



**WORKING PAPER**

**DANGEROUS GOODS PANEL (DGP)**

**TWENTY-SIXTH MEETING**

**Montréal, 16 to 27 October 2017**

**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 2019-2020 Edition**

**PACKING INSTRUCTION 958: UN 2590**

(Presented by Adrian Tusek)

**SUMMARY**

There are a number of inconsistencies between the Technical Instructions and the UN recommendations regarding the packing of asbestos.

Packing Instruction 958 applies to both ammonium nitrate based fertilizers and UN 2590 — **Asbestos, chrysotile**.

This paper proposes to remove UN 2590 — **Asbestos, chrysotile** from Packing Instruction 958 and to create two new packing instructions consistent with the UN Model Regulations.

**Action by the DGP:** The DGP is invited to consider the proposed packing instructions in the appendices to this paper.

**1. INTRODUCTION**

1.1 A number of inconsistencies between the ICAO Technical Instructions and Packing Instruction 958 with respect to asbestos were identified and a new packing instruction was proposed at the seventeenth working group meeting of the Dangerous Goods Panel (DGP-WG/17, Montréal, 24 to 28 April 2017) to address them.

1.2 The following inconsistencies were identified and set out in the report of the by the working group (see paragraph 3.2.4.4 of the DGP-WG/17 report):

- a) Combination packagings were not provided for in Packing Instruction 958, the packing instruction assigned to UN 2590 — **Asbestos, chrysotile**. The UN Model Regulations does allow for them. It was agreed that not allowing them was likely unintentional and that there would be no reason not to allow them for transport by air.
- b) The maximum quantity permitted per single packaging was 200 kg for UN 2590 Asbestos, chrysotile but was limited to 120 kg for jerricans and 50 kg for bags in the UN Model Regulations. It was noted that the 200 kg limit applied to all allowable packagings in Packing Instruction 958 and that specific limits for each type of packaging were not provided. The maximum net mass for steel and plastic Jerricans was 120 kg and for bags was 50 kg by design in accordance with Part 6, so specifying a lower limit for these packagings would be unnecessary within the structure of the Technical Instructions.
- c) Certain types of single packagings with a removeable head were permitted in accordance with the UN Model Regulations but not in the Technical Instructions. It was suggested that only permitting non-removeable heads in the Technical Instructions was intentional.
- d) A particular packing provision was assigned to UN 2590 and UN 2212 in the UN Model Regulations allowing bags, provided they were transported in closed cargo transport units or placed in closed rigid overpacks which was not included in the Technical Instructions. It was suggested that this was also intentional, recognizing that closed cargo transport units were not permitted for transport of dangerous goods by air. There were specific requirements for bags to be palletized and unitized in Packing Instruction 958.
- e) UN 2212 — **Asbestos, amphibole** was forbidden for transport on both passenger and cargo aircraft. It was questioned whether this was justified. The working group wanted to assess the original reasoning for forbidding it before making a decision.
- f) The UN Model Regulations permitted transport of asbestos in limited quantities but there were no provisions for limited quantities in the Technical Instructions. A new limited quantity packing instruction for UN 2590 — **Asbestos, chrysotile** was also proposed. There were no comments on this proposal, other than the need for a revision to the maximum net quantity per package limit for limited quantities should the DGP agree to adopt the packing instruction.

1.3 The following inconsistencies were identified and set out in the DGP-WG/17 report (see paragraph 3.2.4.4):

- a) No changes based on 1.2 a);
- b) The inclusion of reference to a 60 kg limit for plastic boxes (4H1) and 120 kg limit for Jerricans (3A1, 3A2, 3B1, 3B2, 3H1, 3H2) has been deleted from the proposed packing instruction. See 1.2 b);

- c) The working group believed that only permitting single packagings with a non-removable head (see 1.2 c) above) was intentional. I have been unable to find information that supports this position and have retained the ability to use removable head single packagings in this proposal;
- d) Based on the comments in 1.2 d) the ability to use bags in single packagings has been deleted;
- e) In response to 1.2 e), the original reason for listing UN 2212 **Asbestos, amphibole** “forbidden” in the Technical Instructions was not ascertained. Historically, it was the case that UN 2212 Asbestos, amphibole was thought to be a greater health hazard than UN 2590 **Asbestos, chrysotile** but has since been shown not to be the case and both are equally harmful. The UN Model Regulations does not treat either differently for packaging or transport. In 2.9.2 Assignment to Class 9 in the UN Model Regulations it states “Substances which, on inhalation as fine dust, may endanger health” and lists both UN 2212 and UN 2590. Similar wording does not exist in the Technical Instructions. However, there appears to be no reason why UN 2212 should be treated differently to UN 2590 with regard to the hazard to health from fine dust and this hazard is mitigated by the packing method for both; and
- f) In response to 1.2 f), the UN Model Regulations applies a 5 kg maximum net quantity per inner packaging to UN 2212 and UN 2590. However, in air transport, it would not be unreasonable to set a maximum net quantity per package of 1 kg as this would support the asbestos testing industry as samples for testing are usually small in size even when multiple samples from a site are combined.

## 2. ACTION BY THE DGP

2.1 The DGP is invited to consider and adopt a revised Packing Instruction 958 that adopts the packing requirements of the UN Model Regulations applicable to UN 2590. The proposed new Packing Instruction 9XX and Y9XX are shown at Appendix B to this working paper.

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APPENDIX A

PROPOSED AMENDMENT TO PART 3 OF 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
Asbestos, amphibole* (amosite, tremolite, actinolite, anthophyllite, crocidolite)†	2212	9		[Miscellaneous]		A61	III		FORBIDDEN		FORBIDDEN	
									[9XX]	[100 kg]	[9XX]	[200 kg]
Asbestos, chrysotile †	2590	9		Miscellaneous	US 4	A61	III	E1	9589XX Y9XX	200 kg 1 kg	9589XX	200 kg
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APPENDIX B

PROPOSED AMENDMENT TO PART 4 OF THE TECHNICAL INSTRUCTIONS

Part 4

PACKING INSTRUCTIONS

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Chapter 11

CLASS 9 — MISCELLANEOUS DANGEROUS GOODS

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Packing Instruction 958

Passenger and cargo aircraft for UN 2071 and ~~UN 2500~~-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.

<i>UN number and proper shipping name</i>	<i>Quantity — passenger</i>	<i>Quantity — cargo</i>	<b>SINGLE PACKAGINGS</b>
UN 2071 <b>Ammonium nitrate fertilizers</b> <del>UN 2500 <b>Asbestos, chrysotile</b></del>	200 kg	200 kg	Yes

**ADDITIONAL PACKING REQUIREMENTS**

*For UN 2071 and ~~2500~~*

— All rigid packagings must be sift-proof.

*For ~~UN 2500~~*

— ~~Bags must be palletized and unitized by methods such as shrink wrapping in plastic film or wrapping in fibreboard secured by strapping.~~

**SINGLE PACKAGINGS**

*Bags*

Plastics (5H4)  
Textile(5L3)  
Woven plastics (5H3)

*Boxes*

Fibreboard (4G)  
Natural wood (4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)

*Drums*

Aluminium (1B2)  
Fibre (1G)  
Plastics (1H2)  
Plywood (1D)  
Steel (1A2)

*Jerricans*

Plastics (3H2)  
Steel (3A2)

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### Packing Instruction 9XX

Passenger and cargo aircraft for UN 2590 and UN 2212 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>		
<i><u>UN number and proper shipping name</u></i>	<i><u>Packing group</u></i>	<i><u>Inner packaging (see 6:3.2)</u></i>	<i><u>Inner packaging quantity (per receptacle)</u></i>	<i><u>Total quantity per package — passenger</u></i>	<i><u>Total gross mass per package — cargo</u></i>	<i><u>Quantity — passenger</u></i>	<i><u>Quantity — cargo</u></i>
UN 2212 <b><u>Asbestos, amphibole*</u></b> (amosite, tremolite, actinolite, anthophyllite, crocidolite)	II	Glass	10.0 kg	[100 kg]	[200 kg]	No	[200 kg]
		Plastics	50.0 kg				
		Metal	50.0 kg				
		Paper bag	50.0 kg				
		Plastic bag	50.0 kg				
Fibre	50.0 kg						
UN 2590 <b><u>Asbestos, chrysotile</u></b>	III	Glass	10.0 kg	200 kg	200 kg	No	200 kg
		Plastics	50.0 kg				
		Metal	50.0 kg				
		Paper bag	50.0 kg				
		Plastic bag	50.0 kg				
Fibre	50.0 kg						

**ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS**

— Plastic, paper and fibre inner packagings must be sift-proof.

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

*Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

*Jerricans*

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

**ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS**

— All bags of any type must be transported in closed cargo transport units or be placed in closed rigid overpacks.

— If the overpack is not siftproof, a means of containing the contents in the event of leakage must be provided in the form of a leakproof liner, plastic bag or other equally efficient means of containment.



**SINGLE PACKAGINGS**

<u>Boxes</u>	<u>Drums</u>	<u>Jerricans</u>
Aluminium (4B)	Aluminium (1B2)	Plastics (3H1, 3H2)
Fibreboard (4G)	Fibre (1G)	Steel (3A1, 3H2)
Natural wood (4C1, 4C2)	Plastics (1H2)	
Other metal (4N)	Plywood (1D)	
Plastics (4H2)	Steel (1A2)	
Plywood (4D)		
Reconstituted wood (4F)		
Steel (4A)		

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**Packing Instruction Y9XX**Limited quantitiesPassenger and cargo aircraft for UN 2212 and UN 2590 only**General requirements**Part 4, Chapter 1 requirements must be met (except that 4:1.1.2, 1.1.9 c), 1.1.9 e) and 1.1.16 do not apply), 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.**3) Limited quantity requirements**— Part 3, Chapter 4 requirements must be met, including:

- the capability of the package to pass a 1.2 m drop test; and
- a 24-hour stacking test.

<b>COMBINATION PACKAGINGS</b>						<b>SINGLE PACKAGINGS</b>
<u>UN number and proper shipping name</u>	<u>Packing group</u>	<u>Inner packaging (see 6:3.2)</u>	<u>Inner packaging quantity (per receptacle)</u>	<u>Maximum net quantity per package</u>	<u>Total gross mass per package</u>	
<u>UN 2212 Asbestos, amphibole* (amosite, tremolite, actinolite, anthophyllite, crocidolite)</u>	III	Glass	0.2 kg	1 kg	30 kg	No
		Plastics	1.0 kg			
		Metal	1.0 kg			
		Paper bag	1.0 kg			
		Plastic bag	1.0 kg			
<u>UN 2590 Asbestos, chrysotile</u>		Fibre	1.0 kg			

**ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS**

- Plastic, paper and fibre inner packagings must be sift-proof.
- If the outer packaging is not siftproof, a means of containing the contents in the event of leakage must be provided in the form of a leakproof liner, plastic bag or other equally efficient means of containment.

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

Boxes

Aluminium  
Fibreboard  
Natural wood  
Other metal  
Plastics  
Plywood  
Reconstituted wood  
Steel

Drums

Aluminium  
Fibre  
Other metal  
Plastics  
Plywood  
Steel

Jerricans

Aluminium  
Plastics  
Steel

— END —