



**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****Fifty-second session**

Geneva, 27 November -6 December 2017

Item 3 of the provisional agenda

Listing, classification and packing**New entry for UN 1390 ALKALI METAL AMIDES, packing
group I****Transmitted by the expert from Germany*****Introduction**

1. For UN 1390 ALKALI METAL AMIDES, there is only an entry for packing group II in the Model Regulations. In accordance with special provision 182, sodium amide would have to be assigned to that entry.
2. In connection with the request of a company, the German occupational accident insurance fund for raw materials and the chemical industry (Berufsgenossenschaft Rohstoffe und chemische Industrie) carried out investigations (N.5 test). The findings of these investigations showed that the criteria for assignment to Class 4.3, packing group I, are met.
3. Based on these findings, the Federal Institute for Materials Research and Testing (BAM) then tested sodium amide by means of the N.5 test. In this test, gas evolution rates between 126 l/(kg.min) and 239 l/(kg.min) were measured. The test report is enclosed as an annex.
4. Against this background, the German expert believes that the substance must be assigned to packing group I.

* In accordance with the programme of work of the Sub-Committee for 2017–2018 approved by the Committee at its eighth session (see ST/SG/AC.10/C.3/100, paragraph 98 and ST/SG/AC.10/44, paragraph 14).

Proposal

5. It is therefore proposed to add the following row for UN 1390 ALKALI METAL AMIDES packing group I to the table of dangerous goods:

UN No.	Name and description	Class or division	Subsidiary risk	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
						(7a)	(7b)	Packing instruction	Special provisions	Instruction	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
1390	ALKALI METAL AMIDES	4.3		I	182	0	E0	P403 IBC04	B1	T9	TP 7 TP 33

Annex

[English only]

**Report**

on testing of the sample "sodium amide"
and

Expert's opinion

on transport and GHS classification

BAM-reference	2.2/53 131
Copy	1 st copy of 2
Customer	Working Group "Classification" (AGCB)
Order date	31.03.2016
Reference	-
Receipt of order	-
Test samples	"sodium amide" (223/300616/01), Mat.-No. 10046761, Batch No. GB56275, 500 g
Receipt of sample	30.06.2016
Test date	August 2016
Test location	Bundesanstalt für Materialforschung und -prüfung (BAM) Unter den Eichen 87 12005 Berlin
Test procedure according to	UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, sixth revised edition, 2015.

This Test Report consists of page 1 to 4.

This Test Report may only be published in full wording and without any additions. A revocable written consent shall be obtained from BAM beforehand for any amended reproduction or the publication of any excerpts. The content of the Test Report refers exclusively to the objects/materials tested. The German version is exclusively legally binding.

2015-03

1 Introduction

Sodium amide is classified for transport under UN 1390 "ALKALI METAL AMIDES" Division 4.3, Packing Group II and sodium is specified in the corresponding special provision 182 as one of the eligible metals. BG RCI was asked by a company to review this classification. A lab of BG RCI performed the testing of sodium amide according to test method N.5 and gas evolution rates between 23 l/(kg·min) and 31 l/(kg·min) were measured. A classification as packing group I would result. Based on these new findings the Federal Institute for Materials Research and Testing (Bundesanstalt für Materialforschung und -prüfung (BAM)), Berlin, Germany, carried out the investigation of "sodium amide" according to UN Test N.5 at the request of the working group "classification" of the AGGB and gives an expert opinion on transport and GHS regulations.

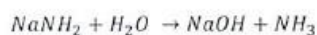
The expert opinion on the transport classification is based on the United Nations Recommendations on the Transport of Dangerous Goods, Model Regulations, nineteenth revised edition 2015 (UN-MR). The expert opinion on the GHS classification is based on the Globally Harmonized System of Classification and Labelling of Chemicals, sixth revised edition 2015 (UN-GHS) and the Regulation (EC) No 1272/2008 (CLP-Regulation).

The sample "sodium amide" (223/300616/01) arrived on 30.06.2016 at BAM.

2 Sample description

Based on the information of the company the delivered substance is > 99 % sodium amide. It consists of white flakes. The sample "sodium amide" (223/300616/01) was not chemically analysed by BAM.

Sodium amide reacts violently with water according to the following reaction to give the gas ammonia which has flammable properties according to special provision 23 (UN-MR).



3 Test methods

The test methods for transport, CLP and GHS regulations are described in the UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, sixth revised edition, 2015.

4 UN Test N.5 Test results

The UN-Test N.5 is performed to determine the ability of a substance to emit flammable gases on contact with water. The test procedure consists of 3 preliminary tests with a small quantity of substance to check for vigorous reaction with water and a possible spontaneous ignition. If spontaneous ignition occurs at any stage no further testing is necessary. Otherwise the test proceeds with the main test. In the case of sodium amide the preliminary tests were skipped because ammonia has an ignition temperature of 630 °C. This temperature is not reached in the reaction of sodium amide with water and therefore self-ignition cannot occur. It was proceeded with the main test.

Main test

The whole of the sample should be ground to a powder before testing, if the solid substance contains more than 1% (by mass) of particles with a diameter of less than 500 μm or if the solid substance is friable. Sodium amide is a hygroscopic substance and was therefore used as delivered.

To measure the rate of gas emission a gravimetric system is used at the BAM which is shown schematically in fig.1.

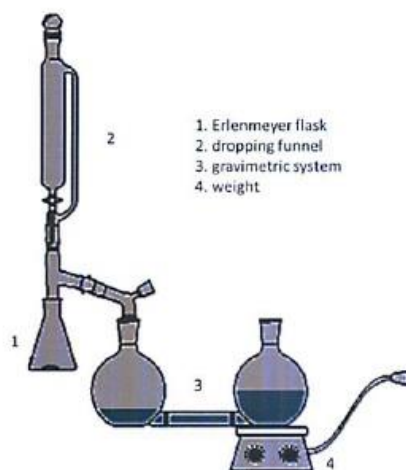


Fig.1 Schematic view of the gravimetric system for measuring the rate of gas emission.

An Erlenmeyer flask with the sample is connected to a dropping funnel containing the water for the reaction. Additionally the gravimetric part of the apparatus is connected via a silicone hose. The gravimetric part consists of two connected water reservoirs whereof one stands on a scale to measure the variation of the weight. The weight of the water flask changes if the developing gas pushes the water from the first flask through the hose into the second one which is open to atmosphere to allow pressurization. The difference between the initial weight of the flask and the measured weight results in the rate of gas emission.

The test was performed three times with 0.5 g or 1 g of the sample, resp. The measuring time was 2 hours to 3 hours. The volume of gas evolved was measured by the gravimetric method.

The sample "sodium amide" (223/300616/01) was used as delivered.

Trial	Sample mass [g] / Water [ml]	Max. rate of evolution of gas [l/(kg·min)]
1	1.01 / 2	190
2	0.50 / 2	239
3	0.50 / 2	126

After addition of the water to the reaction vessel containing sodium amide a vigorous reaction took place. In trial No. 1 and 3 parts of the substance were thrown onto the vessel wall leading to a lower gas evolution rates compared to trial No. 2. After the trials the pH of 14 was determined. The hourly value of the maximum rate of gas evolution could not be determined properly because ammonia dissolves in the water of the gravimetric set-up giving erroneous values.

5 Test method criteria

Criteria for Division 4.3 "Substances which in contact with water emit flammable gases" of UN-MR and the Hazard Class "Substances and Mixtures which in contact with water emit flammable gases" of the CLP-Regulation respectively UN-GHS according to UN-Test N.5:

Maximum rate of evolution of gas	UN-TDG - Packing Group	UN-GHS/CLP - Category
≥ 10 l/(kg·min)	I	1
≥ 20 l/(kg·h) and not ≥ 10 l/(kg·min)	II	2
> 1 l/(kg·h) and neither ≥ 20 l/(kg·h) nor ≥ 10 l/(kg·min)	III	3
≤ 1 [l/(kg·h)]	Not Division 4.3	Not Hazard Class "Substances and Mixtures which in contact with water emit flammable gases"

6 Summary and conclusion*

The sample "sodium amide" (223/300616/01) fulfils the criteria of **Division 4.3 "Substance which in contact with water emit flammable gases", Packing Group I** of the UN-MR and **Hazard Class "Substances and Mixtures, which in contact with water emit flammable gases", Category 1** of the CLP-Regulation and UN-GHS, because a maximum rate of gas emission of more than 10 l/(kg·min) was determined in the UN-Test N.5.

Other hazardous properties were not subject of this investigation.

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Berlin, 01.06.2017

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by order



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* We affirm to furnish this Expert's opinion in all conscience, even-handed and not constrained by directives. BAM subjects to modifications and amendments and if necessary cancellation of this Expert's opinion in the case of new cognition.