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COMMITTEE OF EXPERTS ON THE TRANSPORT
OF DANGEROUS GOODS

Sub-Committee of Experts on the
Transport of Dangerous Goods
(Eighteenth session, 3-14 July 2000,
agenda item 5 (a))

MISCELLANEOUS DRAFT AMENDMENTS TO THE MODEL REGULATIONS
ON THE TRANSPORT OF DANGEROUS GOODS

Listing and classification

Proposal for listing a new self-reactive substance

Transmitted by the expert from the United States of America

Based on the attached test data, the expert from the United States of America proposes to list 4-Nitrophenylhydrazine, wetted with 25-35% water in the List of Self-Reactive Substance in 2.4.2.3.2.3 as follows:

SELF-REACTIVE SUBSTANCE	Concen- tration (%)	Packing method	Control temper- ature (°C)	Emergency temper- ature (°C)	UN generic entry	Remarks
4-Nitrophenylhydrazine, water wetted	≤ 71	OP7	None	None	3226	None

Annex**TEST REPORT/SUMMARY FOR (4-NITROPHENYL)HYDRAZINE, 25-35% WATER WET**

1. Name of substance : (4-nitrophenyl)hydrazine, 25-35% water wet
- General data
- 2.1 Composition : 65-75% (4-nitrophenyl)hydrazine (70.8%);
25-35% water (27.8%)
- 2.2 Molecular formula : C6 H7 N3 O2 . x (H2O)
- 2.3 CAS registry number : 100-16-3
- 2.4 Physical form : Solid
- 2.5 Color : Dark orange
- 2.6 Apparent Density : Not available
- 2.7 Particle size : Not available
- 2.8 Melting point : 157.5°C
3. Detonation (test series A)
Box 1 of the flow chart : Does the substance propagate a detonation?
- 3.1 Method : UN Gap Test (test A.5)
- 3.2 Sample conditions : Ambient temperature
- 3.3 Observations : Tube not fully fragmented but average tube fragmentation is 271.25 mm of length (over 4 trials) which is 1.77X the average inert material (table sugar) fragmentation of 153 mm of length (over 2 trials)
- 3.4 Result : "Partial"
- 3.5 Exit : 1.2
4. Deflagration (test series C)
Box 4 of the flow chart : Does the substance propagate a deflagration?
- 4.1 Method 1 : Time/pressure test (test C.1)
- 4.2 Sample conditions : Ambient temperature
- 4.3 Observations : Did not achieve a pressure rise of 2070 kPa above atmospheric
- 4.4 Result : "No"
- 4.5 Method 2 : Deflagration test (test C.2)
- 4.6 Sample conditions : Preheated to 50°C

- 4.7 Observations : Preliminary 14 mm and 28 mm tubes - would not sustain ignition without flame source;
Dewar vessel: would not sustain ignition without flame source for 2 trials
- 4.8 Result : "No", no measurable deflagration
- 4.9 Overall result : "No"
- 4.10 Exit : 4.3
5. Heating under confinement (test series E)
- Box 8 of the flow chart : What is the effect of heating it under defined confinement?
- 5.1 Method 1 : Koenen test (test E.1)
- 5.2 Sample conditions : Mass 49.0 to 49.4 g
- 5.3 Observations : Limiting diameter 1.5 mm (time to reaction 121 s)
- 5.4 Result : "Medium"
- 5.5 Method 2 : USA pressure vessel test (test E.3)
- 5.6 Sample conditions : Start at ambient temperature, 5.0 g/trial
- 5.7 Observations : 1.0 mm: (1) vented, no rupture, (2) Disc rupture;
1.2 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm: Each of these orifice sizes produced one rupture in one trial;
4.0 mm: (1) vented, no rupture, (2) Disc rupture;
4.5 mm: (1) vented, no rupture, (2) Disc rupture;
5.0 mm: (1) vented, no rupture, (2) vented no rupture, (3) vented, no rupture
- 5.8 Result : USA-PVT number 5.0 ; "Medium" - PVT number is between 3.5 - 8.0
- 5.9 Overall result : "Medium"
- 5.10 Exit : 8.2
6. Thermal stability (test series H)
- 6.1 Method - 77°C : Heat accumulation storage test (test H.4) at 77°C
- 6.2 Sample conditions : 250 g of substance in 0.5 liter Dewar vessel run at 77°C
- 6.3 Observations : 77°C trial: Observed temperature rise greater than 6°C in 3 days

- 6.4 Result : Auto-accelerating decomposition (SADT) is less than 77°C
- 6.5 Method - 60°C : Heat accumulation storage test (test H.4) at 60°C
- 6.6 Sample conditions : 255 g of substance in 0.5 liter Dewar vessel run at 60°C
- 6.7 Observations : 60°C trial: Observed maximum temperature rise of 3°C in 7 days
- 6.8 Result : Auto-accelerating decomposition (SADT) is greater than 60°C
- 6.9 Overall result : SADT for a 50 kg package is less than 77°C and higher than 60°C. No temperature control required
7. Proposed assignment
- 7.1 Proper shipping name : SELF-REACTIVE SOLID TYPE D
- 7.2 UN number : 3226
- 7.3 Division : 4.1
- 7.4 Technical name : (4-nitrophenyl)hydrazine, 25-35% water wet
- 7.5 Concentration : 65-75%
- 7.6 Diluent : 25-35% Water
- 7.7 Subsidiary risks : None
- 7.8 Packing group : II
- 7.9 Packing method : OP7
- 7.10 Control temperature : Not required
- 7.11 Emergency temperature : Not required

CLASSIFICATION OF (4-NITROPHENYL)HYDRAZINE, 25-35 WATER WET

