

SAFETY DATA SHEET

Date of issue/Date of revision

: 17 February 2024

Version

: 2.01



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

1.1 Product identifier

Product name : PPG RAVEN 405 HARDENER BLUE

Product code : 000001194755

Other means of identification

00466823; 00466828

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

Product use : Professional applications, Used by spraying.

Use of the substance/mixture : Coating.

Uses advised against : Product is not intended, labelled or packaged for consumer use.

1.3 Details of the supplier of the safety data sheet

PPG Coatings Belgium BV/SRL

Tweemontstraat 104

B-2100 Deurne

Belgium

Telephone +32-33606311

Fax +32-33606435

e-mail address of person responsible for this SDS : Product.Stewardship.EMEA@ppg.com

1.4 Emergency telephone number

Supplier

+31 20 4075210

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Acute Tox. 4, H302

Acute Tox. 3, H331

Skin Corr. 1B, H314

Eye Dam. 1, H318

Skin Sens. 1, H317

Muta. 2, H341

Repr. 1B, H360Fd

Aquatic Acute 1, H400

Aquatic Chronic 1, H410

Code : 000001194755

Date of issue/Date of revision

: 17 February 2024

PPG RAVEN 405 HARDENER BLUE

SECTION 2: Hazards identification

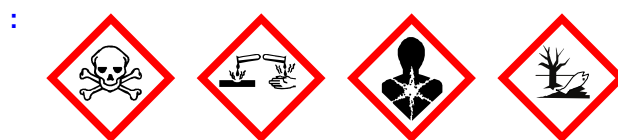
The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended.

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms



Signal word

: Danger

Hazard statements

: Harmful if swallowed.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
Toxic if inhaled.
Suspected of causing genetic defects.
May damage fertility. Suspected of damaging the unborn child.
Very toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention

: Wear protective gloves, protective clothing and eye or face protection. Avoid release to the environment.

Response

: Collect spillage. IF exposed or concerned: Get medical advice or attention. IF INHALED: Immediately call a POISON CENTER or doctor.

Storage

: Not applicable.

Disposal

: Dispose of contents and container in accordance with all local, regional, national and international regulations.
P280, P273, P391, P308 + P313, P304 + P310, P501

Hazardous ingredients

: 4-nonylphenol, branched
m-phenylenebis(methylamine)
3-aminomethyl-3,5,5-trimethylcyclohexylamine
2,2'-iminodiethylamine
4,4'-methylenebis(cyclohexylamine)
Formaldehyde, polymer with benzenamine, hydrogenated
bisphenol A
phenol

Supplemental label elements

: Not applicable.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

: Restricted to professional users.

Special packaging requirements

Containers to be fitted with child-resistant fastenings

: Not applicable.

Tactile warning of danger

: Not applicable.

Code : 000001194755 Date of issue/Date of revision : 17 February 2024
PPG RAVEN 405 HARDENER BLUE

SECTION 2: Hazards identification

2.3 Other hazards

Product meets the criteria for PBT or vPvB : This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

Other hazards which do not result in classification : Causes digestive tract burns. Contains a substance that may emit formaldehyde if stored beyond its shelf life and/or during cure at curing temperatures greater than 60C/140F.
May cause endocrine disruption.

SECTION 3: Composition/information on ingredients

3.2 Mixtures : Mixture

Product/ingredient name	Identifiers	% by weight	Classification	Specific Conc. Limits, M-factors and ATEs	Type
4-nonylphenol, branched	REACH #: 01-2119510715-45 EC: 284-325-5 CAS: 84852-15-3 Index: 601-053-00-8	≥25 - ≤50	Acute Tox. 4, H302 Skin Corr. 1B, H314 Eye Dam. 1, H318 Repr. 2, H361fd Aquatic Acute 1, H400 Aquatic Chronic 1, H410	ATE [Oral] = 1300 mg/kg M [Acute] = 10 M [Chronic] = 10	[1] [3]
m-phenylenebis (methylamine)	REACH #: 01-2119480150-50 EC: 216-032-5 CAS: 1477-55-0	≥10 - ≤22	Acute Tox. 4, H302 Acute Tox. 4, H332 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1B, H317 Aquatic Chronic 3, H412 EUH071	ATE [Oral] = 930 mg/kg ATE [Inhalation (gases)] = 4500 ppm	[1] [2]
3-aminomethyl-3,5,5-trimethylcyclohexylamine	REACH #: 01-2119514687-32 EC: 220-666-8 CAS: 2855-13-2 Index: 612-067-00-9	≥10 - ≤25	Acute Tox. 4, H302 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1A, H317	ATE [Oral] = 1030 mg/kg Skin Sens. 1, H317: C ≥ 0.001%	[1]
2,2'-iminodiethylamine	REACH #: 01-2119473793-27 EC: 203-865-4 CAS: 111-40-0 Index: 612-058-00-X	≥5.0 - ≤9.7	Acute Tox. 4, H302 Acute Tox. 4, H312 Acute Tox. 2, H330 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 STOT SE 3, H335	ATE [Oral] = 1080 mg/kg ATE [Dermal] = 1090 mg/kg ATE [Inhalation (dusts and mists)] = 0.05 mg/l	[1] [2]
4,4'-methylenebis (cyclohexylamine)	REACH #: 01-2119541673-38 EC: 217-168-8 CAS: 1761-71-3	≥1.0 - ≤5.0	Acute Tox. 4, H302 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 STOT RE 2, H373 (liver) (oral) Aquatic Chronic 2, H411	ATE [Oral] = 625 mg/kg	[1]
Formaldehyde, polymer with benzenamine, hydrogenated	CAS: 135108-88-2	≥1.0 - ≤5.0	Acute Tox. 3, H301 Skin Corr. 1C, H314 Eye Dam. 1, H318	ATE [Oral] = 300 mg/kg	[1]

Code : 000001194755 Date of issue/Date of revision : 17 February 2024

PPG RAVEN 405 HARDENER BLUE

SECTION 3: Composition/information on ingredients

bisphenol A	REACH #: 01-2119457856-23 EC: 201-245-8 CAS: 80-05-7 Index: 604-030-00-0	≥1.0 - ≤5.0	Skin Sens. 1B, H317 STOT RE 2, H373 (kidneys) (oral) Aquatic Chronic 3, H412 Eye Dam. 1, H318 Skin Sens. 1, H317 Repr. 1B, H360F STOT SE 3, H335 Aquatic Acute 1, H400 Aquatic Chronic 1, H410	M [Acute] = 1 M [Chronic] = 10	[1] [2] [3]
phenol	REACH #: 01-2119471329-32 EC: 203-632-7 CAS: 108-95-2 Index: 604-001-00-2	≥1.0 - ≤4.3	Acute Tox. 3, H301 Acute Tox. 3, H311 Acute Tox. 3, H331 Skin Corr. 1B, H314 Eye Dam. 1, H318 Muta. 2, H341 STOT RE 2, H373 See Section 16 for the full text of the H statements declared above.	ATE [Oral] = 100 mg/kg ATE [Dermal] = 669 mg/kg ATE [Inhalation (dusts and mists)] = 0.9 mg/l Skin Corr. 1B, H314: C ≥ 3% Skin Irrit. 2, H315: 1% ≤ C < 3% Eye Dam. 1, H318: C ≥ 3% Eye Irrit. 2, H319: 1% ≤ C < 3%	[1] [2]

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs, vPvBs or Substances of equivalent concern, or have been assigned a workplace exposure limit and hence require reporting in this section.

Type

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

[3] Substance of equivalent concern

Occupational exposure limits, if available, are listed in Section 8.

SUB codes represent substances without registered CAS Numbers.

SECTION 4: First aid measures

4.1 Description of first aid measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek immediate medical attention.
- Inhalation** : Remove to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.
- Skin contact** : Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognised skin cleanser. Do NOT use solvents or thinners.
- Ingestion** : If swallowed, seek medical advice immediately and show the container or label. Keep person warm and at rest. Do NOT induce vomiting.

Code : 000001194755 Date of issue/Date of revision : 17 February 2024
PPG RAVEN 405 HARDENER BLUE

SECTION 4: First aid measures

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.
Inhalation : Toxic if inhaled.
Skin contact : Causes severe burns. May cause an allergic skin reaction.
Ingestion : Harmful if swallowed. Corrosive to the digestive tract. Causes burns.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
reduced foetal weight
increase in foetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
reduced foetal weight
increase in foetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
stomach pains
reduced foetal weight
increase in foetal deaths
skeletal malformations

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

5.2 Special hazards arising from the substance or mixture

Code : 000001194755 Date of issue/Date of revision : 17 February 2024
PPG RAVEN 405 HARDENER BLUE

SECTION 5: Firefighting measures

Hazards from the substance or mixture : In a fire or if heated, a pressure increase will occur and the container may burst. This material is very toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous combustion products : Decomposition products may include the following materials:
carbon oxides
nitrogen oxides
Formaldehyde.

5.3 Advice for firefighters

Special precautions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 Environmental precautions

: Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

6.3 Methods and material for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product.

6.4 Reference to other sections

: See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

Code : 000001194755

Date of issue/Date of revision

: 17 February 2024

PPG RAVEN 405 HARDENER BLUE

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

Protective measures

: Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene

: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

: Store between the following temperatures: 0 to 35°C (32 to 95°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

7.3 Specific end use(s)

See Section 1.2 for Identified uses.

SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
m-phenylenebis(methylamine)	ACGIH TLV (United States, 1/2023). Absorbed through skin. C: 0.018 ppm
2,2'-iminodiethylamine	ACGIH TLV (United States, 1/2023). Absorbed through skin. TWA: 4.2 mg/m ³ 8 hours. TWA: 1 ppm 8 hours.
bisphenol A	EU OEL (Europe, 1/2022). TWA: 2 mg/m ³ 8 hours. Form: Inhalable fraction
phenol	EU OEL (Europe, 1/2022). Absorbed through skin. TWA: 8 mg/m ³ 8 hours. TWA: 2 ppm 8 hours. STEL: 16 mg/m ³ 15 minutes. STEL: 4 ppm 15 minutes.

Code : 000001194755

Date of issue/Date of revision

: 17 February 2024

PPG RAVEN 405 HARDENER BLUE

SECTION 8: Exposure controls/personal protection

Recommended monitoring procedures : Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs

Product/ingredient name	Type	Exposure	Value	Population	Effects	
4-nonylphenol, branched	DNEL	Short term Oral	0.4 mg/kg bw/day	General population	Systemic	
	DNEL	Short term Inhalation	0.8 mg/m ³	General population	Systemic	
	DNEL	Short term Dermal	7.6 mg/kg bw/day	General population	Systemic	
	DNEL	Long term Oral	0.08 mg/kg bw/day	General population	Systemic	
	DNEL	Long term Inhalation	0.4 mg/m ³	General population	Systemic	
	DNEL	Long term Inhalation	0.5 mg/m ³	Workers	Systemic	
	DNEL	Short term Inhalation	1 mg/m ³	Workers	Systemic	
	DNEL	Long term Dermal	3.8 mg/kg bw/day	General population	Systemic	
	DNEL	Long term Dermal	7.5 mg/kg bw/day	Workers	Systemic	
	DNEL	Short term Dermal	15 mg/kg bw/day	Workers	Systemic	
m-phenylenebis(methylamine)	DNEL	Long term Inhalation	0.2 mg/m ³	Workers	Local	
	DNEL	Long term Dermal	0.33 mg/kg bw/day	Workers	Systemic	
3-aminomethyl-3,5,5-trimethylcyclohexylamine	DNEL	Long term Inhalation	1.2 mg/m ³	Workers	Systemic	
	DNEL	Short term Inhalation	0.073 mg/m ³	Workers	Local	
2,2'-iminodiethylamine	DNEL	Long term Inhalation	0.073 mg/m ³	Workers	Local	
	DNEL	Long term Oral	0.3 mg/kg bw/day	General population	Systemic	
	DNEL	Short term Oral	0.3 mg/kg bw/day	General population	Systemic	
	DNEL	Long term Dermal	1.1 mg/cm ²	Workers	Local	
	DNEL	Long term Inhalation	0.87 mg/m ³	Workers	Local	
	DNEL	Long term Dermal	1.1 mg/cm ²	Workers	Local	
	DNEL	Short term Inhalation	2.6 mg/m ³	Workers	Local	
	DNEL	Long term Inhalation	4.6 mg/m ³	General population	Systemic	
	DNEL	Short term Dermal	4.88 mg/kg bw/day	General population	Systemic	
	DNEL	Long term Dermal	4.88 mg/kg bw/day	General population	Systemic	
4,4'-methylenebis(cyclohexylamine)	DNEL	Long term Dermal	11.4 mg/kg bw/day	Workers	Systemic	
	DNEL	Long term Inhalation	15.4 mg/m ³	Workers	Systemic	
	DNEL	Short term Inhalation	27.5 mg/m ³	General population	Systemic	
	DNEL	Short term Inhalation	92.1 mg/m ³	Workers	Systemic	
	DNEL	Long term Dermal	0.053 mg/kg bw/day	Workers	Systemic	
	Formaldehyde, polymer with benzenamine, hydrogenated	DNEL	Long term Inhalation	0.13 mg/m ³	Workers	Systemic
		DNEL	Long term Inhalation	0.2 mg/m ³	Workers	Systemic
	bisphenol A	DNEL	Long term Dermal	2 mg/kg bw/day	Workers	Systemic
		DNEL	Short term Inhalation	2 mg/m ³	Workers	Systemic
		DNEL	Short term Dermal	6 mg/kg bw/day	Workers	Systemic
DNEL		Long term Inhalation	2 mg/m ³	Workers	Systemic	
DNEL		Short term Inhalation	2 mg/m ³	Workers	Systemic	
DNEL		Long term Inhalation	2 mg/m ³	Workers	Local	
DNEL		Short term Inhalation	2 mg/m ³	Workers	Local	
DNEL		Long term Dermal	0.031 mg/kg bw/day	Workers	Systemic	
DNEL		Short term Dermal	0.031 mg/kg bw/day	Workers	Systemic	
DNEL		Long term Inhalation	1 mg/m ³	General population	Systemic	
DNEL	Short term Inhalation	1 mg/m ³	General population	Systemic		

Code : 000001194755

Date of issue/Date of revision

: 17 February 2024

PPG RAVEN 405 HARDENER BLUE

SECTION 8: Exposure controls/personal protection

phenol	DNEL	Long term Inhalation	1 mg/m ³	General population	Local
	DNEL	Short term Inhalation	1 mg/m ³	General population	Local
	DNEL	Long term Dermal	0.002 mg/kg bw/day	General population	Systemic
	DNEL	Short term Dermal	0.002 mg/kg bw/day	General population	Systemic
	DNEL	Long term Oral	0.004 mg/kg bw/day	General population	Systemic
	DNEL	Short term Oral	0.004 mg/kg bw/day	General population	Systemic
	DNEL	Short term Dermal	0.0019 mg/kg bw/day	General population	Systemic
	DNEL	Long term Dermal	0.0019 mg/kg bw/day	General population	Systemic
	DNEL	Short term Oral	0.004 mg/kg bw/day	General population	Systemic
	DNEL	Long term Oral	0.004 mg/kg bw/day	General population	Systemic
	DNEL	Short term Dermal	0.031 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Dermal	0.031 mg/kg bw/day	Workers	Systemic
	DNEL	Short term Inhalation	1 mg/m ³	General population	Local
	DNEL	Long term Inhalation	1 mg/m ³	General population	Local
	DNEL	Short term Inhalation	1 mg/m ³	General population	Systemic
	DNEL	Long term Inhalation	1 mg/m ³	General population	Systemic
	DNEL	Short term Inhalation	2 mg/m ³	Workers	Local
	DNEL	Long term Inhalation	2 mg/m ³	Workers	Local
	DNEL	Short term Inhalation	2 mg/m ³	Workers	Systemic
	DNEL	Long term Inhalation	2 mg/m ³	Workers	Systemic
	DNEL	Long term Inhalation	0.452 mg/m ³	General population	Systemic
	DNEL	Long term Oral	0.5 mg/kg bw/day	General population	Systemic
	DNEL	Long term Dermal	0.5 mg/kg bw/day	General population	Systemic
	DNEL	Long term Dermal	1.23 mg/kg bw/day	Workers	Systemic
DNEL	Long term Inhalation	8 mg/m ³	Workers	Systemic	
DNEL	Short term Inhalation	16 mg/m ³	Workers	Local	

PNECs

Product/ingredient name	Type	Compartment Detail	Value	Method Detail	
2,2'-iminodiethylamine	-	Fresh water	0.56 mg/l	Assessment Factors	
	-	Marine water	0.056 mg/l	Assessment Factors	
	-	Sewage Treatment Plant	6 mg/l	Assessment Factors	
	-	Fresh water sediment	1072 mg/kg dwt	Equilibrium Partitioning	
	-	Marine water sediment	107.2 mg/kg dwt	Equilibrium Partitioning	
	-	Soil	7.97 mg/kg dwt	-	
	bisphenol A	-	Fresh water	0.018 mg/l	Sensitivity Distribution
		-	Marine water	0.018 mg/l	Sensitivity Distribution
		-	Sewage Treatment Plant	320 mg/l	Assessment Factors
		-	Fresh water sediment	1.2 mg/kg dwt	Assessment Factors
		-	Marine water sediment	0.24 mg/kg dwt	Assessment Factors
		-	Soil	3.7 mg/kg dwt	Assessment Factors

8.2 Exposure controls

Appropriate engineering controls

: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures

: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

: Chemical splash goggles and face shield. Use eye protection according to EN 166.

Skin protection

Code : 000001194755

Date of issue/Date of revision

: 17 February 2024

PPG RAVEN 405 HARDENER BLUE

SECTION 8: Exposure controls/personal protection

- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. When prolonged or frequently repeated contact may occur, a glove with a protection class of 6 (breakthrough time greater than 480 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 2 or higher (breakthrough time greater than 30 minutes according to EN 374) is recommended. The user must check that the final choice of type of glove selected for handling this product is the most appropriate and takes into account the particular conditions of use, as included in the user's risk assessment.
- Gloves** : butyl rubber
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators. Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Wear a respirator conforming to EN140. Filter type: organic vapour (Type A) and particulate filter P3
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

9.1 Information on basic physical and chemical properties

Appearance

- Physical state** : Liquid.
- Colour** : Blue.
- Odour** : Amine-like. [Slight]
- Odour threshold** : Not available.
- Melting point/freezing point** : May start to solidify at the following temperature: 14°C (57.2°F) This is based on data for the following ingredient: m-phenylenebis(methylamine). Weighted average: -2.63°C (27.3°F)
- Initial boiling point and boiling range** : >37.78°C
- Flammability** : Not available.
- Upper/lower flammability or explosive limits** : Greatest known range: Lower: 1% Upper: 10% (2,2'-iminodiethylamine)
- Flash point** : Closed cup: 92°C
- Auto-ignition temperature** :

Code : 000001194755 Date of issue/Date of revision : 17 February 2024
PPG RAVEN 405 HARDENER BLUE

SECTION 9: Physical and chemical properties

Ingredient name	°C	°F	Method
4,4'-methylenebis(cyclohexylamine)	300	572	EU A.15

- Decomposition temperature** : Stable under recommended storage and handling conditions (see Section 7).
pH : Not applicable.
Viscosity : Kinematic (40°C): >21 mm²/s
Viscosity : > 100 s (ISO 6mm)
Solubility(ies) :

Media	Result
cold water	Not soluble

Partition coefficient: n-octanol/ water : Not applicable.

Vapour pressure :

Ingredient name	Vapour Pressure at 20°C			Vapour pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
2,2'-iminodiethylamine	0.16	0.021				

- Evaporation rate** : 0.005 (2,2'-iminodiethylamine) compared with butyl acetate
Relative density : 1.03
Vapour density : Highest known value: 7.59 (Air = 1) (4-nonylphenol, branched). Weighted average: 6.96 (Air = 1)
Explosive properties : The product itself is not explosive, but the formation of an explosible mixture of vapour or dust with air is possible.
Oxidising properties : Product does not present an oxidizing hazard.
Particle characteristics
Median particle size : Not applicable.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

- 10.1 Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability : The product is stable.
10.3 Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid : When exposed to high temperatures may produce hazardous decomposition products. Refer to protective measures listed in sections 7 and 8.
10.5 Incompatible materials : Keep away from the following materials to prevent strong exothermic reactions: oxidising agents, strong alkalis, strong acids.
10.6 Hazardous decomposition products : Depending on conditions, decomposition products may include the following materials: carbon oxides nitrogen oxides Formaldehyde.

Code : 000001194755

Date of issue/Date of revision

: 17 February 2024

PPG RAVEN 405 HARDENER BLUE

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
4-nonylphenol, branched	LD50 Dermal	Rabbit	2.14 g/kg	-
	LD50 Oral	Rat	1300 mg/kg	-
m-phenylenebis(methylamine)	LC50 Inhalation Gas.	Rat	700 ppm	1 hours
	LD50 Dermal	Rat - Male, Female	>3100 mg/kg	-
3-aminomethyl-3,5,5-trimethylcyclohexylamine	LD50 Oral	Rat	930 mg/kg	-
	LC50 Inhalation Dusts and mists	Rat	>5.01 mg/l	4 hours
2,2'-iminodiethylamine	LD50 Dermal	Rat	>2000 mg/kg	-
	LD50 Oral	Rat	1030 mg/kg	-
	LC50 Inhalation Dusts and mists	Rat	0.07 to 0.3 mg/l	4 hours
4,4'-methylenebis(cyclohexylamine)	LD50 Dermal	Rabbit	1090 mg/kg	-
	LD50 Oral	Rat	1080 mg/kg	-
	LD50 Dermal	Rabbit	2.11 g/kg	-
Formaldehyde, polymer with benzenamine, hydrogenated	LD50 Oral	Rat	0.625 g/kg	-
	LD50 Oral	Rat	300 mg/kg	-
bisphenol A	LD50 Dermal	Rabbit	3600 mg/kg	-
	LD50 Oral	Rat	3.25 g/kg	-
phenol	LC50 Inhalation Dusts and mists	Rat	900 mg/m ³	4 hours
	LD50 Dermal	Rat	669 mg/kg	-
	LD50 Oral	Rat	0.34 g/kg	-

Conclusion/Summary : There are no data available on the mixture itself.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
4-nonylphenol, branched	Skin - Erythema/Eschar	Rabbit	4	-	-
	Skin - Severe irritant	Rat	-	4 hours	4 hours

Conclusion/Summary

Skin : There are no data available on the mixture itself.

Eyes : There are no data available on the mixture itself.

Respiratory : There are no data available on the mixture itself.

Sensitisation

Product/ingredient name	Route of exposure	Species	Result
m-phenylenebis(methylamine)	skin	Mouse	Sensitising
3-aminomethyl-3,5,5-trimethylcyclohexylamine	skin	Guinea pig	Sensitising

Conclusion/Summary

Skin : There are no data available on the mixture itself.

Respiratory : There are no data available on the mixture itself.

Mutagenicity

Conclusion/Summary : There are no data available on the mixture itself.

Carcinogenicity

Conclusion/Summary : There are no data available on the mixture itself.

Code : 000001194755 Date of issue/Date of revision : 17 February 2024
 PPG RAVEN 405 HARDENER BLUE

SECTION 11: Toxicological information

Reproductive toxicity

Conclusion/Summary : There are no data available on the mixture itself.

Teratogenicity

Conclusion/Summary : There are no data available on the mixture itself.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
2,2'-iminodiethylamine	Category 3	-	Respiratory tract irritation
bisphenol A	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
4,4'-methylenebis(cyclohexylamine)	Category 2	oral	liver
Formaldehyde, polymer with benzenamine, hydrogenated	Category 2	oral	kidneys
phenol	Category 2	-	-

Aspiration hazard

Not available.

Information on likely routes of exposure : Not available.

Potential acute health effects

- Inhalation** : Toxic if inhaled.
- Ingestion** : Harmful if swallowed. Corrosive to the digestive tract. Causes burns.
- Skin contact** : Causes severe burns. May cause an allergic skin reaction.
- Eye contact** : Causes serious eye damage.

Symptoms related to the physical, chemical and toxicological characteristics

- Inhalation** : Adverse symptoms may include the following:
 reduced foetal weight
 increase in foetal deaths
 skeletal malformations
- Ingestion** : Adverse symptoms may include the following:
 stomach pains
 reduced foetal weight
 increase in foetal deaths
 skeletal malformations
- Skin contact** : Adverse symptoms may include the following:
 pain or irritation
 redness
 blistering may occur
 reduced foetal weight
 increase in foetal deaths
 skeletal malformations
- Eye contact** : Adverse symptoms may include the following:
 pain
 watering
 redness

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Short term exposure

Code : 000001194755 Date of issue/Date of revision : 17 February 2024
PPG RAVEN 405 HARDENER BLUE

SECTION 11: Toxicological information

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

Conclusion/Summary : Not available.

General : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : Suspected of causing genetic defects.

Reproductive toxicity : May damage fertility. Suspected of damaging the unborn child.

Other information : Not available.

Causes digestive tract burns. Contains a substance that may emit formaldehyde if stored beyond its shelf life and/or during cure at curing temperatures greater than 60C/140F. Can form nitrosamines in the presence of certain organic materials and if heated. Exposure to amine vapor has been reported to cause transient corneal edema described as blue haze, halo effect, foggy or blurred vision for several hours. This condition is typically temporary and does not cause permanent visual effects. When the proper eye protection specified in Section 8 is worn, exposure is significantly reduced and the condition has not been observed.

11.2 Information on other hazards

11.2.1 Endocrine disrupting properties

May cause endocrine disruption.

11.2.2 Other information

Not available.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
4-nonylphenol, branched	Acute EC50 0.044 mg/l	Crustaceans - <i>Moina macrocopa</i>	48 hours
	Acute LC50 0.221 mg/l	Fish	96 hours
	Acute LC50 430 mg/l	Fish	96 hours
	Acute EC50 43.94 mg/l	Algae	72 hours
2,2'-iminodiethylamine	Acute EC50 15.4 mg/l	Daphnia	48 hours
	Acute LC50 63 mg/l	Fish	96 hours
	Acute LC50 0.885 mg/l Fresh water	Crustaceans	48 hours
		Daphnia - <i>Daphnia magna</i> - Neonate	48 hours
Formaldehyde, polymer with benzenamine, hydrogenated	Acute LC50 8.11 mg/l Fresh water	Daphnia - <i>Daphnia magna</i> - Neonate	48 hours
	Acute LC50 4.6 mg/l Fresh water	Fish	96 hours
	Chronic NOEC 0.000174 mg/l Fresh water	Fish	5 months
	phenol	Chronic IC10 2.38 mg/l Fresh water	Daphnia - <i>Daphnia magna</i> - Neonate

Code : 000001194755 **Date of issue/Date of revision** : 17 February 2024
PPG RAVEN 405 HARDENER BLUE

SECTION 12: Ecological information

Conclusion/Summary : There are no data available on the mixture itself.

12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
2,2'-iminodiethylamine	-	87 % - Readily - 21 days	-	-
Formaldehyde, polymer with benzenamine, hydrogenated	-	0 % - Not readily - 28 days	-	-

Conclusion/Summary : There are no data available on the mixture itself.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
2,2'-iminodiethylamine	-	-	Readily
Formaldehyde, polymer with benzenamine, hydrogenated	-	-	Not readily
bisphenol A	-	-	Readily

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
nonylphenol, branched	5.4	251.19	Low
m-phenylenebis(methylamine)	0.18	2.69	Low
3-aminomethyl-3,5,5-trimethylcyclohexylamine	0.99	-	Low
2,2'-iminodiethylamine	-5.58	4.47	Low
4,4'-methylenebis(cyclohexylamine)	2.03	-	Low
Formaldehyde, polymer with benzenamine, hydrogenated	2.68	209 to 219	Low
bisphenol A	3.4	43.65	Low
phenol	1.47	17.38	Low

12.4 Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

12.6 Endocrine disrupting properties

May cause endocrine disruption.

12.7 Other adverse effects

No known significant effects or critical hazards.

Code : 000001194755 **Date of issue/Date of revision** : 17 February 2024
PPG RAVEN 405 HARDENER BLUE

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

Hazardous waste : The classification of the product may meet the criteria for a hazardous waste.

European waste catalogue (EWC)

Waste code	Waste designation
08 01 11*	waste paint and varnish containing organic solvents or other hazardous substances


Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Type of packaging	European waste catalogue (EWC)
Container	15 01 06 mixed packaging

Special precautions : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14. Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number or ID number	UN2922	UN2922	UN2922	UN2922
14.2 UN proper shipping name	CORROSIVE LIQUID, TOXIC, N.O.S. (4-nonylphenol, branched, Formaldehyde, polymer with benzenamine, hydrogenated)	CORROSIVE LIQUID, TOXIC, N.O.S. (4-nonylphenol, branched, Formaldehyde, polymer with benzenamine, hydrogenated)	CORROSIVE LIQUID, TOXIC, N.O.S. (4-nonylphenol, branched, Formaldehyde, polymer with benzenamine, hydrogenated)	CORROSIVE LIQUID, TOXIC, N.O.S. (4-nonylphenol, branched, Formaldehyde, polymer with benzenamine, hydrogenated)
14.3 Transport hazard class(es)	8 (6.1)	8 (6.1)	8 (6.1)	8 (6.1)
14.4 Packing group	II	II	II	II
14.5 Environmental hazards	Yes.	Yes.	Yes.	Yes. The environmentally hazardous substance mark is not required.
Marine pollutant substances	Not applicable.	Not applicable.	 (4-nonylphenol, branched)	Not applicable.

Code : 000001194755

Date of issue/Date of revision

: 17 February 2024

PPG RAVEN 405 HARDENER BLUE

14. Transport information

Additional information

- ADR/RID** : The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.
- Tunnel code** : (E)
- ADN** : The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.
- IMDG** : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.
- IATA** : The environmentally hazardous substance mark may appear if required by other transportation regulations.

14.6 Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

14.7 Maritime transport in bulk according to IMO instruments : Not applicable.

SECTION 15: Regulatory information

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

[EU Regulation \(EC\) No. 1907/2006 \(REACH\)](#)

[Annex XIV - List of substances subject to authorisation](#)

[Annex XIV](#)

None of the components are listed.

[Substances of very high concern](#)

Intrinsic property	Ingredient name	Status	Reference number	Date of revision
Toxic to reproduction	4,4'-isopropylidenediphenol	Recommended	ED/01/2018	10/1/2019
Endocrine disrupting properties for human health	4,4'-isopropylidenediphenol	Recommended	ED/01/2018	10/1/2019
Endocrine disrupting properties for environment	4-nonylphenol, branched and linear substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof	Candidate	ED/169/2012	12/19/2012
	4,4'-isopropylidenediphenol	Recommended	ED/01/2018	10/1/2019

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Restricted to professional users.

Explosive precursors : Not applicable.

[Ozone depleting substances \(1005/2009/EU\)](#)

Not listed.

Code : 000001194755 Date of issue/Date of revision : 17 February 2024
 PPG RAVEN 405 HARDENER BLUE

SECTION 15: Regulatory information

Seveso Directive

This product is controlled under the Seveso Directive.

Danger criteria

Category
H2
E1

15.2 Chemical safety assessment : No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

✔ Indicates information that has changed from previously issued version.

Abbreviations and acronyms

ATE = Acute Toxicity Estimate
 CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
 DNEL = Derived No Effect Level
 EUH statement = CLP-specific Hazard statement
 PNEC = Predicted No Effect Concentration
 RRN = REACH Registration Number
 PBT = Persistent, Bioaccumulative and Toxic
 vPvB = Very Persistent and Very Bioaccumulative
 ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
 ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
 IMDG = International Maritime Dangerous Goods
 IATA = International Air Transport Association

Full text of abbreviated H statements

H301	Toxic if swallowed.
H302	Harmful if swallowed.
H311	Toxic in contact with skin.
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H330	Fatal if inhaled.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H341	Suspected of causing genetic defects.
H360F	May damage fertility.
H360Fd	May damage fertility. Suspected of damaging the unborn child.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.
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.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.
EUH071	Corrosive to the respiratory tract.

Full text of classifications [CLP/GHS]

Code : 000001194755	Date of issue/Date of revision : 17 February 2024
PPG RAVEN 405 HARDENER BLUE	

SECTION 16: Other information

Acute Tox. 2	ACUTE TOXICITY - Category 2
Acute Tox. 3	ACUTE TOXICITY - Category 3
Acute Tox. 4	ACUTE TOXICITY - Category 4
Aquatic Acute 1	SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1
Aquatic Chronic 1	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 1
Aquatic Chronic 2	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2
Aquatic Chronic 3	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3
Eye Dam. 1	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1
Muta. 2	GERM CELL MUTAGENICITY - Category 2
Repr. 1B	REPRODUCTIVE TOXICITY - Category 1B
Repr. 2	REPRODUCTIVE TOXICITY - Category 2
Skin Corr. 1B	SKIN CORROSION/IRRITATION - Category 1B
Skin Corr. 1C	SKIN CORROSION/IRRITATION - Category 1C
Skin Sens. 1	SKIN SENSITISATION - Category 1
Skin Sens. 1A	SKIN SENSITISATION - Category 1A
Skin Sens. 1B	SKIN SENSITISATION - Category 1B
STOT RE 2	SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2
STOT SE 3	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE - Category 3

History

Date of issue/ Date of revision : 17 February 2024
Date of previous issue : 25 October 2023
Prepared by : EHS
Version : 2.01

Disclaimer

The information contained in this data sheet is based on present scientific and technical knowledge. The purpose of this information is to draw attention to the health and safety aspects concerning the products supplied by us, and to recommend precautionary measures for the storage and handling of the products. No warranty or guarantee is given in respect of the properties of the products. No liability can be accepted for any failure to observe the precautionary measures described in this data sheet or for any misuse of the products.