

**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**

**21 November 2024**

**Sixty-fifth session**

Geneva, 25 November-3 December 2024

Item 2 (b) (iii) 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:  
Review of tests in parts I, II and III of the Manual of Tests and Criteria**

**Considerations on document ST/SG/AC.10/C.3/2024/103 -  
Proposed changes to the Koenen test specifications**

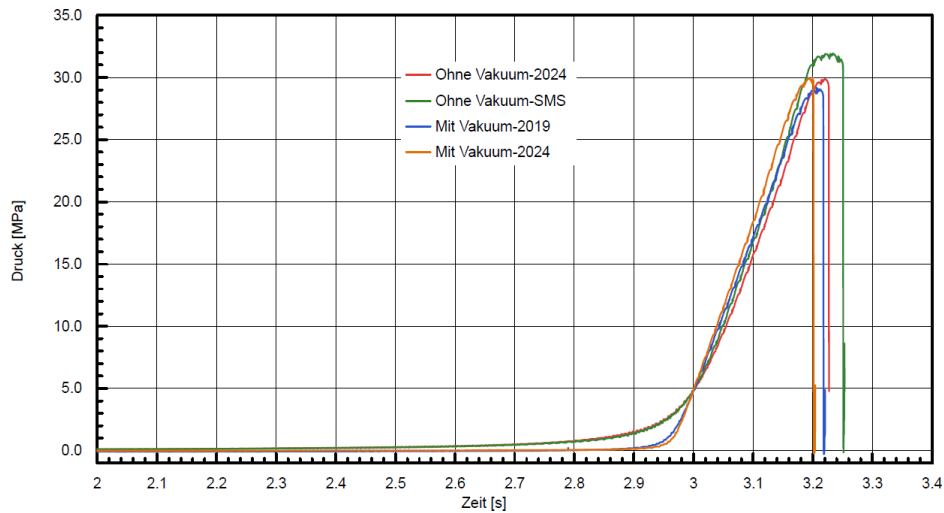
**Submitted by the expert from Germany**

**I. Introduction**

1. Germany supports the proposed changes to the Koenen test specifications in document ST/SG/AC.10/C.3/2024/103 in principle.
2. Germany participated in the Round Robin Test (RRT) mentioned in document ST/SG/AC.10/C.3/2024/103 and the results are not questioned. However, Germany believes that a couple of points in the proposal still need further consideration and clarification.

**II. Discussion**

3. Germany would like to discuss the proposed change of the wall thickness from the current value of  $0.5 \pm 0.05$  mm measured 20 mm from the bottom of the tube to  $0.65 \pm 0.1$  mm (see document ST/SG/AC.10/C.3/2024/103, paragraphs 12 and 13). The German expert is aware that this value was communicated during the RRT. But remeasuring the thickness of tubes from different production years yielded values of around 0.5 mm measured 20 mm from the bottom of the tube. BAM measures the thickness of the steel tubes with a mechanical external measuring gauge (model: Kroeplin quick probe D2R20 0 20 mm, 0.01 mm with the following specifications: measuring range: 0 – 20 mm, scale interval: 0.01 mm, measuring depth max.: 85 mm). An increase of the wall thickness from 0.5 to 0.65 mm might have unintended consequences, e.g. most of the existing tubes will not fall within the specifications anymore and the bursting pressure might shift to higher values.
4. The second point concerns the dynamic burst pressure procedure. In the annex of the proposal in A12.2.3.3 it is described that “The entire system is purged of air, then the vacuum valve is closed...”. The expert from Germany wants to point out that this step is not necessarily needed because similar results are obtained, even if the air is not purged out before pressuring the tube. The standard procedure for determining the bursting pressure at BAM is that the tube is pressurized while the air is still present in the tube. The bursting pressure as well as the pressure rate of both methods are essentially the same as shown in the graph below.



5. Germany very much appreciates the fact that a lower limit of the pressure rate shall be introduced with the bursting pressure procedure, see paragraph 11 of the proposal. It is proposed that the pressure increase from 5-35 MPa should be less than 0.5 seconds, i.e. a pressure rise rate of 60 MPa/s. The 35 MPa is above the proposed limit of the bursting pressure of  $29 \pm 4$  MPa, so this value is not reached in the measurement. Another point is that the proposed rate seems to be considerably low. Typical pressure rates at BAM are 110-120 MPa/s. BAM measurements show that low pressure rates influence the bursting pressure.

### III. Proposal

6. Germany proposes to discuss the points raised above in the Explosives Working Group (EWG) during the next session of the Sub-Committee. Germany believes that the proposal in document ST/SG/AC.10/C.3/2024/103 would benefit from such a discussion in the EWG to finalize the details of the proposal as the result of the highly valued and substantive effort made by the round robin testing group.