

BCR-291: 2,4,4'-trichlorobiphenyl

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier:

Product name : BCR-291: 2,4,4'-trichlorobiphenyl
Product type REACH : Substance/mono-constituent
CAS number : 7012-37-5
EC index number : 602-039-00-4
EC number : 230-293-2
RTECS number : DV8840000
Molecular mass : 257.55 g/mol
Formula : C12H7Cl3

1.2 Relevant identified uses of the substance or mixture and uses advised against:

Certified reference material for laboratory use only

1.3 Details of the supplier of the safety data sheet:

Supplier of the safety data sheet

Institute for Reference Materials and Measurements
 Retieseweg
 B-2440 Geel
 Tel: +32 14 57 12 11
 Fax: +32 14 59 04 06
 JRC-IRMM-RM-Sales@ec.europa.eu

1.4 Emergency telephone number:

Poison Centre:
 +32 70 245 245

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture:

2.1.1 Classification according to Regulation EC No 1272/2008

Classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

Class	Category	Hazard statements
STOT RE	category 2	H373: May cause damage to organs through prolonged or repeated exposure.
Aquatic Acute	category 1	H400: Very toxic to aquatic life.
Aquatic Chronic	category 1	H410: Very toxic to aquatic life with long lasting effects.

2.1.2 Classification according to Directive 67/548/EEC-1999/45/EC

Classified as dangerous in accordance with the criteria of Directives 67/548/EEC and 1999/45/EC

R33 - Danger of cumulative effects.

N; R50-53 - Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

2.2 Label elements:

Labelling according to Regulation EC No 1272/2008 (CLP)



Signal word

H-statements

H373

H410

P-statements

P260

P273



Warning

May cause damage to organs through prolonged or repeated exposure.

Very toxic to aquatic life with long lasting effects.

Do not breathe dust.

Avoid release to the environment.

BCR-291: 2,4,4'-trichlorobiphenyl

P314	Get medical advice/attention if you feel unwell.
P391	Collect spillage.
P501	Dispose of contents/container to manufacturer/competent authority.

2.3 Other hazards:

CLP

Its dust is explosive with air
Dust cloud can be ignited by a spark
Caution! Substance is absorbed through the skin
May have an effect on fertility
May cause harm to breastfed babies
Probably human carcinogenic
Probably hazardous to the foetus
Not readily biodegradable in water

SECTION 3: Composition/information on ingredients

3.1 Substances:

Name (REACH Registration No)	CAS No EC No	Conc. (C)	Classification according to DSD/DPD	Classification according to CLP	Note	Remark
2,4,4'-trichlorobiphenyl	7012-37-5 230-293-2		R33 N; R50-53	STOT RE 2; H373 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	(1)(2)(8)	Mono-constituent

(1) For R-phrases and H-statements in full: see heading 16

(2) Substance with a Community workplace exposure limit

(8) Specific concentration limits, see heading 16

3.2 Mixtures:

Not applicable

SECTION 4: First aid measures

4.1 Description of first aid measures:

General:

If you feel unwell, seek medical advice.

After inhalation:

Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

After skin contact:

Wash immediately with lots of water. Do not apply (chemical) neutralizing agents. Consult a doctor/medical service.

After eye contact:

Rinse with water. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.

After ingestion:

Rinse mouth with water. Give activated charcoal. Victim is fully conscious: immediately induce vomiting. Consult a doctor/medical service if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed:

4.2.1 Acute symptoms

SIMILAR PRODUCTS CAUSE FOLLOWING SYMPTOMS:

No specific information available

After inhalation:

EXPOSURE TO HIGH CONCENTRATIONS: Headache. Dizziness. Feeling of weakness. Nausea. Disturbances of consciousness.

After skin contact:

Symptoms similar to those listed under inhalation. Symptoms similar to those listed under ingestion.

After eye contact:

No data available.

After ingestion:

Skin rash/inflammation. May stain the skin. Discolouration of the (finger)nails. Conjunctivitis. Damp/clammy skin. Feeling of weakness.

4.2.2 Delayed symptoms

If applicable and available it will be listed below.

4.3 Indication of any immediate medical attention and special treatment needed:

If applicable and available it will be listed below.

BCR-291: 2,4,4'-trichlorobiphenyl

SECTION 5: Firefighting measures

5.1 Extinguishing media:

5.1.1 Suitable extinguishing media:

Water spray. Polyvalent foam. Carbon dioxide. ABC powder. Dry sand.

5.1.2 Unsuitable extinguishing media:

No unsuitable extinguishing media known.

5.2 Special hazards arising from the substance or mixture:

On heating/burning: release of toxic and corrosive gases/vapours (hydrogen chloride, carbon monoxide - carbon dioxide) and formation of small quantities of dioxin.

5.3 Advice for firefighters:

5.3.1 Instructions:

Dilute toxic gases with water spray. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.

5.3.2 Special protective equipment for fire-fighters:

Gloves. Protective clothing. Dust cloud production: compressed air/oxygen apparatus. Heat/fire exposure: compressed air/oxygen apparatus.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

Prevent dust cloud formation. No naked flames.

6.1.1 Protective equipment for non-emergency personnel

See heading 8.2

6.1.2 Protective equipment for emergency responders

Gloves. Protective clothing. Dust cloud production: compressed air/oxygen apparatus.

Suitable protective clothing

See heading 8.2

6.2 Environmental precautions:

Contain released substance, pump into suitable containers. Dam up the solid spill. Prevent soil and water pollution. Prevent spreading in sewers.

6.3 Methods and material for containment and cleaning up:

Prevent dust cloud formation. Scoop solid spill into closing containers. Carefully collect the spill/leftovers. Take collected spill to manufacturer/competent authority. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling.

6.4 Reference to other sections:

See heading 13.

SECTION 7: Handling and storage

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

7.1 Precautions for safe handling:

Avoid raising dust. Insufficient ventilation: keep naked flames/sparks away. Finely divided: spark- and explosionproof appliances. Keep away from naked flames/heat. Finely divided: keep away from ignition sources/sparks. Observe very strict hygiene - avoid contact. Keep container tightly closed. Remove contaminated clothing immediately. Do not discharge the waste into the drain.

7.2 Conditions for safe storage, including any incompatibilities:

7.2.1 Safe storage requirements:

Fireproof storeroom. Keep locked up. Unauthorized persons are not admitted. Meet the legal requirements.

7.2.2 Keep away from:

Heat sources, ignition sources, highly flammable materials.

7.2.3 Suitable packaging material:

Glass.

7.2.4 Non suitable packaging material:

No data available

7.3 Specific end use(s):

If applicable and available, exposure scenarios are attached in annex. See information supplied by the manufacturer.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters:

8.1.1 Occupational exposure

a) Occupational exposure limit values

BCR-291: 2,4,4'-trichlorobiphenyl

If limit values are applicable and available these will be listed below.

The Netherlands

Chloorbifenyl (42% Cl)	Time-weighted average exposure limit 8 h	1 mg/m ³	Private occupational exposure limit value
------------------------	--	---------------------	---

Belgium

Biphényles chlorés (42 % Cl)	Short time value	- ppm - mg/m ³	
	Time-weighted average exposure limit 8 h	- ppm 1 mg/m ³	

USA (TLV-ACGIH)

Chlorodiphenyl (42% chlorine)	Time-weighted average exposure limit 8 h	1 mg/m ³	TLV - Adopted Value
-------------------------------	--	---------------------	---------------------

Germany

Chlorierte Biphenyle (42% Chlor)	Time-weighted average exposure limit 8 h	0.1 ppm 1.1 mg/m ³	TRGS 900
----------------------------------	--	----------------------------------	----------

France

Biphényle chloré (42 % Cl)	Short time value	- ppm - mg/m ³	
	Time-weighted average exposure limit 8 h	- ppm 1 mg/m ³	VL: Valeur non réglementaire indicative

UK

Polychlorinated biphenyls (PCB)	Short time value		Workplace exposure limit (EH40/2005)
	Time-weighted average exposure limit 8 h	0.1 mg/m ³	Workplace exposure limit (EH40/2005)

b) National biological limit values

If limit values are applicable and available these will be listed below.

8.1.2 Sampling methods

Product name	Test	Number
Chloro Diphenyl (42% Cl)(Polychlorinated Biphenyls)	NIOSH	5503

8.1.3 Applicable limit values when using the substance or mixture as intended

If limit values are applicable and available these will be listed below.

8.1.4 DNEL/PNEC values

If applicable and available it will be listed below.

8.1.5 Control banding

If applicable and available it will be listed below.

8.2 Exposure controls:

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

8.2.1 Appropriate engineering controls

Avoid raising dust. Insufficient ventilation: keep naked flames/sparks away. Finely divided: spark- and explosionproof appliances. Keep away from naked flames/heat. Finely divided: keep away from ignition sources/sparks. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.

8.2.2 Individual protection measures, such as personal protective equipment

Observe very strict hygiene - avoid contact. Keep container tightly closed. Do not eat, drink or smoke during work.

a) Respiratory protection:

Dust production: dust mask with filter type P3. Combined gas/dust mask with filter type B/P3. High dust production: self-contained breathing apparatus.

b) Hand protection:

Gloves.

- materials for protective clothing (good resistance)

Butyl rubber, neoprene, viton.

- materials for protective clothing (less resistance)

Nitrile rubber.

- materials for protective clothing (poor resistance)

Natural rubber, polyethylene.

c) Eye protection:

Safety glasses. In case of dust production: protective goggles.

d) Skin protection:

Protective clothing. In case of dust production: head/neck protection. In case of dust production: dustproof clothing.

8.2.3 Environmental exposure controls:

See headings 6.2, 6.3 and 13

BCR-291: 2,4,4'-trichlorobiphenyl

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties:

Physical form	Crystalline solid
	Crystalline powder
Odour	No data available on odour
Odour threshold	No data available
Colour	No data available on colour
Particle size	No data available
Explosion limits	No data available
Flammability	Not easily combustible
Log Kow	5.62 ; Experimental value
Dynamic viscosity	No data available
Kinematic viscosity	No data available
Melting point	55 °C
Boiling point	No data available
Flash point	>100 °C
Evaporation rate	No data available
Vapour pressure	No data available
Relative vapour density	Not applicable
Solubility	water ; < 0.000040 g/100 ml
	organic solvents ; soluble
Relative density	No data available
Decomposition temperature	No data available
Auto-ignition temperature	No data available
Explosive properties	No chemical group associated with explosive properties
Oxidising properties	No chemical group associated with oxidising properties
pH	No data available

Physical hazards

No physical hazard class

9.2 Other information:

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity:

Heating increases the fire hazard.

10.2 Chemical stability:

No data available.

10.3 Possibility of hazardous reactions:

No data available.

10.4 Conditions to avoid:

Avoid raising dust. Insufficient ventilation: keep naked flames/sparks away. Finely divided: spark- and explosionproof appliances. Keep away from naked flames/heat. Finely divided: keep away from ignition sources/sparks.

10.5 Incompatible materials:

Highly flammable materials.

10.6 Hazardous decomposition products:

On heating/burning: release of toxic and corrosive gases/vapours (hydrogen chloride, carbon monoxide - carbon dioxide) and formation of small quantities of dioxin.

SECTION 11: Toxicological information

11.1 Information on toxicological effects:

11.1.1 Test results

Reason for revision: 453/2010

Publication date: 2002-04-30

Date of revision: 2012-11-26

Reference number: BCR-291

Revision number: 0300

Product number: 24064

5 / 10

BCR-291: 2,4,4'-trichlorobiphenyl

Acute toxicity

BCR-291: 2,4,4'-trichlorobiphenyl

No (test)data available

Corrosion/irritation

BCR-291: 2,4,4'-trichlorobiphenyl

No (test)data available

Respiratory or skin sensitisation

BCR-291: 2,4,4'-trichlorobiphenyl

No (test)data available

Specific target organ toxicity

BCR-291: 2,4,4'-trichlorobiphenyl

No (test)data available

Conclusion

May cause damage to organs through prolonged or repeated exposure.

Mutagenicity (in vitro)

BCR-291: 2,4,4'-trichlorobiphenyl

No (test)data available

Mutagenicity (in vivo)

BCR-291: 2,4,4'-trichlorobiphenyl

No (test)data available

Carcinogenicity

BCR-291: 2,4,4'-trichlorobiphenyl

No (test)data available

Reproductive toxicity

BCR-291: 2,4,4'-trichlorobiphenyl

No (test)data available

Toxicity other effects

BCR-291: 2,4,4'-trichlorobiphenyl

No (test)data available

Chronic effects from short and long-term exposure

BCR-291: 2,4,4'-trichlorobiphenyl

ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Dry/sore throat. Skin rash/inflammation. May stain the skin. Discolouration of the (finger)nails. Conjunctivitis. Inflammation/damage of the eye tissue. Gastrointestinal complaints. Headache. Dizziness. Nausea. Impaired memory. Change in the haemogramme/blood composition. Enlargement/affection of the liver.

11.1.2 Other information

BCR-291: 2,4,4'-trichlorobiphenyl

IARC - classification	2A
MAK - Krebs erzeugend Kategorie	3B

SECTION 12: Ecological information

12.1 Toxicity:

BCR-291: 2,4,4'-trichlorobiphenyl

No (test)data available

Conclusion

Highly toxic to aquatic organisms

12.2 Persistence and degradability:

May cause long-term adverse effects in the aquatic environment

Reason for revision: 453/2010

Publication date: 2002-04-30

Date of revision: 2012-11-26

Reference number: BCR-291

Product number: 24064

Revision number: 0300

6 / 10

BCR-291: 2,4,4'-trichlorobiphenyl

Not readily biodegradable in water

12.3 Bioaccumulative potential:

BCR-291: 2,4,4'-trichlorobiphenyl

Log Kow

Method	Remark	Value	Temperature	Value determination
		5.62		Experimental value

Conclusion

High potential for bioaccumulation (Log Kow > 5)

12.4 Mobility in soil:

No (test)data on mobility of the substance available

12.5 Results of PBT and vPvB assessment:

Due to insufficient data no statement can be made whether the substance fulfils the criteria of PBT and vPvB according to Annex XIII of Regulation (EC) No 1907/2006.

12.6 Other adverse effects:

BCR-291: 2,4,4'-trichlorobiphenyl

Global warming potential (GWP)

Not included in the list of substances which may contribute to the greenhouse effect (Regulation (EC) No 842/2006)

Ozone-depleting potential (ODP)

Not classified as dangerous for the ozone layer (Regulation (EC) No. 1272/2008 and 1005/2009)

SECTION 13: Disposal considerations

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

13.1 Waste treatment methods:

13.1.1 Provisions relating to waste

Waste material code (Directive 2008/98/EC, decision 2000/0532/EC).

16 05 06* (laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals). Depending on branch of industry and production process, also other EURAL codes may be applicable. Hazardous waste according to Directive 2008/98/EC.

13.1.2 Disposal methods

Dissolve or mix with a combustible solvent. Disposal in high-temperature incinerator (> 1200 °C) with energy recovery. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Do not discharge into drains or the environment.

13.1.3 Packaging/Container

Waste material code packaging (Directive 2008/98/EC).

15 01 10* (packaging containing residues of or contaminated by dangerous substances).

SECTION 14: Transport information

Road (ADR)

14.1 UN number:

UN number	3432
-----------	------

14.2 UN proper shipping name:

Proper shipping name	Polychlorinated biphenyls, solid
----------------------	----------------------------------

14.3 Transport hazard class(es):

Hazard identification number	90
Class	9
Classification code	M2

14.4 Packing group:

Packing group	II
Labels	9

14.5 Environmental hazards:

Environmentally hazardous substance mark	yes
--	-----

14.6 Special precautions for user:

Special provisions	305
Limited quantities	Combination packagings: not more than 1 kg per inner packaging for solids. A package shall not weigh more than 30 kg. (gross mass)

Reason for revision: 453/2010

Publication date: 2002-04-30

Date of revision: 2012-11-26

Reference number: BCR-291

Revision number: 0300

Product number: 24064

7 / 10

BCR-291: 2,4,4'-trichlorobiphenyl

Rail (RID)

14.1 UN number:

UN number	3432
-----------	------

14.2 UN proper shipping name:

Proper shipping name	Polychlorinated biphenyls, solid
----------------------	----------------------------------

14.3 Transport hazard class(es):

Hazard identification number	90
Class	9
Classification code	M2

14.4 Packing group:

Packing group	II
Labels	9

14.5 Environmental hazards:

Environmentally hazardous substance mark	yes
--	-----

14.6 Special precautions for user:

Special provisions	305
Limited quantities	Combination packagings: not more than 1 kg per inner packaging for solids. A package shall not weigh more than 30 kg. (gross mass)

Inland waterways (ADN)

14.1 UN number:

UN number	3432
-----------	------

14.2 UN proper shipping name:

Proper shipping name	Polychlorinated biphenyls, solid
----------------------	----------------------------------

14.3 Transport hazard class(es):

Class	9
Classification code	M2

14.4 Packing group:

Packing group	II
Labels	9

14.5 Environmental hazards:

Environmentally hazardous substance mark	yes
--	-----

14.6 Special precautions for user:

Special provisions	305
Special provisions	802
Limited quantities	Combination packagings: not more than 1 kg per inner packaging for solids. A package shall not weigh more than 30 kg. (gross mass)

Sea (IMDG)

14.1 UN number:

UN number	3432
-----------	------

14.2 UN proper shipping name:

Proper shipping name	Polychlorinated biphenyls, solid
----------------------	----------------------------------

14.3 Transport hazard class(es):

Class	9
-------	---

14.4 Packing group:

Packing group	II
Labels	9

14.5 Environmental hazards:

Marine pollutant	P
Environmentally hazardous substance mark	yes

14.6 Special precautions for user:

Special provisions	305
Special provisions	958
Limited quantities	Combination packagings: not more than 1 kg per inner packaging for solids. A package shall not weigh more than 30 kg. (gross mass)

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:

Annex II of MARPOL 73/78	Not applicable, based on available data
--------------------------	---

Air (ICAO-TI/IATA-DGR)

14.1 UN number:

UN number	3432
-----------	------

14.2 UN proper shipping name:

Reason for revision: 453/2010

Publication date: 2002-04-30

Date of revision: 2012-11-26

Reference number: BCR-291

Revision number: 0300

Product number: 24064

8 / 10

BCR-291: 2,4,4'-trichlorobiphenyl

Proper shipping name	Polychlorinated biphenyls, solid
14.3 Transport hazard class(es):	
Class	9
14.4 Packing group:	
Packing group	II
Labels	9
14.5 Environmental hazards:	
Environmentally hazardous substance mark	yes
14.6 Special precautions for user:	
Special provisions	A11
Passenger and cargo transport: limited quantities: maximum net quantity per packaging	Forbidden

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

European legislation:

Volatile organic compounds (VOC)

0 %

Persistent organic pollutants (POPs)

Listed in Annex IV of Regulation (EC) No 850/2004: List of substances subject to waste management provisions set out in article 7

Listed in Annex I of Regulation (EC) No 850/2004: Part A - Substances listed in the Convention and in the Protocol as well as substances listed only in the Convention

Listed in Annex III of Regulation (EC) No 850/2004: List of substances subject to release reduction provisions

15.2 Chemical safety assessment:

No chemical safety assessment has been conducted.

SECTION 16: Other information

Labelling according to Directive 67/548/EEC-1999/45/EC (DSD/DPD)

Labelling in accordance with 29th adaptation of EC directive 67/548/EEC

Labels



Dangerous for the environment

R-phrases

- 33 Danger of cumulative effects
50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

S-phrases

- (02) (Keep out of the reach of children)
35 This material and its container must be disposed of in a safe way
60 This material and its container must be disposed of as hazardous waste
61 Avoid release to the environment. Refer to special instructions/safety data sheets.

Full text of any R-phrases referred to under headings 2 and 3:

- R33 Danger of cumulative effects
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
R50 Very toxic to aquatic organisms
R53 May cause long-term adverse effects in the aquatic environment

Full text of any H-statements referred to under headings 2 and 3:

- H373 May cause damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

(*) = INTERNAL CLASSIFICATION BY BIG

PBT-substances = persistent, bioaccumulative and toxic substances

- DSD Dangerous Substance Directive
DPD Dangerous Preparation Directive
CLP (EU-GHS) Classification, labelling and packaging (Globally Harmonised System in Europe)

Reason for revision: 453/2010

Publication date: 2002-04-30

Date of revision: 2012-11-26

Reference number: BCR-291

Product number: 24064

Revision number: 0300

9 / 10

BCR-291: 2,4,4'-trichlorobiphenyl

Specific concentration limits CLP

2,4,4'-trichlorobiphenyl	C => 0.005 %	STOT RE 2; H373
--------------------------	--------------	-----------------

Specific concentration limits DSD

2,4,4'-trichlorobiphenyl	C >= 25 %	N;R 33-50/53
	2,5 % <= C < 25 %	N;R 33-51/53
	0,25 % <= C < 2,5 %	R 33-52/53
	0,005 % <= C < 0,25 %	R 33

The information in this safety data sheet is based on data and samples provided to BIG. The sheet was written to the best of our ability and according to the state of knowledge at that time. The safety data sheet only constitutes a guideline for the safe handling, use, consumption, storage, transport and disposal of the substances/preparations/mixtures mentioned under point 1. New safety data sheets are written from time to time. Only the most recent versions may be used. Old versions must be destroyed. Unless indicated otherwise word for word on the safety data sheet, the information does not apply to substances/preparations/mixtures in purer form, mixed with other substances or in processes. The safety data sheet offers no quality specification for the substances/preparations/mixtures in question. Compliance with the instructions in this safety data sheet does not release the user from the obligation to take all measures dictated by common sense, regulations and recommendations or which are necessary and/or useful based on the real applicable circumstances. BIG does not guarantee the accuracy or exhaustiveness of the information provided. Use of this safety data sheet is subject to the licence and liability limiting conditions as stated in your BIG licence agreement. All intellectual property rights to this sheet are the property of BIG and its distribution and reproduction are limited. Consult your BIG licence agreement for details.

