



9.4. Exposure scenario 4: Widespread use by professional workers - Use of silicone in professional settings

Product category used: PC 1: Adhesives, Sealants; PC 9a: Coatings and Paints, Thinners, paint removers; PC 9b: Fillers, putties, plasters, modelling clay; PC 14: Metal surface treatment products; PC 15: Non-metal-surface treatment products; PC 20: Products such as ph-regulators, flocculants, precipitants, neutralization agents; PC 23: Leather treatment products; 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

Sector of use: SU 5: Manufacture of textiles, leather, fur; SU 11: Manufacture of rubber products; SU 12: Manufacture of plastics products, including compounding and conversion; SU 13: Manufacture of other non-metallic mineral products, e.g. plasters, cement; SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment.; SU 18: Manufacture of furniture; SU 19: Building and construction work; SU 20: Health services

Environment contributing scenario(s):		
CS 1	Use of silicone in professional settings	ERC 8c
Worker contributing scenario(s):		
CS 2	Handling of preparations at non-dedicated facilities	PROC 8a
CS 3	Handling of preparations at dedicated facilities	PROC 8b
CS 4	Small scale handling of preparations	PROC 9
CS 5	Open or semi-closed process	PROC 4
CS 6	Mixing and blending	PROC 5
CS 7	Laboratory analyses	PROC 15
CS 8	Dipping and pouring	PROC 13
CS 9	Further processing	PROC 14
CS 10	Handling of massive object	PROC 21

Subsequent service life exposure scenario(s):

ES5: Service life (professional worker) - Handling of silicone articles in professional settings

ES6: Service life (consumers) - Handling of silicone articles by consumers

9.4.1. Env CS 1: Use of silicone in professional settings (ERC 8c)

9.4.1.1. Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: $\leq 1.37E-5$ tonnes/day
Technical and organisational conditions and measures
• The substance should not be released to air <i>Emissions to air are not allowed in this scenario</i>
• The substance should not be released to water <i>Emissions to surface water or to the sewage system are not allowed in this scenario</i>
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 73.78%]
Conditions and measures related to external treatment of waste (including article waste)
• 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>

9.4.1.2. 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 9.45. 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: Silicone material and residues do not get disposed to the sewer.
Air	Estimated release factor	Release factor before on site RMM: 0% Release factor after on site RMM: 0% Explanation: Silicone material is in paste form and no components are emitted into the air.
Non agricultural soil	Estimated release factor	Release factor after on site RMM: 0% Explanation: No direct release to soil.

9.4.1.3. 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 9.46. 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: 1.2E-7 mg/kg dw	RCR < 0.01

9.4.2. Worker CS 2: Handling of preparations at non-dedicated facilities (PROC 8a)

Task(s) covered with this contributing scenario: Transfer and filling process.

9.4.2.1. 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: Basic	
• Local exhaust ventilation: No	



	Method
• Pattern of use: Wide 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	

9.4.2.2. Exposure and risks for workers

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

Table 9.47. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	5E-3 mg/m ³ (MEASE 1.02.01)	RCR = 0.5
Dermal, systemic, long term	3.4E-3 mg/kg bw/day (MEASE 1.02.01)	RCR = 0.227
Combined routes, systemic, long-term		RCR = 0.727

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.

9.4.3. Worker CS 3: Handling of preparations at dedicated facilities (PROC 8b)

Task(s) covered with this contributing scenario: Transfer and filling process.

9.4.3.1. 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: <= 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: Basic	



	Method
• Local exhaust ventilation: No	
• Pattern of use: Wide 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	

9.4.3.2. Exposure and risks for workers

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

Table 9.48. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	5E-3 mg/m ³ (MEASE 1.02.01)	RCR = 0.5
Dermal, systemic, long term	3.4E-3 mg/kg bw/day (MEASE 1.02.01)	RCR = 0.227
Combined routes, systemic, long-term		RCR = 0.727

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.

9.4.4. Worker CS 4: Small scale handling of preparations (PROC 9)

Task(s) covered with this contributing scenario: Transfer and filling process.

9.4.4.1. 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: Basic	



	Method
• Local exhaust ventilation: No	
• Pattern of use: Wide 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	

9.4.4.2. Exposure and risks for workers

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

Table 9.49. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	5E-3 mg/m ³ (MEASE 1.02.01)	RCR = 0.5
Dermal, systemic, long term	3.4E-3 mg/kg bw/day (MEASE 1.02.01)	RCR = 0.227
Combined routes, systemic, long-term		RCR = 0.727

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.

9.4.5. Worker CS 5: Open or semi-closed process (PROC 4)

Task(s) covered with this contributing scenario: Mixing and blending.

9.4.5.1. 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: <= 4 h/day	
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Basic	



	Method
• Local exhaust ventilation: No	
• Pattern of use: Wide dispersive use	
• Pattern of exposure control: Non-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	

9.4.5.2. Exposure and risks for workers

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

Table 9.50. 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	1.4E-5 mg/kg bw/day (MEASE 1.02.01)	RCR < 0.01
Combined routes, systemic, long-term		RCR = 0.601

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.

9.4.6. Worker CS 6: Mixing and blending (PROC 5)

9.4.6.1. 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: <= 4 h/day	
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Basic	
• Local exhaust ventilation: No	



	Method
• Pattern of use: Wide dispersive use	
• Pattern of exposure control: Non-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	

9.4.6.2. Exposure and risks for workers

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

Table 9.51. 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	1.4E-5 mg/kg bw/day (MEASE 1.02.01)	RCR < 0.01
Combined routes, systemic, long-term		RCR = 0.601

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.

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

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

9.4.7.1. 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: Basic	
• Local exhaust ventilation: No	



	Method
• Pattern of use: Wide 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	

9.4.7.2. Exposure and risks for workers

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

Table 9.52. 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-3 mg/kg bw/day (MEASE 1.02.01)	RCR = 0.113
Combined routes, systemic, long-term		RCR = 0.213

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.

9.4.8. Worker CS 8: Dipping and pouring (PROC 13)

9.4.8.1. 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: <= 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: Basic	
• Local exhaust ventilation: No	
• Pattern of use: Inclusion into/onto matrix	



	Method
• 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	

9.4.8.2. Exposure and risks for workers

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

Table 9.53. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	5E-3 mg/m ³ (MEASE 1.02.01)	RCR = 0.5
Dermal, systemic, long term	3.4E-4 mg/kg bw/day (MEASE 1.02.01)	RCR = 0.023
Combined routes, systemic, long-term		RCR = 0.523

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.

9.4.9. Worker CS 9: Further processing (PROC 14)

9.4.9.1. Conditions of use

	Method
Product (article) characteristics	
• Physical form of the used product: Solid object	
• 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: <= 4 h/day	
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Basic	
• Local exhaust ventilation: No	
• Pattern of use: Inclusion into/onto matrix	
• Pattern of exposure control: Direct handling	



	Method
• 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	

9.4.9.2. Exposure and risks for workers

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

Table 9.54. 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	8.6E-5 mg/kg bw/day (MEASE 1.02.01)	RCR < 0.01
Combined routes, systemic, long-term		RCR = 0.606

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.

9.4.10. Worker CS 10: Handling of massive object (PROC 21)

9.4.10.1. Conditions of use

	Method
Product (article) characteristics	
• Physical form of the used product: Solid object	
• 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: Basic	
• Local exhaust ventilation: No	
• Pattern of use: Inclusion into/onto matrix	
• Pattern of exposure control: Direct handling	
• Contact level: Intermittent	



	Method
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 $\geq 90\%$)	
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: ≤ 40 °C	

9.4.10.2. Exposure and risks for workers

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

Table 9.55. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	5E-3 mg/m ³ (MEASE 1.02.01)	RCR = 0.5
Dermal, systemic, long term	1.4E-3 mg/kg bw/day (MEASE 1.02.01)	RCR = 0.093
Combined routes, systemic, long-term		RCR = 0.593

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.