



9.7. Exposure scenario 7: Use at industrial sites - Use of Karstedt concentrate in liquid silicone polymer, silicone elastomer and other liquid silicone production

Product category used: PC 9a: Coatings and Paints, Thinners, paint removers; PC 17: Hydraulic Fluids; PC 23: Leather treatment products; PC 24: Lubricants, Greases, Release Products; PC 25: Metal Working Fluids; PC 26: Paper and board treatment products; PC 31: Polishes and Wax Blends; PC 32: Polymer Preparations and Compounds; PC 34: Textile dyes and impregnating products; PC 35: Washing and Cleaning Products; PC 39: Cosmetics, personal care products; PC 40: Extraction agents

Sector of use: SU 9: Manufacture of fine chemicals

Environment contributing scenario(s):		
CS 1	Use of Karstedt concentrate in liquid silicone polymer, silicone elastomer and other liquid silicone production	ERC 6d
Worker contributing scenario(s):		
CS 2	Handling of the substance at dedicated facilities	PROC 8b
CS 3	Small scale handling of the substance	PROC 9
CS 4	Reaction in fully contained process	PROC 1
CS 5	Reaction in closed continuous process	PROC 2
CS 6	Reaction in closed batch process	PROC 3
CS 7	Laboratory analyses	PROC 15
CS 8	Handling and packaging of preparation at dedicated facilities	PROC 8b
CS 9	Small scale handling and packaging of preparation	PROC 9

9.7.1. Env CS 1: Use of Karstedt concentrate in liquid silicone polymer, silicone elastomer and other liquid silicone production (ERC 6d)

9.7.1.1. Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily use amount at site: ≤ 0.125 tonnes/day
• Annual use amount at site: ≤ 2.5 tonnes/year
• Percentage of EU tonnage used at regional scale: = 10 %
Technical and organisational conditions and measures
<ul style="list-style-type: none"> On site treatment of off-air: Electrostatic precipitators or wet electrostatic precipitators or cyclones or fabric/bag filter or ceramic/metal mesh filter according to the BAT Reference Document in the Non-Ferrous Metals Industry <p><i>Direct air emissions should be reduced by implementing one or more of the following RMMs (air concentration range for which the RMM is suitable is specified in parenthesis):</i></p> <ul style="list-style-type: none"> Electrostatic precipitators using wide electrode spacing: $5 - 15 \text{ mg/Nm}^3$ Wet electrostatic precipitators: $< 5 \text{ mg/Nm}^3$ Cyclones, but as primary collector: $< 50 \text{ mg/Nm}^3$ Fabric or bag filters: high efficiency in controlling fine particulate (melting): achieve emission values $< 5 \text{ mg/Nm}^3$. Membrane filtration techniques can achieve $< 1 \text{ mg/Nm}^3$ Ceramic and metal mesh filters. PM_{10} particles are removed: 0.1 mg/Nm^3 Wet scrubbers: $< 4 \text{ mg/Nm}^3$
<ul style="list-style-type: none"> The substance should not be released to water <p><i>Emissions to surface water or to the sewage system are not allowed in this scenario</i></p>
Conditions and measures related to biological sewage treatment plant
• Biological STP: None [Effectiveness Water: 0%]
Conditions and measures related to external treatment of waste (including article waste)



<ul style="list-style-type: none"> Particular considerations on the waste treatment operations: No (low concentration) <i>Particular risks from waste treatment unlikely due low concentration of substance in waste stream. Waste disposal according to national/local legislation is sufficient. If the platinum content of the waste is elevated enough, internal or external recovery/recycling is considered.</i>
Other conditions affecting environmental exposure
<ul style="list-style-type: none"> Receiving surface water flow rate: $\geq 1.8E4$ m³/day Discharge rate of effluent: $\geq 2E3$ m³/day

9.7.1.2. Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Table 9.60. Local releases to the environment

Release	Release estimation method	Explanations
Water	Estimated release factor	Release factor before on site RMM: 0% Release factor after on site RMM: 0% Local release rate: 0 kg/day Explanation: No water is used in the process, the process is not connected to the water/sewage system. No equipment containing KC that is cleaned with water, but only with solvents that are collected and disposed of at a certified disposal company.
Air	Estimated release factor (based on SPERC Eurometaux 2.5-6a v2.1)	Release factor before on site RMM: 1E-3% Release factor after on site RMM: 1E-3% Local release rate: 1.25E-3 kg/day
Non agricultural soil	Estimated release factor	Release factor after on site RMM: 0% Explanation: No direct release to soil

9.7.1.3. Exposure and risks for the environment and man via the environment

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table. The exposure estimates have been obtained with EUSES 2.1.2 unless stated otherwise.

Table 9.61. Exposure concentrations and risks for the environment and man via the environment

Protection target	Exposure concentration	Risk quantification
Fresh water	Local PEC: 1.44E-10 mg/L	RCR < 0.01
Sediment (freshwater)	Local PEC: 3.63E-7 mg/kg dw	RCR < 0.01
Marine water	Local PEC: 8.3E-11 mg/L	RCR < 0.01
Sediment (marine water)	Local PEC: 2.09E-7 mg/kg dw	RCR < 0.01
Sewage Treatment Plant	Local PEC: 0 mg/L	RCR < 0.01
Agricultural soil	Local PEC: 4.48E-7 mg/kg dw	RCR < 0.01

9.7.2. Worker CS 2: Handling of the substance at dedicated facilities (PROC 8b)

Task(s) covered with this contributing scenario: Charging, discharging, weighing, transfer, preparation of dilutions.

9.7.2.1. Conditions of use

	Method
Product (article) characteristics	



	Method
• Physical form of the used product: Liquid, including paste/slurry/suspension	
• Maximum emission potential of the substance: Very low <i>Only the highest emission potential (EP) is reported. Lower EPs (e.g. if materials of lower dustiness are being handled in parallel) are thus automatically covered in this assessment.</i>	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	
• Generic local exhaust ventilation: Lower confidence limit (industrial use) [Effectiveness Inhalation: 78%] <i>Standard efficiency</i>	
• Level of containment: Semi-closed process	
• Pattern of use: Non-dispersive use	
• Pattern of exposure control: Direct handling	
• Contact level: Intermittent	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No	
• Dermal protection: Chemical resistant dermal protection with basic employee training. (effectiveness >= 90%)	
• Face/eye protection: Eye protection	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

9.7.2.2. Exposure and risks for workers

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table.

Table 9.62. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	2E-3 mg/m ³ (MEASE 1.02.01)	RCR = 0.2
Dermal, systemic, long term	3.4E-3 mg/kg bw/day (MEASE 1.02.01)	RCR = 0.227
Combined routes, systemic, long-term		RCR = 0.427

Remarks on exposure data from external estimation tools:

MEASE 1.02.01:

Explanation:

Dermal, systemic, long term

For calculation of systemic exposure, the exposure estimate for total dermal loading as obtained in MEASE (reported in mg/day) is divided by a body weight of 70 kg for workers.

9.7.3. Worker CS 3: Small scale handling of the substance (PROC 9)

Task(s) covered with this contributing scenario: Small scale transfer and filling process.

9.7.3.1. Conditions of use



	Method
Product (article) characteristics	
• Physical form of the used product: Liquid, including paste/slurry/suspension	
• Maximum emission potential of the substance: Very low <i>Only the highest emission potential (EP) is reported. Lower EPs (e.g. if materials of lower dustiness are being handled in parallel) are thus automatically covered in this assessment.</i>	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	
• Generic local exhaust ventilation: Lower confidence limit (industrial use) [Effectiveness Inhalation: 78%] <i>Standard efficiency</i>	
• Pattern of use: Non-dispersive use	
• Pattern of exposure control: Direct handling	
• Contact level: Intermittent	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No	
• Dermal protection: Chemical resistant dermal protection with basic employee training. (effectiveness >= 90%)	
• Face/eye protection: Eye protection	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

9.7.3.2. Exposure and risks for workers

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table.

Table 9.63. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	2E-3 mg/m ³ (MEASE 1.02.01)	RCR = 0.2
Dermal, systemic, long term	3.4E-3 mg/kg bw/day (MEASE 1.02.01)	RCR = 0.227
Combined routes, systemic, long-term		RCR = 0.427

Remarks on exposure data from external estimation tools:

MEASE 1.02.01:

Explanation:

Dermal, systemic, long term

For calculation of systemic exposure, the exposure estimate for total dermal loading as obtained in MEASE (reported in mg/day) is divided by a body weight of 70 kg for workers.

9.7.4. Worker CS 4: Reaction in fully contained process (PROC 1)

Task(s) covered with this contributing scenario: Mixing, blending of Karstedt concentrate.

9.7.4.1. Conditions of use



	Method
Product (article) characteristics	
• Physical form of the used product: Liquid, including paste/slurry/suspension	
• Maximum emission potential of the substance: Very low <i>Only the highest emission potential (EP) is reported. Lower EPs (e.g. if materials of lower dustiness are being handled in parallel) are thus automatically covered in this assessment.</i>	
• Percentage (w/w) of substance in mixture/article: <= 1 %	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	
• Local exhaust ventilation: No	
• Closed process without likelihood of exposure	
• Pattern of exposure control: Non-direct handling	
• Pattern of use: Closed system without breaches	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No	
• Dermal protection: Chemical resistant dermal protection with basic employee training. (effectiveness >= 90%)	
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

9.7.4.2. Exposure and risks for workers

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table.

Table 9.64. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	1E-3 mg/m ³ (MEASE 1.02.01)	RCR = 0.1
Dermal, systemic, long term	1.4E-5 mg/kg bw/day (MEASE 1.02.01)	RCR < 0.01
Combined routes, systemic, long-term		RCR = 0.101

Remarks on exposure data from external estimation tools:

MEASE 1.02.01:

Explanation:

Dermal, systemic, long term

For calculation of systemic exposure, the exposure estimate for total dermal loading as obtained in MEASE (reported in mg/day) is divided by a body weight of 70 kg for workers.

9.7.5. Worker CS 5: Reaction in closed continuous process (PROC 2)

Task(s) covered with this contributing scenario: Mixing, blending of Karstedt concentrate.

9.7.5.1. Conditions of use



	Method
Product (article) characteristics	
• Physical form of the used product: Liquid, including paste/slurry/suspension	
• Maximum emission potential of the substance: Very low <i>Only the highest emission potential (EP) is reported. Lower EPs (e.g. if materials of lower dustiness are being handled in parallel) are thus automatically covered in this assessment.</i>	
• Percentage (w/w) of substance in mixture/article: <= 1 %	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	
• Local exhaust ventilation: No	
• Closed continuous process with occasional controlled exposure	
• Pattern of use: Non-dispersive use	
• Pattern of exposure control: Non-direct handling	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No	
• Dermal protection: Chemical resistant dermal protection with basic employee training. (effectiveness >= 90%)	
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

9.7.5.2. Exposure and risks for workers

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table.

Table 9.65. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	1E-3 mg/m ³ (MEASE 1.02.01)	RCR = 0.1
Dermal, systemic, long term	2.8E-5 mg/kg bw/day (MEASE 1.02.01)	RCR < 0.01
Combined routes, systemic, long-term		RCR = 0.102

Remarks on exposure data from external estimation tools:

MEASE 1.02.01:

Explanation:

Dermal, systemic, long term

For calculation of systemic exposure, the exposure estimate for total dermal loading as obtained in MEASE (reported in mg/day) is divided by a body weight of 70 kg for workers.

9.7.6. Worker CS 6: Reaction in closed batch process (PROC 3)

Task(s) covered with this contributing scenario: Mixing, blending of Karstedt concentrate.

9.7.6.1. Conditions of use



	Method
Product (article) characteristics	
• Physical form of the used product: Liquid, including paste/slurry/suspension	
• Maximum emission potential of the substance: Very low <i>Only the highest emission potential (EP) is reported. Lower EPs (e.g. if materials of lower dustiness are being handled in parallel) are thus automatically covered in this assessment.</i>	
• Percentage (w/w) of substance in mixture/article: <= 1 %	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	
• Local exhaust ventilation: No	
• Closed batch process with occasional controlled exposure	
• Pattern of use: Non-dispersive use	
• Pattern of exposure control: Non-direct handling	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No	
• Dermal protection: Chemical resistant dermal protection with basic employee training. (effectiveness >= 90%)	
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

9.7.6.2. Exposure and risks for workers

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table.

Table 9.66. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	1E-3 mg/m ³ (MEASE 1.02.01)	RCR = 0.1
Dermal, systemic, long term	1.4E-5 mg/kg bw/day (MEASE 1.02.01)	RCR < 0.01
Combined routes, systemic, long-term		RCR = 0.101

Remarks on exposure data from external estimation tools:

MEASE 1.02.01:

Explanation:

Dermal, systemic, long term

For calculation of systemic exposure, the exposure estimate for total dermal loading as obtained in MEASE (reported in mg/day) is divided by a body weight of 70 kg for workers.

9.7.7. Worker CS 7: Laboratory analyses (PROC 15)

Task(s) covered with this contributing scenario: Quality control.

9.7.7.1. Conditions of use



	Method
Product (article) characteristics	
• Physical form of the used product: Liquid, including paste/slurry/suspension	
• Maximum emission potential of the substance: Very low <i>Only the highest emission potential (EP) is reported. Lower EPs (e.g. if materials of lower dustiness are being handled in parallel) are thus automatically covered in this assessment.</i>	
• Percentage (w/w) of substance in mixture/article: <= 1 %	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	
• Local exhaust ventilation: No	
• Pattern of use: Non-dispersive use	
• Pattern of exposure control: Direct handling	
• Contact level: Intermittent	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No	
• Dermal protection: Chemical resistant dermal protection with basic employee training. (effectiveness >= 90%)	
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

9.7.7.2. Exposure and risks for workers

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table.

Table 9.67. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	1E-3 mg/m ³ (MEASE 1.02.01)	RCR = 0.1
Dermal, systemic, long term	1.7E-4 mg/kg bw/day (MEASE 1.02.01)	RCR = 0.011
Combined routes, systemic, long-term		RCR = 0.111

Remarks on exposure data from external estimation tools:

MEASE 1.02.01:

Explanation:

Dermal, systemic, long term

For calculation of systemic exposure, the exposure estimate for total dermal loading as obtained in MEASE (reported in mg/day) is divided by a body weight of 70 kg for workers.

9.7.8. Worker CS 8: Handling and packaging of preparation at dedicated facilities (PROC 8b)

9.7.8.1. Conditions of use



	Method
Product (article) characteristics	
• Physical form of the used product: Liquid, including paste/slurry/suspension	
• Maximum emission potential of the substance: Very low <i>Only the highest emission potential (EP) is reported. Lower EPs (e.g. if materials of lower dustiness are being handled in parallel) are thus automatically covered in this assessment.</i>	
• Percentage (w/w) of substance in mixture/article: <= 25 %	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	
• Local exhaust ventilation: No	
• Pattern of use: Non-dispersive use	
• Pattern of exposure control: Direct handling	
• Contact level: Intermittent	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Chemical resistant dermal protection with basic employee training. (effectiveness >= 90%)	
• Face/eye protection: Eye protection	
• Respiratory protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

9.7.8.2. Exposure and risks for workers

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table.

Table 9.68. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	6E-3 mg/m ³ (MEASE 1.02.01)	RCR = 0.6
Dermal, systemic, long term	2E-3 mg/kg bw/day (MEASE 1.02.01)	RCR = 0.133
Combined routes, systemic, long-term		RCR = 0.733

Remarks on exposure data from external estimation tools:

MEASE 1.02.01:

Explanation:

Dermal, systemic, long term

For calculation of systemic exposure, the exposure estimate for total dermal loading as obtained in MEASE (reported in mg/day) is divided by a body weight of 70 kg for workers.

9.7.9. Worker CS 9: Small scale handling and packaging of preparation (PROC 9)

9.7.9.1. Conditions of use



	Method
Product (article) characteristics	
• Physical form of the used product: Liquid, including paste/slurry/suspension	
• Maximum emission potential of the substance: Very low <i>Only the highest emission potential (EP) is reported. Lower EPs (e.g. if materials of lower dustiness are being handled in parallel) are thus automatically covered in this assessment.</i>	
• Percentage (w/w) of substance in mixture/article: <= 25 %	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	
• Local exhaust ventilation: No	
• Pattern of use: Non-dispersive use	
• Pattern of exposure control: Direct handling	
• Contact level: Intermittent	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No	
• Dermal protection: Chemical resistant dermal protection with basic employee training. (effectiveness >= 90%)	
• Face/eye protection: Eye protection	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

9.7.9.2. Exposure and risks for workers

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table.

Table 9.69. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	6E-3 mg/m ³ (MEASE 1.02.01)	RCR = 0.6
Dermal, systemic, long term	2E-3 mg/kg bw/day (MEASE 1.02.01)	RCR = 0.133
Combined routes, systemic, long-term		RCR = 0.733

Remarks on exposure data from external estimation tools:

MEASE 1.02.01:

Explanation:

Dermal, systemic, long term

For calculation of systemic exposure, the exposure estimate for total dermal loading as obtained in MEASE (reported in mg/day) is divided by a body weight of 70 kg for workers.