

SAFETY DATA SHEET
**Product: GeoBondX STD
Activator**
SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES
9.1 Information on basic physical and chemical properties:

Appearance:	liquid	
Colour:	brown	
Odour:	earthy, musty	
Odour Threshold:	not established	
pH:	not applicable	
Pour point:	ca. -30 °C	ISO 3016
Boiling point/boiling	> 300 °C at 1,013 hPa	DIN 53171
Flash point:	ca. 229 °C	DIN EN 22719
Evaporation rate:	not established	
Flammability (solid, gas):	not applicable	
Burning number:	not applicable	
Vapour pressure:	ca. 11 hPa at 20 °C	EG A4
	ca. 20 hPa at 50 °C	EG A4
	ca. 22 hPa at 55 °C	EG A4
	Diphenyl-methane-diisocyanate (MDI) < 0,00001 hPa at 20 °C	
Miscibility with water:	immiscible at 15°C	
Surface tension:	not established	
Partition coefficient (n-octanol/water):	not established	
Auto-ignition temperature:	not applicable	
Ignition temperature:	>500°C	DIN 51794
Decomposition temperature:	not established	
Viscosity, dynamic	ca. 145 mPa.s at 20°C	DIN 53019
Explosive properties:	not established	
Dust explosion class:	not applicable	
Oxidising properties:	not established	
Other information:	Please refer to the technical information sheet for specification data.	

SECTION 10: STABILITY & REACTIVITY

10.1 Chemical stability: Polymerises at about 200°C with evolution of CO₂.

10.2 Possibility of hazardous reactions: Exothermic reaction with amines and alcohols; reacts with water forming CO₂; in closed containers, risk of bursting owing to increase of pressure.

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10.3 Hazardous decomposition products: No hazardous decomposition products when stored and handled correctly.**SECTION 11: TOXICOLOGICAL INFORMATION****11.1 Information on Toxicological Effects:**

Ingestion:	Acute toxicity, oral:LD50 rat, male/female: > 2,000 mg/kg Method: Directive 84/449/EEC, B.1Toxicological studies of a comparable product.
Skin contact:	Acute toxicity, dermal: Acute toxicity, dermal, LD50 rabbit, male/female: > 9,400 mg/kg Method: OECD Test Guideline 402
Inhalation:	Acute toxicity, inhalation: LC50 rat, male/female: 0.31 mg/l, 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403 The substance was tested in a form (i.e. specific particle size distribution) that is different from the forms in which the substance is placed on the market and in which it can reasonably be expected to be used. Therefore, a modified classification for acute inhalation toxicity is justified. Assessment: Harmful by inhalation. Converted acute toxicity point estimate 1.5 mg/l Test atmosphere: dust/mist Method: Expert judgement
Primary skin irritation:	Species: rabbit Result: irritating Classification: Causes skin irritation. Method: OECD Test Guideline 404 Toxicological studies of a comparable product
Primary mucosae irritation:	Species: rabbit Result: non-irritant Method: OECD Test Guideline 405 Toxicological studies of a comparable product.
Sensitisation:	Skin sensitization (local lymph node assay (LLNA)): Species: mouse Result: positive Classification: May cause sensitization by skin contact. Method: OECD Test Guideline 429 Toxicological studies of a comparable product.
Respiratory sensitization	Species: rat Result: positive Classification: May cause sensitization by inhalation.
Respiratory sensitization	Species: guinea pig

The information contained in the safety data sheet is given in good faith. It is accurate to the best of our knowledge and belief and has been compiled from data on raw materials. The information given in this data sheet does not constitute or replace the user's own assessment of workplace risk as required by other health and safety legislation.

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Result: positive
Classification: May cause sensitization by inhalation.
Toxicological studies of a comparable product.

Subacute, subchronic and prolonged toxicity:NOAEL: 0,2 mg/m³

LOAEL (Lowest observable adverse effect level): 1 mg/m³

Application Route: Inhalative

Species: rat, male/female

Dose Levels: 0 - 0,2 - 1 - 6 mg/m³

Exposure duration: 2 a

Frequency of treatment: 6 hours a day, 5 days a week

Target Organs: Lungs, Nasal inner lining

Test substance: as aerosol

Method: OECD Test Guideline 453

Findings: Irritation to nasal cavity and to lungs.

Studies of a comparable product.

Carcinogenicity:

Species: rat, Male /female

Application Route: Inhalative

Dose Levels: 0 - 0,2 - 1 - 6 mg/m³

Test substance: as aerosol

Exposure duration: 2 a

Frequency of treatment: 6 hours/day, 5 days/week

Method: OECD Test Guideline 453

Occurrence of tumors in the highest dose group.

Reproductive toxicity/Fertility:

No data available.

Reproductive toxicity/Teratogenicity:

NOAEL (teratogenicity): 12 mg/m³

NOAEL (maternal): 4 mg/m³

NOAEL (developmental toxicity): 4 mg/m³

Species: rat, female

Application Route: Inhalative

Dose Levels: 0 - 1 - 4 - 12 mg/m³

Frequency of treatment: 6 hours/day (Exposure duration: 10 days (day 6 - 15p.c.))

Test period: 20 d

Test substance: as aerosol

Method: OECD Test Guideline 414

NOAEL (developmental toxicity): 4 mg/m³

Did not show teratogenic effects in animal experiments.

Studies of a comparable product.

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Genotoxicity in vitro:	Test type: Salmonella/microsome test (Ames test) Test system: Salmonella typhimurium Metabolic activation: with/without Result: negative Method: OECD Test Guideline 471 Toxicological studies of a comparable product.
Genotoxicity in vivo:	Test type: Micronucleus test Species: rat, male Application Route: Inhalative (exposure period: 3x1h/day over 3 weeks) Result: negative Method: OECD Test Guideline 474 Toxicological studies of a comparable product.
STOT evaluation – one-time exposure:	Route of exposure: Inhalative Target Organs: Respiratory Tract May cause respiratory irritation.
STOT evaluation – repeated exposure:	Route of exposure: Initiative Target Organs: Respiratory Tract May cause damage to organs through prolonged or repeated exposure
Aspiration toxicity:	Based on available data, the classification criteria are not met
CMR Assessment:	Carcinogenicity: Suspected of causing cancer by inhalation (Carc. 2). Mutagenicity: In vitro and in vivo tests did not show mutagenic effects. Based on available data, the classification criteria are not met. Teratogenicity: Did not show teratogenic effects in animal experiments. Based on available data, the classification criteria are not met. Reproductive toxicity/Fertility: Based on available data, the classification criteria are not met.
Toxicology Assessment:	Acute effects: Harmful if inhaled. The product causes irritation of eyes, skin and mucous membranes. Sensitization: May cause sensitization by inhalation and skin contact
Additional information:	Special properties/effects: Over-exposure entails the risk of concentration-dependent irritating effects on eyes, nose throat, and respiratory tract. Delayed appearance of the complaints and development of hypersensitivity (difficult breathing, coughing, asthma) are possible. Hypersensitive persons may suffer from these effects even at low isocyanate concentrations, including concentrations below the UK Workplace Exposure Limit (WEL). Prolonged contact with the skin may cause tanning and irritant effects.

SECTION 12: ECOLOGICAL INFORMATION

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Do not allow to escape into waterways, wastewater or soil.

Please find below the ecotoxicological data available to us for the components

12.1 Toxicity:

Accute fish toxicity:	LC50 > 1,000 mg/l Test type: Acute Fish toxicity Species: Danio rerio (zebra fish) Exposure duration: 96 h
Method: OECD Test Guideline 203	Studies of a comparable product. EC50 > 1,000 mg/l Species: Daphnia magna (Water flea) Exposure duration: 24 h Method: OECD Test Guideline 202 Studies of a comparable product.
Chronic toxicity to daphnia:	NOEC (Reproduction) > 10 mg/l Species: Daphnia magna (Water flea) Exposure duration: 21 d Method: OECD Test Guideline 202 Studies of a comparable product
Acute toxicity for algae:	ErC50 > 1,640 mg/l Test type: Growth inhibition Species: scenedesmus subspicatus Exposure duration: 72 h Method: OECD Test Guideline 201 Studies of a comparable product
Acute bacterial toxicity:	EC50 > 100 mg/l Test type: Respiration inhibition Species: activated sludge Exposure duration: 3 h Method: OECD Test Guideline 209 Studies of a comparable product
Toxicity to soil dwelling organisms:	NOEC (mortality) > 1,000 mg/kg Species: Eisenia fetida (earthworms) Exposure duration: 14 d Method: OECD Test Guideline 207 Studies of a comparable product.
Toxicity to terrestrial plants:	NOEC (seedling emergence) > 1,000 mg/kg Species: Avena Sativa (oats) Exposure duration: 14 d Method: OECD Test Guideline 208

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NOEC (Growth rate) > 1,000 mg/kg

Species: Avena sativa (oats)
Exposure duration: 14 d
Method: OECD Test Guideline 208

NOEC (seedling emergence) > 1,000 mg/kg

Species: Lactuca sativa (lettuce)
Exposure duration: 14 d
Method: OECD Test Guideline 208

NOEC (Growth rate) > 1,000 mg/kg

Species: Lactuca sativa (lettuce) Exposure duration: 14 d
Method: OECD Test Guideline 208**12.2 Ecotoxicology Assessment:**

Aute aquatic toxicity: Based on available data, the classification criteria are not met.

Chronic aquatic toxicity: There is no evidence of a chronic aquatic toxicity.

Toxicity Data on Soil: Not expected to adsorb on soil. The substance is graded as non-critical to soil-dwelling organisms.

Impact on Sewage Treatment:

Because of the low bacterial toxicity, there is no risk of an adverse effect on the performance of biological waste water treatment plants.

12.3 Persistence and degradability:

Biodegradability

Test type: aerobic
Inokulum: activated sludge
Biodegradation: 0 %, 28 d, i.e. not inherently degradable
Method: OECD Test Guideline 302 C
According to the results of tests of biodegradability this product is not readily biodegradable.

Stability in water:

Test type: Hydrolysis
Half life: 20 h at 25 °C
The substance hydrolyzes rapidly in water.
Studies of a comparable product.

Photodegradation:

Temperature: 25 °C
Studies of a comparable product.
Test type: Phototransformation in air
Sensitizer: OH-radicals
Concentration sensibilisator: 500,000 1/cm³
Rate constant: 1.16E-11 cm³/
Half-life indirect photolysis: 0.92 d
Method: SRC - AOP (calculation)
After evaporation or exposure to the air, the product will be moderately degraded by photochemical processes.

Volatility (Henry's Law constant):

Calculated value = 0.0229 Pa*m³/mol

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The substance has to be scored as being slightly volatile from water

12.4 Bioaccumulative potential:

Bioaccumulation: Bioconcentration factor (BCF): 200
Species: Cyprinus carpio (Carp) Exposure duration: 28 d
Concentration: 0.00008 mg/l
Test substance: 14C-labelled
Method: OECD Test Guideline 305 E
An accumulation in aquatic organisms is not to be expected.
Studies of a comparable product.

12.5 Mobility in soil**Distribution among environmental compartments:****Environmental distribution:**

no data available

Results of PBT and vPvB assessment

diphenylmethane-diisocyanate, isomers and homologues. This substance does not meet the criteria for classification as PBT or vPvB.

Additional information on ecotoxicology:

Isocyanate reacts with water at the interface forming CO₂ and a solid insoluble product with high melting point (polyurea). This reaction is accelerated by surfactants (e.g. detergents) or by watersoluble solvents. Previous experience shows that polyurea is inert and non-degradable.

SECTION 13: DISPOSAL CONSIDERATIONS**13.1 Waste treatment methods**

After final product withdrawal, all residues must be removed from containers (drip-free, powder-free or paste-free). Once the product residues adhering to the walls of the containers have been rendered harmless, the product and hazard labels must be invalidated. These containers can be returned for recycling to the appropriate centres set up within the framework of the existing take-back scheme of the chemical industry. Containers must be recycled in compliance with national legislation and environmental regulations
None disposal into waste water.

SECTION 14: TRANSPORT INFORMATION**14.1 ADR/RID:**

Not dangerous goods

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14.2 ADN:	Not dangerous goods This classification data does not apply to transportation by tanker. If required, additional information can be requested from the manufacturer.
14.3 IATA:	Not dangerous goods
14.4 IMDG:	Not dangerous goods Special precautions for user: Not dangerous cargo Keep dry. Avoid heat above +50 °C. Avoid temperatures below +10 °C. Keep away from foodstuffs, acids and alkalis.

SECTION 15: REGULATION INFORMATION**15.1 Safety, health and environmental regulations**

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

Water contaminating class (Germany):

1 slightly water endangering (in accordance with Annex 4 to the Directive on Water-Hazardous Substances) Any existing national regulations on the handling of isocyanates must be observed

SECTION 16: CLP CLASSIFICATIONS**16.1 Full text of hazardous (H) warnings referred to under sections 2 and 3 of the CLP classification (1272/2008/CE).**

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure if inhaled.

Classification in line with CLP