



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-fifth session

Geneva, 25 November–3 December 2024

Item 2 (b) (viii) of the provisional agenda

**Recommendations made by the Sub-Committee
at its sixty-second, sixty-third and sixty-fourth
sessions and pending issues:**

Explosives and related matters:

Miscellaneous

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

Forty-seventh session

Geneva, 4–6 December 2024

Item 2 (a) of the provisional agenda

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

**Work of the Sub-Committee of Experts on the Transport
of Dangerous Goods on matters of interest to the Sub-
Committee of Experts on the Globally Harmonized System
of Classification and Labelling of Chemicals**

Report of the informal correspondence group on the revision of subsection 51.4 of the Manual of Tests and Criteria regarding the burning rate

**Transmitted by the expert from China on behalf of the informal
correspondence group***

I. Report of the informal working group

1. At the sixty-second session of the Sub-Committee of Experts on the Transport of Dangerous Goods (TDG Sub-Committee), the expert from China submitted document ST/SG/AC.10/C.3/2023/6¹ proposing an amendment to 51.4.4.2 (e) of the *Manual of Tests and Criteria*. The Working Group on Explosives (EWG) reviewed the document and recommended accepting the proposal. Experts in the EWG also identified other inconsistencies in subsection 51.4 and further improvements were necessary. An Informal Correspondence Group (Burn Rate ICG), was established to proceed with the work.

2. In August 2023, the expert from China invited experts from the EWG to join the Burn Rate ICG. With the support of these experts, the revision of subsection 51.4 of the *Manual of Tests and Criteria* was completed at the end of September, and a call for comments was completed within the Burn Rate ICG.

3. At the 64th TDG Sub-Committee meeting, the reports of ICG were circulated to EWG for discussion. EWG commended the early work of the Burn Rate ICG. At the meeting, delegates from Germany and the United States of America had questions about the changes

* A/78/6 (Sect. 20), table 20.5.

¹ Circulated for consideration by the Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals (GHS Sub-Committee) at its forty-fourth session with the symbol ST/SG/AC.10/C.4/2023/1.



to the definition of I_{max} and the German expert said that he would go back and discuss with his colleagues and give specific suggestions. After the meeting, German delegates gave their suggestion to delete the sentence: “**The maximum irradiance (I_{max}) is an average of the irradiance measured over a period of at least 30 s during the period of peak thermal radiation**” and gave a detailed explanation. At the same time, they also pointed out the inconsistency in the equation for the radiation efficiency between Figure 51.4.1 and section 51.4.4.2(a). ICG accepted the suggestions and revised the text.

4. Both the TDG and GHS sub-committees are invited to consider the amendments to subsection 51.4 proposed by the informal group in paragraph 5 below. The full text of the revised version of subsection 51.4 with all the proposed amendments is reproduced in informal document INF.6 (TDG Sub-Committee) – INF.4 (GHS Sub-Committee).

II. Proposal

5. Amend subsection 51.4 of the *Manual of Tests and Criteria* as follows (new text is in **bold**):

51.4.1.2 (b) Delete “, Division 1.1”.

51.4.4.1 (a) Amend to read as follows:

“The starting point of the fire is defined as the moment at which the substance or mixture reacts detectably. The end point of the fire is characterized by a decrease in **irradiance I** (as caused by the fire) to less than 5 % of the maximum **irradiance (I_{max})**. **The total burning time t is the time span between the starting point and the end point of the fire** (see figure 51.4.1);”

51.4.4.1 (c) Delete and renumber subsequent paragraphs accordingly (current subparagraphs “(d)” and “(e)” become “(c)” and “(d)” respectively).

51.4.4.1 (c) (*former subparagraph (d)*) Replace “burning time” by “**total burning time**”.

51.4.4.2 (a) In the second sentence delete “percent” and replace “radiation level” by “radiation **energy**”.

51.4.4.2 (c) In the last sentence, replace “of the radiation intensities I_t [W/m²]” by “of the **irradiance I_t [kW/m²]**”.

51.4.4.2 (d) In the first sentence replace “radiation level” by “**irradiance**” and in the second sentence delete “to 1%”.

51.4.4.2 (e) Amend to read as follows:

“ $I_{relevant}$ is obtained from the maximum of the **smoothed and corrected** curve of the **measured** heat radiation. $I_{calculated}$ is the average value of the radiation **obtained** by converting the integrated area in a rectangle of equal size during the same **total burning time** (see figure 51.4.1);”

51.4.4.2 (g) In the last paragraph, replace “and f the form factor” by “and **f is the form factor**”.

51.4.4.5 In figure 51.4.1, replace “ $Dosis_{measured}$ ” and “ $Dosis_{relevant}$ ” by “ **$dose_{measured}$ ” and “ **$dose_{calculated}$ ”.****

51.4.6 Replace “Burning time” by “**Total burning time**” and “Enthalpy of combustion” by “**Heat of combustion**”.

References Add the following new reference at the end of the current list:

“[6] *Organic Peroxides: Storage (Guideline for the labour-safe, environment-safe and fire-safe storage of organic peroxides)*, Hazardous Substances Publication Series 8:2011 (PGS 8:2011) version 1.0, December 2011.”