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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 35973-2018

Environmental technical requirements for containers

集装箱环保技术要求

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard was proposed by and is under the jurisdiction of the National Technical Committee on Freight Containers of Standardization Administration of China (SAC/TC 6).

The drafting organisations of this standard are the Water Transport Science Research Institute of the Ministry of Transport, CIMC Containers Holding Company Limited, Shenzhen Jiada High-Tech Industrial Development Company Limited, China Railway Container Transport Company Limited and Guangzhou Jitai Chemical Company Limited.

It was issued on 6 February 2018 by the General Administration of Quality Supervision, Inspection and Quarantine together with the Standardization Administration of the People's Republic of China, and has been in force since 1 September 2018. The /T in the designation marks it as a recommended national standard.

1 Scope

China's national environmental standard for the freight container itself, rather than for what travels inside it. A container is built in enormous numbers, is painted inside and out, is floored with timber and is sealed along every joint, and each of those operations has historically been done with the cheapest available material: solvent-borne paint that releases volatile organic compounds during manufacture and for months afterwards,

tropical hardwood plywood cut from forests that cannot be replanted at that rate, and adhesives and sealants that continue to give off formaldehyde and benzene into a closed steel box. The box is then loaded with foodstuffs. This standard sets the environmental technical requirements for containers and the corresponding inspection methods, working on three fronts: it limits the harmful substances in the coatings applied to the inner faces, the outer faces, the floor and the underframe; it directs the flooring towards bamboo, bamboo and timber composites, fast-growing timber, plastics and composite materials and away from tropical hardwood, and requires floor and floor-nail surface coatings suited to the safe carriage of food; and it caps free formaldehyde, benzene, toluene plus xylene and total volatile organic compounds in the sealant used inside the box. It applies to the general purpose freight containers defined in GB/T 5338, and containers of other types may refer to it. Container builders, the shipping lines and leasing companies that buy them and the laboratories that test the materials are the users.

This standard specifies the environmental technical requirements for containers and the corresponding inspection methods.

This standard applies to the general purpose freight containers defined in GB/T 5338; containers of other types may be used with reference to it.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition (including all amendments) applies.

GB/T 1992 Freight containers - Terminology

GB 18582 Indoor decorating and refurbishing materials - Limit of harmful substances of interior architectural coatings

GB 18583 Indoor decorating and refurbishing materials - Limit of harmful substances of adhesives

HJ 571 Technical requirement for environmental labelling products - Wood based panels and finishing products

HJ 2537 Technical requirement for environmental labelling products - Waterborne coatings

3 Terms and definitions

The terms and definitions given in GB/T 1992 and the following apply to this document.

3.1 Volatile organic compounds (VOCs)

The collective name for any organic compound whose initial boiling point is lower than or

equal to 250 degrees Celsius at the standard pressure of 101.3 kPa.

4 General requirements

4.1 Renewable materials should be used in the manufacture of containers, and the use of non-renewable resources should be reduced.

4.2 The raw materials used in the manufacture of containers shall be favourable to recovery and re-use.

4.3 For the structural parts used in the manufacture of containers, provided the overall quality is not affected, a structural design favourable to repair and to dismantling should be considered, so as to reduce the effort of the recovery operation.

5.1 Coatings

Waterborne coatings should be selected for containers, and the limits of harmful substances in the coatings shall meet the requirements of Table 1.

Table 1 - Limits of harmful substances in coatings. The limit for VOCs in grams per litre is 150 for the inner face paint, 150 for the outer face paint, 80 for the floor paint and 200 for the underframe paint. The following limits apply to all four: soluble lead not more than 90 mg/kg; soluble cadmium not more than 75 mg/kg; soluble chromium not more than 60 mg/kg; soluble mercury not more than 60 mg/kg; total of benzene, toluene, xylene, trimethylbenzene and ethylbenzene not more than 100; total halogenated hydrocarbons not more than 500; free toluene diisocyanate (TDI) content not more than 700; free formaldehyde not more than 100 g/kg.

The measurement is made after mixing in the proportion and with the dilution ratio specified for the product. If the quantity of thinner used is given as a range, the measurement shall be made after dilution at the extreme value of the recommended dilution.

5.2 Flooring

5.2.1 Bamboo, bamboo and timber composites, fast-growing timber, plastics and composite materials should be used as the raw materials for container flooring, and the use of tropical hardwood should be reduced.

5.2.2 The surface coating or covering material of the floor and of the floor nails shall meet the corresponding requirements for the safe transport of food.

5.2.3 The content of free formaldehyde and free phenol and similar substances in the flooring shall comply with the relevant requirements of HJ 571.

5.3 Sealant

A water-based sealant should be selected for use inside the container. It shall be free of

irritating odour and shall meet the corresponding requirements for the safe transport of food, and the limits of harmful substances in the sealant shall meet the requirements of Table 2.

Table 2 - Limits of harmful substances in the sealant used inside the container: free formaldehyde not more than 1.0 g/kg; benzene not more than 0.2 g/kg; toluene plus xylene not more than 10 g/kg; total volatile organic compounds (TVOCs) not more than 350 g/L.

6.1 Coating tests

6.1.1 The requirement concerning the addition of phthalates and glycol ethers to coating products is verified by means of an on-site inspection.

6.1.2 The determination of the content of volatile organic compounds (VOCs) in coating products is carried out in accordance with the provisions of HJ 2537.

6.1.3 The determination of the content of the heavy metals cadmium, lead, mercury and chromium in coating products is carried out in accordance with the provisions of GB 18582.

6.1.4 The determination of the content of benzene, toluene, xylene and ethylbenzene in coating products is carried out in accordance with the provisions of HJ 2537.