ELL Prepreg

Safety Data Sheet

US-SDS according to the federal final rule of hazard communication revised on 2024 (HazCom 2024)
Issue date: Feb.2 2022 Revision date: Feb.1 2026

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Product name : ELL 101 P, ELL-102 P, ELL 103 P, ELL-105 P

1.2. Recommended use and restrictions on use

Use of the substance/mixture : Prepreg for consumer and industrial electronics.

1.3. Supplier

AGC Multi Material America Inc.
1420 W 12th Place
Tempe, AZ 85281, USA
T +1-480-967-5600

AGC Multi Material Singapore Pte. Ltd.
4 Gul Crescent
Jurong, Singapore 629520
T +65-6861-7117

AGC Multi Material Europe SASU
25 Rue du Lyonnais
69800 Saint-Priest, France
T +33-6-15-75-21-53

1.4. Emergency telephone number

Emergency number :
AGC Multi Material America Inc. : +1-480-967-5600 (9am - 5pm MST) M - F
AGC Multi Material Singapore Pte. Ltd. : +65-6861-7117 (9am - 5pm SST) M - F
AGC Multi Material Europe SASU : +33-6-15-75-21-53 (9am - 5pm CET) M - F

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Not classified

2.2. GHS Label elements, including precautionary statements

GHS US labeling

No labeling applicable

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	Conc. (% w/w)
Glass, oxide, chemicals (ELL 101 P, ELL-102 P, ELL 103 P)	CAS-No.: 65997-17-3	20 – 50
Silica (ELL-105 P)	CAS-No.: 7631-86-9	20 – 50
Silicon dioxide	CAS-No.: 60676-86-0	12 – 25
toluene	CAS-No.: 108-88-3	≤ 1

The specific chemical\ component identities and/or the exact component percentages of this material may be withheld as trade secrets. This information is made available to health professionals, employees, and designated representatives in accordance with the applicable provisions of 29 CFR 1910.1200 (I)(1). Trace ingredients (if any) are present in < 1% concentration, (< 0.1% for potential carcinogens, mutagen, and reproductive toxicant, respiratory tract and skin sensitizers in addition to oral/ inhalation acute toxicant in category 1 and 2). None of the trace ingredients contribute significant additional hazards at the concentrations that may be present in this product. All pertinent hazard information has been provided in this document, per the requirements of the Federal Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalents.

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : If you feel unwell, seek medical advice.

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.

First-aid measures after skin contact : Wash skin with plenty of water.

First-aid measures after eye contact : Rinse eyes with water as a precaution.

First-aid measures after ingestion : Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after inhalation : None under normal conditions. Dust of the product, if present, may cause respiratory irritation after an excessive inhalation exposure.

Symptoms/effects after skin contact : None under normal conditions. Dust may cause irritation in skin folds or by contact in combination with tight clothing.

Symptoms/effects after eye contact : None under normal conditions. Dust from this product may cause eye irritation.

Symptoms/effects after ingestion : None under normal conditions.

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Adapt extinguishing media to the environment for surrounding fires.

5.2. Specific hazards arising from the chemical

Fire hazard : No fire hazard.

Explosion hazard : No direct explosion hazard.

Hazardous decomposition products in case of fire : Toxic fumes may be released.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Fight fire from safe distance and protected location. Do not enter fire area without proper protective equipment, including respiratory protection.

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Notify authorities if product enters sewers or public waters. Absorb spillage to prevent material-damage.

6.1.1. For non-emergency personnel

Protective equipment : Wear recommended personal protective equipment.

Emergency procedures : Ventilate spillage area.

6.1.2. For emergency responders

Protective equipment	:	Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures	:	Evacuate unnecessary personnel.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up	:	Mechanically recover the product.
Other information	:	Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed	:	Not expected to present a significant hazard under anticipated conditions of normal use.
Precautions for safe handling	:	Ensure good ventilation of the work station. Wear personal protective equipment.
Hygiene measures	:	Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	:	Keep in a cool, well-ventilated place away from heat.
Storage conditions	:	Keep cool. Protect from sunlight.
Packaging materials	:	Store always product in container of same material as original container.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Australia

Silica, vitreous (60676-86-0)	
Australia - Occupational Exposure Limits	
Local name	Silica, fused
OES TWA	0.05 mg/m³
Remark (AU)	See Silica - Crystalline
Regulatory reference	Workplace exposure standards for airborne contaminants (2024)

Silicon dioxide (7631-86-9)	
Australia - Occupational Exposure Limits	
Local name	Silica – Amorphous: Fumed silica
OES TWA	2 mg/m³ respirable dust
Remark (AU)	(a) This value is for inhalable dust containing no asbestos and < 1% crystalline silica.
Regulatory reference	Workplace exposure standards for airborne contaminants (2024)

Canada

Glass, oxide, chemicals (65997-17-3)	
Canada (Alberta) - Occupational Exposure Limits	
Local name	Synthetic Vitreous Fibres: Glass Fibres Continuous filament
OEL TWA	1 fibers/cm³ 5 mg/m³ Total
Notations and remarks	Occupational exposure limit is based on irritation effects and its adjustment to compensate for unusual work schedules is not required.
Regulatory reference	Alberta Regulation 87/2009 (Alberta Regulation 150/2020)
Canada (Quebec) - Occupational Exposure Limits	
Local name	Fibres-artificial vitreous mineral fibres - Fibrous glass, continuous filament
VEMP (OEL TWAEV)	1 fibers/cm³
Regulatory reference	S-2.1, r. 13 - Regulation respecting occupational health and safety
Canada (British Columbia) - Occupational Exposure Limits	
Local name	Synthetic Vitreous Fibres - Continuous filament glass fibres
OEL TWA	1 fibers/cm³ 5 mg/m³ Inhalable
Regulatory reference	OHS Guidelines Part 5: Chemical Agents and Biological Agents (WorkSafe BC)
Canada (Manitoba) - Occupational Exposure Limits	
Local name	Synthetic vitreus fibers - Continuous filament glass fibers
OEL TWA	5 mg/m³ (I - Inhalable particulate matter)
	1 fibers/cm³ (F - Respirable fibers)
Notations and remarks	TLV® Basis: URT irr. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH
Canada (Newfoundland and Labrador) - Occupational Exposure Limits	
Local name	Synthetic vitreus fibers - Continuous filament glass fibers
OEL TWA	5 mg/m³ (I - Inhalable particulate matter)
	1 fibers/cm³ (F - Respirable fibers)
Notations and remarks	TLV® Basis: URT irr. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH
Canada (Nova Scotia) - Occupational Exposure Limits	
Local name	Synthetic vitreus fibers - Continuous filament glass fibers
OEL TWA	5 mg/m³ (I - Inhalable particulate matter)
	1 fibers/cm³ (F - Respirable fibers)
Notations and remarks	TLV® Basis: URT irr. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH
Canada (Ontario) - Occupational Exposure Limits	
Local name	Continuous filament glass fibres (Synthetic Vitreous Fibres (Man Made Mineral Fibres))
OEL TWAEV	5 mg/m³ (I - Inhalable fraction) 1 fiber/mL (F - Respirable fibres)

Glass, oxide, chemicals (65997-17-3)	
Regulatory reference	Ontario Occuational Exposure Limits under Regulation 833
Canada (Prince Edward Island) - Occupational Exposure Limits	
Local name	Synthetic vitreus fibers - Continuous filament glass fibers
OEL TWA	5 mg/m³ (I - Inhalable particulate matter)
	1 fibers/cm³ (F - Respirable fibers)
Notations and remarks	TLV® Basis: URT irr. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH
USA - ACGIH - Occupational Exposure Limits	
Local name	Synthetic vitreus fibers - Continuous filament glass fibers
ACGIH OEL TWA	5 mg/m³ (I - Inhalable particulate matter)
	1 fibers/cm³ (F - Respirable fibers)
Remark (ACGIH)	TLV® Basis: URT irr. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH 2021

Silicon dioxide (60676-86-0)	
Canada (Quebec) - Occupational Exposure Limits	
Local name	Silica - Amorphous, fused
VEMP (OEL TWAEV)	0.1 mg/m³ Rd
Notations and remarks	Note 1: The standard corresponds to dust containing no asbestos and the percentage in crystalline silica is less than 1%
Regulatory reference	S-2.1, r. 13 - Regulation respecting occupational health and safety
Canada (Nunavut) - Occupational Exposure Limits	
Local name	Silica, fused
OEL TWA	0.1 mg/m³ (respirable fraction)
Regulatory reference	Occupational Health and Safety Regulations, Nu Reg 003-2016 (Amendment R-044-2021)
Canada (Northwest Territories) - Occupational Exposure Limits	
Local name	Silica, fused
OEL TWA	0.1 mg/m³ (respirable fraction)
Regulatory reference	Occupation Health and Safety Regulations R-039-2015 (R-090-2024)
Canada (Ontario) - Occupational Exposure Limits	
Local name	Silica fused
OEL TWAEV	0.1 mg/m³ (R - Respirable fraction)
Regulatory reference	Ontario Occuational Exposure Limits under Regulation 833
Canada (Saskatchewan) - Occupational Exposure Limits	
Local name	Silica Amorphous: Silica, fused
OEL TWA	0.1 mg/m³ (respirable fraction)
Regulatory reference	The Occupational Health and Safety Regulations, 2020. Chapter S-15.1 Reg 10

toluene (108-88-3)	
Canada (Alberta) - Occupational Exposure Limits	
Local name	Toluene (Toluol)
OEL TWA	188 mg/m³
	50 ppm
Notations and remarks	Substance may be readily absorbed through intact skin.
Regulatory reference	Alberta Regulation 191/2021
Canada (Quebec) - Occupational Exposure Limits	
Local name	Toluene
VEMP (OEL TWAEV)	188 mg/m³
	20 ppm
Notations and remarks	OTO
Regulatory reference	S-2.1, r. 13 - Regulation respecting occupational health and safety
Canada (British Columbia) - Occupational Exposure Limits	
Local name	Toluene
OEL TWA	20 ppm
Notations and remarks	R (the substance has an adverse reproductive effect)
Regulatory reference	OHS Guidelines Part 5: Chemical Agents and Biological Agents (WorkSafe BC)
Canada (Manitoba) - Occupational Exposure Limits	
Local name	Toluene
OEL TWA	20 ppm
Notations and remarks	TLV® Basis: CNS, Hearing & Visual impair; Female repro system eff; Pregnancy loss. Notations: OTO (Ototoxicant); A4 (Not classifiable as a Human Carcinogen); BEI
Regulatory reference	ACGIH 2025
Canada (Newfoundland and Labrador) - Occupational Exposure Limits	
Local name	Toluene
OEL TWA	20 ppm
Notations and remarks	TLV® Basis: CNS, Hearing & Visual impair; Female repro system eff; Pregnancy loss. Notations: OTO (Ototoxicant); A4 (Not classifiable as a Human Carcinogen); BEI
Regulatory reference	ACGIH 2025
Canada (Nova Scotia) - Occupational Exposure Limits	
Local name	Toluene
OEL TWA	20 ppm
Notations and remarks	TLV® Basis: CNS, Hearing & Visual impair; Female repro system eff; Pregnancy loss. Notations: OTO (Ototoxicant); A4 (Not classifiable as a Human Carcinogen); BEI
Regulatory reference	ACGIH 2025
Canada (Nunavut) - Occupational Exposure Limits	
Local name	Toluene (toluol)
OEL TWA	50 ppm

toluene (108-88-3)	
OEL STEL	60 ppm
Notations and remarks	Skin
Regulatory reference	Occupational Health and Safety Regulations, Nu Reg 003-2016 (Amendment R-044-2021)
Canada (Northwest Territories) - Occupational Exposure Limits	
Local name	Toluene (toluol)
OEL TWA	50 ppm
OEL STEL	60 ppm
Notations and remarks	Skin
Regulatory reference	Occupation Health and Safety Regulations R-039-2015 (R-090-2024)
Canada (Ontario) - Occupational Exposure Limits	
Local name	Toluene
OEL TWAEV	20 ppm
Regulatory reference	Ontario Occuational Exposure Limits under Regulation 833
Canada (Prince Edward Island) - Occupational Exposure Limits	
Local name	Toluene
OEL TWA	20 ppm
Notations and remarks	TLV® Basis: CNS, Hearing & Visual impair; Female repro system eff; Pregnancy loss. Notations: OTO (Ototoxicant); A4 (Not classifiable as a Human Carcinogen); BEI
Regulatory reference	ACGIH 2025
Canada (Saskatchewan) - Occupational Exposure Limits	
Local name	Toluene (toluol)
OEL TWA	50 ppm
OEL STEL	60 ppm
Notations and remarks	Skin
Regulatory reference	The Occupational Health and Safety Regulations, 2020. Chapter S-15.1 Reg 10

China & Hong Kong

Silicon dioxide (7631-86-9)	
China - Occupational Exposure Limits	
Local name	沉淀SiO2（白炭黑）# Precipitated silica dust
OEL PC-TWA	5 mg/m³ 总尘
Regulatory reference	GBZ 2.1-2019

European Union

Glass, oxide, chemicals (65997-17-3)	
EU - Binding Occupational Exposure Limit (BOEL)	
Local name	Refractory ceramic fibres: Glass, oxide, chemicals
BOEL TWA	0.3 fibers/mL
Regulatory reference	DIRECTIVE (EU) 2019/130 (amending Directive 2004/37/EC)
USA - ACGIH - Occupational Exposure Limits	
Local name	Synthetic vitreus fibers - Continuous filament glass fibers
ACGIH OEL TWA	5 mg/m³ (I - Inhalable particulate matter)
	1 fibers/cm³ (F - Respirable fibers)
Remark (ACGIH)	TLV® Basis: URT irr. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH 2021

Silicon dioxide (60676-86-0)	
Austria - Occupational Exposure Limits	
Local name	Kieselsäuren, amorphe: Kieselglas
MAK (OEL TWA)	0.3 mg/m³ (A)
Regulatory reference	BGBl. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Silices amorphes: fumées (fraction alvéolaire) # Siliciumdioxide (amorf): rook (inadembare fractie)
OEL TWA	2 mg/m³
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023
Croatia - Occupational Exposure Limits	
Local name	Kvarcno staklo
GVI (OEL TWA)	0.08 mg/m³ R (respirabilna prašina)
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 1/2021)
Denmark - Occupational Exposure Limits	
Local name	Silikatglas
OEL TWA	0.1 mg/m³ respirabel
Regulatory reference	BEK nr 1619 af 19/12/2024
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Kieselglas
AGW (OEL TWA)	0.3 mg/m³ (A)
Remark	DFG - Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission); Y - Ein Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes (BGW) nicht befürchtet zu werden
Regulatory reference	TRGS900

Silicon dioxide (60676-86-0)	
Ireland - Occupational Exposure Limits	
Local name	Silica, fused respirable dust
OEL TWA	0.08 mg/m³
Remark	Advisory OELV (Advisory Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2024
Poland - Occupational Exposure Limits	
Local name	Krzemionka bezpostaciowa i syntetyczna: krzemionka stopiona (szkło kwarcowe)
NDS (OEL TWA)	2 mg/m³ frakcja wdychalna 1 mg/m³ frakcja respirabilna
Remark	Frakcja wdychalna – frakcja aerozolu wnikająca przez nos i usta, która stwarza zagrożenie dla zdrowia po zdeponowaniu w drogach oddechowych. Frakcja respirabilna – frakcja aerozolu wnikająca do dróg oddechowych, która stwarza zagrożenie dla zdrowia po zdeponowaniu w obszarze wymiany gazowej.
Regulatory reference	Dz. U. 2024 poz. 1017 wraz z późn. zm.
Slovenia - Occupational Exposure Limits	
Local name	kremenčevo steklo
OEL TWA	0.3 mg/m³
Remark	Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti)
Regulatory reference	Uradni list RS, št. 72/2021 z dne 11.5.2021
United Kingdom - Occupational Exposure Limits	
Local name	Silica, fused
WEL TWA (OEL TWA)	0.08 mg/m³ respirable dust
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Switzerland - Occupational Exposure Limits	
Local name	silice fondue / Kieselgut
MAK (OEL TWA)	0.3 mg/m³ (a) / (a)
Critical toxicity	Fibpulm / Lungenfibrose
Notation	SS_C / SS_C
Regulatory reference	www.suva.ch, 01.01.2025

Silicon dioxide (7631-86-9)	
Austria - Occupational Exposure Limits	
Local name	Kieselsäuren, amorphe
MAK (OEL TWA)	4 mg/m³ (E)
Regulatory reference	BGBl. II Nr. 156/2021
Czech Republic - Occupational Exposure Limits	
Local name	Amorfní SiO2
PEL (OEL TWA)	4 mg/m³ (pro celkovou koncentraci)

Silicon dioxide (7631-86-9)	
Remark	Prachy s možným fibrogenním účinkem.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)
Estonia - Occupational Exposure Limits	
Local name	Räni (ränidioksiid) (amorfne)
OEL TWA	2 mg/m³ Respireeritav fraktsioon
Remark	1 (Peentolm koosneb alla 2,5-mikromeetrise läbimõõduga osakestest, mis võivad koos sissehingatava õhuga jõuda kopsualveoolidesse)
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Kieselsäuren, amorphe
AGW (OEL TWA)	1 mg/m³ (E)
Peak exposure limitation factor	8(II)
Remark	AGS - Ausschuss für Gefahrstoffe; 2 - Kolloidale amorphe Kieselsäure (7631-86-9) einschließlich pyrogener Kieselsäure und im Nassverfahren hergestellter Kieselsäure (Fällungskieselsäure, Kieselgel); Y - Ein Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes (BGW) nicht befürchtet zu werden
Regulatory reference	TRGS900
Latvia - Occupational Exposure Limits	
Local name	Silīcija dioksīds
OEL TWA	1 mg/m³
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).
Slovenia - Occupational Exposure Limits	
Local name	silikagel
OEL TWA	4 mg/m³
Remark	Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti)
Regulatory reference	Uradni list RS, št. 29/2024 z dne 4. 4. 2024 - Pravilnik o varovanju delavcev pred tveganji zaradi izpostavljenosti kemičnim snovem pri delu
Switzerland - Occupational Exposure Limits	
Local name	Silices amorphes [Dioxyde de silicium non cristallisé] / Kieselsäuren, amorphe [Diatomeenerde, Siliciumdioxid nichtkristallin]
MAK (OEL TWA)	4 mg/m³ (i) / (e)
Critical toxicity	Fibpulm / Lungenfibrose
Notation	SS_C / SS_C
Regulatory reference	www.suva.ch, 01.01.2025

toluene (108-88-3)	
EU - Indicative Occupational Exposure Limit (IOEL)	
IOEL TWA	192 mg/m³
	50 ppm
IOEL STEL	384 mg/m³
	100 ppm
Austria - Occupational Exposure Limits	
Local name	Toluol
MAK (OEL TWA)	190 mg/m³
	50 ppm
MAK (OEL STEL)	380 mg/m³ (4x 15(Miw) min)
	100 ppm (4x 15(Miw) min)
Remark	H. Fortpflanzungsgefährdend: d
Regulatory reference	BGBl. II Nr. 156/2021
Austria - Biological limit values	
Local name	Toluol
BLV	10 g/dl Parameter: Hämoglogin - Untersuchungsmaterial: Blut - Mitarbeiter/innen: Frauen 12 g/dl Parameter: Hämoglogin - Untersuchungsmaterial: Blut - Mitarbeiter/innen: Männer 250 µg/l Parameter: Hämoglogin - Untersuchungsmaterial: Blut - Probenahmezeitpunkt: Bei wiederholt erhöhten o-Cresolwerten ist zusätzlich Toluol im Blut am Ende eines Arbeitstages zu bestimmen (der Zeitpunkt der Untersuchung ist anzugeben) 0.8 mg/l Parameter: o-Cresol - Untersuchungsmaterial: Harn
Remark	Eignung: Blut: Erythrozyten: 3,2 Millionen/µl für Frauen, 3,8 Millionen/µl für Männer; Leukozyten: unterer Grenzwert: 4.000/µl (davon 2.000 Granulozyten) bzw. 3.700/µl bei nicht pathologischem Differentialblutbild, oberer Grenzwert: 13.000/µl; Thrombozyten: 150.000 bzw. 130.000/µl bei nicht pathologischem Differentialblutbild Eignung mit vorzeitiger Folgeuntersuchung: Bei Unterschreiten bzw. Überschreiten der Grenzwerte im Blut (ausgenommen Differentialblutbild) oder im Harn sowie bei atypischen Morphologien im Blut. Der Zeitabstand zwischen den Untersuchungen beträgt bei Eignung: ein Jahr; bei Eignung mit vorzeitiger Folgeuntersuchung: drei Monate.
Regulatory reference	Verordnung über die Gesundheitsüberwachung am Arbeitsplatz 2017 (VGÜ 2017)
Belgium - Occupational Exposure Limits	
Local name	Toluène # Tolueen
OEL TWA	77 mg/m³
	20 ppm
OEL STEL	384 mg/m³
	100 ppm
Remark	D: la mention “D” signifie que la résorption de l’agent, via la peau, les muqueuses ou les yeux, constitue une partie importante de l’exposition totale. Cette résorption peut se faire tant par contact direct que par présence de l’agent dans l’air. # D: de vermelding “D” betekent dat de opname van het agens via de huid, de slijmvliezen of de ogen een belangrijk deel van de totale blootstelling vormt. Deze opname kan het gevolg zijn van zowel direct contact als zijn aanwezigheid in de lucht.

toluene (108-88-3)	
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023
Bulgaria - Occupational Exposure Limits	
Local name	Толуен
OEL TWA	192 mg/m³
	50 ppm
OEL STEL	384 mg/m³
	100 ppm
Remark	Кожа (възможна е значителна резорбция чрез кожата); • (Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност)
Regulatory reference	Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 28 от 2024 г., в сила от 05.04.2024 г.)
Bulgaria - Biological limit values	
Local name	Толуен
BLV	1.6 mmol/mmol Creatinine Биомаркер за експозиция/биомаркер за ефект: хипурова киселина - Биологична среда: урина - Време на пробовземане: В края на експозицията или в края на работната смяна - Специфични ефекти: Няма
Regulatory reference	Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 28 от 2024 г., в сила от 05.04.2024 г.)
Croatia - Occupational Exposure Limits	
Local name	Toluen
GVI (OEL TWA)	192 mg/m³
	50 ppm
KGVI (OEL STEL)	384 mg/m³
	100 ppm
Remark	Direktiva: 2006/15/EZ. Napomena: Koža (razvrstana kao tvar koja nadražuje kožu (H315))
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023)
Croatia - Biological limit values	
Local name	Toluen

toluene (108-88-3)	
BLV	10.85 µmol/l Karakteristični pokazatelj: toluen - Biološki uzorak: krv - Vrijeme uzorkovanja: na kraju radne smjene 1 mg/l Karakteristični pokazatelj: toluen - Biološki uzorak: krv - Vrijeme uzorkovanja: na kraju radne smjene 0.83 µmol/l Karakteristični pokazatelj: toluen - Biološki uzorak: krajnje izdahnuti zrak - Vrijeme uzorkovanja: za vrijeme izloženosti 20 ppm Karakteristični pokazatelj: toluen - Biološki uzorak: krajnje izdahnuti zrak - Vrijeme uzorkovanja: za vrijeme izloženosti 1.58 mol/mol Creatinine Karakteristični pokazatelj: hipurna kiselina - Biološki uzorak: mokraća - Vrijeme uzorkovanja: na kraju radne smjene - Napomena: hrana bogata voćem i povrćem te konzervirana Na-benzoatom povisuje nalaz 2.5 g/g creatinine Karakteristični pokazatelj: hipurna kiselina - Biološki uzorak: mokraća - Vrijeme uzorkovanja: na kraju radne smjene - Napomena: hrana bogata voćem i povrćem te konzervirana Na-benzoatom povisuje nalaz 1.05 mmol/mol Creatinine Karakteristični pokazatelj: o-krezol - Biološki uzorak: mokraća - Vrijeme uzorkovanja: na kraju radne smjene 1 mg/g creatinine Karakteristični pokazatelj: o-krezol - Biološki uzorak: mokraća - Vrijeme uzorkovanja: na kraju radne smjene
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 91/2018)
Cyprus - Occupational Exposure Limits	
Local name	Τολουόλιο
OEL TWA	192 mg/m³
	50 ppm
OEL STEL	384 mg/m³
	100 ppm
Remark	δέρμα
Regulatory reference	Κανονισμοί του 2007 (Κ.Δ.Π. 295/2007)
Czech Republic - Occupational Exposure Limits	
Local name	Toluen (Methylbenzen)
PEL (OEL TWA)	192 mg/m³
	50 ppm
NPK-P (OEL C)	384 mg/m³
	100 ppm
Remark	B - u látky je zaveden biologický expoziční test (BET) v moči nebo krvi, D - při expozici se významně uplatňuje pronikání faktoru kůží, I - dráždí sliznice (oči, dýchací cesty), resp. kůži, P - u látky nelze vyloučit závažné pozdní účinky (s větou H372, H373).
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 20/2025 Sb.)
Czech Republic - Biological limit values	
Local name	Toluen (Methylbenzen)

toluene (108-88-3)	
BLV	1.5 mg/g creatinine Ukazatel: o-Kresol (po hydrolýze) - Biologicky vzorek: moči - Doba odběru: konec směny 1.6 µmol/mmol Creatinine Ukazatel: o-Kresol (po hydrolýze) - Biologicky vzorek: moči - Doba odběru: konec směny 1600 mg/g creatinine Ukazatel: Hippurová kyselina - Biologicky vzorek: moči - Doba odběru: konec směny 1000 µmol/mmol Creatinine Ukazatel: Hippurová kyselina - Biologicky vzorek: moči - Doba odběru: konec směny
Remark	Je-li hodnota při nálezu kyseliny hippurové vyšší než 1600 mg/g, av šak nepřesahuje 2500 mg/g kreatininu, použije se ke zpřesnění expozice toluenu biologický expoziční test podle ukazatele o-Kresol. Je-li hodnota při nálezu kyseliny hippurové vyšší než 2500 mg/g, považuje se za hodnotu prokazující, že jde o pracovní expozici toluenu, jehož hodnota PEL je překračována a biologický expoziční test podle ukazatele o-Kresol se již neprovádí.
Regulatory reference	Vyhláška č. 107/2013 Sb. (kterou se mění vyhláška č. 432/2003 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Toluen (Methylbenzen; Phenylmethan)
OEL TWA	94 mg/m³
	25 ppm
OEL STEL	384 mg/m³
	100 ppm
Remark	E (betyder, at stoffet har en EU-grænseværdi); H (betyder, at stoffet kan optages gennem huden)
Regulatory reference	BEK nr 1619 af 19/12/2024
Estonia - Occupational Exposure Limits	
Local name	Tolueen (metüülbenseen)
OEL TWA	192 mg/m³
	50 ppm
OEL STEL	384 mg/m³
	100 ppm
Remark	A (Naha kaudu kergesti imenduv aine)
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)
Finland - Occupational Exposure Limits	
Local name	Tolueeni
HTP (OEL TWA)	81 mg/m³
	25 ppm
HTP (OEL STEL)	380 mg/m³
	100 ppm
Remark	Iho, melu
Regulatory reference	HTP-ARVOT 2025 (Sosiaali- ja terveysministeriö)
Finland - Biological limit values	
Local name	Tolueeni

toluene (108-88-3)	
BLV	500 nmol/l Parametri: Veren tolueeni - Näytteenottoajankohta: Työpäivän jälkeinen aamu
Regulatory reference	HTP-ARVOT 2025 (Sosiaali- ja terveysministeriö)
France - Occupational Exposure Limits	
Local name	Toluène
VME (OEL TWA)	76.8 mg/m³
	20 ppm
VLE (OEL C/STEL)	384 mg/m³
	100 ppm
Remark	Valeurs réglementaires contraignantes. Toxique pour la reproduction de catégorie 2, Risque de pénétration percutanée. Ces valeurs sont assortie de la mention "bruit" indiquant la possibilité d'une atteinte auditive en cas de co-exposition au bruit
Regulatory reference	Article R4412-149 du Code du travail (réf.: INRS ED 6443, 2022; Outil65; Décret n° 2019-1487; Décret n° 2020-1546; Décret n° 2021-434; Décret n° 2021-1849; Décret n° 2024-307)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Toluol
AGW (OEL TWA)	190 mg/m³
	50 ppm
Peak exposure limitation factor	2(II)
Remark	DFG - Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission); EU - Europäische Union (Von der EU wurde ein Luftgrenzwert festgelegt: Abweichungen bei Wert und Spitzenbegrenzung sind möglich); H - hautresorptiv; Y - Ein Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes (BGW) nicht befürchtet zu werden
Regulatory reference	TRGS900
Germany - Biological limit values (TRGS 903)	
Local name	Toluol
Biological limit value	600 µg/l Parameter: Toluol - Untersuchungsmaterial: B = Vollblut - Probenahmezeitpunkt: g) unmittelbar nach Exposition - Festlegung/Begründung: 05/2024 DFG 75 µg/l Parameter: Toluol - Untersuchungsmaterial: U = Urin - Probenahmezeitpunkt: b) Expositionsende, bzw. Schichtende - Festlegung/Begründung: 05/2024 DFG 1.5 mg/l Parameter: o-Kresol (nach Hydrolyse) - Untersuchungsmaterial: U = Urin - Probenahmezeitpunkt: c) am Schichtende, bei Langzeitexposition nach mehreren vorangegangenen Schichten - Festlegung/Begründung: 05/2024 DFG
Regulatory reference	TRGS 903
Greece - Occupational Exposure Limits	
Local name	Τολουόλιο
OEL TWA	192 mg/m³
	50 ppm
OEL STEL	384 mg/m³
	100 ppm

toluene (108-88-3)	
Remark	Η ένδειξη «δέρμα» στις οριακές τιμές επαγγελματικής έκθεσης επισημαίνει το ενδεχόμενο σημαντικής διείσδυσης μέσω του δέρματος.
Regulatory reference	Π.Δ. 162/2007 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους
Hungary - Occupational Exposure Limits	
Local name	TOLUOL
AK (OEL TWA)	192 mg/m³
	50 ppm
CK (OEL STEL)	384 mg/m³
	100 ppm
Remark	b (Bőrön át is felszívódik), i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármat); BEM (biológiai expozíciós mutató); EU2 (2006/15/EK irányelvben közölt érték); R+T (Azok az anyagok, amelyek RÖVID és TARTÓS expozíciója is egészségkárosodást okoz)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
Hungary - Biological Exposure Indices	
Local name	Toluol
BEI	1 mg/g creatinine Biológiai expozíciós (hatás) mutató: o-krezol - Biológiai minta: vizeletben - Mintavétel ideje: m.v. (műszak végén) 1 µmol/mmol Creatinine Biológiai expozíciós (hatás) mutató: o-krezol - Biológiai minta: vizeletben - Mintavétel ideje: m.v. (műszak végén)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
Ireland - Occupational Exposure Limits	
Local name	Toluene
OEL TWA	192 mg/m³
	50 ppm
OEL STEL	384 mg/m³
	100 ppm
Remark	IOELV (Indicative Occupational Exposure Limit Values), Skin (Substances which have the capacity to penetrate intact skin when they come in contact with it and be absorbed into the body. A substantial contribution to the total body burden via dermal exposure is possible)
Regulatory reference	Chemical Agents Code of Practice 2024
Ireland - Biological limit values	
Local name	Toluene
BMGV	0.02 mg/l Parameter: toluene - Medium: blood - Sampling time: Prior to last shift of workweek 0.03 mg/l Parameter: toluene - Medium: urine - Sampling time: End of shift 0.3 mg/g creatinine Parameter: o-cresol - Medium: urine - Sampling time: End of shift - Notations: B (Background)
Regulatory reference	Biological Monitoring Guidelines (HSA, 2011)

toluene (108-88-3)	
Italy - Occupational Exposure Limits	
Local name	Toluene
OEL TWA	192 mg/m³
	50 ppm
Remark	Cute
Regulatory reference	Allegato XXXVIII del Decreto Legislativo 4 settembre 2024, n. 135
Latvia - Occupational Exposure Limits	
Local name	Toluols (metilbenzols)
OEL TWA	50 mg/m³
	14 ppm
OEL STEL	150 mg/m³
	40 ppm
Remark	Āda; Ietekme uz dzirdi
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).
Latvia - Biological Exposure Indices	
Local name	Toluols (metilbenzols)
BEI	600 µg/l Toluolam asinīs - Paraugi ņemti uzreiz, beidzoties iedarbībai 75 µg/l Toluolam urīnā - Paraugi iegūti maiņas beigās 1.5 mg/l Toluola metabolītam o-krezolam (pēc hidrolīzes) urīnā - Paraugus iegūst ekspozīcijas beigās vai maiņas beigās
Remark	Ilgstošas iedarbības novērtēšanai paraugus iegūst maiņas beigās pēc vairākām iepriekšējām maiņām.
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).
Lithuania - Occupational Exposure Limits	
Local name	Toluenas
IPRV (OEL TWA)	192 mg/m³
	50 ppm
TPRV (OEL STEL)	384 mg/m³
	100 ppm
Remark	R (reprodukcijai toksiškas poveikis); O (medžiaga į organizmą gali prasiskverbti pro nepažeistą odą)
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)
Luxembourg - Occupational Exposure Limits	
Local name	Toluène
OEL TWA	192 mg/m³
	50 ppm
OEL STEL	384 mg/m³

toluene (108-88-3)	
	100 ppm
Remark	Peau
Regulatory reference	Mémorial A Nº 226 de 2021 concernant la protection de la sécurité et de la santé des salariés contre les risques liés à des agents chimiques sur le lieu de travail
Malta - Occupational Exposure Limits	
Local name	Toluene
OEL TWA	192 mg/m³
	50 ppm
OEL STEL	384 mg/m³
	100 ppm
Remark	Skin # Ġilda
Regulatory reference	S.L. 424.24 - Chemical Agents at Work Regulations (L.N. 356 of 2021) # L.S. 424.24 - Regolamenti dwar Aġenti Kimiċi fuq il-Post tax-Xogħol (A.L. 356 tal-2021)
Netherlands - Occupational Exposure Limits	
Local name	Tolueen
TGG-8u (OEL TWA)	150 mg/m³
	39 ppm
TGG-15min (OEL STEL)	384 mg/m³
	100 ppm
Regulatory reference	Arbeidsomstandighedenregeling 2024
Poland - Occupational Exposure Limits	
Local name	Toluen
NDS (OEL TWA)	100 mg/m³
NDSCh (OEL STEL)	200 mg/m³
Remark	Skóra (Oznakowanie substancji notacją „skóra” oznacza, że wchłanianie substancji przez skórę może być tak samo istotne jak przy narażeniu drogą oddechową).
Regulatory reference	Dz. U. 2024 poz. 1017 wraz z późn. zm.
Portugal - Occupational Exposure Limits	
Local name	Tolueno
OEL TWA	20 ppm
Remark	A4 (Agente não classificável como carcinogénico no Homem); IBE (Índice biológico de exposição)
Regulatory reference	Norma Portuguesa NP 1796:2014
Portugal - Biological Exposure Indices	
Local name	Tolueno

toluene (108-88-3)	
BEI	0.02 mg/l Parâmetro: Tolueno - Meio: sangue - Momento da amostragem: Antes do último turno da semana de trabalho 0.03 mg/l Parâmetro: Tolueno - Meio: urina - Momento da amostragem: Fim do turno 0.3 mg/g creatinine Parâmetro: o-Cresol - Meio: urina - Momento da amostragem: Fim do turno - Notaçao: Vb (Valor basal), Com hidrólise
Regulatory reference	Norma Portuguesa NP 1796:2014
Romania - Occupational Exposure Limits	
Local name	Toluen
OEL TWA	192 mg/m³
	50 ppm
OEL STEL	384 mg/m³
	100 ppm
Remark	P - posibilitatea unei penetrări cutanate importante; R2 - susceptibil de a dăuna fertilității
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)
Romania - Biological limit values	
Local name	Toluen
BLV	2 g/l Indicatorul biologic: Acid hipuric - Material biologic: urină - Momentul recoltării: sfârșit de schimb 3 mg/l Indicatorul biologic: o-cresol - Material biologic: urină - Momentul recoltării: sfârșit de schimb
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)
Slovakia - Occupational Exposure Limits	
Local name	Toluén
NPHV (OEL TWA)	192 mg/m³
	50 ppm
NPHV (OEL STEL)	384 mg/m³
	100 ppm
Remark	K – znamená, že faktor môže byť ľahko absorbovaný kožou
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.)
Slovakia - Biological limit values	
Local name	Toluén
BLV	600 µg/l Zisťovaný faktor: Toluén - Vyšetrovaný materiál: krv - Čas odberu vzorky: b) koniec expozície alebo pracovnej zmeny 1.5 mg/l Zisťovaný faktor: O-krezol - Vyšetrovaný materiál: moč - Čas odberu vzorky: c) pri dlhodobej expozícii; po viacerých pracovných zmenách, b) koniec expozície alebo pracovnej zmeny 2401 mg/l Zisťovaný faktor: Kyselina hipurová - Vyšetrovaný materiál: moč - Čas odberu vzorky: b) koniec expozície alebo pracovnej zmeny 1600 mg/g creatinine Zisťovaný faktor: Kyselina hipurová - Vyšetrovaný materiál: moč - Čas odberu vzorky: b) koniec expozície alebo pracovnej zmeny
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.)

toluene (108-88-3)	
Slovenia - Occupational Exposure Limits	
Local name	toluen
OEL TWA	192 mg/m³
	50 ppm
OEL STEL	384 mg/m³
	100 ppm
Remark	K (Lastnost lažjega prehajanja snovi v organizem skozi kožo), Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti), BAT (Biološka mejna vrednost), EU
Regulatory reference	Uradni list RS, št. 29/2024 z dne 4. 4. 2024 - Pravilnik o varovanju delavcev pred tveganji zaradi izpostavljenosti kemičnim snovem pri delu
Slovenia - Biological limit values	
Local name	toluen
BLV	600 µg/l Parameter: toluen - Biološki vzorec: kri - Čas vzorčenja: takoj po izpostavljenosti ob koncu delovne izmene 1.5 mg/l Parameter: o-krezol (po hidrolizi) - Biološki vzorec: urin - Čas vzorčenja: ob koncu delovne izmene, pri dolgotrajni izpostavljenosti: ob koncu delovne izmene po več zaporednih delavnikih 75 µg/l Parameter: toluen - Biološki vzorec: urin - Čas vzorčenja: takoj po izpostavljenosti ob koncu delovne izmene
Regulatory reference	Uradni list RS, št. 29/24 z dne 4. 4. 2024 - Pravilnik o varovanju delavcev pred tveganji zaradi izpostavljenosti kemičnim snovem pri delu
Spain - Occupational Exposure Limits	
Local name	Tolueno
VLA-ED (OEL TWA)	192 mg/m³
	50 ppm
VLA-EC (OEL STEL)	384 mg/m³
	100 ppm
Remark	Vía dérmica (Indica que, en las exposiciones a esta sustancia, la aportación por la vía cutánea puede resultar significativa para el contenido corporal total si no se adoptan medidas para prevenir la absorción. En estas situaciones, es aconsejable la utilización del control biológico para poder cuantificar la cantidad global absorbida del contaminante), VLB® (Agente químico que tiene Valor Límite Biológico), VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo), r (Esta sustancia tiene establecidas restricciones a la fabricación, la comercialización o el uso en los términos especificados en el “Reglamento (CE) nº 1907/2006 sobre Registro, Evaluación, Autorización y Restricción de sustancias y preparados químicos” (REACH) de 18 de diciembre de 2006 (DOUE L 369 de 30 de diciembre de 2006). Las restricciones de una sustancia pueden aplicarse a todos los usos o sólo a usos concretos. El anexo XVII del Reglamento REACH contiene la lista de todas las sustancias restringidas y especifica los usos que se han restringido).
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2025. INSHT
Spain - Biological limit values	
Local name	Tolueno

toluene (108-88-3)	
BLV	0.6 mg/l Parámetro: o-Cresol - Medio: Orina - Momento de muestreo: Final de la jornada laboral - Notas: F (Fondo. El indicador está generalmente presente en cantidades detectables en personas no expuestas laboraboralmente. Estos niveles de fondo están considerados en el valor VLB) 0.05 mg/l Parámetro: Tolueno - Medio: Sangre - Momento de muestreo: Principio de la última jornada de la semana laboral 0.08 mg/l Parámetro: Tolueno - Medio: Orina - Momento de muestreo: Final de la jornada laboral
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2025. INSHT
Sweden - Occupational Exposure Limits	
Local name	Toluen
NGV (OEL TWA)	192 mg/m³
	50 ppm
KGV (OEL STEL)	384 mg/m³
	100 ppm
Remark	B (Ämnet är ototoxiskt och kan orsaka hörselskada. Exponering för ämnet nära det befintliga yrkeshygieniska gränsvärdet och vid samtidig exponering för bulleR (Reproduktionsstörande ämnen, som kan skada fertiliteten och det ofödda barnet), nära insatsvärdet 80 dB, kan ge en ökad skaderisk); H (Ämnet tas lätt upp genom huden. Gränsvärdet bedöms ge tillräckligt skydd om huden är skyddad); 23 (Ämnet har ett indikativt EU-gränsvärde)
Regulatory reference	Arbetsmiljöverkets föreskrifter och allmänna råd (AFS 2023:14) om gränsvärden för luftvägsexponering i arbetsmiljön
United Kingdom - Occupational Exposure Limits	
Local name	Toluene
WEL TWA (OEL TWA)	191 mg/m³
	50 ppm
WEL STEL (OEL STEL)	384 mg/m³
	100 ppm
Remark	Sk (Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Switzerland - Occupational Exposure Limits	
Local name	Toluène / Toluol
MAK (OEL TWA)	190 mg/m³
	50 ppm
KZGW (OEL STEL)	760 mg/m³
	200 ppm
Critical toxicity	Vue, SNC / Sehen, ZNS
Notation	R, R2, SS_C, O^B, B / H, R2, SS_C, O^L, B
Remark	INRS, HSE, NIOSH, DFG

toluene (108-88-3)	
Regulatory reference	www.suva.ch, 01.01.2025
Switzerland - BAT	
Local name	Toluène / Toluol
BAT	2 g/g creatinine (1.26 mmol/mmol cr.; Paramètre biologique: Acide hippurique; Substrat d'examen: Urine; Moment du prélèvement: Fin de l'exposition, de la période de travail. Exposition de longue durée: après plusieurs périodes de travail; Remarques: Paramètre non spécifique. Influence de l'environnement.) / (1.26 mmol/mmol cr.; Biologischer Parameter: Hippursäure; Untersuchungsmaterial: Urin; Probennahmezeitpunkt: Expositionsende, bzw. Schichtende. Bei Langzeitexposition: nach mehreren vorangegangenen Schichten; Bemerkungen: Nicht spezifischer Parameter. Umwelteinflüsse.) 0.5 mg/l (4.62 µmol/l; Paramètre biologique: o-Crésol; Substrat d'examen: Urine; Moment du prélèvement: Fin de l'exposition, de la période de travail. Exposition de longue durée: après plusieurs périodes de travail; Remarques: Interprétation quantitative difficile.) / (4.62 µmol/l; Biologischer Parameter: o-Kresol; Untersuchungsmaterial: Urin; Probennahmezeitpunkt: Expositionsende, bzw. Schichtende. Bei Langzeitexposition: nach mehreren vorangegangenen Schichten; Bemerkungen: Quantitative Interpretation schwierig.) 600 µg/l (6.48 µmol/l; Paramètre biologique: Toluène; Substrat d'examen: Sang complet; Moment du prélèvement: Fin de l'exposition, de la période de travail.) / (6.48 µmol/l; Biologischer Parameter: Toluol; Untersuchungsmaterial: Vollblut; Probennahmezeitpunkt: Expositionsende, bzw. Schichtende.) 75 µg/l (Paramètre biologique: Toluène; Substrat d'examen: Urine; Moment du prélèvement: Fin de l'exposition, de la période de travail.) / (Biologischer Parameter: Toluol; Untersuchungsmaterial: Urin; Probennahmezeitpunkt: Expositionsende, bzw. Schichtende.)
Regulatory reference	Ordonnance 832.30 (OPA), article 50 al. 3, www.suva.ch/valeurs-limites / Verordnung 832.30 (VUV), Art. 50 Abs. 3, www.suva.ch/grenzwerte
USA - ACGIH - Occupational Exposure Limits	
Local name	Toluene
ACGIH OEL TWA	20 ppm
Remark (ACGIH)	TLV® Basis: CNS, Hearing & Visual impair; Female repro system eff; Pregnancy loss. Notations: OTO (Ototoxicant); A4 (Not classifiable as a Human Carcinogen); BEI
Regulatory reference	ACGIH 2025
USA - ACGIH - Biological Exposure Indices	
Local name	Toluene
BEI	0.3 mg/g creatinine Parameter: o-Cresol - Medium: urine - Sampling time: End of shift - Notations: B 0.02 mg/l Parameter: Toluene - Medium: blood - Sampling time: Prior to last shift of workweek 0.03 mg/l Parameter: Toluene - Medium: urine - Sampling time: End of shift
Regulatory reference	ACGIH 2025

Japan

Glass, oxide, chemicals (65997-17-3)
Japan - Occupational Exposure Limits (JSOH)

Local name	ガラス # glass, oxide, chemicals
JSOH OEL	0.01 mg/m³Ag として 0.05 mg/m³Cd として 0.05 mg/m³Co として 0.5 mg/m³Cr として 0.02 mg/m³ 吸入性粉塵、Mn として、有機マンガン化合物を除く 0.1 mg/m³ 総粉塵、Mn として、有機マンガン化合物を除く 0.03 mg/m³Pb として、アルキル鉛化合物を除く 0.1 mg/m³Sb として、スチビンを除く 0.1 mg/m³Se として、セレン化水素、六フッ素化セレンを除く
Regulatory reference	JCDB の調査による

Korea

Silica, vitreous (60676-86-0)	
Korea - Occupational Exposure Limits	
Local name	산화규소(비결정체 규소, 용융된) # Silica (Amorphous silica, fused)
ISHA OEL TWA	0.1 mg/m³ 호흡성 # (Respirable fraction)
Regulatory reference	고용노동부고시 제2020-48호 # MOEL Public Notice. No. 2020-48

Silicon dioxide (7631-86-9)	
Korea - Occupational Exposure Limits	
Local name	산화규소(비결정체 실리카겔) # Silica (Amorphous silicagel)
ISHA OEL TWA	10 mg/m³
Regulatory reference	고용노동부고시 제2020-48호 # MOEL Public Notice. No. 2020-48

Singapore

Silicon dioxide (7631-86-9)	
Singapore - Occupational Exposure Limits	
Local name	Silica gel
PEL (OEL TWA)	10 mg/m³
Regulatory reference	WSH (General Provision) Regulation 2014

Taiwan
No additional information is available.

United States

ELL 101 P, ELL 102- P, ELL 103 P, ELL-105 P
No additional information available

Glass, oxide, chemicals (65997-17-3)	
No additional information available	
USA - ACGIH - Occupational Exposure Limits	
Local name	Synthetic vitreus fibers - Continuous filament glass fibers
ACGIH OEL TWA	5 mg/m³ (I - Inhalable particulate matter)
	1 fibers/cm³ (F - Respirable fibers)
Remark (ACGIH)	TLV® Basis: URT irr. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH 2021

Silica (7631-86-9)
No additional information available

toluene (108-88-3)	
No additional information available	
USA - ACGIH - Occupational Exposure Limits	
Local name	Toluene
ACGIH OEL TWA	20 ppm
Remark (ACGIH)	TLV® Basis: CNS, Hearing & Visual impair; Female repro system eff; Pregnancy loss. Notations: OTO (Ototoxicant); A4 (Not classifiable as a Human Carcinogen); BEI
Regulatory reference	ACGIH 2025
USA - ACGIH - Biological Exposure Indices	
Local name	Toluene
BEI	0.3 mg/g Kreatinin Parameter: o-Cresol - Medium: urine - Sampling time: End of shift - Notations: B 0.02 mg/l Parameter: Toluene - Medium: blood - Sampling time: Prior to last shift of workweek 0.03 mg/l Parameter: Toluene - Medium: urine - Sampling time: End of shift
Regulatory reference	ACGIH 2025
USA - OSHA - Occupational Exposure Limits	
Local name	Toluene
OSHA PEL TWA	200 ppm
OSHA PEL C	300 ppm
Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift	500 ppm 10 mins.
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-2

Silicon dioxide (60676-86-0)	
No additional information available	
USA - OSHA - Occupational Exposure Limits	
Local name	Silica, fused, respirable dust
OSHA PEL TWA	20 mppcf
Remark (OSHA)	Table Z-3. For OSHA PEL (TWA): Use formula: (80 mg/m3 / (%SiO2)) for mg/m3. CAS No. source: eCFR Table Z-1.
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-3 Mineral Dusts

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station.
Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:
Wear recommended personal protective equipment.

Hand protection:
Protective gloves

Eye protection:
Safety glasses

Skin and body protection:
Wear suitable protective clothing

Respiratory protection:
In case of insufficient ventilation, wear suitable respiratory equipment

Personal protective equipment symbol(s):

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Solid
Appearance : Semi-solid. sheet.
Color : White to yellow
Odor : Slight Toluene
Odor threshold : No data available
pH : No data available
Melting point : No data available
Freezing point : Not applicable
Boiling point : No data available
Flash point : Not applicable
Relative evaporation rate (butyl acetate=1) : No data available
Flammability : Non flammable.
Vapor pressure : No data available
Relative vapor density at 20°C : No data available
Relative density : 1.4 – 2.2 Relative evaporation rate (water=1)
Solubility : Water solubility. Negligible.
Partition coefficient n-octanol/water (Log Pow) : No data available
Auto-ignition temperature : Not applicable
Decomposition temperature : No data available
Viscosity, kinematic : Not applicable
Viscosity, dynamic : No data available
Explosion limits : Not applicable
Explosive properties : Not classified.
Oxidizing properties : Not oxidising.

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

Glass, oxide, chemicals (65997-17-3)	
LD50 oral rat	> 2000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 423 (Acute Oral toxicity - Acute Toxic Class Method)

Silica (7631-86-9)	
LD50 oral rat	3160 mg/kg Source: TOMES; HAZARDTEXT
LD50 dermal rat	> 2000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
LD50 dermal rabbit	> 5000 mg/kg Source: ECHA
ATE US (oral)	3160 mg/kg body weight
ATE US (dust, mist)	5.01 mg/l/4h

toluene (108-88-3)	
LD50 oral rat	5580 mg/kg body weight (Equivalent or similar to EU Method B.1, Rat, Male, Experimental value, Oral, 7 day(s))
LD50 dermal rabbit	> 5000 mg/kg body weight (24 h, Rabbit, Male, Experimental value, Dermal)
LC50 Inhalation - Rat	28.1 mg/l air (Equivalent or similar to OECD 403, 4 h, Rat, Male / female, Experimental value, Inhalation (vapours))

Silicon dioxide (60676-86-0)	
LD50 dermal rabbit	> 5000 mg/kg body weight Animal: rabbit
LC50 Inhalation - Rat	> 2.08 mg/l air Animal: rat

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Not classified

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Silica (7631-86-9)	
NOAEL (chronic,oral,animal/male,2 years)	1800 – 3000 mg/kg body weight Animal: rat, Animal sex: male, Guideline: OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
NOAEL (chronic,oral,animal/female,2 years)	1800 – 3200 mg/kg body weight Animal: rat, Animal sex: female, Guideline: OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
IARC group	3 - Not classifiable

toluene (108-88-3)	
IARC group	3 - Not classifiable

Reproductive toxicity : Reproductive toxicity: Not classified.

Silicon dioxide (60676-86-0)	
NOAEL (animal/male, F0/P)	5000 mg/kg body weight Animal: rat, Animal sex: male, Guideline: other:

STOT-single exposure : Not classified

toluene (108-88-3)	
STOT-single exposure	May cause drowsiness or dizziness.

STOT-repeated exposure : Not classified.

Silica (7631-86-9)	
NOAEL (dermal,rat/rabbit,90 days)	≥ 10000 mg/kg body weight Animal: rabbit
toluene (108-88-3)	
LOAEL (oral,rat,90 days)	1250 mg/kg body weight Animal: rat, Guideline: EU Method B.26 (Sub-Chronic Oral Toxicity Test: Repeated Dose 90-Day Oral Toxicity Study in Rodents)
NOAEL (oral,rat,90 days)	625 mg/kg body weight Animal: rat, Guideline: EU Method B.26 (Sub-Chronic Oral Toxicity Test: Repeated Dose 90-Day Oral Toxicity Study in Rodents)
NOAEC (inhalation,rat,vapor,90 days)	2.355 mg/l air Animal: rat, Guideline: EU Method B.29 (Sub-Chronic Inhalation Toxicity:90-Day Study)
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.
Silicon dioxide (60676-86-0)	
NOAEL (oral,rat,90 days)	> 5000 mg/kg body weight Animal: rat, Animal sex: male

Aspiration hazard : Not classified

Viscosity, kinematic : Not applicable

Symptoms/effects after inhalation : None under normal conditions. Dust of the product, if present, may cause respiratory irritation after an excessive inhalation exposure.

Symptoms/effects after skin contact : None under normal conditions. Dust may cause irritation in skin folds or by contact in combination with tight clothing.

Symptoms/effects after eye contact : None under normal conditions. Dust from this product may cause eye irritation.

Symptoms/effects after ingestion : None under normal conditions.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

Silica (7631-86-9)	
LC50 - Fish [1]	10000 mg/l Source: ECHA
EC50 - Crustacea [1]	> 5000 mg/l Source: ECHA
LOEC (chronic)	149.2 mg/l Test organisms (species): Daphnia magna Duration: '21 d'

toluene (108-88-3)	
LC50 - Fish [1]	5.5 mg/l (96 h, Oncorhynchus kisutch, Flow-through system, Fresh water, Experimental value, Lethal)
EC50 - Crustacea [1]	3.78 mg/l Source: ECHA
LOEC (chronic)	2.76 mg/l Test organisms (species): Ceriodaphnia dubia Duration: '7 d'
NOEC (chronic)	0.74 mg/l Test organisms (species): Ceriodaphnia dubia Duration: '7 d'
NOEC chronic fish	1.39 mg/l Test organisms (species): Oncorhynchus kisutch Duration: '40 d'

12.2. Persistence and degradability

toluene (108-88-3)	
Persistence and degradability	Readily biodegradable in water.
Biochemical oxygen demand (BOD)	2.15 g O_2/g substance
Chemical oxygen demand (COD)	2.52 g O_2/g substance
ThOD	3.13 g O_2/g substance
BOD (% of ThOD)	0.69

12.3. Bioaccumulative potential

toluene (108-88-3)	
BCF - Fish [1]	90 (72 h, Leuciscus idus, Static system, Fresh water, Experimental value)
Partition coefficient n-octanol/water (Log Pow)	2.73 (Experimental value, 20 °C)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

toluene (108-88-3)	
Surface tension	27730 mN/m (25 °C, 0.05 %)
Ecology - soil	Low potential for adsorption in soil.

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Regional waste regulation : Disposal must be done according to official regulations.

Waste treatment methods : Dispose of contents/container in accordance with licensed collector’s sorting instructions.

Sewage disposal recommendations	:	Disposal must be done according to official regulations.
Product/Packaging disposal recommendations	:	Comply with applicable regulations for solid waste disposal. Disposal must be done according to official regulations.
Additional information	:	Do not re-use empty containers.

SECTION 14: Transport information

In accordance with DOT / IMDG / IATA

14.1. UN number

Not regulated for transport

14.2. UN proper shipping name

Proper Shipping Name (DOT)	:	Not applicable
Proper Shipping Name (IMDG)	:	Not applicable
Proper Shipping Name (IATA)	:	Not applicable

14.3. Transport hazard class(es)

DOT

Transport hazard class(es) (DOT)	:	Not applicable

IMDG

Transport hazard class(es) (IMDG)	:	Not applicable

IATA

Transport hazard class(es) (IATA)	:	Not applicable

14.4. Packing group

Packing group (DOT)	:	Not applicable
Packing group (IMDG)	:	Not applicable
Packing group (IATA)	:	Not applicable

14.5. Environmental hazards

Other information	:	No supplementary information available.

14.6. Special precautions for user

DOT
No data available

IMDG
No data available

IATA
No data available

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

This product or mixture is not known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

toluene (108-88-3)	
Listed on EPA Hazardous Air Pollutant (HAPS)	
CERCLA RQ	1000 lb

15.2. International regulations

Australia

Australian Industrial Chemicals Introduction Scheme (AICIS)

Australian Inventory of Industrial Chemicals (AICIS introductions Inventory) status: All the chemicals contained in this product are listed.

Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP)

No additional information is available.

Australian Pesticides and Veterinary Medicines Authority (APVMA)

No additional information is available.

Canada

Glass, oxide, chemicals (65997-17-3)
Listed on the Canadian DSL (Domestic Substances List)

Silicon dioxide (60676-86-0)
Listed on the Canadian DSL (Domestic Substances List)

Silica (7631-86-9)
Listed on the Canadian DSL (Domestic Substances List)

toluene (108-88-3)
Listed on the Canadian DSL (Domestic Substances List)

China & Hong Kong

New Chemical Substance Environmental Management Registration Measures (MEE Order 12 of 2020)	
Inventory of Existing Chemical Substances in China (IECSC)	Contains listed substance(s) Glass, oxide, chemicals (CAS-No. 65997-17-3) Silica, vitreous (CAS-No. 60676-86-0) Silica (CAS-No. 7631-86-9) Toluene (CAS-No. 108-88-3)
Law of the People's Republic of China on the Prevention and Control of Occupational Diseases	
Catalogue for Classification of Hazardous Factors of Occupational Diseases	Contains listed substance(s) Glass wool dust (CAS-No. 65997-17-3) Toluene (CAS-No. 108-88-3)
Regulations on the Safe Management of Hazardous Chemicals (Decree 591 of the State Council)	

Catalogue of Hazardous Chemicals (2015)	Methyl benzene (CAS-No. 108-88-3) Considered as Hazardous Chemical(s)
Identification of major hazard installations for dangerous chemicals (GB 18218)	Contains listed substance(s) Toluene (CAS-No. 108-88-3)
Action Plan for Prevention and Control of Water Pollution	
Catalogue of Prior Controlled Chemicals	Contains listed substance(s) Toluene (CAS-No. 108-88-3)
Regulation on the Administration of Precursor Chemicals (Decree 445 of the State Council)	
Catalogue of Precursor Chemicals	Contains listed substance(s) Toluene (CAS-No. 108-88-3)
Other domestic regulatory lists	
Dangerous Goods List (GB 12268-2012)	Contains listed substance(s) Toluene (CAS-No. 108-88-3)
Inventory of Hazardous Chemicals under Key Supervision	Contains listed substance(s) Toluene (CAS-No. 108-88-3)

European Union

EU-Regulations

EU restriction list (REACH Annex XVII)		
Reference code	**Applicable on**	**Entry title or description**
3(a)	toluene	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F
3(b)	toluene	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10
3(c)	toluene	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard class 4.1
48.	toluene	Toluene

Contains no substance(s) listed on the REACH Candidate List
Contains no substance(s) listed on REACH Annex XIV (Authorisation List)
Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)
Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)
Contains no substance(s) listed on the Ozone Depletion list (Regulation EU 2024/590 on substances that deplete the ozone layer)
Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)
Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

National regulations

Austria

Ordinance on Flammable Liquids (VbF) : Auto detect

France	
Occupational diseases	
Code	**Description**
RG 4 BIS	Gastrointestinal disorders caused by benzene, toluene, xylenes and all products containing them
RG 84	Conditions caused by liquid organic solvents for professional use: saturated or unsaturated aliphatic or cyclic liquid hydrocarbons and mixtures thereof; liquid halogenated hydrocarbons; nitrated derivatives of aliphatic hydrocarbons; alcohols; glycols, glycol ethers; ketones; aldehydes; aliphatic and cyclic ethers, including tetrahydrofuran; esters; dimethylformamide and dimethylacetamine; acetonitrile and propionitrile; pyridine; dimethylsulfone and dimethylsulfoxide

Germany

Employment restrictions : Observe restrictions according Act on the Protection of Working Mothers (MuSchG)
Observe restrictions according Act on the Protection of Young People in Employment (JArbSchG)

Water hazard class (WGK) : WGK 1, Slightly hazardous to water (Classification according to AwSV, Annex 1)

Override matching entry (12. BImSchV) : Is not subject to the Major Accidents Ordinance (12. BImSchV)

Netherlands

ABM category : A(4) - low hazard for aquatic organisms, may have longterm hazardous effects in aquatic environment

SZW-lijst van kankerverwekkende stoffen : Glass, oxide, chemicals,Silicon dioxide are listed

SZW-lijst van mutagene stoffen : Glass, oxide, chemicals,Silicon dioxide are listed

SZW-lijst van reprotoxische stoffen – Borstvoeding : None of the components are listed

SZW-lijst van reprotoxische stoffen – Vruchtbaarheid : None of the components are listed

SZW-lijst van reprotoxische stoffen – Ontwikkeling : toluene is listed

Switzerland

Storage class (LK) : NG - Non-hazardous

Japan

Chemical Substances Control Law	Priority Assessment Chemical Substances (Article 2, Paragraph (5) of the Act) Toluene
Industrial Safety and Health Law	Working Environment Assessment Standard (Act, Art.65-2, Para.1) Toluene
	Dangerous or Harmful Substances for Labelling of Chemical Name etc. (Act Art.57 Para.1, Enforcement Order, Art.18 Item 1 and 2, Appended Table No.9) Crystalline silica Toluene
	Dangerous Substances, Flammable Substances (Enforcement Order, Art., Appended Table 1, Item 4) Toluene
	Dangerous or Harmful Substances for Notification of Chemical Name etc. on SDS (Act, Art.57-2, Enforcement Order, Art.18-2 Item 1 and 2, Appended Table 9) Crystalline silica (Ordinance number: 165-2) (under 5%) Toluene (Ordinance number: 407) (under 5%)
	【After amendment of April 2025】 Dangerous or Harmful Substances for Labelling of Chemical Name etc. (Act Art.57 Para.1, Enforcement Order, Art.18 Item 2 to 3, Ordinance on Industrial Safety and Health, Art.30 Appended Table No.2) Crystalline silica
	【After amendment of April 2026】 Dangerous or Harmful Substances for Labelling of Chemical Name etc. (Act Art.57 Para.1, Enforcement Order, Art.18 Item 2 to 3, Ordinance on Industrial Safety and Health, Art.30 Appended Table No.2)

	Crystalline silica
	【After amendment of April 2025】 Dangerous or Harmful Substances for Notification of Chemical Name etc. on SDS (Act, Art.57-2 Para.1, Enforcement Order, Art.18-2 Item 2 to 3, Ordinance on Industrial Safety and Health, Art.34-2 Appended Table No.2) Crystalline silica (under 5%)
	【After amendment of April 2026】 Dangerous or Harmful Substances for Notification of Chemical Name etc. on SDS (Act, Art.57-2 Para.1, Enforcement Order, Art.18-2 Item 2 to 3, Ordinance on Industrial Safety and Health, Art.34-2 Appended Table No.2) Crystalline silica (under 5%)
	Substances on Special medical examination, Current handling workers (Act, Art.66, Para.2, Enforcement Order, Art.22 Item 1) Toluene
	Chemical substances that cause skin damage, skin-absorbable harmful substances (Ordinance on Industrial Safety and Health, Article 594-2, Para.1, list of substances applicable to No. 0704 Item 1, 5 based on July 4, 2023) Toluene
Water Pollution Prevention Law	Designated Materials (Article 2, Paragraph 4 of the Law, Article 3-3 of the Enforcement Order) Toluene
Fire Service Law	Group 4, Flammable Liquids, Class 1 Petroleums, Water-insoluble liquids (Act, Art.2, Para.7, Appended Table 1, Group 4) Toluene
Offensive Odor Control Law	Specified Offensive Odor Substances (Enforcement Order, Art.1) Toluene
Air Pollution Control Law	Hazardous Air Pollutants, Priority Substances (Central Environment Council Report No. 9) Toluene
	Volatile Organic Compounds (Act, Art.2, Para.4) (Environment Agency Notification to Prefectures) Toluene
Law Relating to Prevention of Marine Pollution and Maritime Disasters	Dangerous Goods (Enforcement Order, Art. Appended Table 1-4) Toluene
	Harmful Liquid Substances (Group X), (Enforcement Order, Art. Appended Table 1) Toluene
	Harmful Liquid Substances (Group Y), (Enforcement Order, Art. Appended Table 1) Toluene
Foreign Exchange and Foreign Trade Control Act	Approval for Item 2-2 (Import Trade Control Order, Art.4, Para. 1, Item 2) Toluene, (chloromethyl)vinylbenzene
	Export Trade Control Order, Appended Table 1, Para.16 Toluene
	Export Approval (Export Trade Control Order, Appended Table 2) Toluene, (chloromethyl)vinylbenzene
Road Act	Traffic Restriction for Vehicle (Enforcement Order, Art.19-13, Public Notice No.12 of Japan Highway Public Corp., Appended Table 2) Toluene
Law for the Control of Export, Import and Others of Specified Hazardous Wastes and Other Wastes (Basel Convention)	Specified hazardous waste (Act, Art.2, Para.1-1 (a), Ministerial Ordinance No.12 of June 18, 2018) Toluene, (chloromethyl)vinylbenzene
Japanese Pollutant Release and Transfer Register Law (PRTR Law)	Class 1 Designated Chemical Substances (Act, Art.2, Para.2, Enforcement Order, Art.1 Appended Table 1) Toluene (Maintenance number: 300) (1.0%)
Pneumoconiosis Law	Dusty Works, Act, Art.2, Ordinance for Enforcement, Art.2, Appended Table Silica

Labor Standards Act	Chemical Substances Causing Illness (Act, Art.75, Para.2, Enforcement Regulations, Appended Table No.1-2, Item 4-1) Toluene

Korea

Occupational Safety and Health Act		
Threshold Limit Values Chemicals	Applicable	60676-86-0: Silica (Amorphous silica, fused) 108-88-3: Toluene (Toluol)
Hazardous Substances Below Permissible Level	Applicable	108-88-3: Toluene
Hazardous Substances Subject to Working Environment Measurement	Applicable	7631-86-9: Quartz (Measurement Cycle: 6 months) 108-88-3: Toluene (Measurement Cycle: 6 months) (contains above 1%)
Hazardous Substances Subject to Workers Requiring Health Examination	Applicable	7631-86-9: Mineral dusts (Examination Cycle: 24 months) 108-88-3: Toluene (Examination Cycle: 12 months) (contains above 1%)
Hazardous Substances Subject to Control	Applicable	108-88-3: Toluene (contains above 1%)
Substance Subject to Submission of PSM	Applicable	108-88-3: Toluene (Flammable liquids) (Manufacture ・ Handling: 5,000kg (Storage: 200,000kg))
Safety Control of Dangerous Substances Act		
Safety Control of Dangerous Substances Act	Applicable	108-88-3: Toluene (Class 4 Flammable liquid - category 2 First class Petroleum Water-insoluble (Designated quantity: 200 litter))
Wastes Control Act		
Act on Registration and Evaluation of Chemicals (K-REACH)		
Korea Existing Chemicals Inventory (KECI)	Applicable	65997-17-3: Glass, oxide (KECI-No.: KE-17630) 60676-86-0: Silica, vitreous (KECI-No.: KE-30959) 7631-86-9: Silicon dioxide (KECI-No.: KE-31032) 108-88-3: Toluene (KECI-No.: KE-33936)
Priority Existing Chemicals (PEC)	Applicable	108-88-3: Toluene (PEC-No.: 131)
Other Domestic Regulations		
PRTR Substances	Applicable	108-88-3: Toluene (Group 2)

Singapore

Regulation		**Component / Mixture**
Workplace Safety and Health Act & Workplace Safety and Health (General Provisions) Regulations	Applicable	Silicon dioxide; Toluene
Environmental Public Health (Quality of Piped Drinking Water) Regulations	Drinking Water Quality Standards - Chemical Parameters	Toluene
Fire Safety Act/Fire Safety (Petroleum and Flammable Materials) Regulations	Petroleum and Flammable Materials	Toluene
Misuse of Drugs Act	Controlled Substances Useful for Manufacturing Controlled Drugs - Part II	Toluene

Taiwan

Occupational Safety and Health Act	Applicable	Glass, oxide, chemicals; Silica, vitreous; Silicon dioxide; Toluene
Ordinance on Prevention of Organic Solvent Poisoning	Type Two	Toluene
Methods and Facilities Standards for the Storage, Clearance and Disposal of Industrial Waste	Applicable	Glass, oxide, chemicals; Silica, vitreous; Silicon dioxide; Toluene
Traffic Safety Rule	Applicable	Glass, oxide, chemicals; Silica, vitreous; Silicon dioxide; Toluene

15.3. US State regulations

WARNING: This product can expose you to Toluene, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Component	State or local regulations
Silica (7631-86-9)	U.S. - Massachusetts - Right To Know List; U.S. - Pennsylvania - RTK (Right to Know) List
toluene (108-88-3)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - New York City - Right to Know Hazardous Substances List; U.S. - Pennsylvania - RTK (Right to Know) List
Silicon dioxide (60676-86-0)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List

SECTION 16: Other information

US-SDS according to the federal final rule of hazard communication revised on 2024 (HazCom 2024)

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This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.