



Secretariat

Distr.  
GENERAL

ST/SG/AC.10/C.3/2002/22  
3 April 2002

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**  
(Twenty-first session, 1-10 July 2002,  
agenda item 3 (b))

**EXPLOSIVES, SELF-REACTIVE SUBSTANCES AND ORGANIC PEROXIDES**

**Classification of ammonium nitrate emulsions, suspensions and gels**

**Test Results of ANE**

**Transmitted by the expert from Japan**

**1. Background**

During the nineteenth session of the Sub-Committee, July 2001, the test method for assigning substances to the new entry for Ammonium Nitrate Emulsions, suspensions or gels (ANEs)(UN 3375) was considered. Then draft test series 8(a), 8(b) and 8(c) were adopted, but test series 8(d) is needed to be discussed further (ST/SG/AC.10/C.3/38, paragraph 82).

According to the draft test series 8(a), 8(b) and 8(c), Japan has performed these test for some ANEs, and the results of the tests are attached as Annex.

**2. Results and comments**

***Test 8(a) : Thermal Stability Test***

The results are presented in the Table1 of the Annex. All the emulsions have been proved to be thermally stable, even at 20 °C above the maximum transport temperature, 60 °C.

***Test 8(b) : ANE Gap Test***

The results given in the Table2 of the Annex show that the test is capable of distinguishing between sensitized and unsensitized products just like the results of US/SCETDG/19/INF.19.

***Test 8(c) : Koenen Test***

The results are presented in the Table3 of the Annex. The results of the tests are 'minus'.

**3. Proposal**

It is propose that the above test results showed in the Annex add to "*Examples of results*" of draft test series 8(a), 8(b) and 8(c) in the Manual of Tests and Criteria (ST/SG/AC.10/C.3/38/Add.1, Annex2).

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## Annex

Table 1 Test 8(a) : Thermal Stability Test

Substances	Sample mass (g)	Test T (°C)	Result	Comments
ANE-J1 Ammonium nitrate 80%, Water 13%, Fuel/emulsifier 7%	613	80	-	Mass loss 0.1%
ANE-J2 Ammonium nitrate 76%, Water 17%, Fuel/emulsifier 7%	605	80	-	Mass loss 0.3%
ANE-J3 Ammonium nitrate 68%, Sodium nitrate 9%, Sodium perchlorate 5%, Water 11%, Fuel/emulsifier 7%	583	80	-	Mass loss 0.3%
ANE-J4 Ammonium nitrate 75%, Water 11%, Fuel/emulsifier 14%	602	80	-	Mass loss 0.1%

Table 2 Test 8(b) : ANE Gap Test

Substances	Density g/cm <sup>3</sup>	Gap mm	Result	Comments
ANE-J1 Ammonium nitrate 80%, Water 13%, Fuel/emulsifier 7%	1.39	70	-	Tube fragmented. Plate indented.
ANE-J2 Ammonium nitrate 76%, Water 17%, Fuel/emulsifier 7%	1.42	70	-	Tube fragmented. Plate indented.
ANE-J3 Ammonium nitrate 68%, Sodium nitrate 9%, Sodium perchlorate 5%, Water 11%, Fuel/emulsifier 7%	1.41	70	-	Tube fragmented. Plate indented.
ANE-J4 Ammonium nitrate 75%, Water 11%, Fuel/emulsifier 14%	1.40	70	-	Tube fragmented. Plate indented.
ANE-J5 (sensitized by microballoons) Ammonium nitrate 71%, Sodium nitrate 5%, Water 18%, Fuel/emulsifier 6%	1.20	70	+	Tube fragmented. Plate performed. VOD 5.7 km/s
ANE-J6 (sensitized by microballoons) Ammonium nitrate 80%, Water 13%, Fuel/emulsifier 7%	1.26	70	+	Tube fragmented. Plate performed. VOD 6.3 km/s

Table 3 Test 8(c) : Koenen Test

Substances	Result	Comments
ANE-J1 Ammonium nitrate 80%, Water 13%, Fuel/emulsifier 7%	-	Effect type "O"
ANE-J2 Ammonium nitrate 76%, Water 17%, Fuel/emulsifier 7%	-	Effect type "O"
ANE-J3 Ammonium nitrate 68%, Sodium nitrate 9%, Sodium perchlorate 5%, Water 11%, Fuel/emulsifier 7%	-	Effect type "A"
ANE-J4 Ammonium nitrate 75%, Water 11%, Fuel/emulsifier 14%	-	Effect type "A"