



STC Technical Intelligence 技術智匯

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A | Toys & Children's Products

A.1 EU Publishes New Toy Safety Standard EN 71-1:2026

On 28 January 2026, the European Committee for Standardization (CEN) published the new version of EN 71-1:2026 Toy Safety - Part 1: Mechanical and physical properties.

This standard will replace EN 71-1:2014+A1:2018. It shall become a national standard in CEN member states by 31 July 2026 at the latest, and conflicting national standards will be withdrawn on 31 July 2027.

Following its expected CEN approval and publication in the Official Journal of the European Union (OJEU), this standard will become a harmonized standard under the EU Toy Safety Directive 2009/48/EC.

The Main Technical Changes Are As Follows:

- Terms and Definitions (Added / Revised).
 - New definitions: flash, latex balloon, reference box, resilient material, toy chest and ride-on toy
 - Clarified definitions: accessible toy, head-enclosing toy, expansion material, food-imitating toy, etc.
- New Requirements for Food-Imitating Toys.
 - Toys or components that can easily be mistaken for real food shall not be small parts.
- Comprehensive Revision of Ride-On Toys.
 - New test methods added for: handlebar impact, braking performance, stem security, and stabilizers
- Revised Requirements and Test Methods for Expansion Materials.
 - Introduction of a 20 mm diameter gauge test for expansion toys.
- Toys which a child can enter and Head-Enclosing Toys.
 - Updated requirements, test methods and illustrations where multiple ventilation openings are used.
 - New test method for the opening force of closures on toys which a child can enter
- Toys Intended for Children Under 36 Months.
 - Small Parts
 - Added exemption conditions for sand in toys.
 - Clarified that inflatable toys shall be tested in both inflated and deflated states.
 - Abuse testing: updated tension test for cardboard components.
 - Shape and size of certain toys: elements intended for attaching toys to cots are exempt, provided the instructions clearly state that they must be removed before the toy is given to a child.
 - Straps intended to be worn fully or partially around the neck
 - New requirement: breakaway devices shall be possible to join the parts after they have been separated without altering the characteristics of the joints.
- Warnings and Marking
 - Toys designed to **support the weight of a child**: New requirement for a **graphical symbol indicating protective equipment must be worn**, together with instructions for use and maintenance.
 - Clarified that the word "**Warning**" shall appear **before** the age warning symbol.

A | Toys & Children's Products

A.2 US CPSC Final Rule on Additional Requirements for Water Bead Toys

On 12 December 2025, the U.S. Consumer Product Safety Commission (CPSC) published in the Federal Register the Final Rule for "Safety Standard for Toys: Requirements for Water Beads" – under 16 CFR Parts 1112 and 1250.

This safety standard sets forth requirements for water bead toys and toys that contain water beads.

Reasons for the Update:

CPSC considered the requirements currently in ASTM F963-23 for this category of toys are insufficient to address all known water bead toy hazards. Potential hazards for expanding materials in general include gastrointestinal tract blockage if a child ingests a product comprised of expanding materials. Therefore CPSC decided to create additional requirements in Part 1250 to establish mandatory requirements specifically for water bead toys.

Therefore, this rule revises the title of Part 1250 from "Safety Standard Mandating ASTM F963 for Toys" to "Safety Standard for Toys", to reflect the inclusion of requirements that do not incorporate by reference existing requirements in ASTM F963.

In short, the Rule is now more stringent than the current requirements in ASTM F963-23 and would further reduce the risk of injury and death associated with products within the scope.

Major Warnings Required Figure 4 to Paragraph (d)(1)(i)—Warning for Water Bead Toys and their Packaging

⚠ WARNING
<p>Contains water beads that can grow larger when swallowed or inserted in the ear or nose. Children have DIED when the beads blocked their intestines. Inserted beads have resulted in surgeries.</p> <ul style="list-style-type: none"> • Keep away from babies and toddlers. Watch older children during use. • Get medical help right away if you think your child swallowed or inserted beads.

Figure 5 to Paragraph (d)(1)(ii)—Warning for Toys with Contained Water Beads and their Packaging

⚠ WARNING
<p>Contains water beads that can grow larger when swallowed or inserted in the ear or nose. Children have DIED when the beads blocked their intestines. Inserted beads have resulted in surgeries.</p> <ul style="list-style-type: none"> • Keep away from babies and toddlers. Watch older children during use. • Discard product if beads start to come out. • Get medical help right away if you think your child swallowed or inserted beads.

A | Toys & Children’s Products

A.2 US CPSC Final Rule on Additional Requirements for Water Bead Toys



Major Test Jigs Required:

Figure	Test Jig
<p>Figure 1 to Paragraph (c)(1)— Small Parts Cylinder</p>	
<p>Figure 2 to Paragraph (c)(1)— Funnel Test Gauge. Material: Polytetrafluoroethylene (PTFE)</p>	
<p>Figure 3 to Paragraph (c)(1)— Sieve Test Gauge. Material: Polytetrafluoroethylene (PTFE)</p>	

Effective Date:

The rule became effective on 12 March 2026.

Reference :

<https://www.federalregister.gov/documents/2025/12/12/2025-22643/safety-standard-for-toys-requirements-for-water-beads>

B | Textiles & Furniture

B.1 Flame Retardant Requirements for Domestic Building Safety Nets Entering Hong Kong

On 26 November 2025, a Category 5 fire broke out at Wang Fuk Court in Tai Po, Hong Kong. The blaze rapidly spread along external scaffolding, engulfing seven buildings and becoming one of Hong Kong's most severe fires in nearly 60 years. Preliminary investigations indicate that scaffolding netting used for external wall repairs failed to meet flame-retardant standards. Combined with highly flammable foam insulation, this constituted a key factor in the fire's rapid propagation and the resulting casualties. This tragedy once again underscores the critical importance of flame-retardant properties in construction safety equipment. As China's core standards governing the flame-retardant performance of safety nets, GB 5725 "Safety Nets" and GB/T 5455 "Textiles - Test Methods for Burning Behaviour - Vertical Method" directly determine the baseline fire safety during construction and maintenance of existing buildings.

Standard Requirements:

GB 5725 is China's mandatory national standard for construction safety nets (current version GB 5725-2025). Its core objective is to regulate the production, inspection, and use of safety nets, ensuring the safety of workers at height while preventing fire propagation caused by net combustion. This standard explicitly applies to construction safety nets across multiple sectors including building, water conservancy, and highway engineering, with detailed provisions specifically for external scaffolding safety nets on high-rise buildings.

Regarding flame-retardant performance, GB 5725-2025 imposes differentiated requirements for various safety net types, presenting more granular and stringent criteria than previous standards:

- Twisted-woven and drawn-yarn warp-knitted safety nets shall exhibit a sustained burning time and smouldering time not exceeding 4 seconds, ensuring rapid self-extinguishment upon removal from the ignition source;
- For impregnated and coated safety nets, both afterglow and smouldering times shall not exceed 2 seconds. As these nets are frequently deployed in harsh environments such as chemical plants and mines, their flame-retardant requirements are more stringent.

GB/T 5455-2014 serves as the designated method for assessing the flame-retardant properties of safety nets under GB 5725. In accordance with GB/T 5455-2014 requirements, the flame retardancy test for safety nets must simulate vertical burning scenarios in actual fires. The test specimen is vertically fixed and ignited with a specified flame source for a defined duration. Key indicators such as the afterglow time, smouldering time, and burning droplets are then observed and recorded. During testing, compliant safety nets should extinguish rapidly upon removal of the flame source, exhibiting no significant after-burning or smouldering, and no burning droplets igniting combustible materials below. Non-compliant samples will demonstrate persistent burning and melting droplet formation.

It is noteworthy that the Hong Kong Buildings Department requires construction scaffolding nets to comply with multiple standards, including GB 5725. The testing process must adhere to stringent protocols, with each sample category undergoing multiple tests to ensure result reliability.



C | Cosmetics

C.1 Recent Regulatory Developments for Cosmetics in China

On 12 January 2026, the National Medical Products Administration (NMPA) of China issued Announcement No. 6 of 2026, incorporating 18 revised and formulated standards including Total Aerobic Plate Count Limits for Eye, Lip and Children's Cosmetics into the Cosmetic Safety Technical Specifications (2015 Edition).

- The original limit of total aerobic plate count for eye, lip and children's cosmetics (≤ 500 CFU/g or CFU/mL) has been revised to ≤ 100 CFU/g or CFU/mL.
- The original limit of 1,4-dioxane in cosmetics (30 mg/kg) has been adjusted to 10 mg/kg.
- 4-Methylbenzylidene camphor, 6-amino-m-cresol, perfluorooctane sulfonic acid and its salts, perfluorooctanoic acid and its salts, zinc pyrithione, butylphenyl methylpropional and cyclotetrasiloxane have been included in the list of prohibited substances.
- Further specifications have been set for salicylic acid: the maximum allowable concentration is 0.5% for body products, mucous membrane-contacting products (e.g., eyeshadows, mascaras, eyeliners, lipsticks) and deodorant products. (Note: Salicylic acid shall not be used in any products intended for children under three years old, nor in products with potential inhalation risks, regardless of product category.)
- Additional regulations have been introduced for certain hair dyes, sunscreens and preservatives. For specific details, please refer to the original document.

Reference:

<https://www.nmpa.gov.cn/hzhp/hzhpjmtg/20260112145634170.html?type=pc&m>



C | Cosmetics

C.2 Recent Regulatory Developments for Cosmetics in the EU

On 12 January 2026, the European Commission has adopted Regulation (EU) 2026/78, amending Regulation (EC) No 1223/2009 to ban the use of 15 substances classified as carcinogenic, mutagenic, or toxic for reproduction (CMR). This decision aims to enhance consumer safety and ensure high standards in cosmetic products sold within the EU.

Key Details of the Amendment:

Effective Date: The ban will come into effect on 1 May 2026. All cosmetic products containing the specified CMR substances must comply with the new regulations.

Key Changes:

- **New Additions in Annex II Prohibitions:** The following 15 substances classified as CMR (Categories 1A, 1B, or 2) are banned:

Entry Number	Substance Name	CAS Number	CMR Classification
1752	Multi-walled Carbon Tubes (synthetic graphite)	-	CMR Category 2
1753	Reaction mass of 1,3-dioxan-5-ol and 1,3-dioxolan-4-ylmethanol	-	CMR Category 2
1754	Acetone oxime	127-06-0	CMR Category 2
1755	2-(dimethylamino)-2-[(4-methylphenyl)methyl]-1-[4-(morpholin-4-yl)phenyl]butan-1-one	119344-86-4	CMR Category 2
1756	2,3-epoxypropyl neodecanoate	26761-45-5	CMR Category 2
1757	Benthiavalicarb-isopropyl	177406-68-7	CMR Category 2
1758	7-oxabicyclo[4.1.0]hept-3-ylmethyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate	2386-87-0	CMR Category 2
1759	Sodium 3-(allyloxy)-2-hydroxypropanesulphonate	52556-42-0	CMR Category 2
1760	1,4-dichloro-2-nitrobenzene	89-61-2	CMR Category 2
1761	Fenpropidin	67306-00-7	CMR Category 2
1762	N,N'-methylenediacrylamide	110-26-9	CMR Category 2
1763	tert-butyl 2-ethylperoxyhexanoate	3006-82-4	CMR Category 2
1764	Trimethyl borate	121-43-7	CMR Category 2
1765	S-metolachlor	87392-12-9	CMR Category 2
1766	Pyraclostrobin	175013-18-0	CMR Category 2

C | Cosmetics

C.2 Recent Regulatory Developments for Cosmetics in the EU

- **Silver / Nano-Silver:** Silver has been classified as a CMR category 2 substance, with restrictions on particle size.

Entry 1727 of Annex II to Regulation (EC) No 1223/2009 amended to include silver massive and silver nano.

Entry Number	Substance Name	CAS Number
1727	Silver (nano) [1 nm < particle diameter ≤ 100 nm]	7440-22-4
	Silver (massive) [particle diameter ≥ 1 mm]	

Only micron-sized silver is permitted under specific conditions stated in entry 379 of Annex III and entry 142 of Annex IV as below

Entry Number	Chemical Name	CAS Number	Limit
379	Silver (powder) [100 nm < particle diameter < 1 mm]	7440-22-4	(a) 0.05% Toothpaste
			(b) 0.05% Mouthwash

Entry Number	Chemical Name	Color Index Number	CAS Number	Limit
142	Silver (powder) [100 nm < particle diameter < 1 mm]	77820	7440-22-4	(a) 0.2% Lip products
				(b) 0.2% Eye shadow

C | Cosmetics

C.2 Recent Regulatory Developments for Cosmetics in the EU

- Perboric Acid / Salts**

To enhance clarity, legal certainty, and simplification, the merging of entries 1397, 1398, and 1399 of Annex II to Regulation (EC) No 1223/2009 will streamline the regulation and improve understanding for stakeholders. Therefore, entry 1397 should reflect the content of entries 1398 and 1399, leading to the deletion of those entries.

Entry Number	Substance Name	CAS Number	CMR Classification
1397	Perboric acid (H ₃ BO ₂ (O ₂)), monosodium salt trihydrate	13517-20-9	CMR Category 1B
	Perboric acid, sodium salt, tetrahydrate	37244-98-7	CMR Category 1B
	Perboric acid (HBO(O ₂)), sodium salt, tetrahydrate	10486-00-7	CMR Category 1B
	Sodium peroxoborate, hexahydrate	-	CMR Category 1B
	Sodium perborate	15120-21-5	CMR Category 1B
	Sodium peroxometaborate; sodium peroxoborate	7632-04-4	CMR Category 1B
	Perboric acid, sodium salt	11138-47-9	CMR Category 1B
	Perboric acid, sodium salt, monohydrate	12040-72-1	CMR Category 1B
	Perboric acid (HBO(O ₂)), sodium salt, monohydrate	10332-33-9	CMR Category 1B
	Trimethyl borate	121-43-7	-

- Hexyl Salicylate**

Hexyl Salicylate has been added to Annex III with specific concentration limits based on product type.

Entry Number	Substance Name	CAS Number	Maximum Concentration	Remark
380	Hexyl 2-hydroxybenzoate	6259-76-3	(a) 2% Hydroalcoholic-based fragrances (except for children < 3)	Not to be used in preparations for children under 3 years of age, with exceptions.
			(b) 0.5% All rinse-off products (except certain types for children < 3)	
			(c) 0.3% All leave-on products (except specific types for children < 3)	
			(d) Toothpaste: 0.001%	
			(e) Mouthwash: 0.001%	
			(f) Other products intended for children < 3: 0.1%	

C | Cosmetics

C.2 Recent Regulatory Developments for Cosmetics in the EU

- **o-Phenylphenol / Sodium o-Phenylphenate**

Entry 7 of Annex V to Regulation (EC) No 1223/2009 is amended to include Sodium o-Phenylphenate as allowed preservatives in cosmetic products with stricter usage limits.

Entry Number	Chemical Name / INN	CAS Number	Product Type, Body Parts	Conditions of Use and Warnings
7	Biphenyl-2-ol; 2-phenylphenol; 2-hydroxybiphenyl	90-43-7 32-27-4	<ul style="list-style-type: none"> • Rinse-off products: 0.2% (as phenol) • Leave-on products: 1.15% (as phenol) 	Not to be used in applications that may lead to exposure of the end-user's lungs by inhalation. Not to be used in oral products. Avoid contact with eyes.
	Sodium 2-biphenylate			

Reference:

https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202600078



C | Cosmetics

C.3 Recent Regulatory Developments for Cosmetics in France

Effective 1 January 2026, France will fully prohibit the manufacture, import, export, and placing on the market of cosmetics containing PFAS (per- and polyfluoroalkyl substances).

Products manufactured before 1 January 2026, shall be granted a 12-month transition period.

Cosmetics must comply with the following strict limit values:

- Single non-polymeric PFAS: ≤ 25 ppb;
- Total non-polymeric PFAS: ≤ 250 ppb;
- Total PFAS (total fluorine, including polymeric PFAS): ≤ 50 ppm



D | Rail Transit

D.1 Environmental Assessment of Rail Transit Vehicles Part 3: TB/T 3139-2021 Testing

Overview

TB/T 3139-2021 «Limit of harmful substance of non-metallic materials and indoor air for railway locomotive and vehicle» is a railway industry technical standard approved and issued by the National Railway Administration of the People's Republic of China, officially implemented on 1 October 2021. This standard replaces the 2006 version and serves as the core technical specification for environmental safety and performance regarding the interior environment of locomotives, passenger cars, and EMUs (i.e., railway vehicles) in China's railway industry.

By refining material classifications, strictly controlling prohibited and restricted substances, and upgrading testing methods, this standard comprehensively enhances the environmental requirements for the interior environment of railway vehicles, aligning with international standards. It represents a significant milestone in environmental management within China's railway industry.

Standard Content

- Scope
- Normative reference
- Terms and definitions
- Limitations on harmful substances in non-metallic materials
 - Basic requirements
 - Sheet materials
 - Flooring materials
 - Adhesive substance
 - Coatings
 - Rubber and plastic product
 - Textile
 - Thermal insulation materials
 - Seat and berth foam materials
 - Coated film and adhesive backing materials
 - Carpets
- Requirements and testing methods for prohibited and restricted substances in non-metallic materials
 - Table 17 Requirements for Prohibited Substances
 - Appendix C Requirements for Restricted Substances
- Limits for harmful substances in indoor air, testing methods and testing rules

Material Category	Control Requirements	Core Notes
Non-metallic materials are used inside the vehicle	Hazardous Substance Limit Requirements (Chapter 4)	Depending on the product category, the corresponding controlled items vary, and accurate classification is required (10 major categories and their corresponding subcategories)
	Limits for prohibited and restricted substances (Chapter 5)	32 Prohibited substances and 26 restricted substances; the product shall be disassembled into homogeneous materials
Non-metallic materials not used inside the vehicle	Limits for prohibited and restricted substances (Chapter 5)	32 Prohibited substances and 26 restricted substances; the product shall be disassembled into homogeneous materials

D | Rail Transit

D.1 Environmental Assessment of Rail Transit Vehicles Part 3: TB/T 3139-2021 Testing

- **Products Subject to Hazardous Substance Limit Control**

Products Subject to Hazardous Substance Limit Control

Control Category	Controlled Products	Test Clauses
Sheet Materials	High-pressure decorative panels (veneer), fiber-reinforced materials, engineering plastics	Table 1
	Veneered plywood, plywood, sandwich structure materials, foamed structure materials	
Flooring Materials	Flooring sheets and polymer-based flooring (e.g., anti-corrosion flooring)	Table 2
Adhesives	Solvent-based adhesives (rubber adhesives, SBS adhesives, polyurethane adhesives, other adhesives)	Table 3
	Water-based adhesives (polyoxymethylene type, polyvinyl acetate, rubber type, polyurethane type, other adhesives)	Table 4
	Bulk adhesives (silicone type, α -cyanoacrylate, other adhesives)	Table 5
Coatings	Solvent-based coatings (primer/intermediate coat, topcoat, putty)	Table 6
	Water-based coatings (primer/intermediate coat, topcoat)	Table 7
	Water-based damping coatings	Table 8
Rubber and Plastic Products	Irregular rubber/plastic products (e.g., sealing strips, rubber gangways, solebars, coat hooks, etc.)	Table 9
	Regular rubber/plastic products (awning fabric for gangway bellows); Regular rubber/plastic products (rubber pads)	Table 10
Textiles	Textiles and textile products	Table 11
Thermal Insulation Material	Inorganic fiber insulation materials (glass wool, felt, carbon fiber wool, nano-insulation materials, etc.)	Table 12
	Foamed insulation materials (including rubber/plastic foam)	Table 13
	Other lightweight insulation materials	Table 14
Seat, Sleeper Foam Materials	Seat and berth foaming materials	Table 15
Coated and Backed with Adhesive Materials	Film and back-adhesive materials (decorative films, adhesive films, glue films, etc.)	Table 16
Carpets	Carpets	GB 18587

D | Rail Transit

D.1 Environmental Assessment of Rail Transit Vehicles Part 3: TB/T 3139-2021 Testing

• Prohibited and Restricted Substance Control Requirements

TB/T 3139-2021, for the first time, incorporates prohibited and restricted substances for the rail transit industry into the national-level standard system. This facilitates alignment with international control indicators, reduces environmental risks for exported products, and promotes further development of environmental protection in the industry.

Table 2: Requirements and Test Methods for Prohibited Substances in Non-metallic Materials for railway locomotive and vehicle

No.	Item	CAS No.	Control Scope	Requirements	Method
1	Asbestos	Multiple	All materials	Disabled	GB/T 23263
2	CFC	Multiple	Solvent, aerosol, refrigerant, foaming material	Disabled	Appendix D
3	HALON	Multiple			
4	HCFC	Multiple			
5	HFC	Multiple	Foaming material	Disabled	
6	PFC	Multiple			
7	SF6	2551-62-4			
8	Tetrachloroethylene	127-18-4	Solvent	Disabled	Appendix D
9	Arsenic and compounds (Calculated by total arsenic)	Multiple	Woodwork	Disabled	5.3.2.3
10	Beryllium and compounds (Calculated by total beryllium)	Multiple	All materials	Disabled	
11	Cobalt and compounds (Calculated by total cobalt)	Multiple	All materials	Disabled	
12	Cadmium and compounds (Calculated by total cadmium)	Multiple	All materials (different colors of the same product need to be tested separately)	≤ 100 mg/kg	
13	Lead and compounds (Calculated by total lead)	Multiple	Paint (different colors of the same product need to be tested separately)	Disabled	GB/T 26125

D | Rail Transit

D.1 Environmental Assessment of Rail Transit Vehicles Part 3: TB/T 3139-2021 Testing

Table 2: Requirements and Test Methods for Prohibited Substances in Non-metallic Materials for railway locomotive and vehicle

No.	Item	CAS No.	Control Scope	Requirements	Method	
14	Mercury and compounds (Calculated by total mercury)	Multiple	Woodwork	Disabled	GB/T 26125	
15	Hexavalent chromium compounds (Calculated by total Hexavalent chromium)	Multiple	Leather	≤ 3 mg/kg	5.3.2.5	
16	4-Nitrobiphenyl	92-93-3	All materials	Disabled	Appendix E	
17	Aromatic amines	2-Naphthylamine	All materials (different colors of the same product need to be tested separately)	Disabled	5.3.2.7	
18		Benzidine				
19		4-Aminobiphenyl				
20	Halobenz yltoluene	DBBT	All materials	Disabled	Appendix F	
21		Ugilec121 or 21				
22		Ugilec141				
23	NP	25154-52-3 / 84852-15-3	Textiles, leather cleaning agent	≤ 1,000 mg/kg	GB/T 23322	
24	NPEO	9016-45-9				
25	PBDE	PentaBDE	Multiple	All materials	≤ 1,000 mg/kg	GB/T 26125
		OctaBDE	Multiple	Disabled		GB/T 18414.1
26	PCP	Multiple	All materials	≤ 1,000,mg/kg	5.3.2.11	
27	PCT	85535-84-8	All materials	≤,50,mg/kg	GB/T33345	
28	SCCP	Multiple	All materials	≤ 1,000 mg/kg	GB/T26125	
29	PBB	126-72-7	Textile	Disabled	Appendix G	
30	TDBPP	545-55-1	Textile	Disabled		
31	TEPA	Multiple	Textile	Disabled	GB/T 34692	
32	High concentration of halogen	Multiple	Electrical parts	Cl ≤ 900 mg/kg Br ≤ 900 mg/kg Cl+Br ≤ 1,500 mg/kg	GB/T 34692	

D | Rail Transit

D.1 Environmental Assessment of Rail Transit Vehicles Part 3: TB/T 3139-2021 Testing

Table 3: Restricted Substance Requirements and Test Methods for Non-metallic Materials in railway locomotive and vehicle

No.	Item	CAS No.	Control Scope	Requirements	Method
1	Lead and compounds (calculated by total lead)	Multiple	All materials (excluding paint, different colors and products of the same type need to be tested separately)	≤ 1,000 mg/kg	GB/T 26125
2	Mercury and compounds (calculated by total mercury)	Multiple	All materials (excluding woodwork)	≤ 1,000 mg/kg	GB/T 26125
3	Hexavalent chromium compounds (calculated by total hexavalent chromium)	Multiple	All materials (excluding leather)	≤ 1,000 mg/kg	5.3.2.5
4	PBB	Multiple	All materials (excluding textile)	≤ 1,000 mg/kg	GB/T 26125
5	PBDE (excluding PentaBDE and OctaBDE)	Multiple	All materials	≤ 1,000 mg/kg	GB/T 26125
6	MMMF	-	All materials	Each ≤ 1,000 mg/kg	Appendix H
7	Talcum	14807-96-6	All materials	≤ 1,000 mg/kg	Appendix I
8	Antimony and compounds (calculated by total antimony)	Multiple	All materials	≤ 1,000 mg/kg	5.3.2.3
9	Nickel release	7440-02-0	Metal coating	≤ 0.5 μg/(cm ² ·week)	GB/T 19719
10	MCCP	85535-85-9	All materials	≤ 1,000 mg/kg	Appendix J
11	MDI	Multiple	All materials	≤ 1,000 mg/kg	5.3.2.19
12	Toluene	108-88-3	Adhesives, paint	≤ 1,000 mg/kg	5.3.2.20
13	PAHs	Multiple	All materials	≤ 500 mg/kg	5.3.2.21
14	Organotin compounds (in tin)	Multiple	All materials	Each ≤ 1,000 mg/kg	GB/T 35492

D | Rail Transit

D.1 Environmental Assessment of Rail Transit Vehicles Part 3: TB/T 3139-2021 Testing

Table 3: Restricted Substance Requirements and Test Methods for Non-metallic Materials in railway locomotive and vehicle

No.	Item	CAS No.	Control scope	Requirements	Method	
15	TPP	115-86-6	All materials	≤ 1,000 mg/kg	Appendix G	
16	Phthalates	BBP	85-68-7	All materials	Sum ≤ 1000 mg/kg	Appendix K
17		DBP	84-74-2			
18		DEHP	117-81-7			
19		DIBP	84-69-5			
20		DINP	28533-12-0	All materials	≤ 1,000 mg/kg	
21		DIDP	26761-40-0	All materials	≤ 1,000 mg/kg	
22		DNOP	117-84-0	All materials	≤ 1,000 mg/kg	
23		DMP	131-11-3	All materials	≤ 1,000 mg/kg	
24	TMTD	137-26-8	All materials	≤ 1,000 mg/kg	5.3.2.24	
25	PCB	Multiple	All materials	≤ 50 mg/kg	GB/T 32887	
26	TCB	120-82-1	All materials	≤ 1,000 mg/kg	GB/T 20384	



E | Electronic and Electrical Products

E.1 Major Changes in IEC 60335-1:2020 / A1:2025 Amendment

In 2025, the IEC officially released Amendment 1 (A1:2025) to IEC 60335-1:2020. This revision not only further maintains compatibility with general safety standards but also introduces more stringent and detailed technical requirements in response to new challenges such as the proliferation of smart homes, battery technology applications, and child safety protection. This article systematically reviews the major changes in this amendment from multiple dimensions.

Adjustments in Appliance Classification and Scope of Application

Scope of Change	Core Content
Class 0 Appliances	Limited to appliances connected via flexible cord and plug, or appliances with pins for insertion into circuits with a voltage to earth not exceeding 150V; it is clarified that Class 0 appliances are not permitted in Australia and New Zealand, regardless of operating voltage
Battery-Operated Appliances	Scope expanded to include "parts of appliances"; remote controls and other accessories must be tested according to Annex B; original Clause 22.54 deleted, content integrated into Annex B
DC-Powered Appliances	New requirements for polarity marking (IEC 60417-5005/5006); if unmarked, the most unfavorable polarity shall be applied during testing; new reverse polarity test requirements added

Enhanced Battery Safety Requirements

- New Definition of Small Batteries

Explicitly includes button cells, coin cells, and AAA batteries

- Mechanical Requirements for Battery Compartment Covers

Must meet one of the following opening difficulty requirements:

- Requires the use of a tool
- Requires at least two independent simultaneous actions
- Requires a two-step mechanism operated by multiple fingers simultaneously
- New Mechanical Strength Tests
 - Drop test for hand-held parts: 1 meter × 10 times
 - Compression test: 330N ± 5N, 10 seconds
 - Battery replacement simulation: 10 opening/closing cycles

Light Sources and Optical Safety

- Standard Upgrade
 - Comprehensive transition from IEC 62471:2006 to IEC 62471-7
- Blue Light Hazard Assessment
 - Time weighting: 10 seconds (BLH-B)
 - Assessment distance: 200mm
- Safety Requirements for Optical Components
 - Appliances with optical lenses, doors, covers, or shutters must still meet optical radiation safety requirements in the open/removed state
 - If dependent on electronic circuits, they must pass fault condition and electromagnetic phenomena tests

E | Electronic and Electrical Products

E.1 Major Changes in IEC 60335-1:2020 / A1:2025 Amendment

Key Updates in Electrical Safety

- Protective Impedance
 - Allows the use of a single Y1 class capacitor (complying with IEC 60384-14:2023) as an alternative solution
 - When resistors are used as protective impedance: 10 samples must pass a 21-day damp heat test and impulse voltage test, with resistance change $\leq 10\%$
- Optocouplers
 - Optocouplers bridging double insulation or reinforced insulation must comply with IEC 60747-5-5:2020 Clause 5
 - The maximum withstand isolation voltage shall be at least equal to the requirement for that insulation in Table 7
- Internal Wiring
 - New fixing methods added:
 - Close-fitting tubing or sleeving (e.g., heat-shrinkable tubing or rubber sleeving), covering the conductor and its complete termination
 - Short and rigid wires: when terminal screws are loosened and a force of 2N is applied, the wire shall remain in place

Power Supply Cords and Interconnection Cords

- Power Supply Cords
 - Clarified that "normal use" does not include storage and user maintenance
 - PVC and halogen-free cords shall not come into contact with parts exceeding a temperature rise of 75K
 - New acceptable cable type added: Halogen-free thermoplastic insulated and sheathed flexible cables IEC 63010-1
- Interconnection Cords
 - Interconnection cords for Class III constructions need not comply with power supply cord requirements but shall be adequately insulated
 - Deleted the original clause exempting cross-sectional area requirements for Class III interconnection cords based on temperature rise testing

Mechanical Safety and Stability

- Areas Open to the Public
 - New definition added: includes grocery stores, canteens, railway stations, self-service restaurants, town squares, etc.
 - Clarified that the public includes children
 - Test probe 18 applies to parts of commercial appliances intended to be installed in such areas
- Stability Tests
 - Appliances fixed by suction cups: The most unfavorable combination of all suction cups failing shall be tested (perforated surfaces, scattering flour/powder, or holes in the suction cup body)
 - Feet test: Portable appliances shall be tested with feet, and with the most unfavorable combination of suction cups and similar parts removed (unless they are non-detachable parts)

E | Electronic and Electrical Products

E.1 Major Changes in IEC 60335-1:2020 / A1:2025 Amendment

Comprehensive Upgrade of Software Safety

- New Definitions Added
 - Partitioning, Software separation, Safety-related software, Non-safety-related software, Communication software
- Updates to Annex R
 - Software shall be divided into modules and allocated to safety/communication/non-safety functions
 - Safety-related data shall only be managed by safety-related code
- New Annex U (Cybersecurity)
 - Appliances that communicate remotely via public networks shall implement proper software separation
 - Shall include measures to prevent unauthorized access and transmission/error conditions

Summary: Five Major Evolution Directions of A1:2025

Evolution Direction	Core Points
Enhanced Child Safety	Test probe 18, mechanical requirements for battery compartment covers, definition of areas open to the public
Battery Technology Adaptation	Definition of small batteries, mechanical strength tests, reverse polarity testing
Optical Safety Upgrade	Adoption of IEC 62471-7, blue light hazard assessment, optocoupler requirements
Software Cybersecurity	Software separation, safety partitioning, remote communication protection
Improved Test Methods	Suction cup failure testing, clarification of normal operating conditions, seal leakage testing

These changes reflect the comprehensive response of the IEC 60335-1 standard to the challenges of smart home proliferation, child protection, battery technology applications, and cybersecurity. Manufacturers need to focus on child protection design, battery compartment mechanical strength, optical radiation safety assessment, and software separation architecture to ensure products comply with the new version requirements.





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