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

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Replacing GB/T 23862-2009

Specification for packing and transportation of cultural relics

文物包装与运输规范

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Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Basic principles	2
5 Packing	2
6 Transport	5
7 Methods of verification	7
Annex A (informative) Packing list for cultural relics	8
Annex B (informative) Record sheet for the packing and transport of cultural relics	9
Bibliography	11

3 Terms and definitions

3.1 inner box: the inner packaging container used to hold the relic directly and to make grouped packing easier. 3.2 exterior case: the containerised rectangular packaging container used to hold inner boxes, or relics of special shape, special weight or special material.

3.3 packaging materials for surface protection: materials used for packing that are in direct contact with the relic and help keep it safe. 3.4 packaging materials for blocking: materials used for packing that can block changes in temperature, humidity, gases and other environmental factors between the inside and the outside of the container, keeping the storage environment of the relic stable. 3.5 packaging materials for shockproof and cushion: materials used for packing that reduce the shock and vibration reaching the relic and that are packed around the relic or the inner box.

4 Basic principles

The packing and transport of cultural relics hold to the principle that the safety of the relic comes first; packing materials are chosen with economy and environmental impact also taken into account, and the packing and transport work is carried out on that basis.

5 Packing

5.1 Packing scheme. The scheme should take into account the state of preservation, grade, material, dimensions, weight and number of the relics and the risk factors of the packing work, of the movement of the whole and of the transport. It shall contain at least the relic

information, the packing materials, the making of the cases, the protective packing and the packing method. The relic information states the structural form, material, condition, weight, dimensions and number of the relics and any other special requirements; the packing materials clause gives the surface protection, barrier, cushioning and case body materials with their quantity, specification and thickness; the case making clause states the material, structural form, dimensions and number of the inner and outer cases; the protective packing clause proposes cushioning, moisture-proof, waterproof and mould-proof measures; the packing method clause states the method used to protect the body, internal structure, material and surface layer of the relic.

5.2 Packing materials. Surface protection materials shall be soft materials that do not contaminate or damage the relic, for example tissue paper, acid-free paper, light coloured pure cotton products or high density polyethylene synthetic paper; acid-free paper shall meet the requirements of WW/T 0077 for the inner tissue paper used to pack relics, and the colour fastness of light coloured pure cotton products shall meet the requirement of FZ/T 13054 for rubbing fastness, dry rubbing, first grade product. Barrier materials shall have good oxygen barrier, water barrier and high permeation resistance and shall block outside moisture and gases effectively, for example polyethylene blown film, aluminium foil paper or solvent-based wood coating topcoat; the solvent-based topcoat may be used only on the outer surface of an exterior case made of natural timber, nitrocellulose and polyurethane topcoats being preferred and alkyd and unsaturated polyester coatings not advised. The moisture permeability and mechanical properties of polyethylene blown film shall meet class 1, type C, grade c2 of Table 2 of GB/T 12339-2008 and those of aluminium foil paper class 1, type A, grade a3 of the same table, while the solvent-based topcoat shall meet GB 18581. Cushioning materials shall be tough and resilient, for example polyethylene foam or flexible polyurethane foam; newspaper, toilet paper, paper scraps, sawdust and straw shall not be used. Polyethylene foam shall meet 4.3 of GB/T 8166-2011 and flexible polyurethane foam GB/T 10802. Case body materials shall be natural timber, plywood, fibreboard or corrugated board; natural timber shall be treated against pests by high temperature heating. Natural timber shall meet the timber requirements of GB/T 7284; plywood shall meet the first grade of GB/T 24311; high density fibreboard shall meet the ordinary type of GB/T 31765 and medium density fibreboard the ordinary type for use in dry conditions of GB/T 11718; wet process fibreboard shall meet Table 1 of GB/T 12626.4-2015; corrugated board shall meet the first grade of GB/T 6544.

5.3 Making of the case bodies. The case should be soundly designed, strong and durable, easy to dismantle and easy to reassemble, and suited to long distance transport. Its design should be able to withstand repeated use, repeated handling in transport and complex changes of environment, and should resist compression and deformation. The load bearing capacity of the case structure shall be more than 1.25 times the weight of the contents. Relics weighing not more than 30 kg shall be packed in a fitted box, an ordinary wooden case, or a case made of corrugated board or fibreboard; ordinary wooden cases shall meet

the closed case provisions of GB/T 12464, inner boxes of corrugated board shall meet the packaging requirements of GB/T 6543, single wall boxes being of class BS-1.4 or above and double wall boxes of class BD-1.3 or above. The exterior case is chosen by the weight and volume of the relic and the inner boxes: more than 30 kg and not more than 200 kg, an ordinary wooden case; more than 200 kg and not more than 500 kg, a skidded case; more than 500 kg, or a large relic needing separate packing, a framed wooden case. Ordinary wooden cases, skidded cases and framed wooden cases shall meet the closed case provisions of GB/T 12464, GB/T 18925 and GB/T 7284 respectively. Each inner face of the exterior case shall be lined with moisture-proof film and a waterproof sealing strip shall be applied where an opening face joins the case. There shall be no projecting locks or similar fittings on the outside of the exterior case; where such a fitting is necessary it shall be recessed. The external dimensions of the exterior case shall meet the dimensional requirements of Tables 1, 2, 4 and 5 of GB/T 16471-2008. For a large relic exceeding the dimensional limits of the means of transport, a purpose-made transport scheme and transport vehicle shall be arranged according to its particular circumstances.

5.4 Protective packing. The packing shall be waterproof, moisture-proof, mould-proof, insect-proof, dust-proof, vibration-proof and shock-proof. Suitable protective measures such as cushioning, moisture-proof, waterproof and mould-proof packing are chosen inside and outside the case according to the character of the relic and the conditions of storage, carriage, loading and unloading. Cushioning packing shall meet GB/T 8166-2011; moisture-proof packing grade 1 of GB/T 5048-2017; waterproof packing class B grade 1 of GB/T 7350-1999; mould-proof packing GB/T 4768.

5.5 Packing site. The site should be indoors and shall make it easy to move the relics; relics and packing materials shall be laid out by area and by type. Before packing and before unpacking, in an indoor environment, the temperature and humidity of the packing environment shall be kept broadly the same as those required where the relic is kept; in an outdoor environment the relic shall be left to stand at the packing site for not less than 2 h so that it adapts to the temperature and humidity there. Security staff should be provided at the packing site and people not working there should not enter or leave it.

5.6 Packing methods. One or more of the following should be chosen according to the character of the relic: suspended shock-reduction, in which a frame is set up in the case and the relic is placed on it clear of the case and then fixed to it; strapping, in which two boards are made into a right-angled frame, the relic is placed on it and strapped to the back board, both base and back boards being lined with a fairly thick shock-absorbing layer and the layer on the back board being additionally hollowed out roughly to the shape of the relic so as to enlarge the contact area and improve the hold; point fixing, in which two symmetrical sets of points on the inner walls are lined with high density foam so as to fix the relic in the case; press fixing, in which a number of bearing positions are selected and wooden battens wrapped in surface protection or cushioning material press and fix the relic against the case; and hollowing, in which a recess is cut in thick foam to the shape of the

relic and the relic is placed in it so that it cannot shift.

5.7 Placing the relics in the cases. The inside of the case shall be clean and dry and free from contaminants, pests, mould and other harmful agents. The surface of the relic should be wrapped in a layer of surface protection material as required. The relic is placed in the inner box by a suitable packing method and fixed; a clearance of not less than 5 cm shall be left between the inner walls of the case and the relic for cushioning material or another form of cushioning protection, the clearance being reduced as appropriate for very small relics. A relic of large volume and weight is fixed directly in the exterior case and cushioned, cushioning material being placed between the relic and each inner face of the case, tight against or fastened to relic and case wall. Detachable fittings of a relic should be packed separately but shall be placed in the same inner box and fixed in a suitable position so that they are not lost. Where a set of relics made up of several pieces cannot be placed in one inner box, each piece is packed separately and its number, the general register number of the relic, the total number and the sub-number, is written on the outside of its box before it is placed in the exterior case, so that it can be found. Relics of the same material or with similar temperature and humidity requirements should be placed in the same exterior case by preference, with size and shape also taken into account. Inner boxes are stacked into the exterior case in order, heavier relics below and lighter ones above; inner boxes shall not touch the exterior case directly and a clearance shall be left between the boxes for cushioning material. After the relics have been placed in the case, the centre of gravity of the package should be as low and as central as possible. For a package of complex packing structure, the positions of the main fixing structures and the order of dismantling shall be marked on the case body or the inner structure. Suitable humidity-regulating, adsorbing, mould-proof and insect-proof materials shall be placed in the case according to the condition of the relic, arrangements being made for air transport as the carriage requires. Where necessary, monitoring equipment for temperature and humidity, vibration and shock may be fitted inside the exterior case to collect data on the hazards during packing and transport, so that the risks can be monitored and warned of. There shall be clear corresponding position marks between the lid and the side or end faces of the case so that the lid can be placed correctly when the case is packed again. Before the case is closed, the relics in it are counted and the state of packing checked; the gaps are filled with cushioning material, the packing list for that case is placed inside and fixed, and the case is finally closed and sealed with a seal strip.

5.8 Packing list. The packing list contains, but is not limited to, the inner box number, the name, number and material of the relics and any special requirements for particular relics, with photographs of the relics attached; its form is shown in Annex A. It shall be made out in at least three copies, signed and acknowledged by the consignor and the carrier, one copy travelling in the case with the relics and the others held by the two parties.

5.9 Packaging, storage and transport markings. The case shall carry clear packaging, storage and transport pictorial markings; markings for fragile, this way up, keep dry and