

## SAFETY DATA SHEET

This Safety Data Sheet is prepared in accordance with Annex II to Regulation (EC) No. 1907/2006.

PPG Protective &  
Marine Coatings**SIGMAGUARD 790 HARDENER**

MSDS UK 01 / EN Version 6

Print Date 7/17/2009

Revision date 28-06-09

**1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING****Product information**

**Trade name** : SIGMAGUARD 790 HARDENER  
**Technical data sheet number** : For further information see Technical Data Sheet.

**Recommended use** : coating

**Company** : PPG Coatings SPRL/BVBA  
 Noordersingel 23  
 B-2040 Borgerhout

**Telephone** : +32 3 3606470

**Telefax** : +32 3 3606435

**Emergency telephone number** : +31 20 4075210

**E-mail address** : [PMC.Safety@PPG.com](mailto:PMC.Safety@PPG.com)

**2. HAZARDS IDENTIFICATION****Symbol(s) :**

|| Toxic

|| Dangerous for the environment

**Hazardous components :**

4,4'-diaminodiphenylmethane  
 formaldehyde, oligomeric reaction products with aniline, reaction products with butan-1-ol and 1-chloro-2,3-epoxypropane

**R-phrases) :**

|| MAY CAUSE CANCER.

|| ALSO HARMFUL IF SWALLOWED.

|| ALSO TOXIC: DANGER OF VERY SERIOUS IRREVERSIBLE EFFECTS THROUGH INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.

|| ALSO HARMFUL: DANGER OF SERIOUS DAMAGE TO HEALTH BY PROLONGED EXPOSURE THROUGH INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.

|| POSSIBLE RISK OF IRREVERSIBLE EFFECTS.

|| MAY CAUSE SENSITIZATION BY SKIN CONTACT.

|| TOXIC TO AQUATIC ORGANISMS, MAY CAUSE LONG-TERM ADVERSE EFFECTS IN THE AQUATIC ENVIRONMENT.

**P-phrases) :**

|| Restricted to professional users.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Components	EC No.	CAS-No.	DSD	Note	Classification	Concentration
benzyl alcohol	202-859-9	100-51-6	19th		Xn; R20/22	>=10.00 - <25.00%

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Salicylic acid	200-712-3	69-72-7			Xn; R22 Xi; R41	>=2.50 - <5.00%
4,4'-diaminodiphenylmethane	202-974-4	101-77-9	29th	Nota E	Carc.Cat.2; R45 Mut.Cat.3; R68 T; R39/23/24/25 Xn; R48/20/21/22 R43 N; R51, R53	>=25.00 - <50.00%
formaldehyde, oligomeric reaction products with aniline, reaction products with butan-1-ol and 1-chloro-2,3-epoxypropane		162491-92-1			Xn; R21/22 R43	>=10.00 - <25.00%

Producer declares that for R-phrases not mentioned in chapters 3, the entire amount of hazardous substances is below limits. For components with an occupational threshold limit value see chapter 8.

*If multiple components with identical identifiers appear, these have different hazardous properties, e.g. flashpoint.*

**4. FIRST AID MEASURES**

- General advice** : When symptoms persist or in all cases of doubt seek medical advice. Never give anything by mouth to an unconscious person.
- Eye contact** : Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart. Remove contact lenses. Seek medical advice.
- Skin contact** : Take off all contaminated clothing immediately. Wash skin thoroughly with soap and water or use recognized skin cleanser. Do NOT use solvents or thinners.
- Inhalation** : Remove to fresh air. Keep patient warm and at rest. If breathing is irregular or stopped, administer artificial respiration. If unconscious place in recovery position and seek medical advice.
- Ingestion** : If accidentally swallowed obtain immediate medical attention. Keep at rest. Do NOT induce vomiting.
- Burns** : If spills on clothing catch fire, wash with plenty of water. Remove loose clothing. Do not remove clothing that has melted to the skin. Obtain medical attention.

**5. FIRE-FIGHTING MEASURES**

- Specific hazards during fire fighting** : As the product contains combustible organic components, fire will produce dense black smoke containing hazardous products of combustion (see section 10). Exposure to decomposition products may be a hazard to health. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses.
- Special protective equipment for fire-fighters** : In the event of fire, wear self-contained breathing apparatus.
- Suitable extinguishing media** : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Keep containers and surroundings cool with water spray.
- Extinguishing media which shall not be used for safety reasons** : Do NOT use water jet.

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**6. ACCIDENTAL RELEASE MEASURES**

- Personal precautions** : Use personal protective equipment. Ventilate the area. Refer to protective measures listed in sections 7 and 8. Wear respiratory protection. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. Remove all sources of ignition.
- Environmental precautions** : Try to prevent the material from entering drains or water ways. If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods for cleaning up** : Clean with detergents. Avoid solvents. Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
- Additional advice** : Refer to section 15 for specific national regulation.

**7. HANDLING AND STORAGE****Handling**

- Safe handling advice** : Avoid exceeding of the given occupational exposure limits (see section 8). Use only in area provided with appropriate exhaust ventilation. Avoid contact with skin, eyes and clothing. Smoking, eating and drinking should be prohibited in the application area. Avoid inhalation of vapour or mist. For personal protection see section 8.

- Advice on protection against fire and explosion** : Prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentration higher than the occupational exposure limits. When transferring from one container to another apply earthing measures and use conductive hose material. No sparking tools should be used. Operators should wear anti-static footwear and clothing and floors should be of the conducting type. Isolate from sources of heat, sparks and open flame. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). The product should only be used in areas from which all naked lights and other sources of ignition have been excluded. No smoking. The accumulation of contaminated rags and dry overspray, particularly in spray booth filters, may result in spontaneous combustion. Good housekeeping standards, regular safe removal of waste materials and regular maintenance of spray booth filters will minimise the risks of spontaneous combustion and other fire hazards.

**Storage**

- Requirements for storage areas and containers** : Observe label precautions. Prevent unauthorized access. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store between 5 and 30°C (41 - 86 F) in a dry, well ventilated place away from sources of heat, ignition and direct sunlight. Solvent vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Electrical installations / working materials must comply with the technological safety standards. Keep away from sources of ignition - No smoking. Store in accordance with the particular national regulations (see section 15).
- Advice on common storage** : Keep away from oxidising agents and strongly acid or alkaline materials.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Components on the national list and/or the European TLV list (98/24/EC):**

Components	CAS-No.	Value [mg/m <sup>3</sup> ]	Value [ppm]	Basis

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4,4'-diaminodiphenylmethane <i>can be absorbed through skin</i>	101-77-9	0.08	0.01	EH40 WEL TWA
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**Personal protective equipment****General advice****Respiratory protection**

: When operators, whether spraying or not, have to work inside the spray booth, ventilation is unlikely to be sufficient to control particulates and solvent vapour in all cases. In such circumstances they should wear a compressed air-fed respirator during the spraying process and until such time as the particulates and solvent vapour concentration has fallen below the exposure limits.

**Hand protection**

: For prolonged or repeated contact use protective gloves. Barrier creams may help to protect the exposed areas of skin, they should however not be applied once exposure has occurred. Skin should be washed after contact. Use chemical resistant gloves classified under Standard EN 374: Protective gloves against chemicals and micro-organisms.

Recommended gloves: butyl-rubber

Minimum breakthrough time: 480 min

The recommended gloves are based on most common solvent in this product.

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.

NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Eye protection**

: Chemical resistant goggles must be worn.

**Skin and body protection**

: Personnel should wear protective clothing. Skin should be washed after contact. Working clothes must not consist of textiles, which show a dangerous melting behaviour in case of fire. Workers should wear antistatic footwear.

**Additional advice****Environmental protection**

: Refer to national regulations in chapter 15 for regulations on environmental protection.

**Personal protection****Protective equipment**

: Special work instructions

*Please contact your personal protection equipment supplier for further advice*

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Form</b>	:	viscous
<b>Colour</b>	:	various
<b>Odour</b>	:	amine-like
<b>Flash point</b>	:	> 65°C.0

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<b>Autoignition temperature</b>	:	>426 °C
<b>Upper explosion limit</b>	:	13 %(V) 585.76 g/m3
<b>Lower explosion limit</b>	:	1.3 %(V) 58.58 g/m3
<b>Density</b>	:	1.32 g/cm3 at 20 °C
<b>Water solubility</b>	:	slightly soluble
<b>pH</b>	:	
<b>Viscosity, dynamic</b>	:	5,000 mPa.s at 23 °C
<b>Flow time</b>	:	>= 60 s Transversal section: 6 mm Method: ISO 2431 (EN 535) 6 mm CUP

**10. STABILITY AND REACTIVITY**

<b>Conditions to avoid</b>	:	Avoid temperatures above 60°C (140 F), direct sunlight and contact with sources of heat.
<b>Hazardous reactions</b>	:	Keep away from oxidising agents, strongly alkaline and strongly acid materials in order to avoid exothermic reactions.
<b>Hazardous decomposition products</b>	:	In case of fire hazardous decomposition products may be produced such as: Carbon dioxide (CO <sub>2</sub> ), carbon monoxide (CO), oxides of nitrogen (NO <sub>x</sub> ), dense black smoke.

**11. TOXICOLOGICAL INFORMATION**

<b>Product information</b>	:	There is no data available for this product. The preparation has been assessed following the conventional method of the Dangerous Preparations Directive 1999/45/EC and classified for toxicological hazards accordingly. See Sections 3 and 15 for details.
<b>Acute oral toxicity</b>	:	May cause nausea, abdominal spasms and irritation of the mucous membranes.
<b>Acute inhalation toxicity</b>	:	Exposure to component solvent vapours concentration in excess of the stated occupational exposure limit may result in adverse health effects. Such as: mucous membrane irritation, respiratory system irritation, adverse effects on kidney, liver and central nervous system. Symptoms and signs: headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases loss of consciousness.
<b>Skin irritation</b>	:	Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin resulting in desiccation of the skin. The product may be absorbed through the skin.
<b>Eye contact</b>	:	The liquid splashed in the eyes may cause irritation and reversible damage.
<b>Further information</b>	:	There is no data available for this product.

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Revision date 28-06-09**Acute Toxicity Data for Components**

benzyl alcohol(100-51-6)

Acute oral toxicity	:	LD50: 1,230 mg/kg (rat)
Acute dermal toxicity	:	LD50: 2,000 mg/kg (rabbit )

Salicylic acid(69-72-7)

Acute oral toxicity	:	LD50: 1,250 - 1,580 mg/kg (rat)
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4,4'-diaminodiphenylmethane(101-77-9)

Acute oral toxicity	:	LD50: 517 mg/kg (rat)
Acute dermal toxicity	:	LD50: 200 mg/kg (rabbit )

**12. ECOLOGICAL INFORMATION**

**Further information** : No data is available on the product itself. The preparation has been assessed following the conventional method of the Dangerous Preparations Directive 1999/45/EC and is classified for ecotoxicological properties accordingly. See sections 3 and 15 for details. The product should not be allowed to enter drains, water courses or the soil.

**13. DISPOSAL CONSIDERATIONS**

**Product** : The product should not be allowed to enter drains, water courses or the soil. Disposal together with normal waste is not allowed. Special disposal required according to local regulations.

**Waste key for the unused product** : The European Waste Catalogue classification of this product, when disposed of as waste is:

08 01 11 Waste paint and varnish containing organic solvents or other dangerous substances.

If this product is fully cured or mixed with other wastes, this code may no longer apply. If mixed with other wastes, the appropriate code should be assigned. For further information contact your local waste authority

**14. TRANSPORT INFORMATION**

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

Transport to be in accordance with ADR for road, IMDG for sea and IATA for air transport:

UN-Number	:	2810
Proper shipping name	:	TOXIC LIQUID, ORGANIC, N.O.S.
Class	:	6.1
Packing group	:	III
Label	:	6.1
Proper shipping name (ADR)	:	TOXIC LIQUID, ORGANIC, N.O.S.
Technical name 1	:	4,4'-diaminodiphenylmethane

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Marine Pollutant (IMDG)	:	Marine Pollutant
Marine Pollutant component (IMDG)	:	4,4'-diaminodiphenylmethane
EmS (IMDG)	:	F-A, S-A
Limited quantity (ADR)	:	Max. per inner pack. : 5.00 L Max. per outer pack. : 30.00 KG
Limited quantity (IMDG)	:	Max. per inner pack. : 5.00 L Max. per outer pack. : 30.00 KG

**15. REGULATORY INFORMATION**

The product is classified and labelled in accordance with Directive 1999/45/EC.

**Toxic****Dangerous for the environment****Hazardous components which must be listed on the label:**

- 4,4'-diaminodiphenylmethane
- formaldehyde, oligomeric reaction products with aniline, reaction products with butan-1-ol and 1-chloro-2,3-epoxypropane

R-phrase(s)	:	R45 R22 R39/23/24/25  R48/20/21/22  R68 R43 R51/53	May cause cancer. Also harmful if swallowed. Also toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed. Also harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. Possible risk of irreversible effects. May cause sensitization by skin contact. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
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S-phrase(s)	:	S53  S23 S36/37 S38  S45  S61	Avoid exposure - obtain special instructions before use. Do not breathe spray. Wear suitable protective clothing and gloves. In case of insufficient ventilation, wear suitable respiratory equipment. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Avoid release to the environment. Refer to special instructions/ Safety data sheets.
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P-phrase(s)	:	Restricted to professional users.
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The information contained in this safety data sheet does not constitute the user's own assessment of workplace risks, as required by other health and safety legislation. The provisions of the national health and safety at work regulations apply to the use of this product at work.

**National legislation**

**Further information** : HS (G) 178, Spraying of Flammable Liquids, HSE., HS (G) 176, Storage of Flammable Liquids in Tanks, HSE., HS (G) 51, Storage of Flammable Liquid in Containers, HSE., HS (G) 37, An introduction to Local Exhaust Ventilation, HSE., Health and Safety at Work etc Act, 1974, and relevant Statutory Provisions., Environmental Protection Act, 1990 and associated legislation., The Special Waste Regulations, 1996 and amendments., The Chemicals (Hazard Information and Packaging for Supply) Regulations, 1994 and amendments., EH 40, Occupational Exposure Limits, HSE. Revised annually., HS(G) 53, Respiratory Protective Equipment - A Practical Guide for Users, HSE., HS(G) 97, A Step by Step guide to COSHH Regulations, HSE., EH 173, Monitoring Strategies for Toxic Substances, HSE.

**16. OTHER INFORMATION****Explanation of R-phrases mentioned in section 3**

benzyl alcohol	R20/22	Harmful by inhalation and if swallowed.
Salicylic acid	R22	Harmful if swallowed.
	R41	Risk of serious damage to eyes.
4,4'-diaminodiphenylmethane	R45	May cause cancer.
	R39/23/24/25	Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
	R43	May cause sensitization by skin contact.
	R48/20/21/22	Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
	R68	Possible risk of irreversible effects.
	R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
formaldehyde, oligomeric reaction products with aniline, reaction products with butan-1-ol and 1-chloro-2,3-epoxypropane	R21/22	Harmful in contact with skin and if swallowed.
	R43	May cause sensitization by skin contact.

This Safety Data Sheet is based on the Safety Data Sheets obtained from the producer/manufacturer or/and internet databases and valid regulations considering hazardous substances/preparations.

**Training advice:**

Persons taking part in a turnover of hazardous products ought to be trained in product handling, safety and hygiene.

Drivers ought to be trained and obtain a certificate in accordance with the requirements of transport regulations (ADR).

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The information contained in this safety data sheet is based on the present state of knowledge and current European and National legislation at the date of issue. The supplier reserves the right to modify data on the safety data sheet without



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further notice. Any change in data will normally be followed by the issue of a new safety data sheet. The user should check the date of issue and if more than 12 months have elapsed, then the data should only be used after checking with the nearest sales office of the supplier to establish that the data is still valid. As the specific conditions of use of the product are outside the suppliers control, the supplier is not responsible for the (negative) consequences of these specific conditions of use, which are outside of the suppliers control and which are not compliant with the handling, storage and other instructions in this safety data sheet.

After all component(s) stated on the relevant Technical Data Sheet have been mixed the safety precautions mentioned on each of the component(s) safety data sheets and labels should be used in assessing the safety precautions of the mixed product.

Technical data sheet number 7448