

# UN/SCETDG/27/INF.8

---

## 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-seventh session  
Geneva, 4-8 July 2005  
Item 7 of the provisional agenda

### MISCELLANEOUS PROPOSALS OF AMENDMENT TO THE MODEL REGULATIONS ON THE TRANSPORT OF DANGEROUS GOODS

#### Maximum degree of filling for filling by mass

Transmitted by the expert from Austria

#### **Introduction**

Packagings and tanks are often filled by weight using a balance. This should be reflected in the formulas of part 4 referring to the maximum degree of filling for liquids, by adding also the more user-friendly formula for the maximum mass in kg/m<sup>3</sup> capacity.

For this formula, only the density at 50 °C is required. For the volume the density at 50 °C, the density at 15 °C and the temperature of the substance is required. Adding this formula may also contribute to a better understanding.

If the committee agrees that this would improve the regulations, we will come forward with a formal proposal at the next meeting.

**Proposal**

Existing text	Proposed amended text
<p>4.1.1.4 When filling packagings, including IBCs and large packagings, with liquids, sufficient ullage (outage) shall be left to ensure that neither leakage nor permanent distortion of the packaging occurs as a result of an expansion of the liquid caused by temperatures likely to occur during transport. Unless specific requirements are prescribed, liquids shall not completely fill a packaging at a temperature of 55 °C. However, sufficient ullage shall be left in an IBC to ensure that at the mean bulk temperature of 50 °C it is not filled to more than 98% of its water capacity.</p>	<p>4.1.1.4 When filling packagings, including IBCs and large packagings, with liquids, sufficient ullage (outage) shall be left to ensure that neither leakage nor permanent distortion of the packaging occurs as a result of an expansion of the liquid caused by temperatures likely to occur during transport. Unless specific requirements are prescribed, liquids shall not completely fill a packaging at a temperature of 55 °C. However, sufficient ullage shall be left in an IBC to ensure that at the mean bulk temperature of 50 °C it is not filled to more than 98% of its water capacity.</p> <p>Maximum degree of filling (in kg/m<sup>3</sup> capacity) = 98 x d<sub>50</sub> (density in kg/m<sup>3</sup>)</p>
<p>4.2.1.9.2 The maximum degree of filling (in %) for general use is determined by the formula:</p> $\text{Degree of filling} = \frac{97}{1 + \alpha (t_r - t_f)}$	<p>4.2.1.9.2 The maximum degree of filling for general use is determined by the formula:</p> $\text{Maximum degree of filling (in \%)} = \frac{97}{1 + \alpha (t_r - t_f)}$ <p>or</p> <p>Maximum degree of filling (in kg/m<sup>3</sup> capacity) = 97 x d<sub>50</sub> (density in kg/m<sup>3</sup>)</p>
<p>4.2.1.9.3 The maximum degree of filling (in %) for liquids of Class 6.1 and Class 8, in packing groups I and II, and liquids with an absolute vapour pressure of more than 175 kPa (1.75 bar) at 65 °C, is determined by the formula:</p> $\text{Degree of filling} = \frac{95}{1 + \alpha (t_r - t_f)}$	<p>4.2.1.9.3 The maximum degree of filling for liquids of Class 6.1 and Class 8, in packing groups I and II, and liquids with an absolute vapour pressure of more than 175 kPa (1.75 bar) at 65 °C, is determined by the formula:</p> $\text{Maximum degree of filling (in \%)} = \frac{95}{1 + \alpha (t_r - t_f)}$ <p>or</p> <p>Maximum degree of filling (in kg/m<sup>3</sup> capacity) = 95 x d<sub>50</sub> (density in kg/m<sup>3</sup>)</p>

<p><b>4.2.5.3</b></p> <p>TP1 The degree of filling prescribed in 4.2.1.9.2 shall not be exceeded.</p> $\text{Degree of filling} = \frac{97}{1 + \alpha (t_r - t_f)}$ <p>TP2 The degree of filling prescribed in 4.2.1.9.3 shall not be exceeded.</p> $\text{Degree of filling} = \frac{95}{1 + \alpha (t_r - t_f)}$	<p><b>4.2.5.3</b></p> <p>TP1 The degree of filling prescribed in 4.2.1.9.2 shall not be exceeded.</p> <p>TP2 The degree of filling prescribed in 4.2.1.9.3 shall not be exceeded.</p>
---	---