



**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
Forty-first session**

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Item 3 (a) of the provisional agenda

Listing, classification and packing:**proposals of amendments to the list of dangerous goods of Chapter 3.2****Asbestos****Transmitted by the International Dangerous Goods and Containers
Association (IDGCA)¹****Introduction**

1. Currently in the Model Regulations asbestos are classified under two entries depending on their colour, and are assigned to one group in 2.9.2 “Substances which, on inhalation as fine dust, may endanger health”;

- UN №2590 – WHITE ASBESTOS (chrysotile, actinolite, anthophyllite, tremolite);
- UN №2212 – BLUE ASBESTOS (crocidolite) or BROWN ASBESTOS (amosite, myosorite).

2. However, in a number of national scientific and technical handbooks asbestos are divided into two groups: CHRYSOTILE and AMPHIBOLE (see annex).

3. In international documents, developed by international organizations (WHO² ILO³) and in the Rotterdam Convention, asbestos are also divided into chrysotile and amphiboles; in the above-mentioned documents a differentiated approach to regulation is applied.

¹ In accordance with the programme of work of the Sub-Committee for 2011-2012 approved by the Committee at its fifth session (refer to ST/SG/AC.10/C.3/76, para. 116 and ST/SG/AC.10/38, para. 16).

² http://www.who.int/occupational_health/WHO_health_assembly_en_web.pdf.

³ http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:2374383040425478::NO:12100:P12100_ILO_CODE:C162:NO

4. As a result of the above-mentioned discrepancy, amphiboles (actinolite, anthophyllite, tremolite) may be transported under No. 2590 (WHITE ASBESTOS) without any obstacles and appropriate precaution measures, although more stringent safety measures should apply during transport and storage.

Justification

5. Asbestos is the generic commercial name of groups of minerals (U.S. Geological Survey etc.). Mentioned in column 2 of the list of dangerous goods, the name ASBESTOS is a generic shipping name. According to 3.1.2.8.1 of the Model Regulations "Generic and "not otherwise specified" proper shipping names shall be supplemented with the technical or chemical group names..." and, according to 3.1.2.8.1.1. "The technical name shall be a recognized chemical or biological name used in scientific and technical handbooks..."

A review of the scientific technical handbooks in different countries (see annex) shows that chemical group names for asbestos are AMPHIBOLES and CHRYSOTILE.

The amphibole group include five different minerals, so in shipping documents and on the package the proper shipping name should be supplemented with the technical name. This requirement is mentioned in special provision 274, therefore it should be added in Column 6 for UN 2212.

The chrysotile group include only one mineral - chrysotile, therefore it is reasonable in Column 2 for UN 2590 to specify CHRYSOTILE or CHRYSOTILE FIBRE and not to add special provision 274 in Column 6.

6. Both types of asbestos are included into the group "Substances which, on inhalation as fine dust, may endanger health", and in Column 3, Class 9 is specified for the two entries.

7. Amphibole asbestos and chrysotile differ by their structure and properties. **Chrysotile** is a sheet silicate (ROCK-FORMING MINERALS, Vol.3 Sheet Silicates, W.A.Deer (Cambridge University), R.A.Howie, J Zussman (Vanchester University), LONGMANS, London, 1962) and amphiboles are chain minerals (ROCK-FORMING MINERALS, Vol.2 Chain Silicates, W.A.Deer (Cambridge University), R.A.Howie, J Zussman(Vanchester University), LONGMANS, London, 1962). In that time the issue of classification of asbestos was purely scientific without any other concerns. The fact that chrysotile and amphiboles are mentioned in different volumes of one handbook supports chemical and morphological differences of these substances. Later, a number of medical studies confirmed different levels of health hazards from these minerals. Whereas the hazard from amphiboles is unquestionable, chrysotile is considered as a substance with low level of hazard. This approach is reflected in resolutions of WHO⁴, ILO⁵, Rotterdam Convention⁶. Based on the above, Packing Group II should continue to be assigned to UN 2212, and Packing Group III to UN 2590.

8. Columns 7a and 7b "Limited and excepted quantities" should remain unchanged.

9. Columns 8 and 9 "Packagings and IBCs" should remain unchanged.

⁴ http://www.who.int/occupational_health/WHO_health_assembly_en_web.pdf

⁵ http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:2374383040425478::NO:12100:P12100_ILO_CODE:C162:NO

⁶ <http://www.pic.int/TheConvention/Chemicals/AnnexIIIChemicals/tabid/1132/language/en-US/Default.aspx>

10. Columns 10 and 11 “Portable Tanks and bulk containers” should remain unchanged.

Proposal

11. To apply UN №2212 for *amphiboles*, and UN №2590 for *chrysotile*.
 12. In Chapter 3.2 to revise the dangerous goods list as follows:

UN No.	Name and description	Class or subsidiary division	Subsidiary risk	UN packing group	Special provisions	Packagings and IBCs				Portable Tanks and bulk containers	
						Limited and excepted quantities	Packing instruction	Special packing provisions	Instructions	Special provisions	
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
2212	AMPHIBOLE ASBESTOS (amosite, tremolite, actinolite, anthophyllite, crocidolite).	9		II	168 274	1 kg	E2	P002 IBC08	PP37 B3, B4	T3	TP33
2590	CHRYSOTILE or CHRYSOTILE FIBRE	9		III	168	5 kg	E1	P002 IBC08	PP37 B3, B4	T1	TP33

13. In Chapter 2.9., amend the relevant paragraph of 2.9.2. to read:

Substances which, on inhalation as fine dust, may endanger health

2212 AMPHIBOLE ASBESTOS (amosite, tremolite, actinolite, anthophyllite, crocidolite)

2590 CHRYSOTILE or CHRYSOTILE FIBRE

14. IDGCA invites the Sub-Committee to consider this proposal and to adopt a relevant decision.

Annex

English only

• USA and Canada

N	Definition of the term “asbestos”	Resource
1	<p>Asbestos is a generic name given to the fibrous variety of six naturally occurring minerals that have been used in commercial products. Asbestos is made up of fiber bundles. These bundles, in turn, are composed of extremely long and thin fibers that can be easily separated from one another. The bundles have splaying ends and are extremely flexible.</p> <p>The term “asbestos” is not a mineralogical definition. It is a commercial designation for mineral products that possess high tensile strength, flexibility, resistance to chemical and thermal degradation, and high electrical resistance and that can be woven.</p> <p>The minerals that can crystallize as asbestos belong to two groups: serpentine (chrysotile) and amphibole (crocidolite, amosite, anthophyllite asbestos, tremolite asbestos, and actinolite asbestos). Amphiboles are distinguished from one another by the amount of sodium, calcium, magnesium, and iron that they contain.</p>	U.S. Geological Survey FS-012-01

• Russia

N	Definition of the term “asbestos”	Resource
1.	<p>Asbestos [ἀσβεστος (ὑπερστος) — everburning, indestructible] — fibre mineral splintery into thin firm fibres. This property is specific for two groups of minerals, serpentine and amphiboles, know as chrysotile asbestos and amphibole asbestos. Amphiboles include such minerals as crocidolite, roduisit, rezhikite (magnoarvedsonite), anthophyllite-, amosite-, cummingtonite-, tremolite-, actinolite.</p>	Geological dictionary: — Moscow, Nedra. Edited by K.N. Paffengoltz et al., 1978.
2.	<p>Asbestos Asbestos minerals (from Greek “everburning, indestructible”, asbestos, asbestus, earth flax, mountain flax; german Asbest; fr. asbeste, aminate; Spanish. asbesto), - the group of fibre minerals splintery into thin firm fibres. By its chemical properties asbestos minerals are qualified as hydrous silicate of magnesium, ferrum, partly calcium and natrium. By mineralogical properties and crystalline structure they divided into two groups – chrysotile asbestos and amphibole asbestos.</p>	Mining encyclopedia. — Moscow: Soviet encyclopedia. Edited by E. A. Kozlovsky. 1984—1991.

• EU

N	Definition of the term “asbestos”	Resource
1	<p>Asbestos, any of several minerals that readily separate into long, flexible fibres. Chrysotile, the fibrous form of the mineral serpentine, is the best-known type and accounts for about 95 percent of all asbestos in commercial use. It is a hydrous magnesium silicate with the chemical composition of $Mg_3Si_2O_5(OH)_4$. The other types all belong to the amphibole group of minerals and include the fibrous forms of anthophyllite, amosite (grunerite), crocidolite (riebeckite), tremolite, and actinolite.</p>	Encyclopedia Britannica http://www.britannica.com/EBchecked/topic/37756/asbestos/

- India

N	Definition of the term “asbestos”	Resource
1	The term asbestos refers to a family of naturally occurring flexible fibrous, hydrous silicate mineral that are relatively indestructible, heat resistant, acid and alkali resistant and have high length to breadth ratio. They result due to leaching of silicious material by water and crystallization in the interstices of parent rock. They are crystalline in form and capable of getting longitudinally into single fibril or fiber bundles. Asbestos is a collective term for some of the metamorphic fibrous, mineral silicate of the serpentine and amphibole groups. They have different physical and chemical properties. Asbestos a mineral fibre, exists in mainly two forms i.e. Serpentine group (chrysotile) and amphibole group (crocidolite, amosite, actinolite, tremolite and anthophyllite). Asbestos has several properties i.e. it is resistant to heat, acids and chemicals. Due to its easy maneuverability it is being used in many countries.	"Report on the National Study on Health Status of Workers in the Asbestos Industry " - study report of Director General of Factory Advice Service & Labour Institutes, under Ministry of Labour, Central Government of India -This is called DGFASLI Report of 2004.

- Brazil

N	Definition of the term “asbestos”	Resource
1	Amianto (Latin) or asbestos (Greek) are generic names of a family of mineral found and distributed on the nature , widely used by the industrial sector on the last century. The rocks of asbestos are divided on two groups: the serpentines and the amphiboles. The serpentines has the mainly variety the chrysotile or “white asbestos”, which present curve and malleable fibers. The amphiboles, which represent less than 5% of all asbestos exploited and consumed in the world, are banned on the major part of the planet.	National Institute of Cancer (INCA – Instituto Nacional de Câncer) Instituto Nacional de Câncer – INCA , Praca Cruz Vermelha, 23 - Centro 20230-130 - Rio de Janeiro - RJ www.inca.gov.br

- Australia

N	Definition of the term “asbestos”	Resource
1	Asbestos is a generic name for naturally occurring mineral silicate fibres of the Serpentine and Amphibole series. In the Serpentine series is Chrysotile, commonly known as white asbestos. In the Amphibole series are Actinolite, Amosite or Misorite (commonly known as brown asbestos), Anthophyllite, Crocidolite (commonly known as blue asbestos) and Tremolite.	Expert from Australia ST/SG/AC.10/C.3/2011/44

- International Agency on Research Cancer (IARC)

N	Definition of the term “asbestos”	Resource
1	Asbestos is the generic commercial designation for a group of naturally occurring mineral silicate fibres of the serpentine and amphibole series. These include the serpentine mineral chrysotile (also known as ‘white asbestos’), and the five amphibole minerals – actinolite, amosite (also known as ‘brown asbestos’), anthophyllite, crocidolite (also known as ‘blue asbestos’), and tremolite.	IARC Monograph, 1973.