

## 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

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Item 3 of the provisional agenda

**Listing, classification and packing**

### **Adequate UN entry for 2,4-Dichlorophenol with possible solution for all chlorophenols**

**Transmitted by the expert from Germany**

#### **Background**

1. The Model Regulations subsume chlorophenolic substances under UN 2020 or UN 2021 CHLOROPHENOLS, 6.1 in solid or liquid form with the packing group III in solid or liquid form. Dichlorophenol is mentioned by name in the index of the Model Regulations and 2,4-Dichlorophenol in the index of the IMDG Code and both are assigned to class 6.1, UN 2020/UN 2021.
2. However, 2,4-Dichlorophenol (CAS-No. 120-83-2) has toxic as well as corrosive properties which both have to be considered for classification. In addition, also other chlorophenols may have divergent or additional hazards, which are not addressed by UN 2020 and UN 2021.
3. The Editorial and Technical Group (E&T 32) at the International Maritime Organization considered document CCC 6/6/12 from Germany, proposing a new allocation of 2,4-Dichlorophenol to UN 2923 in the index of the IMDG Code due to current classification. According to that, the substance not only has toxic, but also corrosive properties and the group decided, that Germany submits an appropriate proposal to the Sub-Committee of Experts on the Transport of Dangerous Goods.
4. At the fifty-eighth session of the Sub-Committee, the expert from Germany submitted official document ST/SG/AC.10/C.3/2021/3. It proposed adding new UN entries for chlorophenols not meeting the classification criteria for the class or division of the current UN entries identified in the Dangerous Goods List in Chapter 3.2 and therefore are currently not transported properly according to their chemical and physical properties.
5. After taking into account the feedback received during and after that session, the expert from Germany submitted this updated informal document for the consideration of the Sub-Committee.

## Introduction

6. Chlorophenols are currently transported under UN 2020 or UN 2021 CHLOROPHENOLS, Class 6.1 in solid or liquid form with packing group III:

UN No. Substance	Class	Subsidiary Hazard	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
							Packing instruction	Special packing provisions	Instruc- tions	Special provisions
UN 2020 CHLOROPHENOLS, SOLID	6.1		III	205	5 kg	E1	P002 IBC08 LP02	B3	T1	TP33
UN 2021 CHLOROPHENOLS, LIQUID	6.1		III		5 L	E1	P001 IBC03 LP01		T4	TP1

7. 2,4-Dichlorophenol is expected to be transported under UN 2020 at the present time by all means of transport.

8. 2,4-Dichlorophenol (CAS-No. 120-83-2) is classified as both, corrosive (Skin Corr. Cat. 1B) and toxic (Acute Tox. Cat. 3, dermal)<sup>1</sup> according to GHS criteria. Toxicological properties for 2,4-Dichlorophenol result in assignment to class 8, subsidiary hazard 6.1, packing group II, according to the Model Regulations criteria.

9. The majority of the monochlorophenols and dichlorophenols result in class 8, with or without subsidiary hazard 6.1, packing group II, according to the Model Regulations criteria (See Annex I below).

10. UN 2020 and UN 2021 do not cover the corrosive properties and required packing group for 2,4-Dichlorophenol and for other mono- and dichlorophenols from Annex I. Moreover, the transport requirements corresponding to the hazards of these substances differ from those regulated within UN 2020 or UN 2021.

11. When classifying and transporting chlorophenols as dangerous goods, possible corrosive properties and transportation requirements should be considered, taking into account current toxicological information as well. A harmonized classification should be achieved for all means of transport.

12. Of the 19 chlorophenols, only pentachlorophenol (CAS-No. 87-86-5) has an individual entry by name. Not all chlorophenols are of equal importance for transport and not all chlorophenols are sufficiently documented in terms of the hazards they pose.

## Proposal

13. Germany proposes three options for chlorophenols meeting classification criteria different from those of UN 2020 and UN 2021: a classification with an appropriate N.O.S. entry. This could be achieved by a new special provision (Option 1) or by revision of UN Nos. 2020 and UN 2021 to specific N.O.S. entries (Option 2) or by adding two new N.O.S. entries for chlorophenols with properties other than only toxic, beside the amendments of Option 2 (Option 3). A required supplementary provision is to amend the alphabetic index in the UN Model Regulations with 2,4-Dichlorophenol by introducing the UN No. 2923 for Options 1 and 2, or the new UN XXXX for Option 3.

<sup>1</sup> based on data from CLP-Regulation No. 1272/2008, from the GESTIS database ([www.dguv.de/ifa/stoffdatenbank](http://www.dguv.de/ifa/stoffdatenbank) from the Institute for Occupational Safety and Health of the German Social Accident Insurance) and from the ECHA database ([echa.europa.eu](http://echa.europa.eu) from the European Chemicals Agency)

## Option 1

14. Taking into account that there are no single entries by name for the various chlorophenols (apart from Pentachlorophenol) and the fact that according to the GESTIS database ([www.dguv.de/ifa/stoffdatenbank](http://www.dguv.de/ifa/stoffdatenbank)) and the ECHA database ([echa.europa.eu](http://echa.europa.eu)) other mono- and dichlorophenols would also be classified as corrosive (e.g. 2-Chlorophenol, 4-Chlorophenol, 3,5-Dichlorophenol, 2,6-Dichlorophenol), which does not meet the classification criteria of the current entries of UN 2020 and 2021, amend Chapter 3.3 by adding a new special provision 2YY to the current entries of UN 2020 and UN 2021 to read as follows:

“2YY If the chemical or physical properties of a chlorophenol are such that the substance does not meet the classification criteria for the entries UN 2020 or UN 2021 but meets the criteria for any other or additional class or division (e.g. class 8) or a diverging UN packing group, it shall be transported according to the appropriate N.O.S. entry (e.g. UN 2923).”

## Option 2

15. In accordance with 2.0.0.2 of the Model Regulations amend the two already existing UN entries of UN 2020 and UN 2021 in Dangerous Goods List in Chapter 3.2 and the Alphabetical Index of the Model Regulations, as follows (new text is underlined):

UN No. Substance	Class	Subsidiary Hazard	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
							Packing instruction	Special packing provisions	Instructions	Special provisions
UN 2020 CHLOROPHENOLS, SOLID, <u>N.O.S.</u>	6.1		III	205	5 kg	E1	P002 IBC08 LP02	B3	T1	TP33
UN 2021 CHLOROPHENOLS, LIQUID, <u>N.O.S.</u>	6.1		III		5 L	E1	P001 IBC03 LP01		T4	TP1

16. This amendment would allow chlorophenols, such as 2,4-Dichlorophenol, with other physical or chemical properties as toxic in accordance with 2.0.2.8 of the Model Regulations for dangerous goods to be transported in an appropriate way.

## Required supplementary provisions for Options 1 and 2

17. Delete Dichlorophenol from the alphabetical index in the Model Regulations.

18. Amend the alphabetical index in the Model Regulations with 2,4-Dichlorophenol by introducing the UN entry, as follows:

“2,4-Dichlorophenol Class: 8 UN No. 2923”

## Option 3

19. Based on the already existing practice that can be seen in the case of the UN entries of chlorosilanes (UN 2985 CHLOROSILANES, FLAMMABLE, CORROSIVE, N.O.S., UN 2986 CHLOROSILANES, CORROSIVE, FLAMMABLE N.O.S., UN 2987 CHLOROSILANES, CORROSIVE N.O.S. and UN 2988 CHLOROSILANES, WATERREACTIVE, FLAMMABLE, CORROSIVE N.O.S.) and in accordance with 2.0.0.2. of the Model Regulations amend the two already existing UN entries of UN 2020 and UN 2021 in the Dangerous Goods List in Chapter 3.2 and the alphabetical index in the Model Regulations and introduce two new UN entries for chlorophenols, as follows (new text is underlined):

UN No. Substance	Class	Subsidiary Hazard	UN packing group	Special provi- sions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
							Packing instruction	Special packing provisions	Instruc- tions	Special provisions
UN 2020 CHLOROPHENOLS, <u>TOXIC, SOLID, N.O.S.</u>	6.1		III	205	5 kg	E1	P002 IBC08 LP02	B3	T1	TP33
UN 2021 CHLOROPHENOLS, <u>TOXIC, LIQUID, N.O.S.</u>	6.1		III		5 L	E1	P001 IBC03 LP01		T4	TP1
<u>UN XXXX*</u> CHLOROPHENOLS, CORROSIVE, TOXIC, SOLID, N.O.S	<u>8</u>	<u>6.1</u>	<u>II</u>		<u>1 kg</u>	<u>E2</u>	<u>P002</u> <u>IBC08</u>	<u>B2, B4</u>	<u>T3</u>	<u>TP33</u>
<u>UN XXXY</u> CHLOROPHENOLS, CORROSIVE, SOLID, N.O.S	<u>8</u>		<u>II</u>		<u>1 kg</u>	<u>E2</u>	<u>P002</u> <u>IBC08</u>	<u>B2, B4</u>	<u>T3</u>	<u>TP33</u>

\* This UN entry would allow 2,4-Dichlorophenol to be transported appropriately in accordance with its chemical properties and hazards it poses.

### Required supplementary provisions for Option 3

20. Delete Dichlorophenol from the alphabetical index in the Model Regulations.
21. Amend the alphabetical index in the Model Regulations with 2,4-Dichlorophenol by introducing the UN entry, as follows:

“2,4-Dichlorophenol Class: 8 UN No. XXXX.”

**Annex I****Classification of most mono- and dichlorophenols**

Name	Cas-No.	Classification according to GHS Criteria*	Classification according to TDG criteria
2-Monochlorophenol	95-57-8	Skin Corr. Cat. 1	Class 8 PG ?
4-Monochlorophenol	106-48-9	Skin Corr. Cat. 1B	Class 8 PG II**
2,4-Dichlorophenol	120-83-2	Skin Corr. Cat. 1B, Acute Tox. Cat. 3 dermal	Class 8 (6.1) PG II
2,5-Dichlorophenol	583-78-8	Skin Corr. Cat. 1B	Class 8 PG II
2,6-Dichlorophenol	87-65-0	Skin Corr. Cat. 1B	Class 8 PG II
3,5-Dichlorophenol	591-35-5	Skin Corr. Cat. 1B, Acute Tox. Cat. 3 dermal	Class 8 (6.1) PG II
3,4-Dichlorophenol	95-77-2	Skin Corr. Cat. 1B, Acute Tox. Cat. 3 inhalative and maybe also dermal	Class 8 (6.1) PG II

\* based on Data from the GESTIS database ([www.dguv.de/ifa/stoffdatenbank](http://www.dguv.de/ifa/stoffdatenbank) from the Institute for Occupational Safety and/or Health of the German Social Accident Insurance) and/or from the ECHA database ([echa.europa.eu](http://echa.europa.eu) from the European Chemicals Agency).

\*\* according to WHO (1989. Chlorophenols other than pentachlorophenol. Environmental Health Criteria 93. Geneva, Switzerland: World Health Organization.) the substance is also classified as Class 6.1 PG III as subsidiary hazard.

## Annex II

### Data sheet to be submitted to the United Nations for new or amended classification of substances

Submitted by Germany

Date 25.04.2022

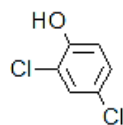
Supply all relevant information including sources of basic classification data. Data should relate to the product in the form to be transported. State test methods. Answer all questions - If necessary, state "not known" or "not applicable" - If data is not available in the form requested, provide what is available with details. Delete inappropriate words.

#### Section 1. SUBSTANCE IDENTITY

1.1 Chemical name: 2,4-Dichlorophenol

1.2 Chemical formula:  $C_6H_4Cl_2O$ 

1.3 Other names/synonyms: 2,4-DCP



1.4.1 UN number:

1.4.2 CAS number: 120-83-2

1.5 Proposed classification for the Recommendations:

UN XXXX CHLOROPHENOLS, CORROSIVE, TOXIC, SOLID, N. O. S., CLASS 8 (6.1), PG II

1.5.1 proper shipping name (3.1.2<sup>1</sup>) 2,4-DICHLOROPHENOL

1.5.2 class/division 8 subsidiary hazard(s): 6.1 packing group PG II

1.5.3 proposed special provisions, if any:

- Limited and excepted quantities: 1 kg, E2
- Special packing provisions: B2, B4
- Portable tanks and bulk containers:
  - Instructions: T3
  - Special provisions: TP33

1.5.4 proposed packing instruction(s): P002, IBC08

#### Section 2. PHYSICAL PROPERTIES

2.1 Melting point or range 42-45 °C

2.2 Boiling point or range 209-210 °C

2.3 Relative density at:

2.3.1 15 °C \_\_\_\_

2.3.2 20 °C 1,4 g\*cm-3

2.3.3 50 °C \_\_\_\_

2.4 Vapour pressure at:

2.4.1 50 °C 0,13 kPa

2.4.2 65 °C \_\_\_\_ kPa

2.5 Viscosity at 20 °C<sup>2</sup> \_\_\_\_ m<sup>2</sup>/s

2.6 Solubility in water at 20 °C 4,5 g/100 ml

- 2.7 Physical state at 20°C (2.2.1.1<sup>1</sup>) solid/liquid/gas<sup>2</sup>
- 2.8 Appearance at normal transport temperatures, including colour and odour: colourless crystals with a phenolic, medicinal odour
- 2.9 Other relevant physical properties: The substance is readily soluble in non-polar, organic solvents (hydrocarbons) as well as oils and fats. Solubility in methanol 10 g/100 ml, in ethanol 50 mg/ml.

### Section 3. FLAMMABILITY

- 3.1 Flammable vapour
- 3.1.1 Flash point (2.3.3<sup>1</sup>) 113 °C oc/cc
- 3.1.2 Is combustion sustained? (2.3.1.3<sup>1</sup>)      yes/no
- 3.2 Autoignition temperature \_\_\_ °C
- 3.3 Flammability range (LEL/UEL) \_\_\_ %
- 3.4 Is the substance a flammable solid? (2.4.2<sup>1</sup>)      yes/no
- 3.4.1 If yes, give details \_\_\_

### Section 4. CHEMICAL PROPERTIES

- 4.1 Does the substance require inhibition/stabilization or other treatment such as nitrogen blanket to prevent hazardous reactivity?    yes/no

If yes, state:

- 4.1.1 Inhibitor/stabilizer used \_\_\_
- 4.1.2 Alternative method \_\_\_
- 4.1.3 Time effective at 55 °C \_\_\_
- 4.1.4 Conditions rendering it ineffective \_\_\_
- 4.2 Is the substance an explosive according to paragraph 2.1.1.1? (2.1<sup>1</sup>)    yes/no
- 4.2.1 If yes, give details \_\_\_
- 4.3 Is the substance a desensitized explosive? (2.4.2.4<sup>1</sup>)      yes/no
- 4.3.1 If yes, give details \_\_\_
- 4.4 Is the substance a self-reactive substance? (2.4.1<sup>1</sup>)      yes/no

If yes, state:

- 4.4.1 exit box of flow chart \_\_\_

What is the self-accelerating decomposition temperature (SADT) for a 50 kg package? °C

Is the temperature control required? (2.4.2.3.4<sup>1</sup>)    yes/no

- 4.4.2 proposed control temperature for a 50 kg package \_\_\_ °C
- 4.4.3 proposed emergency temperature for a 50 kg package \_\_\_ °C
- 4.5 Is the substance pyrophoric? (2.4.3<sup>1</sup>)      yes/no

4.5.1 If yes, give details \_\_\_

- 4.6 Is the substance liable to self-heating? (2.4.3<sup>1</sup>)      yes/no

4.6.1 If yes, give details \_\_\_

- 4.7 Is the substance an organic peroxide (2.5.1<sup>1</sup>)      yes/no

If yes state:

4.7.1 exit box of flow chart \_\_\_\_

What is the self-accelerating decomposition temperature (SADT) for a 50 kg package?  
\_\_\_\_ °C

Is temperature control required? (2.5.3.4.1<sup>1</sup>)                      yes/no

4.7.2 proposed control temperature for a 50 kg package \_\_\_\_ °C

4.7.3 proposed emergency temperature for a 50 kg package \_\_\_\_ °C

4.8 Does the substance in contact with water emit flammable gases? (2.4.4<sup>1</sup>)                      yes/no

4.8.1 If yes, give details \_\_\_\_

4.9 Does the substance have oxidizing properties (2.5.1<sup>1</sup>)                      yes/no

4.9.1 If yes, give details \_\_\_\_

4.10 Corrosivity (2.8<sup>1</sup>) to:

4.10.1 mild steel \_\_\_\_ mm/year at \_\_\_\_ °C

4.10.2 aluminium \_\_\_\_ mm/year at \_\_\_\_ °C

4.10.3 other packaging materials (specify)

\_\_\_\_ mm/year at \_\_\_\_ °C

\_\_\_\_ mm/year at \_\_\_\_ °C

4.11 Other relevant chemical properties \_\_\_\_

## Section 5. HARMFUL BIOLOGICAL EFFECTS

5.1 LD<sub>50</sub>, oral (2.6.2.1.1<sup>1</sup>) 1276 mg/kg bw to 1352 mg/kg bw

Animal species: Mouse<sub>m/f</sub> (CD-1)

5.2 LD<sub>50</sub>, dermal (2.6.2.1.2<sup>1</sup>) 780 mg/kg bw    Animal species: Rat<sub>m/f</sub> (Sprague-Dawley)

5.3 LC<sub>50</sub>, inhalation (2.6.2.1.3<sup>1</sup>) \_\_\_\_ mg/litre    Exposure time \_\_\_\_ hours

or \_\_\_\_ ml/m<sup>3</sup>    Animal species \_\_\_\_

5.4 Saturated vapour concentration at 20 °C (2.6.2.2.4.3<sup>1</sup>) \_\_\_\_ ml/m<sup>3</sup>

5.5 Skin exposure (2.8<sup>1</sup>) results Exposure time 15 minutes

Animal species: Rabbit

5.6 Other data \_\_\_\_

5.7 Human experience \_\_\_\_

## Section 6. SUPPLEMENTARY INFORMATION

6.1 Recommended emergency action

6.1.1 Fire (include suitable and unsuitable extinguishing agents) \_\_\_\_

6.1.2 Spillage \_\_\_\_

6.2 Is it proposed to transport the substance in:

6.2.1 Bulk Containers (6.8<sup>1</sup>)    yes/no

6.2.2 Intermediate Bulk Containers (6.5<sup>1</sup>)?                      yes/no

6.2.3 Portable tanks (6.7<sup>1</sup>)?    yes/no

If yes, give details in Sections 7, 8 and/or 9.



**Section 7. BULK CONTAINERS (only complete if yes in 6.2.1)**

7.1 Proposed type(s) \_\_\_\_

**Section 8. INTERMEDIATE BULK CONTAINERS (IBCs) (only complete if yes in 6.2.2)**

8.1 Proposed type(s) IBC08

**Section 9. MULTIMODAL TANK TRANSPORT (only complete if yes in 6.2.3)**

9.1 Description of proposed tank (including IMO tank type if known) T3

9.2 Minimum test pressure \_\_\_\_

9.3 Minimum shell thickness \_\_\_\_

9.4 Details of bottom openings, if any \_\_\_\_

9.5 Pressure relief arrangements \_\_\_\_

9.6 Degree of filling \_\_\_\_

9.7 Unsuitable construction materials \_\_\_\_  
  
\_\_\_\_\_