

**Secretariat**

Distr.: General  
12 September 2019

Original: English

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## **Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals**

**Sub-Committee of Experts on the Transport of Dangerous Goods**

### **Fifty-sixth session**

Geneva, 2-11 December 2019

Item 6 (b) of the provisional agenda

**Miscellaneous proposals for amendments to the Model Regulations  
on the Transport of Dangerous Goods: packagings**

## **Use of recycled plastics material – expansion to all rigid plastics packagings**

**Transmitted by the International Confederation of Plastics Packaging  
Manufacturers (ICPP) and the International Confederation of  
Container Reconditioners (ICCR)\***

### **Introduction**

1. In keeping with the common government and industry environmental goal of providing for the sustainable use of plastics in the manufacture of packagings (e.g. the (EU) Commission is launching an EU-wide pledging campaign to ensure that by 2025, ten million tonnes of recycled plastics find their way into new products on the EU market<sup>1</sup>) ICPP submitted informal document INF.23 (fifty-fifth session) to the last session to initiate discussions for furthering acceptance of recycled plastics material under the Model Regulations based on extensive experience. Based on the favourable responses from Sub-Committee participants at the fifty-fifth session, ICPP submits this document to provide a basis for further discussion on how the Model Regulations could further support sustainable use of plastic materials.

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\* In accordance with the programme of work of the Sub-Committee for 2019–2020 approved by the Committee at its ninth session (see ST/SG/AC.10/C.3/108, paragraph 141 and ST/SG/AC.10/46, paragraph 14).

<sup>1</sup> A European Strategy for Plastics in a Circular Economy (EN: p.9),  
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1516265440535&uri=COM:2018:28:FIN>

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Please recycle



2. Initial efforts to permit the use of recycled plastic materials in the Model Recommendations in the 1990's led to the introduction of a definition of recycled plastics material as shown in paragraph 1.2.1 and in permitting the manufacture of plastic drums (1H1, 1H2) and jerricans (3H1, 3H2) through a provision in 6.1.4.8.1.
3. Beginning first with the manufacture of IBC pallets in the 1980's and later the manufacture of plastic packagings in the 1990's, the safe use of recycled plastics material in the manufacture of dangerous goods packagings has now been well demonstrated. As summarized in informal document INF.23 (fifty-fifth session), the United States packaging industry first began manufacturing plastic drums at the PG II and III performance level in 1997. For the period between June 1, 2011 and August 31, 2015 more than four million UN 1H1 and 1H2 drums were manufactured from recycled plastic materials. Their usage has demonstrated the same high degree of performance experienced in the use of new packagings manufactured from virgin resin materials.
4. Given the newness of using recycled plastics in the 1990's, the original requirements were understandably conservative. At that time, the Sub-Committee held the view that as confidence in the use of recycled plastics material was gained, the regulations could be adjusted accordingly.
5. The considerable experience gained in the use of recycled plastics material has:
  - validated the use of recycled plastic materials for the manufacture of UN certified plastic packagings;
  - shown that through an effective sorting process, the properties of recycled resins are consistently within design type limits for the construction of UN packagings; and
  - proven that performance of UN packagings made from recycled resins has been shown to be consistent with that of packagings made from resin materials not previously used.
6. Based on these findings, it is the opinion of ICPP that:
  - the authorized usage of recycled plastic materials may be safely expanded to allow its use in the manufacture of packagings covered in Chapter 6.5;
  - the quality assurance of recycled plastics materials properties, as with all other packaging material properties, may be addressed through the requirements for packaging quality assurance programs (see 6.1.1.4, 6.5.4.1 and 6.6.1.2); and
  - the required testing of packagings manufactured using recycled plastics material may be safely aligned with that for packagings made from resin materials not previously used.
7. On this basis, ICPP describes below, for purposes of discussion by the Sub-Committee, amendments to the definition of recycled plastics materials and the provisions in Chapter 6.5. The specific amendments on which ICPP invites discussion are provided in Annex I. In advance of the fifty-sixth session, it is ICPP's intention to provide additional information about their current experience on the use of recycled plastics materials and in the meantime to solicit the views of delegations.

## **Expanding use of recycled plastics to other packaging types**

8. Currently the use of recycled plastics material is limited to plastic drums and jerricans. Experience in the manufacture of plastic drums and jerricans has demonstrated that recycled plastics materials may be safely used in the manufacture of dangerous goods packagings. IBCs for non-dangerous goods made of recycled plastics have been manufactured and successfully used in Europe for several years. This experience indicates that expanding the

UN authorization for the use of recycled plastics material in the manufacture of plastics packagings from plastic drums to IBCs used for dangerous goods will be successful. ICPP is committed to developing additional information and test data for the Sub-Committee in support of its request. On this basis ICPP seeks to authorize the use of recycled plastics material in the manufacture of other UN packaging types including:

- Rigid plastics IBCs under 6.5.5.3; and
- Composite IBCs with plastics inner receptacles under 6.5.5.4.

## **Testing of recycled resin batches**

9. Experience has shown that effective sorting of used plastic materials, as required by the 1.2.1 definition, ensures the properties of recycled resins (i.e., melt flow index, density and tensile strength) consistently correspond to those of new materials. Based on United States experience since 1997, it has been concluded, through United States Competent Authority approvals, that monitoring the melt flow index of each batch of recycled plastic resin in conjunction with careful sorting is sufficient for ensuring recycled plastic resin corresponding to design type specifications; and that batch testing in accordance with the requirements in the definition of recycled plastics material is not necessary to ensure consistency.

10. Further, as with all packagings, packagings made from recycled resin material are subject to a quality assurance (QA) programme. As part of any quality assurance programme, a manufacturer ensures the quality of materials that will be used. In the manufacture of plastic packagings, this would include ensuring that resin materials are within specifications for the particular design type. This is done irrespective of whether the plastics material is new or recycled.

11. Given the experience gained and the assurance of resin properties through a QA programme, ICPP is of the opinion that the specific testing required for each batch of plastics material be left to the competent authority through acceptance of a satisfactory quality assurance programme, and recommends deletion of the following sentence from the definition of recycled plastics material:

“The quality assurance programme shall include a record of proper pre-sorting and verification that each batch of recycled plastics material has properties the proper melt flow rate, density, and tensile yield strength, consistent with that of the design type manufactured from such recycled material.”

## **Testing of manufactured packagings**

12. Experience has also shown that when recycled resin properties are within specifications through effective sorting and cleaning, produced packagings consistently comply with performance requirements. On the basis of the experience gained in the United States since 1997, the United States Competent Authority no longer requires package testing of samples from each batch of packagings produced. Rather package testing in accordance with the Chapter 6.1 tests is required once each year – the same frequency as plastics packagings made from new resin materials.

13. Taking experience into account and further noting that additional testing may be included in the QA programme for packagings made from recycled plastics, ICPP invites comments on deleting the sentences in the 1.2.1 definition so that testing of packagings made from recycled plastic materials is consistent with that of packagings made from new resins. The sentences that would be removed are as follows:

“In addition, the packaging manufacturer’s quality assurance programme under 6.1.1.4 shall include performance of the mechanical design type test in 6.1.5 on packagings manufactured from each batch of recycled plastics material. In this testing, stacking performance may be verified by appropriate dynamic compression testing rather than static load testing.”

## **Conclusion**

14. ICPP welcomes the Sub-Committee’s comments on its plan for revising the Model Regulations with respect to the use of recycled resins. In the interim period leading up to the fifty-sixth session, ICPP will submit an informal document providing more detail on experience in using recycled plastic material and soliciting comments from individual governments in preparation for discussion at the 56th session.

## Annex

### Draft ICPP proposals to modify requirements for packagings manufactured from recycled plastics material

ICPP invites comments on the following draft amendments:

1. Modify the current wording of Model Regulations to read as follows (text is deleted, underlined text is added):

#### 1.2.1 Definitions

*Recycled plastics material* means material recovered from used industrial packagings that has been cleaned and prepared for processing into new packagings. The specific properties of the recycled material used for production of new packagings shall be assured and documented regularly as part of a quality assurance programme recognized by the competent authority. ~~The quality assurance programme shall include a record of proper pre-sorting and verification that each batch of recycled plastics material has the proper melt flow rate, density, and tensile yield strength, consistent with that of the design type manufactured from such recycled material.~~ This necessarily includes knowledge about the packaging material from which the recycled plastics have been derived, as well as awareness of the prior contents of those packagings if those prior contents might reduce the capability of new packagings produced using that material. ~~In addition, the packaging manufacturer's quality assurance programme under 6.1.1.4 shall include performance of the mechanical design type test in 6.1.5 on packagings manufactured from each batch of recycled plastics material. In this testing, stacking performance may be verified by appropriate dynamic compression testing rather than static load testing.~~

#### 6.5.5 Requirements for IBCs

##### 6.5.5.3 *Specific requirements for rigid plastics IBCs*

6.5.5.3.2 The body shall be manufactured from suitable plastics material of known specifications and be of adequate strength in relation to its capacity and its intended use. Except for recycled plastics material as defined in 1.2.1, no used material other than production residues or regrind from the same manufacturing process may be used. The material shall be adequately resistant to ageing and to degradation caused by the substance contained or, where relevant, by ultraviolet radiation. Low temperature performance shall be taken into account when appropriate. Any permeation of the substance contained shall not constitute a danger under normal conditions of transport.

~~6.5.5.3.5 No used material other than production residues or regrind from the same manufacturing process may be used in the manufacture of rigid plastics IBCs.~~

##### 6.5.5.4 *Specific requirements for composite IBCs with plastics inner receptacles*

6.5.5.4.6 The inner receptacle shall be manufactured from suitable plastics material of known specifications and be of adequate strength in relation to its capacity and its intended use. Except for recycled plastics material as defined in 1.2.1, no used material other than production residues or regrind from the same manufacturing process may be used. The material shall be adequately resistant to ageing and to degradation caused by the substance contained or, where relevant, by ultraviolet radiation. Low temperature performance shall be taken into account when appropriate.

Any permeation of the substance contained shall not constitute a danger under normal conditions of transport.

~~6.5.5.4.9 No used material other than production residues or regrind from the same manufacturing process may be used in the manufacture of inner receptacles.~~

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