

REACH Praxisführer zur Expositionsbewertung und zur Kommunikation in den Lieferketten

Beispiele zu Teil II: Expositionsszenarien und Kommunikation in den Lieferketten

Beispiel 4: Erweitertes Sicherheitsdatenblatt HDDA

Dieses Beispiel zeigt, wie die Ergebnisse des iterativen 3-Stufen-Ansatzes zur Expositionsbewertung im Anhang eines erweiterten Sicherheitsdatenblattes kommuniziert werden können.

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Das vorliegende Dokument gehört zum Teil II des „REACH Praxisführers zur Expositionsbewertung und zur Kommunikation in den Lieferketten“. Der Praxisführer besteht aus mehreren Teilen. Eine Übersicht finden Sie im Vorwort zu Teil I.

Eine Beschreibung der Inhalte und des Praxisführers steht auf der folgenden Internetseite zur Verfügung:

VCI: <http://www.vci.de/default~cmd~shd~docnr~125022~lastDokNr~102474.htm>

Alle zugehörigen Materialien (inklusive der Projektbeispiele zu Teil II und III) können von dieser Seite heruntergeladen werden. Sie finden hier zusätzlich Hinweise zu verwandten Themen und neuen Entwicklungen.

Die englischsprachigen Veröffentlichungen zum Praxisführer finden Sie auf der folgenden Internet-Seite:

CEFIC: <http://cefic.org/templates/shwPublications.asp?HID=750>

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EXAMPLE of an extended eSDS for HDDA

Safety data sheet

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Date / Revised: July 2008

Product: **HDDA**

Date of print 23.10.2008

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1. Identification of the substance or preparation

HEXANDIOLDIACRYLAT

1.2. Use of the substance/preparation

- Use for formulation (SU 10)
- Use for UV-curable technics (SU 6, 7, NACE C 20.3): Coating (PC 9) and printing (PC 18)

1.3. Company/undertaking identification

BASF SE

67056 Ludwigshafen

GERMANY

E-mail address: global.info@basf.com

1.4. Emergency telephone

Telephone: +49 621 60-0

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2. HAZARDS IDENTIFICATION

Irritating to eyes and skin.

May cause sensitization by skin contact.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature

1,6-hexanediol diacrylate

CAS Number: 13048-33-4

EC-Number: 235-921-9

INDEX-Number: 607-109-00-8

Regulations of the European union (Labelling) / National legislation/Regulations

EC-Number: 235-921-9

as in Annex I of Directive 67/548/EEC:

Hazard symbol(s)

Xi Irritant.

R-phrases(s)

R36/38 Irritating to eyes and skin.

R43 May cause sensitization by skin contact.

S-phrases(s)

S37/39 Wear suitable gloves and eye/face protection.

Hazard determining component(s) for labeling: HEXAMETHYLENE DIACRYLATE

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4. FIRST AID MEASURES

General advice:

Immediately remove contaminated clothing.

If inhaled:

If difficulties occur after vapour/aerosol has been inhaled, remove to fresh air and seek medical attention.

On skin contact:

Wash thoroughly with soap and water.

On contact with eyes:

Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

On ingestion:

Rinse mouth immediately and then drink plenty of water, seek medical attention.

Note to physician:

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media:

water, dry extinguishing media, foam

Specific hazards:

harmful vapours

Evolution of fumes/fog. The substances/groups of substances mentioned can be released in case of fire.

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Special protective equipment:

Wear a self-contained breathing apparatus.

Further information:

The degree of risk is governed by the burning substance and the fire conditions.
Contaminated extinguishing water must be disposed of in accordance with official regulations.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

Use personal protective clothing.

Environmental precautions:

Contain contaminated water/firefighting water. Do not discharge into drains/surface waters/groundwater.

Methods for cleaning up or taking up:

For large amounts: Pump off product.

For residues: Pick up with suitable absorbent material. Dispose of absorbed material in accordance with regulations.

7. HANDLING AND STORAGE

7.1. Handling

Handle in accordance with good industrial hygiene and safety practice. Wearing of closed work clothing is required additionally to the stated personal protection equipment.

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No special measures necessary provided product is used correctly.

Protection against fire and explosion:

Heated containers should be cooled to prevent polymerization. Take precautionary measures against static discharges.

7.2. Storage

Further information on storage conditions: Protect against heat. Protect from the effects of light. The stabilizer is only effective in the presence of oxygen.

Storage stability:

Storage temperature: $\leq 25\text{ }^{\circ}\text{C}$

Protect from temperatures below: $8\text{ }^{\circ}\text{C}$

7.3. Specific use(s)

Not applicable.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Exposure limit values

Derived No-Effect-Levels (DNELs)

Worker

DNEL oral, chronic, local = 6.25 mg/kg/d

DNEL oral, chronic, systemic = 0.63 mg/kg/d

DNEL inhalation = 0.318 ppm [3 mg/m³]

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General population

No free HDDA on final (printing) product, therefore no exposure of the general public expected.

Predicted No-Effect Concentrations for the aquatic compartment (PNECs)*Fresh Water*

PNEC for aquatic organisms	0.05 mg•l-1
PNEC for sediment organisms	0.433 mg•kg-1

Marine

PNEC for marine organisms	5E-03 mg•l-1
PNEC for sediment organisms	0.0433 mg•kg-1

8.2. Exposure controls**8.2.1. Occupational exposure controls**

Handle in accordance with good industrial hygiene and safety practice. Wearing of closed work clothing is required additionally to the stated personal protection equipment.

(a) Respiratory protection

Not needed for intended / identified use.

(b) Hand protection

Chemical resistant protective gloves (EN 374)

Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374):
nitrile rubber (NBR) - 0.4 mm coating thickness.

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The specifications are based on own tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the determined permeation time.

Manufacturer's directions for use should be observed because of great diversity of types.

(c) Eye protection

Safety glasses with side-shields (frame goggles) (e.g. EN 166)

(d) Skin protection

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to DIN-EN 465)

8.2.2. Environmental exposure controls

Do not flush into surface water, sanitary sewer or ground water system. Supporting technical measures like "closed sinks" are recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. General information

9.2. Important health, safety and environmental information

pH:	not applicable	
Boiling point/boiling range	107 °C	(0.3 mbar, DIN 51751)
Flash point	> 110 °C	(DIN 51758)
Flammability (solid, gas)	235 °C	(DIN 51794)
Explosive properties	no	

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Oxidising properties	no	
Vapour pressure	0.014 mbar	(50 °C)
	0.76 mbar	(100 °C)
Relative density	1.015 g/cm3	(25 °C, DIN 51757)
Solubility	--	
Water solubility	0.36 g/l	(20 °C)
Partition coefficient: n-octanol/water	2.81	(25 °C, measured)
Viscosity	6 mPa.s	(25 °C)
Vapour density	--	
Evaporation rate	--	

9.3. Other information

10. STABILITY AND REACTIVITY

10.1. Conditions to avoid

The product can polymerize if the shelf life or storage temperature are greatly exceeded. Heat develops during polymerization.

10.2. Materials to avoid

Reacts with peroxides and other radical components. The product is stabilized against spontaneous polymerization prior to despatch.

10.3. Hazardous decomposition products

No hazardous decomposition products if stored and handled as prescribed/indicated.

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11. TOXICOLOGICAL INFORMATION

Toxicokinetics, metabolism and distribution

- no data

Acute effects (acute toxicity, irritation and corrosivity),

- LD50 rat (oral): > 2,000 mg/kg
- rat (by inhalation): 7 h (IRT)
No mortality within the stated exposition time as shown in animal studies.
- LD50 rabbit (dermal): > 3,000 mg/kg
- Primary skin irritation rabbit: Irritant. (Draize test)
- Primary irritations of the mucous membrane rabbit: Irritant. (Draize test)

Sensitisation

- May cause sensitization by skin contact

Repeated dose toxicity

- no data available

CMR effects

- no data available

12. ECOLOGICAL INFORMATION

12.1. Ecotoxicity

Toxicity to fish:

- LC50 (96 h) 1 - 10 mg/l, *Leuciscus idus*

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Aquatic invertebrates:

- LC50 (48 h) 1 - 10 mg/l, Daphnia magna (OECD Guideline 202, part 1)

Aquatic plants:

- EC50 (72 h) 1 - 10 mg/l, Scenedesmus subspicatus

Microorganisms/Effect on activated sludge:

- EC10 (0.5 h) 405 mg/l, Pseudomonas putida (DIN 38412 Part 8)
The product has low solubility in the test medium. An aqueous solution prepared with solubilizers has been tested.
- EC20 (0.5 h) 60 mg/l (DIN EN ISO 8192)
Inhibition of degradation activity in activated sludge is not to be anticipated during correct introduction of low concentrations.

12.2. Mobility

Over time, the substance will preferentially distribute into the compartment air.

12.3. Persistence and degradability

Readily biodegradable (according to OECD criteria)

60 - 70 % TIC of the ThIC (28 d) (ISO 14593) (aerobic, activated sludge)

12.4. Bioaccumulative potential

Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

12.5. Results of PBT assessment

HDDA is not a PBT substance.

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12.6. Other adverse effects

None.

13. DISPOSAL CONSIDERATIONS

Must be incinerated in accordance with local regulations.

Contaminated packaging:

Uncontaminated packaging can be re-used.

Packs that cannot be cleaned should be disposed of in the same manner as the contents.

14. TRANSPORT INFORMATION

Land transport

ADR

Not classified as a dangerous good under transport regulations

RID

Not classified as a dangerous good under transport regulations

Inland waterway transport

ADNR

Not classified as a dangerous good under transport regulations

Sea transport

IMDG

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Not classified as a dangerous good under transport regulations

Air transport
IATA/ICAO

Not classified as a dangerous good under transport regulations

15. REGULATORY INFORMATION

Regulations of the European union (Labelling) / National legislation/Regulations

EC-Number: 235-921-9

as in Annex I of Directive 67/548/EEC:

Hazard symbol(s)

Xi Irritant.

R-phrases(s)

R36/38 Irritating to eyes and skin.

R43 May cause sensitization by skin contact.

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Hazard determining component(s) for labelling: HEXAMETHYLENE DIACRYLATE

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16. OTHER INFORMATION

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Annex: Exposure scenarios

1. Use of HDDA in all industrial and professional Process Categories (Generic Exposure Scenarios by ECETOC TRA)

All possible categories (PROC)s considered in ECETOC TRA have been estimated for the substance. In case the results indicate the further assessment is required, follow the link to the refinement in the branch-specific scenario and the additional risk management measures provided in the following chapter 2.

DNEL and PNECs used as described in chapter 8.1.

Description of ECETOC TRA details can be found in the Technical Report 93 (2004) or at <https://www.ecetoc-tra.org/>

Table 1: Overview on workplace exposure scenarios by ECETOC TRA

process categories [PROC]	Use Scenarios	Duration of activity [hours]	LEV (Y/N)	Estimated Exposition [ppm]	MoE [DNEL/est expo]	Safe use
PROC 1	Use in a closed process with no likelihood of exposure	> 4 hours	Yes	0,01	31,8	YES
PROC 2	Use in closed process with occasional controlled exposures e.g. during sampling	> 4 hours	Yes	0,5	0,636	no refinement done – if needed, please contact manufacturer
PROC 3	Use in a closed batch process i.e. where only limited opportunity for breaching arises e.g. sampling	> 4 hours	Yes	0,1	3,18	YES
PROC 4	Use in a batch or other process (including related process stages e.g. filtration, drying) where opportunities for exposure arise e.g. sampling, dis/charging of materials	> 4 hours	Yes	1	0,318	no refinement done – if needed, please contact manufacturer
PROC 5	Use in a batch process including chemical reactions and/or the formulation by mixing, blending or calendaring of liquid and solid-based products	> 4 hours	Yes	1	0,318	for refinement see Table 2
PROC 6	Spraying of the substance or preparations containing the substance in industrial applications e.g. coatings	1 - 4 hours	Yes	12	0,026	for refinement see Table 2

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process categories [PROC]	Use Scenarios	Duration of activity [hours]	LEV (Y/N)	Estimated Exposure [ppm]	MoE [DNEL/est expo]	Safe use
PROC 7	Dis/charging the substance (or preparations containing the substance) to/from vessels	1 - 4 hours	No	6	0,053	for refinement see Table 2
PROC 8	Filling containers with the substance or its preparations (including weighing)	1 - 4 hours	No	6	0,053	for refinement see Table 2
PROC 9	Roller application or brushing of adhesives and other surface coatings	1 - 4 hours	No	300	0,001	for refinement see Table 2
PROC 10	Use as a blowing agent in the manufacture of foams, etc.	> 4 hours	Yes	0,5	0,636	no relevant PROC
PROC 11	Use for coating/treatment of articles, etc. (including cleaning) by dipping or pouring	> 4 hours	Yes	3	0,106	for refinement see Table 2
PROC 12	Production of products or articles from substance by compression, tableting, extrusion or pelletisation	> 4 hours	Yes	3	0,106	no refinement done – if needed, please contact manufacturer
PROC 13	Use as a laboratory reagent	1 - 4 hours	Yes	0,06	5,3	YES
PROC 14	Use as a fuel	< 15 mins	No	0,1	3,18	YES
PROC 15	Use as a lubricant (including metal working fluids)	> 4 hours	Yes	50	0,006	no refinement done – if needed, please contact manufacturer

After UV curing, HDDA becomes part of a solid matrix and does not exist as a single molecule anymore. Therefore, wide dispersive use is not considered relevant for this substance. For the same reason, consumer exposure of HDDA is excluded.

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2. Sector group- / branch-specific Exposure Scenarios

Table 2: Sector-specific scenarios by CEFICs UV/EB acrylate resins sector group -
Use of HDDA in Sectors of Use 6, 7, 10 (SU 6, 7, 10) and NACE C 20.3.

Type	Scenario Title	Duration of activity (hours)	additional OC / RMM	Est. Exposure [ppm] (refined)	Margin of exposure [[DNEL/est expo]]	Safe use
SU 7, 10 UV/EB 1	FORMULATION (covering PROC 5)	< 4 hours	<ul style="list-style-type: none"> Ambient temperature (< 30°C) and Room ventilation rate > 6 / h and Chemical resistant protective gloves (EN 374), nitrile rubber (NBR) - 0.4 mm coating thickness and Safety glasses with side-shields (frame goggles) (e.g. EN 166) 	0.016 (PROC 5)	19.9 (PROC 5)	YES (PROC 5)
SU 7, 10 UV/EB 2	MAINTENANCE (covering PROC 7 and PROC 8)	< 1 hours	<ul style="list-style-type: none"> Ambient temperature (< 30°C) and Room ventilation rate > 6 / h and Chemical resistant protective gloves (EN 374), nitrile rubber (NBR) - 0.4 mm coating thickness and Safety glasses with side-shields (frame goggles) (e.g. EN 166) 	0.024 (PROC 7) 0.024 (PROC 8)	13.25 (PROC 7) 13.25 (PROC 8)	YES (PROC 7) YES (PROC 8)
SU 6, 7 PC 9, PC 18, PC 26	APPLICATION (covering PROC 6, PROC 9 and	> 4 hours	<ul style="list-style-type: none"> Ambient temperature (< 30°C) and Room ventilation rate > 6 / h 	0.000576 (PROC 6)	541.7 (PROC 6)	YES (PROC 6)

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UV/EB 3	PROC 11)		and	0.0144 (PROC 9)	20.8 (PROC 9)	YES (PROC 9)
			<ul style="list-style-type: none"> Chemical resistant protective gloves (EN 374), nitrile rubber (NBR) - 0.4 mm coating thickness 	0.000144 (PROC 11)	2208.3 (PROC 11)	YES (PROC 11)
			and			
			<ul style="list-style-type: none"> Safety glasses with side-shields (frame goggles) (e.g. EN 166) 			
			and			
			<ul style="list-style-type: none"> HDDA used in the preparation at max. 30% [w/w] 			
			and			
			<ul style="list-style-type: none"> Spray booth (according to best technical standard) 			

According to the conditions of the sector-specific scenario. Parameter values (use frequency, duration, relevant exposure pathways etc.) for input into this sector-specific model have been collected for sector group specific product applications, following the model of the UV/EB sector group table of habits and practices.

Please contact [UV/EB sector group](#) for all necessary information. (Link is not workable yet!)

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3. Individual Exposure Scenarios / individual Use Conditions

Not identified yet.