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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**  
(Twentieth session, 3-12 December 2001,  
agenda item 7 (d))

**LISTING AND CLASSIFICATION**

**Miscellaneous amendment proposals**

**New entry for the persalt  
Sodium Perborate Monohydrate  
in Division 5.1**

**Submitted by the expert from Germany**

**Background**

1. At present the detergent raw material Sodium Perborate Monohydrate is shipped worldwide in quantities of approx. 200,000 MT/y with increasing tendency.
2. At present the shipping of this material is carried out in bags (plastics film and paper), bulk bags, (flexible IBCs), bulk packagings (non-pressurized boxtype freight containers with sift-proof inner liner), hopper type and tank railcars and hopper type and tank trucks.
3. Since February 1998 the majority of the quantity (including domestic shipments in the United States of America) shipped worldwide is nowadays classified as an oxidizer pursuant to the transport regulations (division 5.1, UN 1479, PG III) based on positive results given by the UN O.1 test (see Annex 1).

GE.01-23883

## Reasoning

4. For safety reasons dangerous substances, globally shipped in such large quantities like this material, should have assigned individual UN numbers, because on the one hand this promotes a unique safety standard in multimodal transportation all over the world and on the other hand only individual UN entries allow the assigning of specific packing provisions, specific operational stowage instructions, specific treatment and faster identification and access to safety information for emergency intervening in cases of emergency.

For commercial reasons further it has to be considered, that a large quantity of this material at present is shipped in bulk packagings (boxtype freight containers with sift-proof inner liner, filled/loaded by gravity), which is prohibited for generic entries pursuant to the restructured modal regulations coming into force during 2001, i. e. shipments may be carried out with exemptions granted by the competent authorities only.

For these reasons, the expert from Germany proposes the introduction of a new entry as mentioned below (see Annex 2 - data sheet).

## Proposal

5. (a) Add entry 3xxx in the Dangerous Goods List as follows:

UN No.	Name and Description	Class or division	Subsidiary Risks	UN packing group	Special provisions	Limited quantities	Packagings and IBCs		Portable tanks	
							Packing instruction	Special provisions	Portable tank instruction	Portable tank special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
3xxx	SODIUM PERBORATE MONOHYDRATE	5.1	-	III	-	1 kg	P002 IBC08 LP02	PPxx B3, Bx	T1	-

(b) Amend the entry in the alphabetical index to read :

SODIUM PERBORATE MONOHYDRATE

5.1

3xxx

6. Add a new special packaging provision to P002 to read:

PPxx For UN 3xxx and UN 3yyy, metal packagings shall be vented.

7. Add a new special packaging provision to IBC 08 to read:

Bx For UN 3xxx and 3yyy, metal IBCs shall be vented

\* \* \*

**Annex 1**

INFRACOR  
Degussa-Hüls Gruppe

Hanau, February 05, 2001

**Report SPZ 92/97-2 (n)****UN Testing with Sodium Perborate Monohydrate**

- 1 Test for oxidizing solids** (according to UN Manual of Tests and Criteria, ST/SG/AC.10/11/Rev.3, 1999, 34.4.1, Test O.1)

**1.1 Samples**

The test was conducted with two samples of the same production batch in two series (which means with two reference test series). The test samples and the reference samples were prepared according to the test procedures as prescribed in section 34.4.1 of the UN test manual.

**1.2 Results**

The following table shows the test results with the relation to the reference test results (mean burning time of five trials):

<b>Ratio of Mixture</b>	<b>4:1</b>	<b>1:1</b>	<b>Ref.</b>
Sample	Burning time [s]	Burning time [s]	No
Sodium Perborate Monohydrate (sample 1)	50.2	45.6	1
Sodium Perborate Monohydrate (sample 2)	34.6	51.8	2

<b>Ratio of Mixture</b>	<b>No</b>	<b>6:4</b>	<b>4:6</b>	<b>3:7</b>
Reference Sample		Burning time [s]	Burning time [s]	Burning time [s]
Potassium Bromate : Cellulose	1	7.0	31.0	92.8
Potassium Bromate : Cellulose	2	6.8	26.2	89.4

**1.3 Conclusion**

The product sodium perborate monohydrate, represented by the tested samples, should be classified in Packing Group III of Division 5.1.

Dr. W. Wildner

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## Annex 2

## Figure 1

**DATA SHEET TO BE SUBMITTED TO THE UNITED NATIONS  
FOR NEW OR AMENDED CLASSIFICATION OF SUBSTANCES**

Submitted by the expert from Germany

Date:

Supply all relevant information including sources of basic classification data. Data should relate to the product in the form to be transported. State test methods. Answer all questions (if necessary state "not known" or "not applicable"). If data is not available in the form requested, provide what is available with details. Delete inappropriate words.

**Section 1. SUBSTANCE IDENTITY**

- 1.1 Chemical name: **Perboric acid, Sodium salt, monohydrate**
- 1.2 Chemical formula: **NaBO<sub>3</sub> \* H<sub>2</sub>O**
- 1.3 Other names/synonyms: **Sodium perborate monohydrate, Sodium peroxometaborate monohydrate, SPM, PBS1, PBSM**
- 1.4.1 UN number: **3xxx** 1.4.2 CAS number: **10332-33-9**
- 1.5 Proposed classification for the Recommendations
- 1.5.1 proper shipping name (3.1.2 <sup>\*</sup>/) : **SODIUM PERBORATE MONOHYDRATE**
- 1.5.2 class/division : **5.1** subsidiary risk(s) **none**  
packing group: **III**
- 1.5.3 proposed special provisions, if any: none
- 1.5.4 proposed packing instruction(s): **P002 (PPxx), IBC08 (B3, Bx) LP02**  
PPxx: For UN 3xxx and UN 3yyy, metal packagings shall be vented.  
Bx: For UN 3xxx and UN 3yyy, metal IBCs shall be vented.

**Section 2. PHYSICAL PROPERTIES**

- 2.1 Melting point or range: **n.a.**
- 2.2 Boiling point or range: **n.a.**
- 2.3 Relative density at :
- 2.3.1 15 °C: **see 2.3.2**
- 2.3.2 20 °C: **400 - 700 g/l (bulk density)**
- 2.3.3 50 °C: **see 2.3.2**
- 2.4 Vapour pressure at :
- 2.4.1 50 °C: **n. a** kPa
- 2.4.2 65 °C: **n. a** kPa
- 2.5 Viscosity at 20 °C<sup>\*\*</sup>/: **n. a.** m<sup>2</sup>/s
- 2.6 Solubility in water at 20 °C **1,5 g/100 ml**
- 2.7 Physical state at 20 °C (2.2.1.2<sup>\*</sup>/) .....**solid/liquid/gas<sup>\*\*</sup>/**

<sup>\*</sup>/ This and similar references are to chapters and paragraphs in the Model Regulations on the Transport of Dangerous Goods.

<sup>\*\*</sup>/ See definition of "liquid" in 1.2.1 of the Model Regulations on the Transport of Dangerous Goods.

2.8 Appearance at normal carriage temperatures, including colour and odour :

**Crystalline, white, free flowing granules, odourless**

2.9 Other relevant physical properties:

**Risk of decomposition when exposed to permanent heat (exothermic decomposition <sup>3</sup> 60 °C).**

### Section 3. FLAMMABILITY

3.1 Flammable vapour

3.1.1 Flash point (2.3.3\*/) **n.a.** °C oc/cc

3.1.2 Is combustion sustained? (2.3.1.2\*/).....**yes/no**

3.2 Autoignition temperature **n.a.** °C

3.3 Flammability range (LEL/UEL) **n.a.** %

3.4 Is the substance a flammable solid? (2.4.2 \*/) **yes/no**

3.4.1 If yes, give details .....  
.....

### Section 4. CHEMICAL PROPERTIES

4.1 Does the substance require inhibition/stabilization or other treatment such as nitrogen blanket to prevent hazardous reactivity ? **yes/no**

If yes, state

4.1.1 Inhibitor/stabilizer used:.....

4.1.2 Alternative method:.....

4.1.3 Time effective at 55 °C:.....

4.1.4 Conditions rendering in ineffective:.....

4.2 Is the substance an explosive according to paragraph 2.1.1.1? (2.1 \*/) .....**yes/no**

4.2.1 If yes, give details:.....  
.....

4.3 Is the substance a desensitized explosive? (2.4.2.4 \*/).....**yes/no**

4.3.1 If yes, give details:.....  
.....

4.4 Is the substance a self-reactive substance? (2.4.1 \*/) .....**yes/no**

If yes, state:

4.4.1 exit box of flow chart:.....

What is the self accelerating decomposition temperature (SADT) for a 50 kg package?

Is the temperature control required? (2.4.2.3.5 \*/) .....**yes/no**

4.4.2 proposed control temperature for a 50 kg package .....°C

4.4.3 proposed emergency temperature for a 50 kg package .....°C

4.5 Is the substance pyrophoric? (2.4.3 \*/) .....**yes/no**

4.5.1 If yes, give details:.....  
.....

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*\*/ This and similar references are to chapters and paragraphs in the Model Regulations on the Transport of Dangerous Goods.*

- 4.6 Is the substance liable to self-heating? (2.4.3 \*/) ..... **yes/no**
- 4.6.1 If yes, give details:.....  
.....
- 4.7 Is the substance an organic peroxide (2.5.1 \*/)..... **yes/no**
- If yes state:
- 4.7.1 exit box of flow chart:.....
- What is the self accelerating decomposition temperature (SADT) for a 50 kg package? °C
- Is the temperature control required? (2.5.3.5.1 \*/) **yes/no**
- 4.7.2 proposed control temperature for a 50 kg package .....°C
- 4.7.3 proposed emergency temperature for a 50 kg package .....°C
- 4.8 Does the substance in contact with water emit flammable gases? (2.4.4 \*/) **yes/no**
- 4.8.1 If yes give details .....  
.....
- 4.9 Does the substance have oxidizing properties (2.5.1 \*/) **yes/no**
- 4.9.1 If yes, give details:  
**see encl. Test report # SPZ 92/97-2 (n) dated Feb. 05, 2001 prepared by Infracor Safety Data Testing Centre, Hanau, Germany**
- 4.10 Corrosivity (2.8 \*/) to:
- 4.10.1 mild steel: < **0,01** mm/year at 55 °C
- 4.10.2 aluminium: < **0,01** mm/year at 55 °C
- 4.10.3 other packaging materials  
(specify) not known .....mm/year at  
.....mm/year at
- 4.11 Other relevant chemical properties :  
**Stable under normal conditions. Conditions to avoid: Sources of heat, moisture, water**

## Section 5. HARMFUL BIOLOGICAL EFFECTS

- 5.1 LD 50, oral (2.6.2.1.1 \*/) **1500 - 1900** mg/kg Animal species : **Rat, female (lit.)**  
**1700 - 2500** mg/kg **Rat, male (lit.)**
- 5.2 LD 50, dermal (2.6.2.1.2 \*/) > **2000** mg/kg Animal species : **Rabbit, OECD 402 (lit.)**
- 5.3 LC 50, inhalation (2.6.2.1.3 \*/) **not available** mg/litre Exposure time :  
or **not available** ml/m<sup>3</sup> Animal species :
- 5.4 Saturated vapour concentration at 20 °C (2.6.2.2.4.3 \*/) **not applicable**
- 5.5 Skin exposure (2.8 \*/) results: **Irritant** Exposure time: hours/minutes  
Animal species: **Rabbit (OECD 404)**
- 5.6 Other data:  
**Not sensitizing, Buehler test, guinea pig (OECD 406) (lit.)**
- 5.7 Human experience:  
**When swallowed localised irritation in the throat area, vomiting and diarrhea, as well as pyrosis, arose. At working place concentration > 21 mg/m<sup>3</sup> irritating effects in the airways occurred.**

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\*/ This and similar references are to chapters and paragraphs in the Model Regulations on the Transport of Dangerous Goods.

## Section 6. SUPPLEMENTARY INFORMATION

### 6.1 Recommended emergency action

#### 6.1.1 Fire (include suitable and unsuitable extinguishing agents):

**Product itself is not combustible. Contact with combustible substances may cause ignitions. Involved in a fire or exposed to high temperatures, it may decompose yielding oxygen and steam. Risk of overpressure and bursting due to decomposition in confined spaces. Suitable extinguishing media: Water, quenching foam and powder; Unsuitable extinguishing media: Carbon dioxide, organic compounds.**

#### 6.1.2: Spillage:

**Keep away from heat. Protect from moisture. Absorb mechanically. Avoid production of dust. Keep containers open; do not seal hermetically. Never return spilled product into its original container for re-use (Risk of decomposition).**

### 6.2 Is it proposed to transport the substance in :

6.2.1 Intermediate Bulk Containers (6.5<sup>\*</sup>/) ? .....yes/~~no~~

6.2.2 Multimodal tanks (6.7<sup>\*/</sup>) ? .....yes/~~no~~

6.2.3 Box type container with liner.....yes/~~no~~

If yes, give details in Sections 7 and/or 8.

## Section 7. INTERMEDIATE BULK CONTAINERS (IBCs) (only complete if yes in 6.2.1)

7.1 Proposed type(s): **All types listed in packing instr. IBC08 with the exemption of 13H1 Metal IBCs shall be provided with a device to allow venting during transport.**

## Section 8. MULTIMODAL TANK TRANSPORT (only complete if yes in 6.2.2)

- 8.1 Description of proposed tank (including IMO tank type if known).....**T1**  
8.2 Minimum test pressure .....**1,5 bar**  
8.3 Minimum shell thickness .....**5 mm**  
8.4 Details of bottom openings, if any .....**2 shut-off devices**  
8.5 Pressure relief arrangements .....**Normal type**

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<sup>\*/</sup> This and similar references are to chapters and paragraphs in the Model Regulations on the Transport of Dangerous Goods.