
**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**

**(Twenty-second session, 2-6 December 2002,
agenda item 4(a))**

NEW PROPOSALS

Outstanding issues

Tank provision for UN 1963, Helium, refrigerated liquid

Transmitted by the expert from the United States of America

Background

1. In the tenth revised edition of the UN Model Regulations, TP 23 was assigned to UN 1963, Helium, refrigerated liquid. For some unknown reason TP 23 was dropped in the eleventh revised edition and it also does not appear in the twelfth revised edition. There was no proposal to make this change. During the discussions that took place in the UN portable tanks working group it was agreed that special consideration needed to be taken into account for portable tanks in dedicated helium service. While these tanks are capable of passing the 4 g rail impact test successfully, the cost of performing the test on a prototype tank is very costly because even though the tank passes the test some permanent elongation of structural members may occur. It should be stressed that the impact test in 6.7.4.14.1 was specifically added for the purpose of ensuring that the portable tanks can withstand the conditions of rail transport. Due to the specialized frame structure employed in their design, and the fact that these tanks are restricted to dedicated transport of refrigerated helium and are not transported by rail, the US has included an exception from the rail impact testing specified in 6.7.4.14.1 if the tanks are marked "NOT FOR RAIL TRANSPORT". TP23 allowed for the competent authority to approve this exception. However, in this paper we are requesting that the Sub-Committee address the specific exception in a new TP specifically for UN 1963 as opposed to reinstating TP 23 against UN 1963 in the Dangerous Goods List.

2. Helium is available in commercially viable extractable quantities in only five countries and is liquefied for transportation in only four countries. One way shipment of liquid helium takes up to 45 days due to the distance between production and consumption points and the inherent delays experienced in transportation and customs clearance. Liquid helium is also one of the most volatile liquids with a latent heat of vaporization that is only 1/62 of liquid nitrogen and 1/871 of water that indicates the need for limiting heat leak into liquid helium to extremely low levels. To accomplish this, the tank has to be highly specialized structurally and with respect to insulation design. A 40,000 litre liquid helium tank costs over half million dollars (US) and carries a load of helium worth up to a quarter million dollars (US). Refrigerated liquefied helium portable tanks have been safely used for long distance (international) transportation and are not transported on railroads due to the unpredictability of rail impact loads on a world wide basis and the possibility of high economic losses due to structural or insulation failures of these containers if transported by rail. In over a million trips by road and water over the past 30 years structural or insulation failures were virtually non-existent except in severe accidents. Subjecting the highly specialized refrigerated liquefied helium tanks, that are limited to road and water transportation, to 4g rail impact testing as prescribed in UN Recommendations 6.7.4.14.1 would result in the destruction of a prototype tank at a substantial cost even though the tank would never be transported by rail. Problems with certain countries not accepting these tanks under the Alternative Arrangement "AA" provisions of 6.7.1.2 have only recently come to light and on this basis the US is requesting that the Sub-Committee adopt the proposed TP during the current biennium.

Proposal

It is proposed that a new TPxx be incorporated in column 11 of the Dangerous Goods List for UN 1963, Helium, refrigerated liquid and in section 4.2.5.3 of the Model Regulations as follows:

"TPxx Portable tanks that are used for the dedicated transport of UN 1963, Helium, refrigerated liquid need not be subjected to the impact test in 6.7.4.14.1 if the portable tank is marked "NOT FOR RAIL TRANSPORT" in letters of a minimum height of 10 cm on at least two sides."
