Bundesanstalt für Arbeitsschutz und Arbeitsmedizin
Federal Institute for Occupational Safety and Health

# Justification Document for the Selection of a CoRAP Substance

| | |
|---|---|
| **Substance Name (public name):** | 1-[(2-chloro-4-nitrophenyl)azo]-2-naphthol |
| **EC Number:** | 220-562-2 |
| **CAS Number:** | 2814-77-9 |
| **Authority:** | Germany |
| **Date:** | 19/03/2019 |

**Cover Note**

This document has been prepared by the evaluating Member State given in the CoRAP update.

## Table of Contents

# 1 IDENTITY OF THE SUBSTANCE

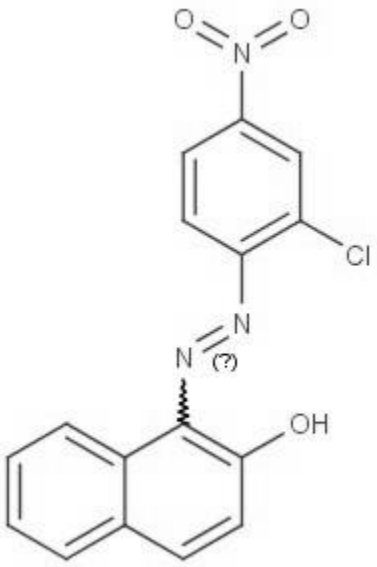
## 1.1 Other identifiers of the substance

**Table: Other Substance identifiers**

| | |
|---|---|
| **EC name (public):** | 1-[(2-chloro-4-nitrophenyl)azo]-2-naphthol |
| **IUPAC name (public):** | 1-[(E)-2-(2-chloro-4-nitrophenyl)diazen-1-yl]naphthalen-2-ol |
| **Index number in Annex VI of the CLP Regulation:** | N/A |
| **Molecular formula:** | $C_{16}H_{10}ClN_3O_3$ |
| **Molecular weight or molecular weight range:** | 327.72 g/mol |
| **Synonyms:** | 1-[(2-chloro-4-nitrophenyl)azo]-2-naphthol<br>1-[(2-chloro-4-nitrophenyl)diazenyl]-2-naphthol<br>C.I. Pigment Red 004<br>Pigment Red |

**Type of substance** ☒ Mono-constituent ☐ Multi-constituent ☐ UVCB

**Structural formula:**




## 1.2 Similar substances/grouping possibilities

In the REACH registration dossiers, Pigment Red 3 (CAS: 2425-85-6), Pigment Red 4 (CAS: 2814-77-9) and Pigment Orange 5 (CAS: 3468-63-1) are evaluated together. The category hypothesis is used for read-across between the three pigments for all relevant toxicological endpoints.

# 2 OVERVIEW OF OTHER PROCESSES / EU LEGISLATION

**Table: Completed or ongoing processes**

| | | |
|---|---|---|
| RMOA | ☐ Risk Management Option Analysis (RMOA) | |
| REACH Processes | Evaluation | ☐ Compliance check, Final decision |
| | | ☐ Testing proposal |
| | | ☐ CoRAP and Substance Evaluation |
| | Authorisation | ☐ Candidate List |
| | | ☐ Annex XIV |
| | Restric -tion | ☐ Annex XVII[1] |
| Harmonised C&L | ☐ Annex VI (CLP) (see section 3.1) | |
| Processes under other EU legislation | ☐ Plant Protection Products Regulation<br>Regulation (EC) No 1107/2009 | |
| | ☐ Biocidal Product Regulation<br>Regulation (EU) 528/2012 and amendments | |
| Previous legislation | ☐ Dangerous substances Directive<br>Directive 67/548/EEC (NONS) | |
| | ☐ Existing Substances Regulation<br>Regulation 793/93/EEC (RAR/RRS) | |
| (UNEP) Stockholm convention (POPs Protocol) | ☐ Assessment | |
| | ☐ In relevant Annex | |
| Other processes / EU legislation | ☐ Other (provide further details below) | |

[1] Please specify the relevant entry.

# 3 HAZARD INFORMATION (INCLUDING CLASSIFICATION)

## 3.1 Classification

### 3.1.1 Harmonised Classification in Annex VI of the CLP

### 3.1.2 There is currently no Annex VI entry for harmonised C&L for this substance. Self classification

- In the registration:

Not classified

- The following hazard classes are in addition notified among the aggregated self classifications in the C&L Inventory:

| | |
|---|---|
| Aquatic Chronic 4 | H413 |
| Eye Irrit. 2 | H319 |
| Skin Irrit. 2 | H315 |
| Acute Tox. 4 | H302 |

### 3.1.3 Proposal for Harmonised Classification in Annex VI of the CLP

There is currently no proposal for harmonised C&L for this substance.

# 4 INFORMATION ON (AGGREGATED) TONNAGE AND USES[2]

## 4.1 Tonnage and registration status

**Table: Tonnage and registration status***

| | | |
|---|---|---|
| ☐ Full registration(s) (Art. 10) | ☐ Intermediate registration(s) (Art. 17 and/or 18) | |
| Tonnage band (as per dissemination site) | | |
| ☐ 1 – 10 tpa | ☐ 10 – 100 tpa | ☒ 100 – 1000 tpa |
| ☐ 1000 – 10,000 tpa | ☐ 10,000 – 100,000 tpa | ☐ 100,000 – 1,000,000 tpa |
| ☐ 1,000,000 – 10,000,000 tpa | ☐ 10,000,000 – 100,000,000 tpa | ☐ > 100,000,000 tpa |
| ☐ <1 . . . . . >+ tpa (e.g. 10+ ; 100+ ; 10,000+ tpa) | | ☐ Confidential |

From ECHA dissemination site: the total tonnage band has been calculated by excluding the intermediate uses, for details see the Manual for Dissemination and Confidentiality under REACH Regulation (section 2.6.11): https://echa.europa.eu/documents/10162/22308542/manual_dissemination_en.pdf/7e0b87c2-2681-4380-8389-cd655569d9f0

## 4.2 Overview of uses

**Table: Uses**

**Part 1:**

| | | | | | | |
|---|---|---|---|---|---|---|
| ☒ Manufacture | ☒ Formulation | ☒ Industrial use | ☒ Professional use | ☒ Consumer use | ☒ Article service life | ☐ Closed system |

**Part 2:**

| | **Use(s)** |
|---|---|
| **Uses as intermediate** | |
| **Formulation** | |
| **Uses at industrial sites** | |
| **Uses by professional workers** | |
| **Consumer Uses** | PC 9a: Coatings and paints, thinners, paint removes; PC 18: Ink and toners; PC 32: Polymer preparations and compounds |
| **Article service life** | Numerous articles relevant for consumers |

[2] *ECHA dissemination site accessed in August 2018.*

# 5. JUSTIFICATION FOR THE SELECTION OF THE CANDIDATE CoRAP SUBSTANCE

## 5.1. Legal basis for the proposal

☒ Article 44(2) (refined prioritisation criteria for substance evaluation)

☐ Article 45(5) (Member State priority)

## 5.2. Selection criteria met (why the substance qualifies for being in CoRAP)

☒ Fulfils criteria as CMR/ Suspected CMR

☐ Fulfils criteria as Sensitiser/ Suspected sensitiser

☐ Fulfils criteria as potential endocrine disrupter

☒ Fulfils criteria as PBT/vPvB / Suspected PBT/vPvB

☐ Fulfils criteria high (aggregated) tonnage (*tpa > 1000*)

☒ Fulfils exposure criteria

☐ Fulfils MS's (national) priorities

## 5.3. Initial grounds for concern to be clarified under Substance Evaluation

| **Hazard based concerns** | | |
|---|---|---|
| CMR<br>☐ C ☐ M ☐ R | Suspected CMR[1]<br>☒ C ☒ M ☒ R | ☐ Potential endocrine disruptor |
| ☐ Sensitiser | ☐ Suspected Sensitiser[3] | |
| ☐ PBT/vPvB | ☒ Suspected PBT/vPvB[1] | ☐ Other (please specify below) |
| **Exposure/risk based concerns** | | |
| ☐ Wide dispersive use | ☐ Consumer use | ☐ Exposure of sensitive populations |
| ☒ Exposure of environment | ☐ Exposure of workers | ☐ Cumulative exposure |
| ☐ High RCR | ☐ High (aggregated) tonnage | ☐ Other (please specify below) |
| **Suspected CMR properties:**<br>In the REACH registration dossier, Pigment Red 3 (PR3, CAS: 2425-85-6), Pigment | | |

[3] CMR/Sensitiser: known carcinogenic and/or mutagenic and/or reprotoxic properties/known sensitising properties (according to CLP harmonized or registrant self-classification or CLP Inventory)
Suspected CMR/Suspected sensitiser: suspected carcinogenic and/or mutagenic and/or reprotoxic properties/suspected sensitising properties (not classified according to CLP harmonized or registrant self-classification)
Suspected PBT: Potentially Persistent, Bioaccumulative and Toxic

Red 4 (PR4, CAS: 2814-77-9) and Pigment Orange 5 (PO5, CAS: 3468-63-1) are evaluated together. The category hypothesis is used for read-across between the three pigments for all relevant toxicological endpoints. There are at least minor inconsistencies between the three CSR dossiers (e.g. not all studies always referenced).
Data for (germ cell) mutagenicity are inconclusive and positive Ames test results (i.e. after reductive cleavage of the Azo bond) indicate a concern for genotoxicity which requires thorough evaluation. Available negative in vitro data do not clarify the concern raised from the positive bacterial mutagenicity assays after Prival (hamster S9) activation.
Presentation of data for carcinogenicity is confusing with no results presented for any of the studies including two oral carcinogenicity studies (read-across from PR3, key studies). Only a summarizing statement from an IARC publication[4] on limited evidence for carcinogenicity in rats and mice is presented (versus "some evidence of carcinogenic activity" in original NTP study summary) for the key studies.
Testing in reproductive toxicity relied only on a OECD 421 screening study (read-across from PR3), labelled as two generation study.

**Suspected PBT/vPvB properties:**
There are no biodegradation studies for Pigment Red 4 (EC 220-562-2). The registrant proposes read-across to the structurally related substance Pigment Red 3 (EC 219-372-2) and it appears reasonable to assume similar properties for both substances. No biodegradation was observed in a screening test on ready biodegradability of Pigment Red 3. Based on this result, Pigment Red 3 and consequently Pigment Red 4 are considered to fulfill the screening criterion for persistence / very high persistence.
The experimental log Pow given in the registration dossier is 3.45 and hence below the screening criterion for bioaccumulation/ very high bioaccumulation. Given the very low water solubility (3.3 µg/l) and the significantly higher log Pow estimations from KOWWIN (6.55)[5], chemicalize (5.61)[6] and COSMOtherm (4.49)[7], the measured log Pow needs to be checked for plausibility. A study on bioaccumulation is available for the structurally related substance Pigment Red 3 but it is considered to be not reliable as it was conducted at concentrations above water solubility. As the log Pow may be larger than the screening criterion of 4.5, Pigment Red 4 is considered to be potentially bioaccumulative or very bioaccumulative.

There are no studies on the aquatic toxicity of Pigment Red 4. The registrant proposes read-across to the structurally related substances Pigment Red 3 (EC 219-372-2) and Pigment Orange 5 (EC 222-429-4). There is one study on the short-term toxicity of Pigment Orange 5 to daphnids. Furthermore, for Pigment Red 3 (EC 219-372-2) there are studies on the short-term toxicity to fish, short- and long-term toxicity to daphnids and toxicity to algae. All studies mentioned above showed no effects up to the limit of water solubility.

**Exposure**
The substance is used as a colorant in inks, paints, pigments and plastics. There are widespread dispersive indoor and outdoor uses by consumers in paints.

[4] IARC Monographs on the Evaluation of Carcinogenic Risks to Humans Volume 57 Occupational Exposures of Hairdressers and Barbers and Personal Use of Hair Colourants; Some Hair Dyes, Cosmetic Colourants, Industrial Dyestuffs and Aromatic Amines, 1993, pp. 259-267.
[5] 2010 U.S. Environmental Protection Agency. KOWWIN v1.68.
[6] Chemicalize 2018. http://www.chemicalize.org/, accessed on 14th August 2018
[7] COSMOtherm C30-1601 (revision 2299), COSMOlogic GmbH & Co KG, http://www.cosmologic.de
F. Eckert and A. Klamt, "Fast solvent screening via quantum chemistry: COSMO-RS approach," AIChE J., vol. 48, no. 2, pp. 369–385, 2002.
COSMOconf 4.0, COSMOlogic GmbH & Co KG, http://www.cosmologic.de

## 5.4. Preliminary indication of information that may need to be requested to clarify the concern

| | |
|---|---|
| ☒ Information on toxicological properties | ☒ Information on physico-chemical properties |
| ☒ Information on fate and behaviour | ☐ Information on exposure |
| ☐ Information on ecotoxicological properties | ☐ Information on uses |
| ☐ Information ED potential | ☐ Other (provide further details below) |

**CMR concern:**
Dossiers lack important information: Two oral carcinogenicity studies are cited but no results are presented on carcinogenicity.

A thorough review of genotoxicity/mutagenicity data is necessary. Detailed study reports have to be made available.

In dossiers, an OECD 421 study (with PR3) is labelled as two-generation study, other studies on reproductive toxicity (fertility and development) are lacking.

**PBT/vPvB concern:**
Refinement of log $P_{ow}$ might be required. In case the substance screens as B/vB, further information on fate and behavior is needed to clarify the PBT/vPvB concern.

## 5.5. Potential follow-up and link to risk management

| | | | |
|---|---|---|---|
| ☒ Harmonised C&L | ☐ Restriction | ☐ Authorisation | ☐ Other (provide further details) |

After evaluation of all necessary data the conclusion will be drawn if a harmonized C&L dossier will be submitted.