



**WORKING PAPER**

**DANGEROUS GOODS PANEL (DGP)  
MEETING OF THE WORKING GROUP OF THE WHOLE**

**Montréal, 15 to 19 April 2013**

**Agenda Item 2: Development of recommendations for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2015-2016 Edition**

**2.3 : Part 3 — Dangerous Goods List, Special Provisions and Limited and Excepted Quantities**

**2.4 : Part 4 — Packing Instructions**

**UN 3242 — AZDICARBONAMIDE**

(Presented by Q. Xu)

**SUMMARY**

This paper proposes to amend Table 3-1 for UN 3242, **Azodicarbonamide** to align with the UN Model Regulation and the IMO IMDG CODE in principle so that Azodicarbonamide can be transported by air.

Action by the DGP-WG is in paragraph 2.

**1. INTRODUCTION**

1.1 The Table 3-1 entry for UN 3242 entry was discussed at DGP-WG/12 (DGP-WG/12-WP/9). In that paper, we proposed to amend Table 3-1 for UN 3242 — **Azodicarbonamide** to align with that in the UN Model Regulations in principle permitting UN 3242 for air transport when azodicarbonamide formulations have an SADT above 75°C. The amendments proposed at DGP-WG/12 are shown in Appendix B to this working paper.

1.2 A number of comments were received during the discussion. Based on these comments, we have revised the proposal.

1.3 During the discussion at the last meeting, it was suggested that the SADT value was not the determining factor in making these substances forbidden. The determining factor was the fact that these substances had desensitized explosive properties. In section 2.4.2.4.2 of the UN Model Regulations, it is stated that UN 3241 and UN 3242 are not desensitized explosives though they are assigned to Division 4.1. We think UN 3242 may be a substance that was formerly classified in the UN Model

Regulations as “substances related to self-reactive substances”. These substances are similar to self-reactive substances but have an SADT greater than 75°C. On the other hand, UN 3241 (**Bromo-2-nitropropane-1,3-diol**) is similar to UN 3242, and is permitted for air transport. Moreover, UN 3241 is permitted to be carried as excepted quantities, which aligns with the UN Model Regulations and the IMO IMDG CODE in principle.

1.4           It was noted that the UN packing provisions in P409 for these substances were more restrictive than those in Packing Instruction 459 as proposed in DGP-WG/12-WP/9. After reviewing packing instruction P409 assigned to UN 3242 in UN Model Regulations and the related packing instructions P520 in the UN Model Regulations and Packing Instruction 457 in the Technical Instructions assigned to UN 3241, which is similar to UN 3242, we propose to assign a new Packing Instruction 4XX for UN 3242.

1.5           Some experts suggested that the limited quantity and excepted quantity values should be included in the proposal. After reviewing the self-reactive substance entries in the Technical Instructions, it is noted that no limited quantity is allowed and the value of E0 is assigned for these related entries. So we propose to assign these same values to self-reactive substances entries for UN 3242.

## 2.       **ACTION BY THE DGP-WG**

2.1           The DGP-WG is invited to amend Table 3-1 so that UN 3242 is permitted for transport when azodicarbonamide formulations have an SADT above 75°C. The proposed amendments to Table 3-1 and the corresponding Packing Instruction 4XX are shown in Appendix A to this working paper.

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APPENDIX A

PROPOSED AMENDMENT TO THE TECHNICAL INSTRUCTIONS

Part 3

**DANGEROUS GOODS LIST,  
SPECIAL PROVISIONS AND  
LIMITED AND EXCEPTED QUANTITIES**

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**ARRANGEMENT OF THE  
DANGEROUS GOODS LIST (TABLE 3-1)**

Table 3-1. Dangerous Goods List

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
<b>Azodicarbonyl dimide</b>	3242	4.1		<b>Solid flammable</b>		A60	<b>II</b>	<b>E0</b>	<b>FORB 4XX</b>	<b>1000 5 kg</b>	<b>FORB 4XX</b>	<b>1000 10 kg</b>

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**Part 4**

**PACKING INSTRUCTION**

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**Chapter 6**

**CLASS 4 — FLAMMABLE SOLIDS; SUBSTANCES  
LIABLE TO SPONTANEOUS COMBUSTION;  
SUBSTANCES WHICH, IN CONTACT WITH WATER,  
EMIT FLAMMABLE GASES**

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**Packing Instruction 4XX**

Passenger and cargo aircraft for UN 3242 only

**General requirements**

Part 4, Chapter 1 requirements must be met, including:

**1) Compatibility requirements**

— Substances must be compatible with their packagings as required by 4:1.1.3.

**2) Closure requirements**

— Closures must meet the requirements of 4:1.1.4.

<b><u>COMBINATION PACKAGINGS</u></b>						<b><u>SINGLE PACKAGINGS</u></b>	
<u>UN number and proper shipping name</u>	<u>Inner packaging (see 6:3.2)</u>	<u>Inner packaging quantity (per receptacle) — passenger</u>	<u>Total quantity per package — passenger</u>	<u>Inner packaging quantity (per receptacle) — cargo</u>	<u>Total quantity per package — cargo</u>	<u>Passenger</u>	<u>Cargo</u>
<u>UN 3242 Azodicarbonamide</u>	<u>Plastics</u>	<u>0.5 kg</u>	<u>5 kg</u>	<u>1.0 kg</u>	<u>10 kg</u>	<u>No</u>	<u>No</u>
	<u>Plastic bag</u>	<u>0.5 kg</u>		<u>1.0 kg</u>			

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6:3.1)**

Boxes

Drums

Fibreboard (4G)\*

Fibre (1G)\*

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**APPENDIX B**

**PROPOSAL PRESENTED AT DGP-WG/12**

[DGP-WG/12-WP/9](#)





**WORKING PAPER**

**DANGEROUS GOODS PANEL (DGP)  
MEETING OF THE WORKING GROUP OF THE WHOLE**

**Montréal, 15 to 19 October 2012**

**Agenda Item 2: Development of recommendations for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air (Doc 9284)* for incorporation in the 2015-2016 Edition**

**2.3: Part 3 — Dangerous Goods List, Special Provisions and Limited and Excepted Quantities**

**2.4: Part 4 — Packing Instructions**

**UN3242 — AZODICARBONAMIDE**

(Presented by Q. Xu)

**SUMMARY**

This paper proposes to amend Table 3-1 for UN3242 — **Azodicarbonamide** to align with UN Model Regulation and IMO IMDG CODE in principle so that **Azodicarbonamide** can be transported by air.

Action by the DGP-WG is in paragraph 2.

**1. INTRODUCTION**

1.1 **Azodicarbonamide** (UN 3242) formulations may be self-reactive substances and listed in Table 2-6. They are classified as self-reactive substance type C or type D depending on their dangerous properties and four UN numbers are available. UN3224 and UN3226 could be chosen when no temperature control is needed and self-accelerating decomposition temperature (SADT) of the substance is above 55°C.

1.2 According to Special Provisions A60, UN 3242 only applies to the technically pure substance or to formulations derived from it having an SADT higher than 75°C, and therefore does not apply to formulations which are self-reactive substances.

1.3 Regarding UN3224 and UN3226 in Table 3-1, the azodicarbonamide formulations classified as these entries can be transported by passenger and cargo aircraft and the maximum net quantity per package is 5 kg and 10 kg respectively. The applicable packing instruction is 459. However, UN 3242 is forbidden on both passenger and cargo aircraft.

1.4 Industry is confused with why the azodicarbonamide formulations with higher SADT (i.e. higher safety level) are forbidden by air while those with a lower SADT can be transported by both passenger and cargo aircraft. In fact, the substances classified as UN 3242 can be transported in the UN Model Regulation and the IMO IMDG CODE. Moreover, the limited quantity of UN 3242 specified by the UN Model Regulation is 1kg which is higher than the quantities permitted for UN 3224 and UN 3226, which are 100 g and 500 g respectively.

## 2. ACTION BY THE DGP-WG

2.1 The DGP-WG is invited to amend Table 3-1 so that UN 3242 is permitted for transport when azodicarbonamide formulations have an SADT above 75°C. The corresponding packing instruction and the maximum net quantity per package can be referred to the related part of the Self-reactive solid type E in Packing Instruction 459. The proposed amendments are shown in the appendix to this working paper.

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APPENDIX

PROPOSED AMENDMENT TO THE TECHNICAL INSTRUCTIONS

Part 3

DANGEROUS GOODS LIST,  
SPECIAL PROVISIONS AND  
LIMITED AND EXCEPTED QUANTITIES

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Chapter 2

ARRANGEMENT OF THE  
DANGEROUS GOODS LIST (TABLE 3-1)

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Table 3-1. Dangerous Goods List

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
<b>Azodicarbo namide</b>	3242	4.1		Corrosive		A60	<b>II</b>		<del>FORB</del> <b>459</b>	<del>IDDEN</del> <b>10 kg</b>	<del>FORB</del> <b>459</b>	<del>IDDEN</del> <b>25 kg</b>

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**Part 4**

**PACKING INSTRUCTIONS**

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COMBINATION PACKAGINGS							SINGLE PACKAGINGS
<i>UN number and proper shipping name</i>	<i>Inner packaging (see 6.3.2)</i>	<i>Inner packaging quantity (per receptacle) — passenger</i>	<i>Total quantity per package — passenger</i>	<i>Inner packaging quantity (per receptacle) — cargo</i>	<i>Total quantity per package — cargo</i>		
<b>Liquids</b>							No
UN 3223	<b>Self-reactive liquid type C</b>	Plastics	0.5 L	5 L	1.0 L	10 L	
UN 3225	<b>Self-reactive liquid type D</b>	Plastics	0.5 L	5 L	1.0 L	10 L	
UN 3227	<b>Self-reactive liquid type E</b>	Plastics	1.0 L	10 L	2.5 L	25 L	
UN 3229	<b>Self-reactive liquid type F</b>	Plastics	1.0 L	10 L	2.5 L	25 L	
<b>Solids</b>							No
UN 3224	<b>Self-reactive solid type C</b>	Plastics	0.5 kg	5 kg	1.0 kg	10 kg	
		Plastic bag	0.5 kg	5 kg	1.0 kg	10 kg	
UN 3226	<b>Self-reactive solid type D</b>	Plastics	0.5 kg	5 kg	1.0 kg	10 kg	
		Plastic bag	0.5 kg	5 kg	1.0 kg	10 kg	
UN 3228	<b>Self-reactive solid type E</b>	Plastics	1.0 kg	10 kg	2.5 kg	25 kg	
		Plastic bag	1.0 kg	10 kg	2.5 kg	25 kg	
UN 3230	<b>Self-reactive solid type F</b>	Plastics	1.0 kg	10 kg	2.5 kg	25 kg	
		Plastic bag	1.0 kg	10 kg	2.5 kg	25 kg	
<u>UN 3242 Azodicarbonamide</u>		<u>Plastics</u>	<u>1.0 kg</u>	<u>10 kg</u>	<u>2.5 kg</u>	<u>25 kg</u>	
		<u>Plastic bag</u>	<u>1.0 kg</u>	<u>10 kg</u>	<u>2.5 kg</u>	<u>25 kg</u>	

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