DGP/30-WP/12*
10/7/25

منظمة الطيران المدني الدولي

ورقة عمل

فريق خبراء البضائع الخطرة

الاجتماع الثلاثون

مونتريال، ٦ إلى ٢٠٢٥/٦/١٠

البند رقم ١: المواءمة بين أحكام الإيكاو المتعلقة بالبضائع الخطرة وتوصيات الأمم المتحدة بشأن نقل البضائع الخطرة (المرجع: REC-A-DGS-2027).

١-٢: إعداد ما يلزم من اقتراحات لتعديل وثيقة "التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو" (Doc 9284) لإدخالها في طبعة ٢٠٢٥-٢٠٢٦ من الوثيقة

تعديلات على الجزء الثاني من التعليمات الفنية
أعدّتها مجموعة العمل التابعة لفريق خبراء البضائع الخطرة في ٢٠٢٤ و٢٠٢٥

(ورقة مقدَّمة من مجموعة العمل التابعة لفريق خبراء البضائع الخطرة
بشأن التنسيق مع لوائح الأمم المتحدة)

الموجز

تحتوي ورقة العمل هذه على مسوّدة للتعديلات التي ستدخل على الجزء الثاني من التعليمات الفنية والتي وضعتها مجموعة العمل التابعة لفريق خبراء البضائع الخطرة في اجتماعيْها عام ٢٠٢٤ (DGP-WG/2024) وعام ٢٠٢٥ (DGP-WG/2025). والتعديلات:

أ) تعبر عن القرارات التي اتخذتها لجنة خبراء الأمم المتحدة المعنية بنقل البضائع الخطرة وبالنظام المنسّق عالمياً لتصنيف المواد الكيميائية ووسمها في دورتها الثانية عشرة لتعديل الطبعة المنقّحة الثالثة والعشرين من "لائحة الأمم المتحدة النموذجية" (جنيف، ٢٠٢٤/١٢/٦)؛

ب) معالجة المشكلات المتعلقة بأجهزة تخزين الطاقة.

وأجرت مجموعة العمل التابعة لفريق خبراء البضائع الخطرة بشأن التنسيق مع لوائح الأمم المتحدة (DGP-WG/UN Harmonization) مراجعة مستفيضة للتعديلات المقترحة على الجزء الأول التي وضعتها مجموعة العمل في عام ٢٠٢٥ (DGP-WG/2025) من أجل التوافق مع توصيات الأمم المتحدة. كما أشارت

* لم يُترجم سوى موجز ورقة العمل

المجموعة إلى ضرورة إجراء تنقيحات للأحكام الجديدة المتعلقة بتصنيف عينات المواد النشطة لمعالجة مسألة أن بعض المواد المُشار إليها في لائحة الأمم المتحدة النموذجية لا يسمح بنقلها بطريق الجو. وقد تم إبراز التنقيحات المقترحة باللون الأصفر في ورقة العمل هذه (انظر الفقرة ٥-٤-٢ في الفصل التمهيدي بالجزء الثاني).

الإجراء الذي يتخذه فريق خبراء البضائع الخطرة: فريق خبراء البضائع الخطرة مدعو إلى الموافقة على مسودة التعديلات الواردة في ورقة العمل هذه.

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Part 2

CLASSIFICATION OF DANGEROUS GOODS

3. UN NUMBERS AND PROPER SHIPPING NAMES

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.0, 2.0.2.7 (see ST/SG/AC.10/52/Add.1)

3.7 A mixture or solution containing one or more substances identified by name in Table 3 1 or classified under an n.o.s. entry ~~and one or more substances not subject to these Instructions~~ is not subject to these Instructions if the hazard characteristics of the mixture or solution are such that they do not meet the criteria (including human experience criteria) for any class or division.

4. PRECEDENCE OF HAZARD CHARACTERISTICS

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.0, 2.0.3.1 (see ST/SG/AC.10/52/Add.1)

g) substances of Division 6.1 with a Packing Group I inhalation toxicity. Except for substances or ~~preparations~~ mixtures meeting the criteria of Class 8 having an inhalation toxicity of dusts and mists (LC_{50}) in the range of Packing Group I, but toxicity through oral ingestion ~~or dermal contact only in the range~~ and dermal contact in the range of Packing Group III or less, which must be allocated to Class 8 (see note under 2;6.2.2.4.1 and 2;8.2.4);

5.4 Samples of energetic materials for testing purposes

UN harmonization amendments

Paragraph 4.1.2.1.3 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.0, 2.0.4.3 (see ST/SG/AC.10/52/Add.1)

5.4.1 Samples of organic substances carrying functional groups listed in tables A6.1 and/or A6.3 in Appendix 6 (Screening Procedures) of the UN Manual of Tests and Criteria may be transported under UN 3224 (self-reactive solid type C) or UN 3223 (self-reactive liquid type C), as applicable, of Division 4.1 provided that:

a) the samples do not contain any:

i) known explosives;

ii) substances showing explosive effects in testing;

iii) compounds designed with the view of producing a practical explosive or pyrotechnic effect; or

iv) components consisting of synthetic precursors of intentional explosives;

b) for mixtures, complexes or salts of inorganic oxidizing substances of Division 5.1 with organic material(s), the concentration of the inorganic oxidizing substance is:

i) less than 15 per cent, by mass, if assigned to Packing Group I (high hazard) or II (medium hazard); or

ii) less than 30 per cent, by mass, if assigned to Packing Group III (low hazard);

c) available data do not allow a more precise classification;

d) the sample is not packed together with other goods;

e) the sample is packed in accordance with Packing Instruction 459; and

f) the proper shipping name is supplemented with the word “sample”.

5.4.2 Samples of organic substances carrying functional groups listed in tables A6.1 or A6.3 in appendix 6 (Screening Procedures) of the UN *Manual of Tests and Criteria* may be assigned to one of the appropriate entries for self-reactive substances type C (UN 3223 or UN 3224) of Division 4.1 and transported under the provisions of 2;4.2.3.2.6 when packed in quantities not exceeding 200 g for solids or 200 mL for liquids per outer packaging provided that:

a) they fulfil the criteria of Part 2, Introductory chapter, paragraph 5.4.1 a) to c) and f); and

b) their decomposition energy is:

i) less than 1 500 J/g for salts or complexes of organic compounds;

ii) less than 2 000 J/g for other organic substances;

iii) 1 500 J/g or more for salts or complexes of organic compounds, and in test C.1 the result is not “yes, rapidly” and in any one of test series F the result is not "not low"; or

iv) 2 000 J/g or more for other organic substances, and in test C.1 the result is not “yes, rapidly” and in any one of test series F the result is not “not low”.

The assessment in b) iii) and iv) may be based on a single test C.1 and one single test from test series F. If the criteria in b) are fulfilled, it can be assumed that the sample is not more dangerous than self-reactive substances type B. Samples not passing the criteria in b) iii) or iv) are forbidden for transport unless dissolved or diluted with an inert compound to form a homogenous mixture in agreement with the criteria in b) i) or ii), as applicable.

5.4.3 A flow chart describing the classification of energetic samples is shown in Figure 2-1.

Insert new text as follows:

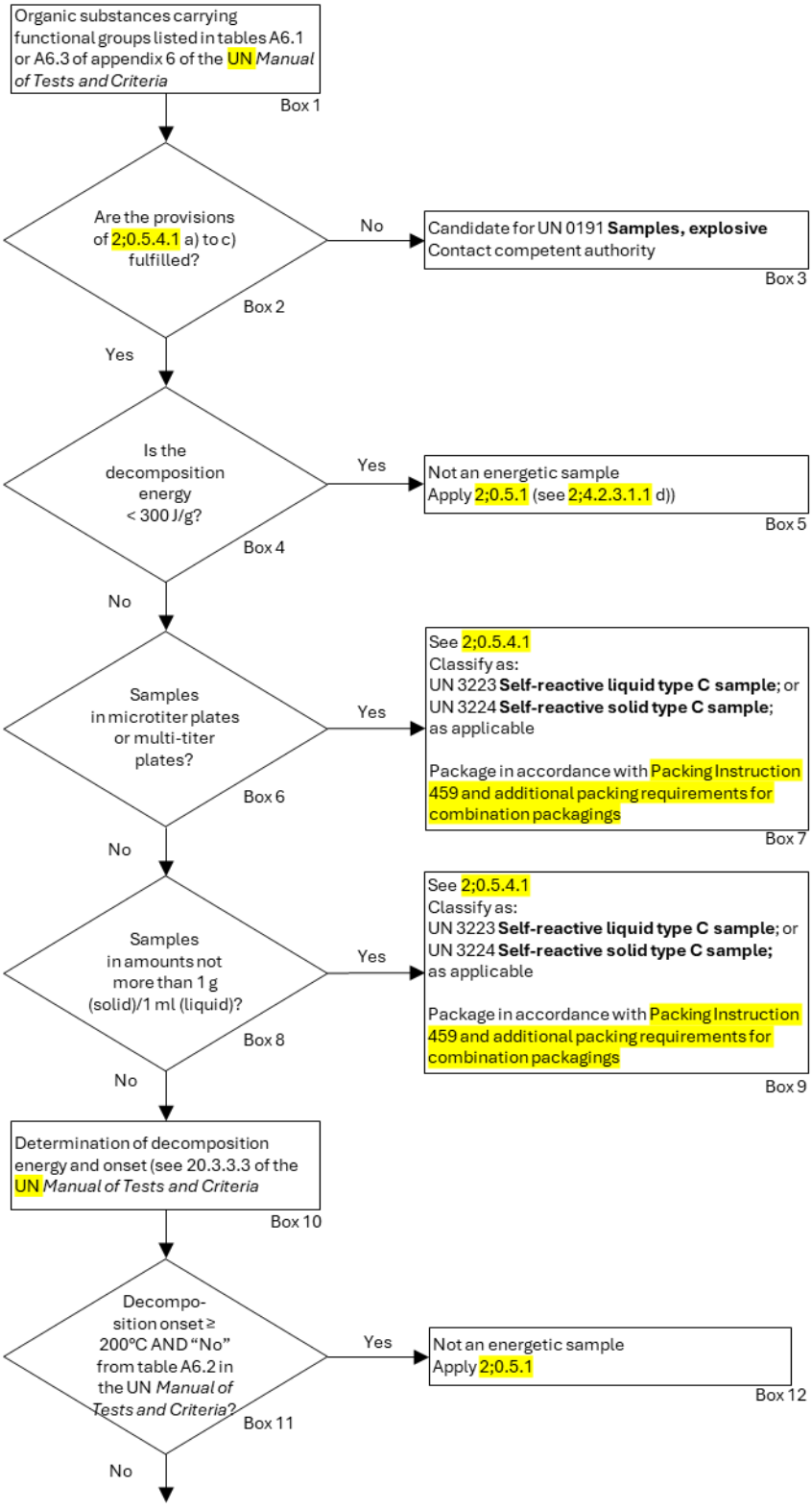

Figure 2-1. Classification of energetic samples

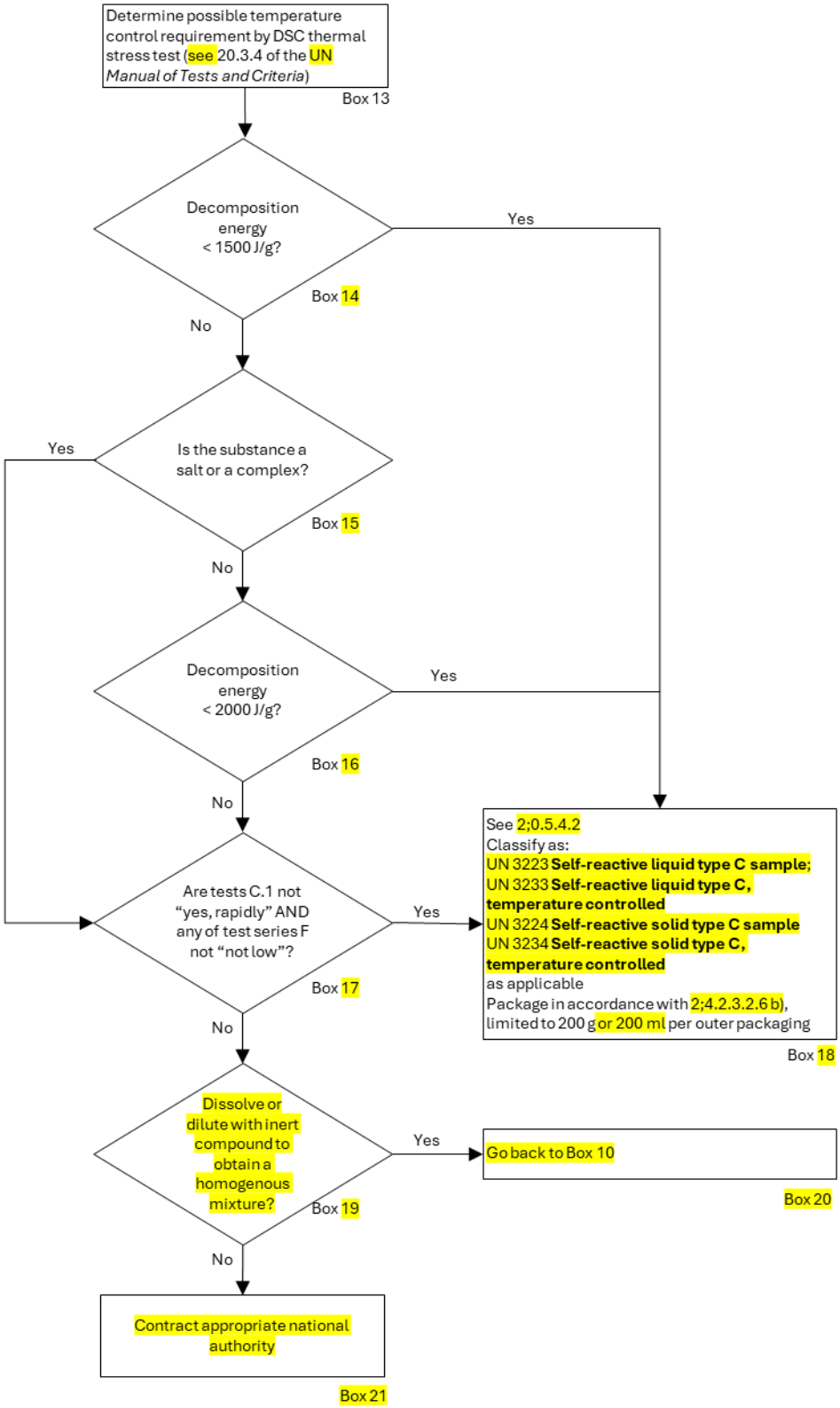

Figure 2-1. Classification of energetic samples (cont'd)

End of new text.

6. CLASSIFICATION OF ARTICLES AS ARTICLES CONTAINING DANGEROUS GOODS N.O.S.

UN harmonization amendments

Paragraphs 4.1.2.1 and 4.4.2 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.0, 2.0.5.2 (see ST/SG/AC.10/52/Add.1)

6.2 Such articles may in addition contain cells or batteries. ~~Lithium cells and batteries~~ Lithium metal, lithium ion and sodium ion cells and batteries that are integral to the article must be of a type proven to meet the testing requirements of the UN Manual of Tests and Criteria, Part III, subsection 38.3. For articles containing pre-production prototype ~~lithium cells or batteries~~ lithium metal, lithium ion or sodium ion cells or batteries transported for testing, or for articles containing ~~lithium cells or batteries~~ lithium metal, lithium ion or sodium ion cells or batteries manufactured in annual production runs of not more than 100 cells or batteries, the requirements of Special Provision A88 apply.

Chapter 1

CLASS 1 – EXPLOSIVES

1.1 DEFINITIONS AND GENERAL PROVISIONS

Class 1 comprises:

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.1.1.1 (see ST/SG/AC.10/52/Add.1)

b) explosive articles, except those that are too dangerous to transport or devices containing explosive substances in such quantity or of such a character that their inadvertent or accidental ignition or initiation during transport will not cause any effect external to the device either by projection, fire, smoke, heat or loud noise (see 1.5.2); and

1.2 DEFINITIONS

For the purposes of these Instructions, the following definitions apply:

a) ***Explosive substance*** is a solid or liquid substance (or a mixture of substances) which is in itself capable, by chemical reaction, of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic substances are included even when they do not evolve gases.

b) ***Pyrotechnic substance*** is an explosive substance designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative, self-sustaining, exothermic, chemical reactions.

c) ***Explosive article*** is an article containing one or more explosive substances.

d) ***Phlegmatized*** means that a substance (or “phlegmatizer”) has been added to an explosive to enhance its safety in handling and transport. The phlegmatizer renders the explosive insensitive, or less sensitive, to the following actions: heat, shock, impact, percussion or friction. Typical phlegmatizing agents include, but are not limited to: paper, wax, water, polymers (such as chlorofluoropolymers), alcohol and oils (such as petroleum jelly and paraffin).

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.1.1.3 (see ST/SG/AC.10/52/Add.1)

e) ***Explosive or pyrotechnic effect*** ~~means, in the context of 1.1 c),~~ is an effect produced by self-sustaining exothermic chemical reactions including shock, blast, fragmentation, projection, heat, light, sound, gas and smoke.

Note.— Explanations for a number of other terms used in connection with explosives can be found in Attachment 2 to these Instructions.

Chapter 2

CLASS 2 – GASES

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 63 (see ST/SG/AC.10/52/Add.1)

2.5 AEROSOLS

2.5.1 For aerosols, the division of Class 2 and the subsidiary hazards depend on the nature of the contents of the aerosol dispenser. The following provisions must apply:

a) Division 2.1 applies if the contents include 85 per cent by mass or more flammable components and the chemical heat of combustion is 30 kJ/g or more;

b) Division 2.2 applies if the content contains 1 per cent by mass or less flammable components and the heat of combustion is less than 20 kJ/g;

c) otherwise the product must be classified as tested by the tests described in the UN Manual of Tests and Criteria, Part III, section 31. Extremely flammable and flammable aerosols must be classified in Division 2.1; non-flammable in Division 2.2;

d) gases of Division 2.3 must not be used as a propellant in an aerosol dispenser;

e) ~~where the contents other than the propellant of aerosol dispensers to be ejected are classified as Division 6.1, Packing Groups II or III or Class 8, Packing Groups II or III, the aerosol must have a subsidiary hazard of Division 6.1 or Class 8;~~the aerosol must have a subsidiary hazard of Division 6.1 or Class 8 where the contents, other than the propellant of aerosol dispensers, are classified as:

i) Division 6.1, Packing Groups II or III; or

ii) Class 8, Packing Groups II or III.

The aerosol must be prohibited from transport where the contents are classified as Division 6.1, Packing Group I or Class 8, Packing Group I;

f) ~~aerosols with contents meeting the criteria of Packing Group I for toxicity or corrosivity are forbidden from transport.~~the aerosol must be prohibited from transport where the contents additionally meet the classification criteria of:

i) Class 1 – Explosives;

ii) liquid desensitized explosives of Class 3;

iii) self-reactive substances and solid desensitized explosives of Division 4.1;

iv) Division 4.2 – Substances liable to spontaneous combustion;

v) Division 4.3 – Substances which, in contact with water, emit flammable gases;

vi) Division 5.2 – Organic peroxides;

vii) Division 6.2 – Infectious substances; or

viii) Class 7 – Radioactive material.

2.5.2 Flammable components are flammable liquids, flammable solids or flammable gases and gas mixtures as defined in Notes 1 to 3 of subsections 31.1.3 of Part III of the UN *Manual of Tests and Criteria*. ~~This designation does not cover pyrophoric, self-heating or water-reactive substances.~~ The chemical heats of combustion must be determined either by ~~one of the following~~ reference to published scientific literature, through calculation or by using suitable calorimetric test methods~~:~~ (e.g. ASTM D 240~~, ISO/FDIS 13943: 1999 (E/F) 86.1 to 86.3 or~~ and NFPA 30B).

Chapter 4

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

4.3 SUBSTANCES LIABLE TO SPONTANEOUS COMBUSTION (DIVISION 4.2)

4.3.2 Classification in Division 4.2

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.4.3.2.3.1 (see ST/SG/AC.10/52/Add.1)

4.3.2.3.1 A substance must be classified as a self-heating substance of Division 4.2 if, in tests performed in accordance with the test method given in the current edition of the UN Manual of Tests and Criteria, Part III, subsection 33.3.1.6:

a) a positive result is obtained using a 25 mm sample cube at 140°C;

b) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 100 mm sample cube at 120°C and the substance is to be transported in packages with ~~a volume~~ an internal volume of more than 3 m^3;

c) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 100 mm sample cube at 100°C and the substance is to be transported in packages with ~~a volume~~ an internal volume of more than 450 L;

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.4.3.2.3.2 (see ST/SG/AC.10/52/Add.1)

4.3.2.3.2 A substance must not be classified in Division 4.2 if:

a) a negative result is obtained in a test using a 100 mm sample cube at 140°C;

b) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 25 mm sample cube at 140°C, a negative result is obtained in a test using a 100 mm sample cube at 120°C and the substance is to be transported in packages with ~~a volume~~ an internal volume of not more than 3 cubic metres; or

c) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 25 mm sample cube at 140°C, a negative result is obtained in a test using a 100 mm sample cube at 100°C and the substance is to be transported in packages with ~~a volume~~ an internal volume of not more than 450 L.

4.3.3 Assignment of packing groups

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.4.3.3.3 (see ST/SG/AC.10/52/Add.1)

4.3.3.3 Packing Group III must be assigned to self-heating substances if:

a) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 25 mm sample cube at 140°C and the substance is to be transported in packages with ~~a volume~~ an internal volume of more than 3 cubic metres;

b) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 25 mm sample cube at 140°C, a positive result is obtained in a test using a 100 mm sample cube at 120°C and the substance is to be transported in packages with ~~a volume~~ an internal volume of more than 450 L; or

c) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 25 mm sample cube at 140°C and a positive result is obtained in a test using a 100 mm sample cube at 100°C.

Chapter 5

CLASS 5 – OXIDIZING SUBSTANCES; ORGANIC PEROXIDES

5.3.4 Desensitization of organic peroxides

Table 2-7. List of currently assigned organic peroxides in packagings

Note.— Peroxides to be transported must fulfil the classification and the control and emergency temperatures (derived from the self-accelerating decomposition temperature (SADT)) as listed.

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.5.3.2.4 (see ST/SG/AC.10/52/Add.1)

Organic peroxide	*Concentration (per cent)*	*Diluent type A (per cent)*	*Diluent type B (per cent) (Note 1)*	*Inert solid (per cent)*	*Water (per cent)*	*Control tempera-ture (°C)*	*Emergency tempera-ture (°C)*	*UN generic entry*	*Sub-sidiary hazards and notes*
~~([3r-(3r,5as,6s,8as,9r,10r,12s,12ar**)]-Decahydro-10-methoxy-3,6,9-trimethyl-3,12-epoxy-12h-pyrano[4,3-j]-1,2-benzodioxepin)~~	~~≤100~~							~~3106~~	
tert-Amyl peroxypivalate	≤77		≥23			+10	+15	3113	
tert-Amyl peroxypivalate	≤ 72	≥ 28				+10	+15	3115	
tert-Amylperoxy-3,5,5-trimethylhexanoate	≤100							3105	
Arteether (including stereoisomers)	≤ 100							3106	
Artemether (including stereoisomers)	≤ 100							3106	
Artemisinin	≤ 100							3106	
Artesunate (including stereoisomers)	≤ 100							3106	
2,2-Dihydroperoxypropane	≤27			≥73				FORBIDDEN	
Dihydroartemisinin (including stereoisomers)	≤ 100							3106	
1-(2-Ethylhexanoylperoxy)-1,3-dimethylbutyl peroxypivalate	≤52	≥45	≥10			-20	-10	3115	
1,2,4,5,7,8-Hexoxonane, 3,6,9-trimethyl-3,6,9-tris (ethyl and propyl) derivatives	≤ 41	≥ 59						3105	35
tert-Hexyl Peroxyneodecanoate	≤71	≥29				0	+10	3115	

Notes:

34. Sum of diluent type A and water ≥55 per cent and in addition methyl ethyl ketone.
35. Available oxygen ≤ 7.3 %

Chapter 6

CLASS 6 – TOXIC AND INFECTIOUS SUBSTANCES

6.2 DIVISION 6.1 – TOXIC SUBSTANCES

6.2.2 Assignment of packing groups

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.6.2.2.4.1 (see ST/SG/AC.10/52/Add.1)

6.2.2.4.1 The grouping criteria for the oral and dermal routes as well as for inhalation of dusts and mists are as shown in Table 2-8.

Note.— Substances or mixtures meeting the criteria of Class 8 and with an inhalation toxicity of dusts and mists (LC_{50}) leading to Packing Group I are only accepted for an allocation to Division 6.1 if the toxicity through oral ingestion or dermal contact is at least in the range of Packing Group I or II. Otherwise, an allocation to Class 8 is made when appropriate (see Part 2, Introductory chapter, paragraph 4 g) and 8.2.4).

6.3.2 Classification of infectious substances

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.6.3.2.2 (see ST/SG/AC.10/52/Add.1)

6.3.2.2 Infectious substances are divided into ~~the following categories~~ Categories A and B~~:~~.

6.3.2.2.1 *Category A~~:~~*

6.3.2.2.1.1 An infectious substance which is transported in a form that, when exposure to it occurs, is capable of causing permanent disability, life-threatening or fatal disease in otherwise healthy humans or animals is assigned to Category A. Indicative examples of substances that meet these criteria are given in Table 2-10.

Note.— An exposure occurs when an infectious substance is released outside of the protective packaging resulting in physical contact with humans or animals.

~~a)~~ 6.3.2.2.1.2 Infectious substances meeting these criteria which cause disease in humans or in both humans and animals must be assigned to UN 2814 **– Infectious substance, affecting humans**. Infectious substances which cause disease only in animals must be assigned to UN 2900 **– Infectious substance, affecting animals**.

~~b)~~ 6.3.2.2.1.3 Assignments to UN 2814 or UN 2900 must be based on the known medical history and symptoms of the source human or animal, endemic local conditions, or professional judgement concerning individual circumstances of the source human or animal.

~~*Note 1.— The proper shipping name for UN 2814 is **Infectious substance, affecting humans.** The proper shipping name for UN 2900 is **Infectious substance, affecting animals** only.*~~

~~Note 2.—~~ 6.3.2.2.1.4 Table 2-10 is not exhaustive. Infectious substances, including new or emerging pathogens, which do not appear in Table 2-10 but which meet the same criteria must be assigned to Category A. In addition, if there is doubt as to whether or not a substance meets the criteria it must be included in Category A.

~~*Note 3.— In Table 2-10, the micro-organisms written in italics are bacteria or fungi.*~~ To address emerging health situations, more up-to-date information on the applicable categories can be obtained from human and animal health inter-governmental organizations and national authorities.

6.3.2.2.2 *Category B~~:~~*

An infectious substance which does not meet the criteria for inclusion in Category A is assigned to Category B. Infectious substances in Category B must be assigned to UN 3373 ***– Biological substance, Category B***.

~~*Note.— The proper shipping name of UN 3373 is **Biological substance, Category B**.*~~

Table 2-10. Indicative examples of infectious substances included in Category A in any form unless otherwise indicated
~~(6.3.2.2.1 a))~~

UN Number and Proper Shipping Name	**Micro-organism (bacteria and fungi are written in italics)**
UN 2900 Infectious substances affecting animals ~~only~~	

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.6.3.2.3.9 (see ST/SG/AC.10/52/Add.1)

6.3.2.3.9 Except for:

a) medical waste (UN 3291 and UN 3549);

b) medical devices or equipment contaminated with or containing infectious substances in Category A (UN 2814 or UN 2900); and

c) medical devices or equipment contaminated with or containing other dangerous goods that meet the definition of another hazard class, other than lithium cells or batteries or sodium ion cells or batteries contained in or packed with equipment (UN 3091, UN 3481 and UN 3552).

medical devices or equipment potentially contaminated with or containing infectious substances which are being transported for disinfection, cleaning, sterilization, repair, or equipment evaluation are not subject to the provisions of these Instructions if packed in packagings designed and constructed in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents. Packagings must be designed to meet the construction requirements listed in 6;3.

6.3.2.3.9.1 Medical devices or equipment must be drained of free liquid to the extent practicable. They must be packed in a strong rigid outer packaging fitted with sufficient cushioning material to prevent movement within the outer packaging. These packagings must meet the general packing requirements of 4;1.1.1, 4;1.1.3.1 and 4;1.1.4 (with the exception of 4;1.1.4.1). If the outer packaging is not liquid tight and the medical devices or equipment are contaminated with or contain liquid infectious substances, a means of containing the liquid in the event of leakage must be provided in the form of a leakproof liner, plastic bag or other equally effective means of containment. These packagings must be capable of retaining the medical devices and equipment when dropped from a height of 1.2 m.

Note.— A packaging's capability of retaining medical devices or equipment when dropped from a height of 1.2 m should be determined through testing a sample package as prepared for transport or through alternative means such as non-destructive testing and engineering analysis, testing with an article of similar mass and size, or other equivalent means.

6.3.2.3.9.2 Packages must be marked “Used medical device” or “Used medical equipment”. When an overpack is used, it must be marked with the words “Used medical device” or “Used medical equipment” unless the markings are visible.

6.3.2.3.9.3 When used medical devices contain or are packed with lithium cells or batteries or sodium ion cells or batteries, the relevant entry of the Dangerous Goods List (Table 3-1) must be used and all applicable provisions of these Instructions must apply.

Chapter 8

CLASS 8 – CORROSIVE SUBSTANCES

8.2 GENERAL CLASSIFICATION PROVISIONS

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.8.2.4 (see ST/SG/AC.10/52/Add.1)

8.2.4 ~~A s~~Substances or mixtures meeting the criteria of Class 8 having an inhalation toxicity of dusts and mists (LC_{50}) in the range of Packing Group I, but toxicity through oral ingestion ~~or dermal contact only in the range~~ and dermal contact in the range of Packing Group III or less, must be allocated to Class 8 (see Part 2, Introductory chapter, paragraph 4 g) and ~~N~~note under 6.2.2.4.1).

Chapter 9

CLASS 9 – MISCELLANEOUS DANGEROUS SUBSTANCES AND ARTICLES, INCLUDING ENVIRONMENTALLY HAZARDOUS SUBSTANCES

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.9.2 (see ST/SG/AC.10/52/Add.1)

Table 2-16. Substances and articles of Class 9

UN number	*Name*	*Notes*
3536	**Lithium ion batteries installed in cargo transport unit**	
3563	**Lithium metal batteries installed in cargo transport unit**	
3552	**Sodium ion batteries contained in equipment** with organic electrolyte	
3552	**Sodium ion batteries packed with equipment** with organic electrolyte	
3564	**Sodium ion batteries installed in cargo transport unit**	

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.9.4 (see ST/SG/AC.10/52/Add.1)

9.3 LITHIUM BATTERIES

Cells and batteries ~~contained in equipment~~ contained in articles, engines, equipment or vehicles or cells and batteries packed with equipment, containing lithium in any form ~~must be assigned to UN Nos. 3090, 3091, 3480 or 3481, as appropriate. They~~ may be transported under ~~these entries~~ the appropriate entry provided:

a) each cell or battery is of the type proved to meet the requirements of each test of the UN Manual of Tests and Criteria, Part III, subsection 38.3;

Cells and batteries manufactured according to a type meeting the requirements of subsection 38.3 of the UN Manual of Tests and Criteria, Revision 3, Amendment 1 or any subsequent revision and amendment applicable at the date of the type testing may continue to be transported, unless otherwise provided in these Instructions.

Cell and battery types only meeting the requirements of the UN Manual of Tests and Criteria, Revision 3, are no longer valid. However, cells and batteries manufactured in conformity with such types before 1 July 2003 may continue to be transported if all other applicable requirements are fulfilled.

Note 1.— Batteries must be of a type proved to meet the testing requirements of the UN Manual of Tests and Criteria, Part III, subsection 38.3, irrespective of whether the cells of which they are composed are of a tested type.

Note 2.— A battery with a change resulting from treatment, such as repairing, refurbishing, or remanufacturing in accordance with 38.3.2.2 (c) of the Manual of Tests and Criteria may be considered to differ from a tested type.

b) each cell and battery incorporates a safety venting device or is designed to preclude a violent rupture under conditions normally incident to transport;

c) each cell and battery is equipped with an effective means of preventing external short circuits;

d) each battery containing cells or a series of cells connected in parallel is equipped with effective means as necessary to prevent dangerous reverse current flow (such as diodes, fuses, etc.);

e) cells and batteries are manufactured under a quality management programme that includes:

1) a description of the organizational structure and responsibilities of personnel with regard to design and product quality;

2) the relevant inspection and test, quality control, quality assurance, and process operation instructions that will be used;

3) process controls that should include relevant activities to prevent and detect internal short circuit failure during manufacture of cells;

4) quality records, such as inspection reports, test data, calibration data and certificates. Test data must be kept and made available to the appropriate national authority upon request;

5) management reviews to ensure the effective operation of the quality management programme;

6) a process for control of documents and their revision;

7) a means for control of cells or batteries that are not conforming to the type tested in accordance with Part III, subsection 38.3 of the UN *Manual of Tests and Criteria*;

8) training programmes and qualification procedures for relevant personnel;

9) procedures to ensure that there is no damage to the final product;

Note.— In-house quality management programmes may be accepted. Third-party certification is not required, but the procedures listed in 1) to 9) above must be properly recorded and traceable. A copy of the quality management programme must be made available to the appropriate national authority upon request.

f) lithium batteries, containing both primary lithium metal cells and rechargeable lithium ion cells, that are not designed to be externally charged (see Special Provision A213), meet the following conditions:

i) the rechargeable lithium ion cells can only be charged from the primary lithium metal cells;

ii) overcharge of the rechargeable lithium ion cells is precluded by design;

iii) the battery has been tested as a lithium primary battery;

iv) component cells of the battery are of a type proved to meet the respective testing requirements of the UN *Manual of Tests and Criteria*, Part III, subsection 38.3; and

g) except for button cells installed in equipment (including circuit boards), manufacturers and subsequent distributors of cells or batteries manufactured after 30 June 2003 make available the test summary as specified in the UN Manual of Tests and Criteria, Part III, subsection 38.3, paragraph 38.3.5.

Note.— The term "make available" means that manufacturers and subsequent distributors ensure that the test summary is accessible so that the shipper or other persons in the supply chain can confirm compliance.

h) hybrid batteries, containing both lithium ion cells and sodium ion cells (see Special Provision A235), must meet the following conditions:

i) the lithium ion cells and sodium ion cells are electrically connected;

ii) the battery has been tested as a lithium ion battery in accordance with 9.3 a);

iii) each component lithium ion and sodium ion cell of the battery is of a type proved to meet the respective testing requirements of the UN *Manual of Tests and Criteria*, part III, sub-section 38.3.

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.9.5 (see ST/SG/AC.10/52/Add.1)

9.4 SODIUM ION BATTERIES

Cells and batteries, cells and batteries ~~contained in equipment~~ contained in articles, engines, equipment or vehicles or cells and batteries packed with equipment containing sodium ion, which are a rechargeable electrochemical system where the positive and negative electrode are both intercalation or insertion compounds, constructed with no metallic sodium (or sodium alloy) in either electrode and with an organic non-aqueous compound as electrolyte~~, must be assigned to UN Nos. 3551 or 3552, as appropriate.~~

~~Note.— Intercalated sodium exists in an ionic or quasi-atomic form in the lattice of the electrode material.~~

~~They~~ may be transported under ~~these entries~~ the appropriate entry provided:

a) each cell or battery is of the type proved to meet the requirements of applicable tests of the UN *Manual of Tests and Criteria*, Part III, subsection 38.3;

Note.— Batteries must be of a type proved to meet the testing requirements of the UN Manual of Tests and Criteria*, Part III, subsection 38.3, irrespective of whether the cells of which they are composed are of a tested type.*

b) each cell and battery incorporates a safety venting device or is designed to preclude a violent rupture under conditions normally encountered during transport;

c) each cell and battery is equipped with an effective means of preventing external short circuits;

d) each battery containing cells or a series of cells connected in parallel is equipped with effective means as necessary to prevent dangerous reverse current flow (such as diodes, fuses, etc.);

e) cells and batteries are manufactured under a quality management programme as prescribed under 9.3 e) 1) to 9);

f) manufacturers and subsequent distributors of cells or batteries make available the test summary as specified in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3, paragraph 38.3.5.

Note.— The term "make available" means that manufacturers and subsequent distributors ensure that the test summary is accessible so that the shipper or other persons in the supply chain can confirm compliance.

Editorial Note.— The following are editorial amendments necessary because of the edition of new Figure 2-1.

Chapter 6

CLASS 6 – TOXIC AND INFECTIOUS SUBSTANCES

6.2.2 Assignment of packing groups

6.2.2.4.4 In Figure ~~2-1~~ 2-2, the criteria according to 6.2.2.4.3 are expressed in graphical form, as an aid to easy classification. However, because of approximations inherent in the use of graphs, substances on or near packing group borderlines must be checked using numerical criteria.

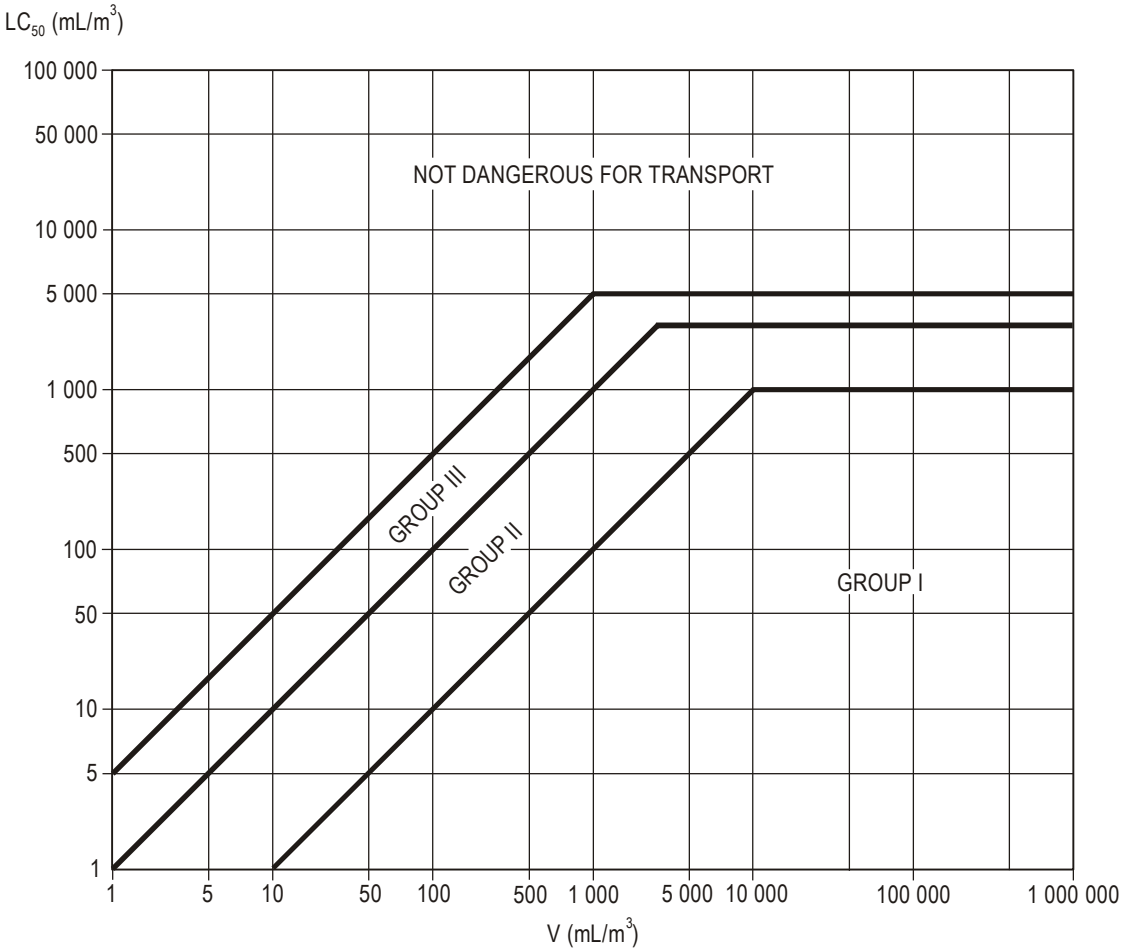

Figure ~~2-1~~2-2. Criteria for inhalation of vapours

Chapter 8

CLASS 8 – CORROSIVE SUBSTANCES

8.4 ALTERNATIVE PACKING GROUP ASSIGNMENT METHODS FOR MIXTURES: STEP-WISE APPROACH

8.4.1 General provisions

For mixtures, it is necessary to obtain or derive information that allows the criteria to be applied to the mixture for the purpose of classification and assignment of packing groups. The approach to classification and assignment of packing groups is tiered, and is dependent upon the amount of information available for the mixture itself, for similar mixtures and/or for its ingredients. The flow chart of Figure ~~2-2~~ 2-3 outlines the process to be followed.

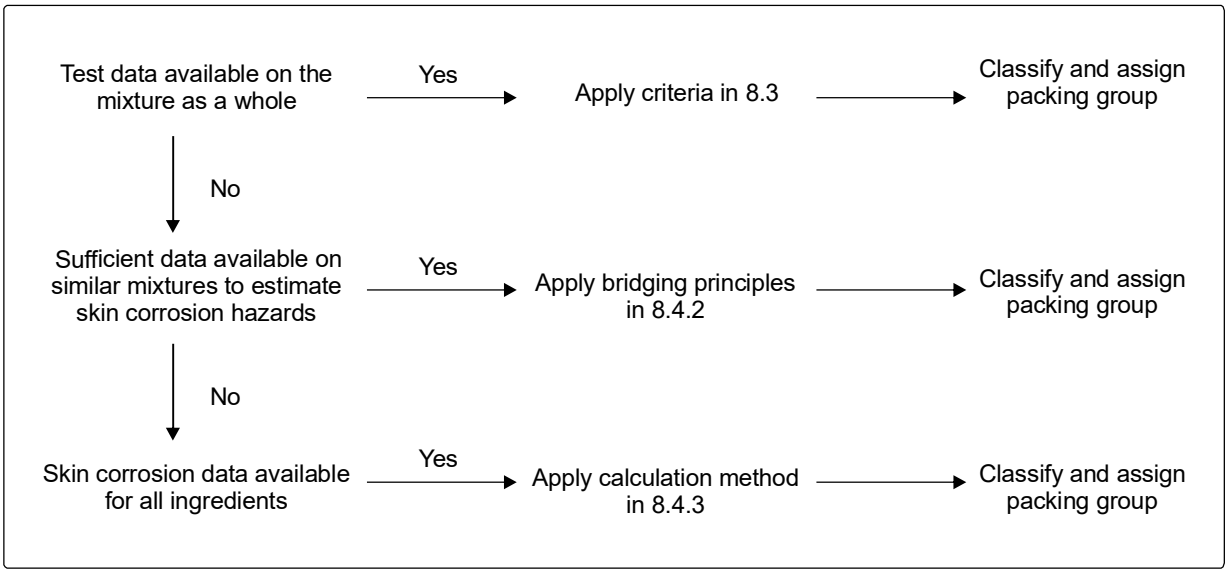

Figure ~~2-2~~2-3. Step-wise approach to classify and assign packing group of corrosive mixtures

8.4.3 Calculation method based on the classification of the substances

8.4.3.3 To determine whether a mixture containing corrosive substances must be considered a corrosive mixture and to assign a packing group, the calculation method in the flow chart in Figure ~~2-3~~ 2-4 must be applied.

8.4.3.4 When a specific concentration limit (SCL) is assigned to a substance following its entry in Table 3-1 or in a special provision, this limit must be used instead of the generic concentration limits (GCL). This appears where 1 per cent is used in the first step for the assessment of the Packing Group I substances, and where 5 per cent is used for the other steps respectively in Figure ~~2-3~~ 2-4.

8.4.3.5 For this purpose, the summation formula for each step of the calculation method must be adapted. This means that, where applicable, the generic concentration limit must be substituted by the specific concentration limit assigned to the

substance(s) (SCLi), and the adapted formula is a weighted average of the different concentration limits assigned to the different substances in the mixture:

(PGx_1)/GCL+(PGx_2)/〖SCL〗_2 +⋯+ (PGx_i)/〖SCL〗_i ≥1

Where:

PGxi = concentration of substance 1, 2 … i in the mixture, assigned to Packing Group x (I, II or III)

GCL = generic concentration limit

SCLi = specific concentration limit assigned to substance i

The criterion for a packing group is fulfilled when the result of the calculation is ≥1. The generic concentration limits to be used for the evaluation in each step of the calculation method are those found in Figure ~~2-3~~ 2-4.

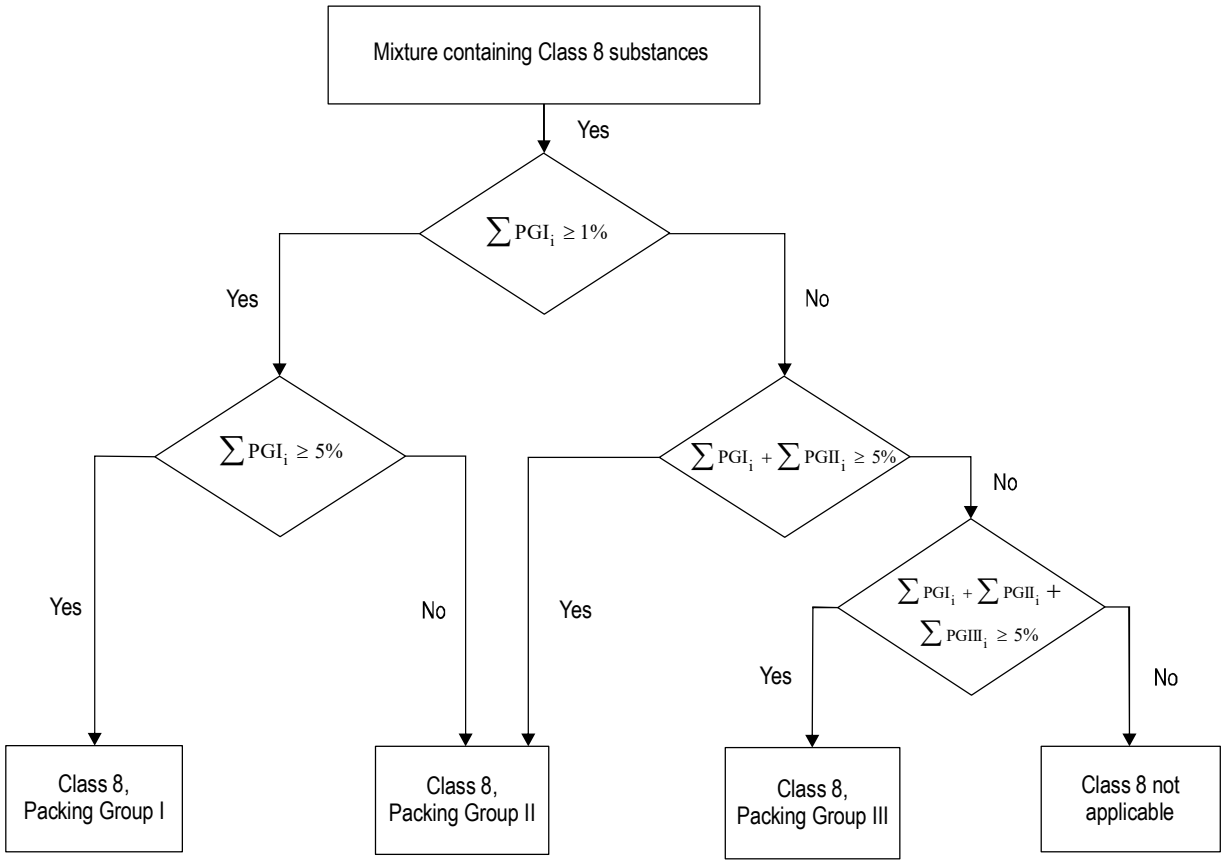

Figure ~~2-3~~2-4. Calculation method

— END —