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

18 November 2022

Sub-Committee of Experts on the Transport of Dangerous Goods

Sixty-first session
Geneva, 28 November - 6 December 2022
Item 17 of the provisional agenda
Other business

Suggestions for adjusting test temperature of UN Test 3(c) and UN Test 4(b)

Transmitted by the expert from China

Introduction

1. Thermal stability is an important indicator of explosive safety assessment and the only rejected assessment indicator in the United Nations Manual of Tests and Criteria. Test conditions for thermal stability: 75 ± 2 ℃ - 48 hours, have been successfully used in the United Nations Manual of Tests and Criteria for several decades.

2. As the climate changes, the temperature of the transportation environment also changes significantly. Especially in summer, the Chinese team of experts measured the temperature inside the vehicle, and the data showed that the highest temperature in the container had exceeded 75 ℃. Partial melting of some explosives (such as TNT based explosive, B explosives, etc.) has also occurred. Although thermal runaway may not occur at this condition, the change of physical state will also bring security risks. For example, the melted explosives may leak out of the packing cases and flow into the cracks on the deck, etc.

Proposal

3. Considering that the current thermal stability test conditions can no longer meet the actual conditions, it is suggested to:

(a) Increase the test temperature from 75 ℃ to 85 ℃ in UN Test 3(c) and UN Test 4(a) ;

(b) Add a record of changes in the physical state of the explosive in the evaluation of test results (in sections 13.6.1.1.4, 13.6.2.4 and 14.4.1.4). For example, if the physical state of the sample changes during the test, it should be recorded and marked in the test report.