formaldehyde, decomposable harmful aromatic amine dyes, pH (shall comply with Class A requirements of GB 18401), migratable N-nitrosamines and N-nitrosamine precursors, short-chain chlorinated paraffins (SCCPs), and the emission of formaldehyde, benzene, toluene, xylene, and total volatile organic compounds (TVOC).

A | Toys & Children's Products

A.5 Taiwan Region Plans to Introduce Statutory Inspection Requirements for Pacifier Clips

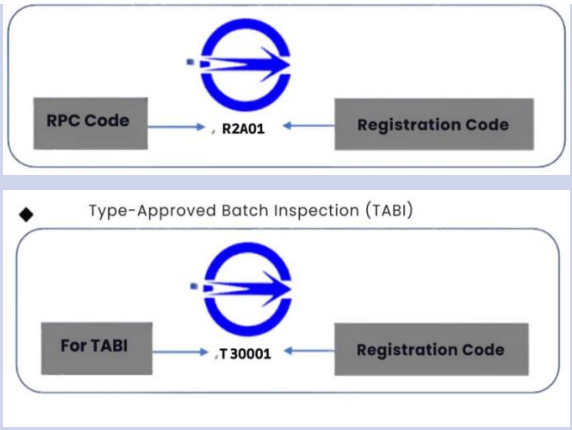
On November 25, 2025, the Bureau of Standards, Metrology and Inspection (BSMI) of the Ministry of Economic Affairs of Taiwan Region, China issued the "Announcement on Statutory Inspection Requirements for Pacifier Clips". The tariff code of this product is: 39[26.90.90.90](26.90.90.90).8-E.

BSMI Announcement: Preannouncement of the draft "Relevant Inspection Regulations for Pacifier Clip Commodities Subject to Inspection".

Background for Formulation

Market sampling inspection results by BSMI show that 67% of randomly purchased pacifier clips failed the physical performance test. Previously, the EU Rapid Alert System for Non-food Products (Safety Gate) has issued relevant alerts many times, and the public is also worried about the potential safety hazards of pacifier clips - such products may cause suffocation and strangulation risks, endangering the safety of infants and young children. Therefore, BSMI plans to include such products in the scope of statutory mandatory inspection to ensure their safety and quality meet the standards.

Proposed Requirements

Inspection Standard	Inspection Method	BSMI Mark
CNS 16041:2018: Child use and care articles − Soother holder	Product certification registration Validation registration (type test mode plus conformity declaration mode) Or Type approval batch inspection	

Note: The listed products are exempt from the relevant tests of clauses 5.3.1, 5.3.2, 5.3.4, 5.3.5, [5.3.6.2](5.3.6.2), 5.3.8, 5.3.9, and 5.3.11.

Deadline for Public Comments: January 26, 2026 (two months after the announcement is issued)

Reference:

https://gazette.nat.gov.tw/egFront/detail.do?metaid=161762&log=detailLog

A | Toys & Children's Products

A.6 Interpretation of Japan Toy Standard ST2025 on Providing Assembly Instructions via QR Code-linked Websites

New clause on "Assembly" in Japan Toy Standard ST2025.

The ST2025 Toy Safety Standard has added clause 4.29 "Assembly", which clarifies the requirements for toy assembly, including general assembly precautions and specific disassembly rules for "children-assembled toys" and "adult-assembled toys".

Interpretation by the Japan Toy Association

Question

Regarding the assembly requirements (Clause 4.29), can the assembly instructions for simple plastic models be provided via a QR code on the product packaging linking to a website?

Answer

If improper assembly of the toy may cause danger: The assembly instructions must be provided to the consumer simultaneously when the toy is received. Therefore, the method of obtaining instructions via a QR code linking to a website is generally not considered to meet this requirement.

If assembly itself is the core value of play, and the use after assembly is not the main purpose: The assembly instructions can be provided via a QR code on the product packaging linking to a website, etc.

This judgment requires case-by-case analysis, focusing on whether the core of the product is "assembly" or "use after assembly".

Specific Examples

"Adult-assembled toys" (e.g., ride-on toys, carousels, amusement facilities, etc.): The toy needs to be "used after assembly". Assembly is a key link to ensure safe use, and the core lies in "assembly" - therefore, the assembly instructions must be attached to the product in the form of a leaflet, etc.

"Children-assembled toys" (e.g., plastic models, building blocks, etc.): If assembly itself is the core play value and "use after assembly" is not the main purpose, the assembly instructions can be provided via a QR code linking to a website.

Reference:

https://www.toys.or.jp/stcunyou20251024.pdf

A | Toys & Children's Products

A.7 CEN Revises Standard for Household Toy Trampolines

On October 29, 2025, the European Committee for Standardisation (CEN) issued the standard EN 71-14:2025 "Safety of Toys - Part 14: Household Trampolines", which will replace the current version EN 71-14:2018.

Scope of Application

This standard specifies the requirements and test methods for household toy trampolines (including their auxiliary devices and enclosures), which are designed for single-person use indoors or outdoors at the same time. This standard does not cover trampolines subject to other standards, such as trampolines for gymnastics equipment (EN 13219:2008), floating inflatable trampolines (EN ISO 25649:2017), and trampolines for public playgrounds or medical purposes.

Citation in the Official Journal of the EU

To align with the Toy Safety Directive 2009/48/EC, this revised standard is expected to be included in the Official Journal of the EU soon.

Main Changes

Item	Content of Change
Exemption requirements in EN 71-1	Some exemption requirements in EN 71-1 have been deleted, and these exemptions are now transferred to the revised EN 71-1:2025. This is a structural adjustment with no changes to technical requirements.
Requirements for pinching and crushing risks	The requirements related to pinching and crushing risks have been slightly revised.
Warning requirements	The requirements for warnings, markings, and instructions have been updated.
Basis for revision	Added clear guidelines for pinching/crushing risks to bystanders, focusing on limiting the accessibility of springs (A2 and A6).

Effective Dates

Item	Date	Latest Completion Timeframe
Date of Announcement (DOA)	2026-01-31	This EN standard must be announced at the national level of member states.
Date of Application (DOP)	2026-04-30	This EN standard must be implemented at the national level of member states (by means of equivalent national standards or recognition).
Date of Withdrawal (DOW)	2026-10-31	National standards of member states conflicting with this EN standard must be withdrawn.

Reference:

https://standards.cencenelec.eu/dyn/www/f?p=CEN:10:0::FSP_PROJECT.FSP_ORG_ID:78514.6036&cs=11CB545789F554A209F2976F96F09F773

B | Amazon Compliance Requirements

B.1 Amazon Product Requirements and Compliance (PRC) Policy: Direct Validation

Direct Validation

Recently, Amazon launched an important product requirement and compliance policy: For certain product categories, compliance must be directly validated (Direct Validation) by Testing, Inspection and Certification (TIC) institutions recognised by Amazon. This new policy means that for certain categories, the traditional model of sellers uploading compliance reports themselves will no longer apply. Sellers need to adjust their compliance processes in a timely manner and select professional, efficient, and Amazon-recognised TIC institutions for compliance validation and review.

What is Amazon DV (Direct Validation)?

DV: Direct Validation. Amazon requires that in specific product categories, compliance certificates meeting Amazon's control requirements must be directly provided by Testing, Inspection and Certification institutions (TICs).

According to the agreement with the seller, a DV TIC institution can conduct engineering evaluation, testing, and certification in accordance with Amazon's policies using one of the following two methods:

- Conduct engineering evaluation and testing of the product in accordance with the relevant standard requirements specified in the guidelines; or
- Certify the test report (documents provided by the seller).

Main Services Provided by DV TIC Institutions to Sellers:

- Product compliance validation – Collect required compliance documents for validation and certification, including test reports and other supporting documents, to verify product compliance.
- Label and marking review (user/service manual, product label/marking).
- Rectification process – When there are rectifiable non-conformities in the validation, carry out the rectification process with the seller and verify its conformity.
- External document certification (GCC, CPC, CofAs, COCs, other certificates, etc.) and upload – If the final conclusion is PASS, the TIC institution will upload the certificate to the laboratory platform.

STC is an Amazon-recognised Direct Validation (DV) audit institution (TIC) for the Toys category and Closet Storage Units (CSU), which can help sellers quickly complete direct validation for related categories.

C | Rail Transit

C.1 Environmental Assessment of Rail Transit Vehicles Part 2: Air Quality Online Monitoring System

Introduction to the On-line Air Quality Monitoring System for STC's Environmental Assessment of Rail Transit Vehicles

Overview

Utilizing a custom-developed online monitoring system installed on rail vehicles, this system enables online gas collection, online gas analysis, real-time control, real-time viewing, data management, and comparative analysis. It allows for continuous monitoring of data such as CO_2, PM2.5, TVOCs, temperature, and humidity, providing real-time insight into the air quality conditions within passenger compartments. By employing a cloud platform to record compartment data, it assists operational departments in analyzing and formulating appropriate measures to ensure a good environmental air quality within the vehicles, thereby enhancing operational management quality. Furthermore, it provides a theoretical basis for the future development of rail vehicles.

System Design

The entire system platform consists of three parts: the in-vehicle gas quality detection cluster, the gas quality detection data analysis platform, and the gas quality detection data visualisation platform.

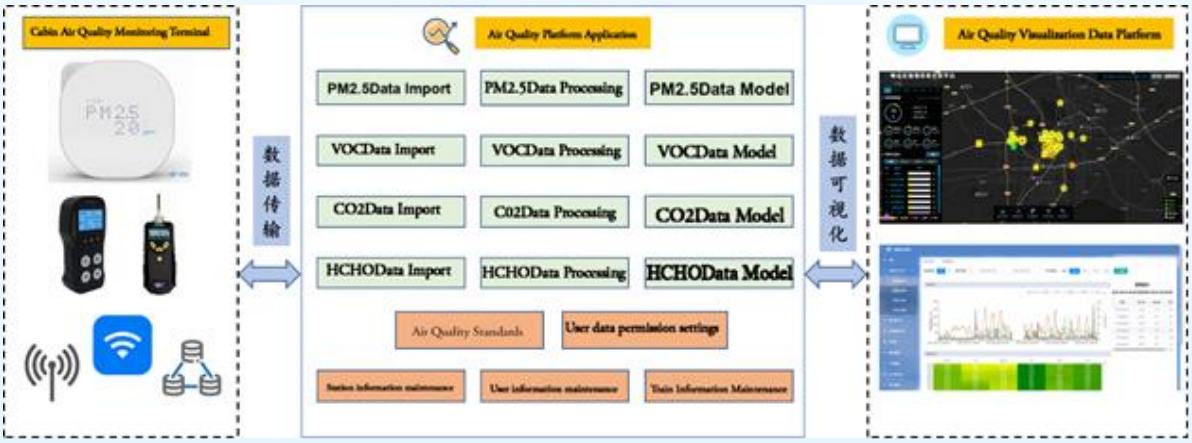


Figure 1 Technical Route

C | Rail Transit

C.1 Environmental Assessment of Rail Transit Vehicles Part 2: Air Quality Online Monitoring System

Online Air Quality Monitoring System

The in-vehicle online air quality monitoring system comprises air quality monitoring terminals, a cloud platform, and a user client (user PC or mobile phone). The system collects and stores data such as CO_2, PM2.5, SO_2, CO, VOCs, formaldehyde, temperature, and humidity from the passenger compartments via the monitoring terminals.

Table 1 Monitoring Factors of the Online Air Quality Monitoring System

No.	Monitoring Factor		Measuring Range	Resolution	Indication Error	Response Time
1	Gas Module	Formaldehyde	0-10ppm	0.01ppm	±10% or ±0.05ppm	≤120s
2		Carbon Monoxide	0-200ppm	0.1ppm	±10% or ±5ppm	≤120s
3		Carbon Dioxide	0-5000ppm	1ppm	±10% or ±50ppm	≤120s
4		Sulfur Dioxide	0-10ppm	0.01ppm	±10% or ±0.1ppm	≤120s
5		Ammonia	0-10ppm	0.01ppm	±10% or ±0.1ppm	≤120s
6		Radon	0.10 ~ 99.99 pCi/L	0.30 cpm/pCi/L	±15% or ±0.5pCi/L	≤120min
7		Total Volatile Organic Compounds	0-100ppm	0.01ppm	±10% or ±0.1ppm	≤120s
8	Particulate Matter Module	PM_1	0-500μg/m³	1μg/m³	±10% or ±10ug/m³	≤120s
9		$PM_{2.5}$	0-1000μg/m³	1μg/m³	±10% or ±10ug/m³	≤120s
10		PM_{10}	0-1000μg/m³	1μg/m³	±10% or ±10ug/m³	≤120s
11	Temperature and Humidity	Temperature	-20-80℃	0.1℃	±5% or ±2℃	≤120s
12		Humidity	0-100%RH	0.1%RH	±5% or ±3%RH	≤120s

C | Rail Transit

C.1 Environmental Assessment of Rail Transit Vehicles Part 2: Air Quality Online Monitoring System

Data Management Platform

- Platform Function Analysis

Based on the actual monitoring situation within passenger compartments, this platform establishes a rapid assessment technology for the effectiveness of in-vehicle air quality improvement measures. It aims to enhance the operational service quality of rail vehicles and passenger comfort, providing a basis for formulating air quality improvement strategies.

- Platform Function Design

    - Real-time Pollution Analysis

    Monitoring data from all compartments within the system are categorised and displayed according to compartment number and pollution type. The icons for monitoring points in each compartment are dynamically displayed in different colors based on pollution level. The icons also indicate the specific compartment location, enabling users to intuitively and easily grasp the air quality status of each compartment.

    - Chart Analysis

    The graphical display of system monitoring parameters is presented in various forms such as line charts, bar charts, and tables. The content displayed includes real-time and historical minute-by-minute and hourly values of each monitoring parameter's concentration. This facilitates users in viewing the changing trends of various monitoring parameters over a selected period. Simultaneously, comparative analysis of various parameters between different monitoring points can be performed. Users can independently set the display time range. When exporting or printing, multiple formats are supported, including JPG images, PDF, EXCEL, and WORD documents.

    - Historical Data Query

    The system provides a historical data query function. By setting options such as time type, station/site, and query time, users can view historical data information for the selected site, including various monitoring parameters and data update times. Query results support export in EXCEL document format.

    The platform also features functions such as site management, device monitoring, SMS configuration, and user management.

Mobile User Terminal

- Mobile Terminal Management

Real-time display of real-time monitoring data of all carriages within the user's authority, and rendering according to the level of monitoring indicators, which are divided into six levels: excellent, good, mild, moderate, severe, and critical.

- Data Anomaly Alarm Management

Data anomaly alarm information for the current site is displayed in a data list format. Users can view real-time data for the currently alarming site. The client receives alarm information from the push center in real-time and provides real-time alarm reminders.

D | Food & Food-related Products

D.1 JRC Releases Latest Guidelines on Testing Conditions for Kitchenware Articles in Contact with Foodstuffs

On November 28, 2025, the Joint Research Centre (JRC) of the European Commission released the 5th edition of "Testing conditions for kitchenware articles in contact with foodstuffs". The core is to provide unified migration test conditions for household utensils to ensure the comparability of official control data. Its annexes fully replace the previous four editions and the 2009 old guidelines, covering multiple materials, utensil types, and key test parameters. The following is a structured collation by STC:

- **Core Positioning and Scope of Application**
  - Applicable objects: Limited to household utensils, providing a reference benchmark for the testing conditions of industrial utensils.
  - Core objective: Unify parameters such as contact temperature, time, and food simulants to support the comparability of results of EU FCM official control (Regulation (EU) 2017/625).
  - Regulatory connection: The selection of food simulants follows Annex III of the EU Plastic Regulation (EU) No 10/2011, and migration testing and compliance determination are aligned with the requirements of the FCM framework regulation
- **Core Annexes and Key Content**

This edition takes annexes as the core, clarifies test schemes by material and utensil type, with key updates as follows:

Annex	Title	Core Content	Key Updates
Annex 1	Examples of Utensils and Selection of Simulants	Added utensil types such as covered jars, immersion wine coolers, and goblets; matched simulants according to food type/characteristics (e.g., 3% acetic acid for acidic foods, isooctane for fatty foods)	Expanded the list of utensils and refined the rules for simulant adaptation
Annex 2	Testing Conditions for Plastics and Plastic Coatings	Specified temperature-time combinations for migration testing of reusable/disposable plastic utensils (e.g., boiling at 100℃ for 30min, contact at 70℃ for 2h, etc.); clarified requirements for sample preparation, soaking ratio, and blank control	Optimised cycle test parameters for reusable scenarios
Annex 3	Inorganic Materials and Inorganic Coatings	Covers metals/alloy, ceramics, glass, stoneware, enamel, etc.; sets migration conditions for different utensils (e.g., ceramics with 4% acetic acid at 22℃ for 24h or boiling for 1h); emphasises the dissolution limits of specific elements (lead, cadmium, chromium, etc.) in metals	Unified the testing process for inorganic coatings and refined the benchmark for element dissolution determination
Annex 4	Non-plastic Organic Materials and Coatings	Includes silicone, rubber, epoxy coatings, treated paper/cardboard, cork, etc.; sets test conditions according to material temperature resistance and usage scenarios (e.g., silicone utensils at 100℃ for 30min, rubber gaskets at 70℃ for 2h)	Added testing schemes for cork/wooden utensils and supplemented migration requirements for organic coatings after curing
Annex 5	Multi-material Utensils and Special Cases	Proposed split testing and combined evaluation methods for composite structures (e.g., plastic handles + metal pot bodies); clarified special testing processes for special utensils (e.g., vacuum insulation cups, non-stick pan coatings)	Solved the difficulty of boundary testing for multi-materials and refined the requirements for pre-testing of coating integrity

D | Food & Food-related Products

D.1 JRC Releases Latest Guidelines on Testing Conditions for Kitchenware Articles in Contact with Foodstuffs

- **Key Test Parameters and General Requirements**
  - General Process of Migration Testing
    - Sample preparation: Sample according to the maximum contact area of the utensil, clean to avoid contamination, and set blanks and parallel samples.
    - Simulant selection: Strictly match food types (aqueous, acidic, alcoholic, fatty).
    - Condition setting: Determine temperature-time according to the "worst-case usage scenario" (e.g., boiling for cooking, room temperature for 24h for long-term storage).

    Execution and determination: Extract according to standard methods, detect the concentration of migrants, and the results must meet the limit requirements of the corresponding material.
  - Key Material-specific Points
    - Inorganic materials: Ceramics/enamel need to pay attention to the dissolution of lead and cadmium; metals such as stainless steel focus on testing the migration of chromium, nickel, manganese, etc.
    - Organic materials: Silicone needs to test total migration and specific additives (e.g., peroxides); rubber focuses on nitrosamine release.
    - Coatings: Adhesion test should be performed first, then migration test to avoid coating shedding affecting the results.

D | Food & Food-related Products

D.2 Netherlands Revises Commodity Act on Food Contact Materials (FCMs) and Articles

On November 26, 2025, the State Secretary for Health, Welfare and Sport of the Netherlands officially issued an amendment with reference number 4274094-1090928-WJZ, revising the technical requirements for food contact materials (FCMs) and related articles in the "Commodity Act (Packaging and Consumer Goods Regulations)", which came into force on November 27, 2025. The regulation was originally formulated in March 2014 to regulate the production, sale, and use of packaging and consumer goods in contact with food, ensuring consumer health and safety.

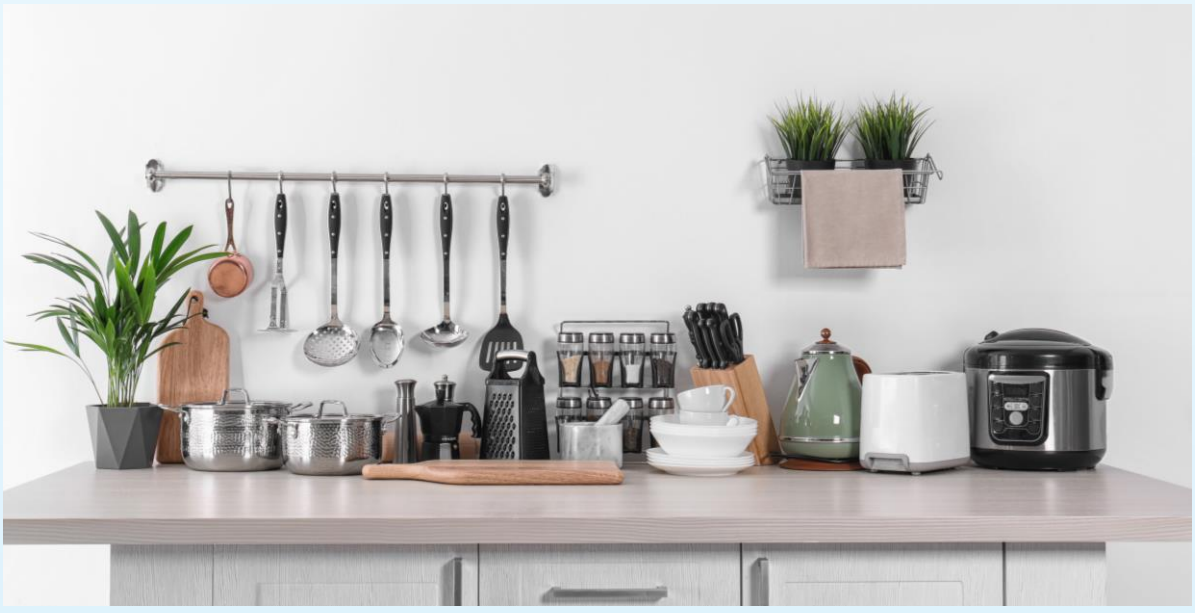
The core objectives of this revision include three aspects: first, to further strengthen the safety control of food contact materials, reduce the risk of harmful substance migration by updating technical indicators such as specific migration limits (SML); second, to promote the coordination between national standards and EU regulations, achieving technical alignment with core EU directives such as the EU Plastic Regulation for Food Contact Materials (EU) No. 10/2011; third, to improve the scope of regulatory coverage, fill the regulatory gaps for some substances, and enhance the scientificity and operability of the regulation.

Core Technical Revision Content

The technical revisions of this amendment focus on three major areas: general requirements for recycled plastics, specific migration limits (SML) for metal materials, and usage specifications for coating materials. The specific technical parameter adjustments are as follows:

- Update of References to Recycled Plastic Regulations

In the general requirements section, the amendment clearly replaces the originally referenced recycled plastic regulation (EC) 282/2008 with the latest EU recycled plastic regulation (EU) 2022/1616. This adjustment means that enterprises in the Netherlands using recycled plastics to produce food contact materials must strictly follow the technical requirements of (EU) 2022/1616 regarding recycled process evaluation, safety report preparation, and labeling, to ensure the safety and compliance of recycled materials.



D | Food & Food-related Products

D.2 Netherlands Revises Commodity Act on Food Contact Materials (FCMs) and Articles

- Revision of Specific Migration Limits (SML) for Metal Materials

Metal materials are one of the core areas of this revision. The amendment comprehensively updated the SML of 19 metal substances, including two types of adjustments: tightening the limits of existing substances and adding control over new substances. The specific technical parameters are as follows:

Metal Substance Category	Specific Substance	SML before Revision(mg/kg)	SML after Revision(mg/kg)	Remarks
Existing substances (limit adjustment)	Arsenic	0.01	0.002	Limit tightened
	Cadmium	0.01	0.005	Limit tightened
	Chromium	0.1	0.25	Limit tightened
	Cobalt	0.05	0.02	Limit tightened
	Copper	5	4	Limit tightened
	Manganese	0.6	1.8	Limit relaxed
	Vanadium	0.05	0.01	Limit tightened
	Lithium	0.6	0.048	Limit tightened
New controlled substances	Barium	None	1.2	First-time control
	Beryllium	None	0.01	First-time control
	Iron	None	40	First-time control
	Mercury	None	0.003	First-time control
	Molybdenum	None	0.12	First-time control
	Thallium	None	0.0001	First-time control, strictest limit
	Tin	None	100 (unless otherwise specified in (EU) 2023/915)	First-time control
	Silver	None	0.08	First-time control
Substances with unchanged limits	Aluminum, antimony, bismuth, lead, nickel, zinc, zirconium			Continued original technical requirements

D | Food & Food-related Products

D.2 Netherlands Revises Commodity Act on Food Contact Materials (FCMs) and Articles

- Revision of Technical Requirements for Coating Materials

For coating materials in direct contact with food, the amendment proposes new technical requirements in terms of substance use restrictions and migration limits, including:

Substance Category	Specific Substance/Reaction Product	Usage Limit Requirement	SML before Revision (mg/kg)	SML after Revision (mg/kg)	Remarks
Existing substances	Adipic acid dihydrazide	Shall not be used in coatings in direct contact with acidic food	0.05	5	Migration limit adjusted
Newly permitted specific reaction products	Reaction product of aziridine and 1,6-diisocyanatohexane homopolymer, blocked with butylpropylene oxide and monomethoxypolyol	Included in the list of permitted substances for coating materials	None	0.05	SML clearly specified for the first time
	Reaction product of aziridine and 1,6-diisocyanatohexane homopolymer (blocked with butylpropylene oxide) and monomethoxypolyol (CAS No.: 2416007-57-1)	Included in the list of permitted substances for coating materials	None	0.005	SML clearly specified for the first time, with CAS number identification

- Other Technical Coordination and Clarification

The amendment also supplements some technical clarification clauses to ensure coordination and consistency with EU regulations. For example, it clarifies that the release of primary aromatic amines (PAA) in materials and articles made of dyes prepared from aromatic isocyanates or diazo coupling shall comply with the requirements of Section 2 of Annex II of EU Regulation (EU) No. 10/2011; unifies the terminology of related substances to avoid regulatory ambiguity.

D | Food & Food-related Products

D.3 Official Journal of the EU Publishes Implementation Guide C/2025/6721: Q&A on (EU) 2024/3190 (BPA Ban in FCMs)

On December 17, 2025, the Official Journal of the EU published Implementation Guide C/2025/6721, which provides detailed interpretation of Regulation (EU) 2024/3190 (BPA Ban in Food Contact Materials) in the form of special questions and answers (Q&A). The core objective of this guide is to clarify the technical ambiguous areas in the implementation of the original regulation, provide authoritative technical basis for industry compliance practices, and ensure the smooth implementation of the BPA ban. This summary focuses on the core technical points of the guide, sorting out from key dimensions such as regulatory background, scope of application, boundary of controlled substances, technical requirements for compliance, and transition period arrangements.

- **Regulatory Background and Guide Positioning**

Bisphenol A (BPA) has attracted much attention due to its potential endocrine-disrupting properties. Based on the latest scientific opinion of the European Food Safety Authority (EFSA) in 2023 (reducing the tolerable daily intake of BPA to 0.2ng/kg body weight), the EU adopted Regulation (EU) 2024/3190 in December 2024, comprehensively tightening the restrictions on the use of BPA, revising (EU) No 10/2011 and repealing (EU) 2018/213, realizing the complete ban of BPA in food contact materials and expanding the control to other harmful bisphenol substances.

As a supporting technical document, Guide C/2025/6721 addresses practical technical issues of widespread concern in the industry through Q&A, covering core technical links such as definition of scope of application, boundary of controlled substances, detection and verification requirements, and compliance transmission in the supply chain, providing clear technical guidance for enterprises' compliance assessment, product adjustment, and market access.

Summary of Core Technical Points

- **Technical Definition of Scope of Application**

The guide clarifies the applicable boundary of Regulation (EU) 2024/3190, providing technical definitions from three dimensions: material type, product form, and production chain:

- **Scope included in control :** Covers materials and articles such as plastics, epoxy resin coatings, printing inks, adhesives, rubber, ion exchange resins, and silicone; clarifies that external components of food contact materials (even if not in direct contact with food) that may cause harmful substances to migrate to food during normal use must also be included in the control; the control covers the entire production chain from raw materials, intermediate products to final products.

- **Clearly excluded scope :** Paper and cardboard, food contact materials and articles containing recycled materials (only for trace pollution inadvertently introduced), enamel products, and materials and articles for pet food contact are not within the scope of control; permanently connected pipelines of large containers with a capacity exceeding 1000 liters are exempt, but pipelines with a large specific surface area (S/V) or small pipelines are not eligible for exemption.

- **Technical Boundary of Controlled Substances**

The guide refines the control list and technical requirements of bisphenol substances, clarifying the control logic of "complete ban + limited exemption":

- **Core prohibited substances:** Completely prohibit the use of BPA (CAS: 80-05-7) and its salts in the manufacture of food contact materials and articles, and prohibit the placement of products containing such substances on the EU market; at the same time, include 5 bisphenol derivatives with clear hazardous properties in the prohibited scope, including bisphenol S (CAS: 80-09-1), 4,4'-(1,3-dimethylbutyl)diphenol (CAS: 6807-17-6), phenolphthalein (CAS: 77-09-8), bisphenol AF (CAS: 1478-61-1), and tetrabromobisphenol A (CAS: 79-94-7).

- **Extended control principle:** Any bisphenol derivative classified as a Category 1A/1B CMR substance (carcinogenic, mutagenic, reproductive toxic) or a Category 1 endocrine disruptor in the future will be automatically included in the control scope (except for exemption scenarios). For example, bisphenol F (CAS: 620-92-8) has entered the ECHA unified classification and evaluation process and may be included in the control in the future.

D | Food & Food-related Products

D.3 Official Journal of the EU Publishes Implementation Guide C/2025/6721: Q&A on (EU) 2024/3190 (BPA Ban in FCMs)

- **Special substance requirements:** Bisphenol A diglycidyl ether (BADGE, CAS: 1675-54-3) can still be used as a plastic monomer, but food contact materials and articles made from it must ensure no BPA residue, and the residue must meet the detection limit requirement.

- **Exemption scenarios:** Only two specific exemptions are retained. One is used as a liquid epoxy resin monomer in varnishes and coatings, applicable to self-supporting food contact containers with a capacity >1000 liters, and must ensure no migration and be cleaned and rinsed before first use; the other is used as a manufacturing monomer for polysulfone filter membrane modules without additional restrictions.

- **Technical Requirements for Compliance Verification**

The guide clarifies the technical path for enterprise compliance verification, including detection requirements, declaration of conformity, and supply chain transmission requirements:

- **Detection technical requirements:** Products within the exemption scope must prove that the BPA migration amount does not exceed 1μg/kg (detection limit); products using permitted substances such as BADGE must test the BPA residue, which also needs to meet the detection limit requirement of 1μg/kg; although the guide does not mandate testing for all products, it clearly states that testing or modeling calculations are effective technical means to prove compliance, and enterprises must verify that their products have no residues or migration of prohibited bisphenol substances through reasonable technical methods.

- **Declaration of Conformity (DoC) requirements:** All products within the scope of control (whether using bisphenol substances or not) must have a declaration of conformity issued by the operator at the corresponding stage, except for the retail stage; the declaration must include operator information (identity, address, contact information), product information (name, specifications), declaration date, list of bisphenol substances used, and a confirmation statement of compliance with Regulation (EU) 2024/3190 and Articles 3, 15, and 17 of (EC) No 1935/2004; the declaration must be effectively transmitted in all links of the supply chain to ensure traceability.

- **Import and export technical rules:** Products exported from the EU to third countries are generally not subject to the ban, but must have complete traceability documents (including clear destination labeling) to facilitate member states to verify whether there is re-export to the EU market; products imported into the EU apply the same technical requirements as local products, and importers are responsible for compliance verification to ensure that products meet the technical specifications of the ban and the guide.

- **Technical Coordination Requirements for the Transition Period**

The guide clarifies the transition period deadlines for different types of products, providing clear time guidance for enterprises' product inventory clearance and technical transformation, with specific classifications as follows:

- Disposable food contact materials and articles: Ordinary products can continue to be sold until July 20, 2026; special products (used for preserving vegetables/fruits, aquatic products, or products with only BPA varnish/coating on the metal outer surface) can be sold until January 20, 2028.

- Reusable food contact materials and articles: Ordinary products can be first placed on the market until July 20, 2026; reusable products for professional food production equipment that comply with the rules before the ban takes effect can have their first market placement extended to January 20, 2028; all reusable products can remain on the market until January 20, 2029 at the latest (to complete inventory clearance).

Reference:

https://eur-lex.europa.eu/eli/C/2025/6721/oj/eng/pdf

E | Textiles & Furniture

E.1 Core Requirements and Differences of Formaldehyde Emission Limits for Wood-based Panels in Major Global Markets

There are significant differences in the core requirements for formaldehyde emission limits of wood-based panels in major global markets. China's new standard (GB 18580-2025), US CARB, EU EN, and Japan JAS are the most influential systems. China's ENF grade limit is leading globally, while US NAF focuses on formaldehyde-free addition control. The following is a structured collation of the core requirements of various countries by STC.

Chinese Standards (GB Series)

- Mandatory national standard: GB 18580-2025 (implemented on June 1, 2026), adopting the 1m³ climate chamber method。

Product Category	Limit	Limit Mark
Wood-based panel products	E_0 grade ≤0.050mg/m³	E_0
Wood-based panels	E_1 grade ≤0.124mg/m³	E_1

- Recommended classification: GB/T 39600-2021, divided into three grades:

Grade	Formaldehyde Emission Limit	Application Scenario
E_{NF}	≤0.025mg/m³	Formaldehyde-free added products
E_0	≤0.050mg/m³	Products in direct contact with the indoor environment
E_1	≤0.124mg/m³	Wood-based panel substrates

- Core points: No edge sealing during testing, close to actual use; E_{NF} grade is one of the strictest numerical limits globally.

European Standards (EN Series)

- Core standards: EN 717-1 (climate chamber method), EN 13986 (performance of wood-based panels). Only E_1 grade is the indoor access standard, with a limit of ≤0.124mg/m³ (climate chamber method) or ≤1.5mg/L (desiccator method). E_2 grade (≤5.0mg/L) can only be used indoors after facing or outdoors.
- Implementation requirements: Member states generally only accept E_1 grade products. Some countries (such as Germany) will also add stricter environmental certifications such as Blue Angel, requiring the limit to be about 65%-50% of the E_1 grade.

US Standards (CARB and EPA)

- CARB (most influential globally):

Certification Grade	Core Requirements	Typical Limit (Climate Chamber Method, ppm)
P1	Basic limit	Hardwood plywood ≤0.08, particleboard ≤0.18, MDF ≤0.21
P2	Enhanced control	Hardwood plywood ≤0.05, particleboard ≤0.09, MDF ≤0.11
NAF	Formaldehyde-free addition	No formaldehyde-based adhesives added during production, emission ≤ natural wood background value (about 0.04–0.05mg/m³)

- EPA TSCA Title VI: Equivalent to CARB P2, a federal-level access requirement covering the entire US market.

E | Textiles & Furniture

E.1 Core Requirements and Differences of Formaldehyde Emission Limits for Wood-based Panels in Major Global Markets

Japanese Standards (JAS F Star Rating)

- Core standard: JIS A 1460-2015 (desiccator method, unit mg/L), divided into four grades:

Star Rating	Formaldehyde Emission Limit	Indoor Usage Restriction
F★	≥1.5mg/L	Prohibited for indoor use
F★★	0.5–1.5mg/L	Strictly limited usage
F★★★	0.3–0.5mg/L	Appropriately limited usage
F★★★★	≤0.3mg/L(average value), ≤0.4mg/L(maximum value)	No usage restriction

- Conversion reference: F4 star is approximately equivalent to China's E0 grade; 0.3mg/L (desiccator method) ≈ 0.03mg/m³ (climate chamber method).

Standards of Other Countries/Regions

Country/Region	Core Standard	Limit and Method
Australia/New Zealand	AS/NZS 4266.17	Desiccator method ≤1.8mg/L (particleboard), ≤1.1mg/L (MDF); extraction method ≤10mg/100g
South Korea	KS M 1502	Equivalent to EU E_1 grade, climate chamber method ≤0.124mg/m³
Canada	CSA 0437.0	Refer to CARB P2, with stricter requirements for some categories

Compliance Recommendations

- Export to EU/South Korea: Ensure E_1 grade (≤0.124mg/m³), preferentially adopt the climate chamber method for testing and retain the report.
- Export to the US: Meet CARB P2 or NAF according to the category; NAF requires providing a formaldehyde-free adhesive declaration and supply chain records.
- Export to Japan: Prefer F4 star; the desiccator method test report must indicate the average value and maximum value.
- Domestic sales: From 2026 onwards, products must meet E_0 grade, substrates meet E_1 grade; ENF grade can be used as a high-end selling point.

F | Cosmetics

F.1 Updates on US Cosmetics Regulations

California, USA Introduces New Restrictions on Multiple Synthetic Musks - October 8, 2025

On October 8, 2025, the government of California, USA issued Assembly Bill No. 60 "Musk Reduction Act" and amended Section 108980 of the "Health and Safety Code". Starting from January 1, 2027, it is prohibited for any person or entity to manufacture, sell, deliver, possess, or offer for commercial sale any cosmetics intentionally added with the following ingredients:

- Musk ambrette (CAS 83-66-9)
- Musk tibetene (CAS 145-39-1)
- Musk moskene (CAS 116-66-5)
- Musk xylene (CAS 81-15-2)

At the same time, the addition amount of Musk ketone (CAS 81-14-1) in cosmetics is regulated:

- Perfume ≤ 1.4%
- Eau de toilette ≤ 0.56%
- Other products (excluding oral products) ≤ 0.042%
- Oral products are prohibited from intentionally adding Musk ketone.

California, USA to Ban Specific Chemical Components in Hair Straightening Products - October 11, 2025

On October 11, 2025, the Governor of California signed Senate Bill No. 236, also known as the "Combating Unsafe Relaxers (C.U.R.L.) Act".

This bill specifically targets hair straightening products used for chemically straightening curly, coiled, or tightly curled hair, prohibiting the production, sale, or distribution of related products intentionally added with the following ingredients in California :

- Formaldehyde (CAS: 50-00-0)
- Isobutylparaben (CAS 4247-02-3)
- Isopropylparaben (CAS 4191-73-5)
- Cyclohexylamine (CAS 108-91-8)
- Cyclotetrasiloxane (CAS 556-67-2)
- Diethanolamine perfluorooctane sulfonate (CAS 70225-14-8)
- Dibutyl phthalate (CAS 84-74-2)
- Diethylhexyl phthalate (CAS 117-81-7)
- Lily aldehyde (CAS 80-54-6)

The bill requires the Department of Toxic Substances Control to formulate specific implementation rules by January 1, 2030, and publish testing standards by January 1, 2028.

F | Cosmetics

F.2 Updates on UK Cosmetics Regulations

"Cosmetic Products (Restriction of Chemical Substances) Regulations 2025 No. 2" (UK) Updated

The UK will implement the "Cosmetic Products (Restriction of Chemical Substances) Regulations 2025 No. 2" (S.I. 901) on January 21, 2026. This regulation aims to strengthen the supervision of the use of specific chemical substances in cosmetics to enhance consumer safety. The regulation mainly manages the potential health risks of the chemical substance 2-hydroxy-4-methoxybenzophenone (commonly known as Oxybenzone) in cosmetics.

Product classification and corresponding limit standards:

- Skin products (including aerosol sprays and pump sprays): The maximum allowable concentration is 2.2% (if used as a formulation preservative, the concentration shall not exceed 0.5%; if used as a formulation preservative at this concentration, its concentration as a UV filter shall be ≤1.7%);
- Facial, hand, and lip products (excluding aerosol sprays and pump sprays): The maximum allowable concentration is 6% (if used as a formulation preservative, the concentration shall not exceed 0.5%; if used as a formulation preservative at this concentration, its concentration as a UV filter shall be ≤5.5%);
- All other cosmetics: The maximum allowable concentration is 0.5%;

Notes:

- Products already on the market before January 21, 2026, can continue to be sold until July 21, 2026, provided they comply with the previous regulatory requirements。
- This regulation is consistent with the EU Cosmetics Regulation (EC) No. 1223/2009, and Annex VI has been updated to include all revisions up to and including November 11, 2025.

Draft "Cosmetic Products (Restriction of Chemical Substances) Regulations 2026" (UK)

On October 31, 2025, the UK submitted a notification to the World Trade Organisation (WTO) on the draft "Cosmetic Products (Restriction of Chemical Substances) Regulations 2026". The draft was formulated by the Office for Product Safety and Standards (OPSS) under the UK Department for Business and Trade, aiming to revise the retained Regulation (EC) No 1223/2009 in Great Britain and introduce stricter control over various cosmetic ingredients to enhance consumer safety. The draft will be open for comments until December 30, 2025.

Effective date: July 15, 2026, with some clauses delayed until August 15, 2026, such as:

- Cosmetics containing prohibited substances can continue to be sold until January 15, 2027, but must comply with previous regulations and be placed on the market before July 15, 2026.
- Products containing substances classified as CMR can continue to circulate until February 15, 2027, provided these products were on the market before August 15, 2026.

Regulation overview: This revision targets a number of chemical substances with potential health risks, including carcinogenic, mutagenic, and reproductive toxic substances.

Three key updates include:

- Formaldehyde releasers: All finished products containing formaldehyde-releasing preservatives with a concentration exceeding 0.001% must be labeled with: "Caution: releases formaldehyde".
- Prohibition of the use of sunscreen 3-(4-methylbenzylidene)-d1-camphor (4-MBC/Enzacamene): This raw material will be completely prohibited for use in cosmetics due to potential endocrine-disrupting and reproductive toxic risks.
- Addition of 16 new CMR substances to Annex II (list of prohibited substances).

Original link: https://members.wto.org/crnattachments/2025/TBT/GBR/25_07356_00_e.pdf

G | Electronic and Electrical Products

G.1 Technical Summary of the Revised EU Regulation (EU) 2025/2052: Repealing (EU) 2019/1782, Ecodesign Requirements for External Power Supplies, Wireless Chargers, Wireless Charging Pads, Portable Battery Chargers, and USB Type-C Cables

On October 13, 2025, the European Commission officially issued a revised announcement on the ecodesign regulation for external power supplies, comprehensively upgrading the original Regulation (EU) 2019/1782 through the new Regulation (EU) 2025/2052. This revision is a key measure for the EU to implement the Circular Economy Action Plan and green digital transformation, with three core objectives: first, to enhance the charging compatibility of cross-brand devices by unifying charging interface standards; second, to reduce electronic waste generation, which is expected to cut 11,000 tons of charger-related electronic waste in the EU annually; third, to strengthen energy efficiency control, projected to save electricity equivalent to the annual energy consumption of 140,000 electric vehicles by 2035.

Expansion of the Regulation's Scope of Application

The revised regulation significantly expands the regulatory scope, extending from the original single external power supply (EPS) to the entire charging ecosystem, specifically covering:

- External power supplies: Updated definition and removal of the 250W maximum power limit; "charging base" products such as robot vacuum charging docks are included in the regulation;
- Wireless charging devices: Including wireless chargers with integrated power supplies (≤50W) and wireless charging pads requiring external power supplies;
- Universal portable battery chargers;
- USB Type-C cables: Clearly aligned with USB Type-C 2.4 and USB-PD 3.2 v1.1 specifications.

The scope of exemptions includes UPS power supplies, power supplies dedicated to medical devices, power supplies dedicated to transportation vehicles, etc. Fixed-installation products are only exempt from interoperability requirements but must still comply with other ecodesign standards.

Core Technical Requirements

Mandatory Interoperability Standards

- Interface requirements: All interoperable external power supplies placed on the EU market shall be equipped with at least one USB Type-C or USB-PD (Power Delivery) port, and the maximum output power shall be provided through this port;
- Cable requirements: Non-detachable hardwired cables for USB Type-C ports are prohibited to avoid the scrapping of the entire device due to cable damage;
- Marking requirements: Products meeting the requirements shall be affixed with a unified "Universal Charger" mark, and the maximum supported power shall be clearly indicated on each output port; USB Type-C cables are classified by rated power of 60W/240W, and the power level shall be marked on the connector.

Enhanced Energy Efficiency Requirements

- New light-load efficiency indicators: Mandatory limits are set for efficiency under 10% load conditions, filling the regulatory gap in the original regulation regarding inefficient operation under low loads;
- Strengthened basic energy efficiency: Tightened no-load power consumption and average effective efficiency standards, while setting upper limits for no-load/standby energy consumption of wireless chargers and charging pads;
- Unified testing standards: During the transition period, DOE 10 CFR Part 430 Appendix Z (2022 edition) is adopted as the testing reference, ensuring consistent evaluation through "standard test cables + correction factors".

G | Electronic and Electrical Products

G.1 Technical Summary of the Revised EU Regulation (EU) 2025/2052: Repealing (EU) 2019/1782, Ecodesign Requirements for External Power Supplies, Wireless Chargers, Wireless Charging Pads, Portable Battery Chargers, and USB Type-C Cables

Implementation Timeline and Transition Arrangements

- Regulation entry into force: 20 days after official publication in the Official Journal of the European Union (OJEU);
- Mandatory application date: 3 years after the entry into force (expected December 14, 2028), at which point the original Regulation (EU) 2019/1782 will be repealed;
- Early application: From December 14, 2025, external power supplies complying with the new regulation may be deemed to meet the requirements of the original regulation;
- Special transition: An additional grace period is set for spare parts supply and USB-PD devices with power >100W to reduce industrial switching costs.

In addition, phased compliance nodes are set for different device types: portable devices such as mobile phones and tablets shall comply from December 28, 2024, and laptops shall complete compliance adjustments from April 28, 2026.

G | Electronic and Electrical Products

G.2 GB 4824-2025 "Industrial, Scientific and Medical Equipment - Radio Frequency Disturbance Characteristics - Limits and Measurement Methods" Technical Summary

Standard Overview

GB 4824-2025 "Industrial, Scientific and Medical Equipment - Radio Frequency Disturbance Characteristics - Limits and Measurement Methods" was approved and released by the State Administration for Market Regulation (State Administration of Standardisation) on February 28, 2025, and will be officially implemented on March 1, 2026. As a national mandatory standard, it is identically adopted from the international standard CISPR 11:2024, fully replacing the previous version GB 4824-2019 to become the latest compliance basis in the field of radio frequency disturbance control for industrial, scientific and medical (hereinafter referred to as "ISM") equipment

Scope of Application

The scope of application of the new standard has been further expanded compared with the previous version, specifically covering:

- ISM electrical equipment operating in the frequency range of 0 Hz to 400 GHz, as well as household and similar appliances designed to generate and/or locally use radio frequency energy;
- ISM equipment with radio transmission/reception functions (host equipment with radio functions);
- ISM radio frequency lighting equipment and ultraviolet irradiation equipment within the ISM frequency bands defined by the International Telecommunication Union (ITU) Radio Regulations;
- Robots for industrial, scientific and medical applications (such as industrial welding robots, medical surgical robots, excluding household/entertainment robots);
- Grid-Connected Power Conversion Equipment (GCPC), including power conversion equipment such as photovoltaic power generation and energy storage system power supply equipment

ICore Technical Changes

Compared with GB 4824-2019, in addition to structural adjustments and editorial revisions, the core technical changes of GB 4824-2025 focus on expanding high-frequency test requirements, supplementing specifications for emerging equipment, and optimizing test methods, as detailed below:

- **Update of Terms and Definitions**

Thirteen new terms and definitions have been added, including "auxiliary equipment", "equipment with radio functions", "fundamental frequency", "maximum internal frequency", "industrial robot", "medical robot", "power conversion equipment", "radio device", "radio module", "radio transmitter", "rated load", "robot", and "wired network port". Meanwhile, 29 new abbreviations have been added to further clarify the applicable boundaries and technical connotations of the standard. In addition, the definition of small Equipment Under Test (EUT) has been revised from the original 1.2m × 1.5m to 1.5m × 1.5m, which is more in line with the current development status of equipment.

- **Expansion of Radiated Disturbance Limit Requirements for High-Frequency Bands**

For Group 1 equipment (low-disturbance equipment, such as medical devices and laboratory instruments), new radiated disturbance limit requirements for the frequency band of 1 GHz to 18 GHz have been added, filling the gap in the previous version where there were no requirements for frequencies above 1 GHz. This change mainly addresses interference issues caused by high-frequency applications such as 5G and WiFi-6. For Group 1 equipment with a maximum internal frequency exceeding 108 MHz, it is necessary to focus on completing tests for the 1 GHz to 6 GHz frequency band, and some equipment may extend the test to 18 GHz according to actual conditions. The test shall adopt broadband horn antennas or high-frequency receivers, imposing higher requirements on the shielding design and circuit layout of products.

G | Electronic and Electrical Products

G.2 GB 4824-2025 "Industrial, Scientific and Medical Equipment - Radio Frequency Disturbance Characteristics - Limits and Measurement Methods" Technical Summary

- **New Conducted Disturbance Limits for Wired Network Ports**

For the first time, conducted disturbance limit requirements have been introduced for equipment with wired network ports (such as Ethernet, industrial bus interfaces, excluding USB/IEEE1394), covering the test frequency band of 150 kHz to 30 MHz. The test uses a Coupling/Decoupling Network (CDN), current probe, or voltage method to measure common-mode interference, aiming to control disturbances propagated through network ports, solve crosstalk problems between power supplies and signal lines, and improve the overall electromagnetic compatibility of the system. This requirement is consistent with general standards such as CISPR 32, improving the full-dimensional control of conducted disturbances of equipment.

- **Clarification of EMC Requirements for Equipment with Integrated Radio Functions**

For ISM equipment with built-in wireless modules such as WiFi, Bluetooth, LoRa, and 5G, the new standard clarifies its EMC test requirements, including: defining the technical scope of "wireless communication ports"; specifying that wireless modules must undergo disturbance measurement even when in non-transmitting state; clarifying the test boundaries of antenna ports; and requiring that if the frequency of the wireless module exceeds the standard limit frequency band, it shall be indicated on the product label. In addition, Appendix F has been added to specifically regulate the intermodulation interference test method between the host equipment and wireless modules, filling the gap in the previous version's control of intelligent networked equipment. It should be noted that the intentional radio frequency signals emitted by the equipment (such as WiFi communication frequency bands) and their spurious emissions are still exempt in accordance with ITU regulations.

- **New Definitions and Test Specifications for Robot Equipment**

The definition of "ISM robot" has been clarified for the first time, referring to professional robots in industrial, scientific and medical fields composed of "multi-degree-of-freedom execution unit + control system + sensor" (such as industrial welding robots, medical surgical robots, excluding household and entertainment robots such as floor-cleaning robots). The test requirements for robot equipment include: simulating real working conditions (such as dynamic motion trajectories, multi-axis linkage) for testing; carrying rated loads during testing; and covering typical motion scenarios in operating modes (the standard adds tables such as "Operating Modes for Fixed-Installation Robots" and "Operating Modes for Mobile Robots" for clarification). Meanwhile, the standard adds multiple test layout diagrams, including "EUT Boundary for Radiated Disturbance Measurement of Robots with Extendable/Movable Arms" and "Typical Test Layout for Conducted/Radiated Disturbance Measurement of Floor-Standing Robot Systems", providing clear guidance for test implementation.

- **Optimisation of Standard Coordination**

The new standard directly references the limits and test methods of the CISPR 16 series standards, reducing conflicts between standards. At the same time, with reference to the "Regulations on the Division of Radio Frequencies of the People's Republic of China", the content related to frequency band allocation in the standard has been revised to be more in line with China's national conditions; the footnotes and expressions of some clauses have been optimised to improve the readability and operability of the standard.

Impacts on Relevant Industries

- **Medical Device Industry**

The new standard has a significant impact on the design, production, and market launch of medical devices. On the one hand, medical devices with high-frequency modules and wireless functions (such as monitors with wireless transmission functions and medical robots) need to add radiated disturbance tests for frequencies above 1 GHz and relevant tests for wireless modules. During the design phase, it is necessary to strengthen EMC design measures such as electromagnetic shielding and filtering, otherwise, they may face the risk of test failure. On the other hand, the clear specifications of the standard also provide a clear path for the compliant market launch of medical devices, helping to improve the electromagnetic compatibility and operational safety of products and reduce equipment failures caused by radio frequency disturbances.

G | Electronic and Electrical Products

G.2 GB 4824-2025 "Industrial, Scientific and Medical Equipment - Radio Frequency Disturbance Characteristics - Limits and Measurement Methods" Technical Summary

- **Industrial Automation Industry**

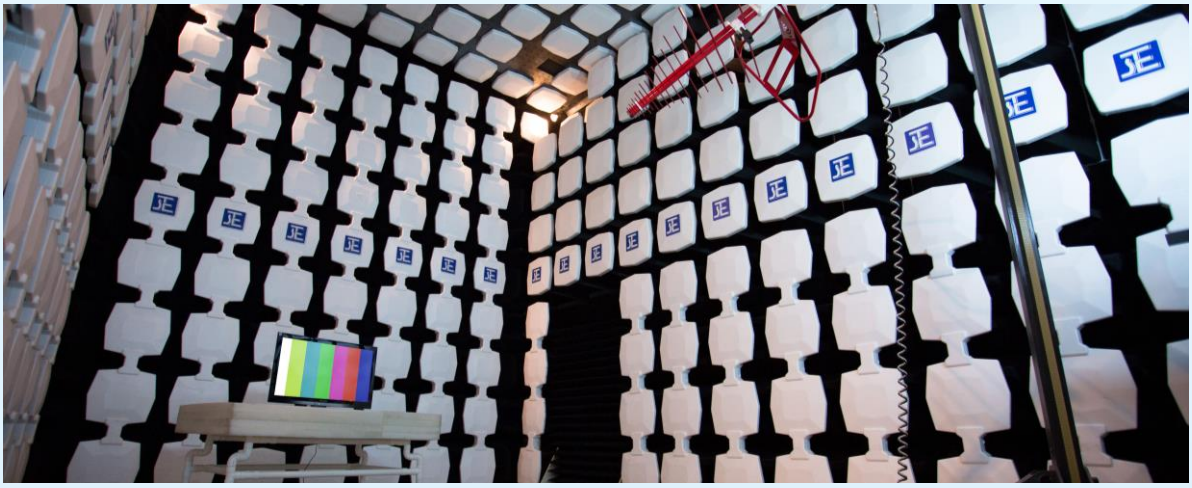
Industrial robots, industrial controllers with network interfaces, high-frequency industrial equipment (such as radio frequency welding machines, magnetron heating equipment), etc., all need to adapt to the requirements of the new standard. For example, industrial robot enterprises need to re-examine their product test plans to ensure coverage of test scenarios such as dynamic motion and load operation; industrial control equipment with Ethernet interfaces needs to add conducted disturbance tests for wired network ports. This will promote enterprises to strengthen the EMC protection design of interfaces in product design and improve the stability and reliability of industrial control systems.

- **Intelligent Equipment-Related Industries**

With the advancement of the Internet of Things and intelligence trends, ISM equipment with built-in wireless functions is increasing. The clear requirements of the new standard for such equipment will regulate industrial development and avoid product performance impacts caused by issues such as intermodulation interference between wireless modules and host equipment. At the same time, it will also urge enterprises to comprehensively consider EMC design in the early stage of product research and development, reducing later rectification costs.

- **Summary**

The release and implementation of GB 4824-2025 is an important measure in China's field of radio frequency disturbance control for ISM equipment to keep up with technological development trends and align with international standards. By expanding the high-frequency test range, supplementing specifications for emerging equipment, and optimizing test methods, the standard further improves the EMC control system for ISM equipment, which is of great significance for improving product quality, ensuring the radio communication environment, and promoting industrial transformation and upgrading. Relevant enterprises should attach great importance to the impact of the new standard, carry out compliance layout in advance, and ensure that products meet the standard requirements smoothly and achieve a stable transition through technical improvements, test optimisation, supply chain collaboration, and other measures.



STC Technical Intelligence

www.stc.group

Consult Us
enquiry@stc.group

Headquarters - Hong Kong Standards and Testing Centre

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Hong Kong | Guangdong | Shanghai | Changzhou | Guangxi | Vietnam | Japan | USA | Germany