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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-third session, 30 June – 4 July 2003,
agenda item 2)

TRANSPORT OF GASES

Requirements for UN composite cylinders in 6.2.2.1.1

Transmitted by the Compressed Gas Association (CGA)

The Compressed Gas Association (CGA) would like to submit the following proposal regarding the requirements for UN composite cylinders in 6.2.2.1.1.

Background

1. In December 2002, the Sub-Committee and Committee agreed to adopt ISO 11119-1:2002 and ISO 11119-2:2002 to specify the requirements for the manufacture of UN composite cylinders in 6.2.2.1.1 of the Model Regulations, 13th revised edition.

As stated in the Report of the Working Group on Additional Provisions for the Transport of Gases (ST/SG/AC.10/C.3/44, Annex 1, paragraph 8), “[d]iffering viewpoints were expressed on the need to restrict the lives of composite receptacles.... After a long discussion,...a compromise [was reached] which set the initial life of composite cylinders at 15 years, but allowed for subsequent discretionary prolongation by the competent authority in the light of accumulated experience.”

All UN composite cylinders were also required to be designed for unlimited service life.

2. ISO 11119-1:2002 and ISO 11119-2:2002 address composite cylinders designed for a life from 10 years to non-limited life, with a recommendation that cylinders with a design life greater than 15 years be requalified in order for them to remain in service beyond 15 years.

By requiring that all cylinders eligible for UN marking be designed for unlimited life, the original intent of the ISO 11119 standards has been restricted. It will effectively prevent UN composite cylinders from being technically or economically competitive with cylinders currently being constructed and used under other existing standards, regulations, or directives.

The key benefit of using composite cylinders is their light weight. The technology and associated standards have been developed over the past 30 years to enable the safe use of composite cylinders in a variety of applications.

When composite cylinders were first approved, the design-life concept was introduced to ensure that a safe working life could be established for each design. The design-life concept also enabled the cylinders to be designed with a balance of optimum efficiency (i.e. lightest weight) and useful service life.

The typical design life for composite cylinders today is 15 years. It is estimated that well over 2 million fully-wrapped cylinders with a 15-year design life have been produced since they were first approved in the 1970s.

It is possible to design composite cylinders so that they have a longer design life. However, in order to accomplish this, additional material thicknesses are necessary in the design, and as a consequence, the weight as well as the cost increase. Some users require a cylinder design life longer than 15 years, and various standards now allow the concept of a variable or even non-limited design life. For example, European standards EN 12257 and EN 12245, for hoop-wrapped and fully-wrapped composite cylinders respectively, allow for the same options in cylinder design life and performance that are found in the ISO 11119 standards.

The requirements of 6.2.2.1.1 of the 13th revised edition of the Model Regulations will eliminate options for design life and will place undue restrictions on design. It is not necessary for all composite cylinders to be designed for “unlimited life” only.

CGA supports the rationale that the extension of life of a specific composite cylinder design beyond 15 years may only be considered for those design types originally qualified and constructed for a longer life. Under no circumstances should the life of a cylinder be extended beyond the original design life to which it had been qualified and approved. CGA also respectfully submits the rationale that composite cylinders designed for a specific “limited” life safely meet the requirements of many users and should not be excluded from the Model Regulations.

Proposal

CGA would like to propose the following revisions to the notes at the end of the table in 6.2.2.1.1 of the Model Regulations, 13th revised edition:

NOTE 1: ~~*In the above referenced standards, composite cylinders shall be designed for unlimited service life.*~~

NOTE 2: *After the first 15 years of service, composite cylinders manufactured according to these standards may be approved for extended service, up to the original design life to which they were initially approved, by the competent authority ~~which~~ that was responsible for the original approval of the cylinders design and which will base its decision. The decision for approval for extended service shall be based on the inspection and test information supplied by the manufacturer or owner or user.*
