



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

Sixty-first session

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Item 10 (c) of the provisional agenda

Issues relating to the Globally Harmonized System:
miscellaneous

Sub-Committee of Experts on the Globally Harmonized
System of Classification and Labelling of Chemicals

Forty-third session

Geneva, 7–9 December 2022

Item 3 (i) of the provisional agenda

Work on the Globally Harmonized System of
Classification and Labelling of Chemicals: other matters

Flammable liquids: Open-cup and closed-cup testing for the flash point

Transmitted by the expert from Germany and the chair of the Working
group on Explosives*

Background

1. Reference is made to document ST/SG/AC.10/C.4/2022/2, ST/SG/AC.10/C.3/2022/11 considered during the June–July sessions of the Sub-Committee of Experts on the Transport of Dangerous Goods (TDG) and the Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). The proposals in paragraphs 10 and 12 of the document were not adopted because some delegations needed more time to evaluate the implications regarding the two options given in its paragraph 11.
2. The discussions and assessments of the working group on explosives (EWG) are summarized in its report, see paragraph 17 of informal document INF.44 (TDG, sixtieth session). The EWG supported the amendments with the preference of option 1 in paragraph 11 of the document ST/SG/AC.10/C.4/2022/2, ST/SG/AC.10/C.3/2022/11, i.e., to strongly recommend the use of closed-cup testing and to remove references to open-cup testing.
3. The TDG Sub-Committee concluded that it would like to resume the discussions on the question of test methods for the flash point based on a further document (see paragraph 98 of the report of the TDG Sub-Committee, document ST/SG/AC.10/C.3/120).
4. Some GHS Sub-Committee experts stated that they thought that the open-cup test method might be appropriate in some cases (especially for highly viscous flammable liquids) and preferred option 2 in which a reference to open-cup testing would be kept in the Manual. The experts were invited to provide information about cases where the open-cup test is used

* A/75/6 (Sect.20), para. 20.51

for flammable liquid's classification purposes (see paragraphs 10 to 12 of the report of the GHS Sub-Committee, document ST/SG/AC.10/C.4/84).

Responses to the concerns expressed

5. The authors of this document considered the remarks made at the last session and additionally contacted the delegations who expressed reservations about the removal of references to open-cup testing.

6. At the last session, some experts pointed out that the reference to the safety margin for open-cup test results should be kept at least for the case that available data of open-cup tests are used.

7. Concerns were also expressed on testing of viscous liquids. In this context, the authors would like to point out that even for viscous liquids, the flash point for classification purposes can be determined by closed cup-testing (see section 32.4.2.1 of the Manual of Tests and Criteria).

8. However, based on the request during the last session (see the last sentence in paragraph 4 above), the authors received information that for some viscous liquids closed-cup testing is not possible – even when considering that for the purposes of classification only flash point values up to 93 °C are relevant (the upper criterion for the distinction between GHS flammable liquids category 4 and no classification).

9. The authors are grateful for the feedback received. As a result, the proposal for section 32.4 of the Manual of Tests and Criteria is amended such that open-cup testing is acceptable if closed-cup testing is not possible (e.g., due to the viscosity of the liquid) and in case available data are used, see paragraph 1 in the annex to this document.

Current references to closed-cup and open-cup testing in the GHS

10. Additionally, the authors would like to point out that the GHS already refers to closed-cup testing and states that open-cup tests are acceptable only in special cases, see current section 2.6.4.2.4 of the GHS:

“2.6.4.2.4 If data are not available, the flash point and the initial boiling point shall be determined through testing. The flash point shall be determined by closed-cup test method. Open-cup tests are acceptable only in special cases.”

Proposals

11. The TDG and GHS sub-committees are invited to consider the proposals as outlined in the Annex to this document.

Annex

Note: The proposals below show the amendments compared to the current text as follows: additions are underlined, deletions are struck through.

Amendments to the Manual of Tests and Criteria (Section 32)

1. Amend section 32.4 of the Manual of Tests and Criteria by adding the following paragraph under the heading of 32.4 (and above the heading of section 32.4.1):

“32.4 Test methods used for determining flash point and viscosity

It is strongly recommended to use closed-cup test methods for the determination of the flash point. Open-cup test methods are acceptable for liquids which cannot be tested in closed-cup test methods (e.g., due to their viscosity) or in case available data are used. In these cases, 5 °C should be subtracted from the measured value, because open cup test methods generally result in higher values than closed-cup test methods.”

Sub-sections 32.4.1 and 32.4.2 remain unchanged.

2. Consequentially, a reference to open-cup testing is no longer needed in section 32.2.3 and it is proposed to amend the third sentence as follows:

“32.2.3 [...]Therefore, it may occur that liquids which are not included in the list because their flash point in their pure state is more than 60 °C ~~in a closed-cup test, or more than 65.6 °C in an open-cup test~~, may be classified as "generic" or "not otherwise specified" flammable liquids with a flash point at or below that limit. [...]”

Amendments to the GHS (Chapter 2.6)

3. Additionally, it is proposed to amend the wording in section 2.6.4.2.4 of the GHS to be specific with regard to the special cases in which open-cup test data are appropriate (viscous liquids for which open-cup testing is not possible or available data). Furthermore, the proposed wording would then be equivalent to that in the Manual of Tests and Criteria as proposed in paragraph 1 above:

“2.6.4.2.4 If data are not available, the flash point and the initial boiling point shall be determined through testing. The flash point shall be determined by a closed-cup test method. Open-cup tests are acceptable ~~only in special cases for liquids which cannot be tested in closed-cup test methods (e.g., due to their viscosity) or in case available data are used. In these cases, 5 °C should be subtracted from the measured value because open cup test methods generally result in higher values than closed-cup methods.”~~

4. The authors would also like to point out that (as far as we are aware), “shall” shall not be used in the GHS. The GHS Sub-Committee may wish to consider replacing “shall” in the first two sentences (twice) by “should”.