United Nations ST/SG/AC.10/C.3/2012/79

Secretariat

Distr.: General
11 September 2012

Original: English

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

Forty-second session
Geneva, 3–11 December 2012
Item 2 (b) of the provisional agenda
Recommendations made by the Sub-Committee on its thirty-ninth, fortieth and forty-first sessions and pending issues
Listing, classification and packing

Special provision for aluminium hydride, UN 2463

Transmitted by the Council on Safe Transportation of Hazardous Articles (COSTHA)[1]

Introduction

1. At the forty-first session of the Sub-Committee COSTHA requested the views of Sub-Committee members to facilitate the development of a formal proposal for submission to the forty-second session of the Sub-Committee (see also ST/SG/AC.10/C.3/82, para 73). A number of helpful comments were provided and were taken into account when developing this proposal. Testing was conducted on α-Aluminium hydride (Alane), UN 2463 and it was determined that it does not meet the criteria for classification as a Division 4.3 substance as a powder or as a mixture with a polymeric binder. In addition the material is shipped in a molded pellet form that is not friable in which case it also does not meet the criteria for classification as dangerous goods. Molded pellets of α-Aluminium hydride were immersed in water with no physical reaction of release of flammable gas.

2. The entry Aluminium hydride, UN 2463, 4.3, PG I was added in the 1970's along with other similar hydrides. A classification data sheet was not submitted at the time. Rather the incorporation of this entry in the Model Regulations was based on an analogy with other like substances. Since the incorporation of Aluminium hydride, UN 2463 in the Model Regulations the defining criteria and classification data from testing has evolved. Historically, Aluminium hydride was known to be pyrophoric in air and water reactive.

[1] In accordance with the programme of work of the Sub-Committee for 2011-2012 approved by the Committee at its fifth session (refer to ST/SG/AC.10/C.3/76, para. 116 and ST/SG/AC.10/38, para. 16).

However, today it is known that Aluminium hydride is available in a number of different crystalline phases, including a stable form, α-Aluminium hydride. It is well-documented that α-Aluminium hydride can be passivated, with the result that:

- The powder is not pyrophoric in air, and
- It can be immersed in water with no reaction.

3. Stability is further enhanced upon compaction with a binder to form a non-friable pellet that is formed with a mixture of α-Aluminium hydride and a non-dangerous binder. The resulting material does not meet the defining criteria for any hazard class or as an environmentally hazardous substance.

Proposal

4. COSTHA proposes a new SP xyz be assigned in column 6 of the Dangerous Goods List for Aluminium hydride, UN 2463 to recognize that some forms of the substance do not meet the criteria for classification as a Division 4.3 substance or the established defining criteria of any other class or division.

> SP XYZ If the chemical or physical properties of this substance are such that it does not meet the established defining criteria for Division 4.3 and any other class or division, it is not subject to these Regulations.

Annex

Test results for α-Aluminium Hydride

Tests were conducted in accordance with the procedures described in "Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria", 5th revised edition.

Division 4.3 Water Reactivity tests were conducted in accordance with Test N.5 of the Manual of Tests and Criteria. A sample of Aluminium hydride powder (0.1178 g) and an Aluminium hydride/TCP pellet (0.1252 g) were submitted for evaluation per the UN 4.3 Water Reactivity Test. The test was carried out using the procedures described in the Manual of Tests and Criteria, Rev.5. Over a 72-hour period, the apparatus and sample were periodically observed for any gas generation (bubbling from the powder or pellet) which in turn would have pushed water into the last receiving flask and/or altered the water level in the middle flask. After 72 hours no gas generation was observed from either sample. After the initial 72-hour period, the setup was allowed to stand and was observed occasionally for several days in anticipation of eventual reaction and gas generation. No reaction or gas generation was observed after 7 days.