EVA-TECH® TECHNICAL DATA SHEET

Eva-tech®

www.eva-last.com
1121 V2

A PRODUCT BY EVA-LAST®
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Identification

Date of Publication:
19/11/2021

Product name: Eva-last® Eva-tech® mono-extrtusion composite decking.

Product use: This product is primarily used for decking, facades, screens, cladding, and railing.

Website: www.eva-last.com

Manufacturers information:

Eva-last® Distributors
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Product information: +27 10 593 9220

Eva-tech® material composition

Eva-tech® is a first-generation material technology. The engineered cellulose-polymer composite consists primarily of bamboo and high-density polyethene. Additives are incorporated, enhancing the durability and colour-fastness of the material. The resultant product is weather-resistant and available in several natural colours.

Substance name	Approximate weight %	CAS Number	Agency	Exposure limit	Comment
Core					
Bamboo fibre	55 - 60 %	N/A	OSHA	PEL-TWA 15 mg per m	Total dust
				PEL-TWA 5 mg per m	Respiratory dust fraction
				TLV-TWA 3 mg per m	Respiratory dust fraction
				TLV-TWA 10 mg per m	Inhabitable particles
HDPE - Polyethylene	35 - 40 %	9002-99-4	N/A	N/A	Thermoplastic
Additional additives					
Anti mould agent, coupling agent, UV stabilizers and colour pigments				**Information withheld**	

REACH SVHC compliant

Material properties

Physical properties		Measured value	Test standard	Note
Linear thermal expansion coefficient		45.3 10^{-6} K^{-1}	ASTM D6341	Temperature range of - 20 °C to 60 °C
Creep recovery		89%	ASTM D7032	Average Recovery ≥ 75 %
Flame spread index		110	ASTM E84	Requirement pass rate <=200
Smoke emissions		500	ASTM E84	
Water absorption after 24 hours %		3.39	EN 15534-1:2014	Change in mass
Swelling after 24 hours %	**thickness**	0.2	EN 15534-1:2014	
	width	0.3	EN 15534-1:2014	
	length	1.5	EN 15534-1:2014	

*Based on test results from similar Eva-tech® core materials.

Physical properties		Measured value	Test standard	Note
Water absorption after 180 hours %		3.52	EN 15534-1:2014	Change in mass
Swelling after 180 hours %	thickness	0.2	EN 15534-1:2014	
	width	0.4	EN 15534-1:2014	
	length	0.8	EN 15534-1:2014	
Termite resistance %		Mass loss 0.02	ASTM D2017	Pass
Fungal decay resistance %	G.trabeum	Mass loss 0.77	ASTM D2017	Pass
	P.placenta	Mass loss 0.91	ASTM D2017	Pass
	T.versicolor	Mass loss 0.90	ASTM D2017	Pass
	I.lacteus	Mass loss 0.91	ASTM D2017	Pass

*Based on test results from similar Eva-tech® core materials.

Weathering effects and reduction factors (ASTM D 7032)

Physical properties	Differences		Reduction factors	
	Strength	Stiffness	Strength	Stiffness
High temperatures	96.80 %	90.30 %	0.97	0.90
Low temperatures	145.60 %	137.50 %	1.00	1.00
Moisture	108.30 %	108.50 %	1.00	1.00
UV Resistance	92.70 %	94.40 %	1.00	1.00
Freeze-thaw	104.80 %	100.70 %	1.00	1.00

*Based on test results from similar Eva-tech® materials.

Surface properties

Physical properties		Measured value	Test standard	Note
Value of residual indentation	(mm)	0.1	EN 15534-1:2014	Falling ball test
Maximum crack length	(mm)	No cracking	EN 15534-1:2015	Falling ball test
Scratch resistance	(N)	0.5	FORD FLTM BO 162-01	
Abrasion	(mg/c)	16	ASTM D4060	mg/cycle
Brinell hardness	(N/mm2)	39.8	EN 15534-1	
Shore hardness	(HD)	71	ISO 868	
Cap delamination	(N/mm)	37	ISO 24345-2006	

Slip resistance

R-rating stems from DIN 51130 (German) and is shod feet (safety boot/ work boot sole typical test) and environments that are susceptible to oil type contaminants. The R Rating is commonly specified for commercial projects as it is more applicable than the ABC rating, which does not use shoes. The contaminant is often not considered for the application. Repeatability is poor for ramp tests to pendulum tests as it depends on a human subject. Testing is extensive: Approximately 25 x PTV test.

R Value - shod feet		
Ranking	Rating	Type
R9	11-18	Shoes
R10	18-34	Shoes
R11	34-51	Shoes
R12	51-70	Shoes
R13	>70	Shoes

Pendulum (PTV , SRV) Summary of test results:		
Rating	Category	Probability
12-24	High	1 in 20
25-26	Moderate to High	1 in 200
27-33	Moderate	1 in 10 000
34-36	Low Moderate	1 in 100 000
>37	Low	1 in 1 000 000

ABC Rating: Barefoot		
Ranking	Rating	Type
A	21-31	Barefoot
B	32-42	Barefoot
C	>45	Barefoot

Note *1 Although DIN51130 certification requires laboratory mounted ramp equipment, the HSE have determined that an approximate cross reference is possible between the DIN51130 R ratings test and wet Pendulum Test Values (PTV) using a 96 slider replicating footfall with shod feet. The table below summarises this.

Note **2 Although DIN51097 certification requires laboratory mounted ramp equipment, the HSE have determined that an approximate cross reference is possible between the DIN51097 ABC ratings test and wet Pendulum Test Values (PTV) using a 55 slider replicating footfall with bare feet. The table below summarizes this.

Physical properties		Measured value	Test standard	Note
Finish - Grooved				
Slip resistance ratings		R10	DIN 51130 rating – R Rating	Based on lowest wet results
Slip resistance ratings		A	DIN 51130 rating - ABC Rating	Based on lowest wet results
Slip resistance ratings		Moderate	HSE rating – Risk of slip	Based on lowest wet results
Slip resistance ratings		1 in 10 000	HSE rating – Probability of slip	Based on lowest wet results
Slip resistance result	Dry	30	EN15534-1 EN15534-4	Pendulum (PTV , SRV)
Slip resistance result	Wet	32	EN15534-1 EN15534-4	Pendulum (PTV , SRV)
Finish - Sanded				
Slip resistance ratings		R10/R11	DIN 51130 rating – R Rating	Based on lowest wet results
Slip resistance ratings		B	DIN 51130 rating - ABC Rating	Based on lowest wet results
Slip resistance ratings		Low to moderate	HSE rating – Risk of slip	Based on lowest wet results
Slip resistance ratings		1 in 100 000	HSE rating – Probability of slip	Based on lowest wet results
Slip resistance result	Dry	46	EN15534-1 EN15534-4	Pendulum (PTV , SRV)
Slip resistance result	Wet	34	EN15534-1 EN15534-4	Pendulum (PTV , SRV)
Finish - Brushed				
Slip resistance ratings		R11	DIN 51130 rating – R Rating	Based on lowest wet results
Slip resistance ratings		C	DIN 51130 rating - ABC Rating	Based on lowest wet results
Slip resistance ratings		Low to moderate	HSE rating – Risk of slip	Based on lowest wet results
Slip resistance ratings		1 in 100 000	HSE rating – Probability of slip	Based on lowest wet results
Slip resistance result	Dry	43	EN15534-1 EN15534-4	Pendulum (PTV , SRV)
Slip resistance result	Wet	36	EN15534-1 EN15534-4	Pendulum (PTV , SRV)

Physical properties		Measured value	Test standard	Note
Finish – Light brushed				
Slip resistance ratings		R11	DIN 51130 rating – R Rating	Based on lowest wet results
Slip resistance ratings		B	DIN 51130 rating - ABC Rating	Based on lowest wet results
Slip resistance ratings		Low	HSE rating – Risk of slip	Based on lowest wet results
Slip resistance ratings		1 in 1 000 000	HSE rating – Probability of slip	Based on lowest wet results
Slip resistance result	Dry	55	EN15534-1 EN15534-4	Pendulum (PTV , SRV)
Slip resistance result	Wet	39	EN15534-1 EN15534-4	Pendulum (PTV , SRV)
Finish – W				
Slip resistance ratings		R10/R11	DIN 51130 rating – R Rating	Based on lowest wet results
Slip resistance ratings		B	DIN 51130 rating - ABC Rating	Based on lowest wet results
Slip resistance ratings		Low to moderate	HSE rating – Risk of slip	Based on lowest wet results
Slip resistance ratings		1 in 1 00 000	HSE rating – Probability of slip	Based on lowest wet results
Slip resistance result	Dry	43	EN15534-1 EN15534-4	Pendulum (PTV , SRV)
Slip resistance result	Wet	34	EN15534-1 EN15534-4	Pendulum (PTV , SRV)
Finish - S				
Slip resistance ratings		R10	DIN 51130 rating – R Rating	Based on lowest wet results
Slip resistance ratings		B	DIN 51130 rating - ABC Rating	Based on lowest wet results
Slip resistance ratings		Moderate	HSE rating – Risk of slip	Based on lowest wet results
Slip resistance ratings		1 in 10 000	HSE rating – Probability of slip	Based on lowest wet results
Slip resistance result	Dry	44	EN15534-1 EN15534-4	Pendulum (PTV , SRV)
Slip resistance result	Wet	31	EN15534-1 EN15534-4	Pendulum (PTV , SRV)

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Eva-tech® surface chemical resistance

REAGENT	CONCENTRATION	LDPE		HDPE	
		70°	140°	70°	140°
Acetone		o	-	o	-
Acetaldehyde*	100%	o	-	o	-
Acetic Acid*	10%	+	+	+	+
Acetic Acid*	60%	+	o	+	o
Acetic Anhydride*		-	-	-	-
Air		+	+	+	+
Aluminum Chloride	all conc	+	+	+	+
Aluminum Fluoride	all conc	+	+	+	+
Aluminum Sulphate	all conc	+	+	+	+
Alums	all types	+	+	+	+
Ammonia	100% dry gas	+	+	+	+
Ammonium Carbonate		+	+	+	+
Ammonium Chloride	sat'd	+	+	+	+
Ammonium Fluoride	sat'd	+	+	+	+
Ammonium Hydroxide	10%	+	+	+	+
Ammonium Hydroxide	28%	+	+	+	+
Ammonium Nitrate	sat'd	+	+	+	+
Ammonium Persulphate	sat'd	+	+	+	+
Ammonium Sulphate	sat'd	+	+	+	+
Ammonium Metaphosphate	sat'd	+	+	+	+
Ammonium Sulfide	sat'd	+	+	+	+
Amyl Acetate#*	100%	-	-	-	-
Amyl Alcohol#*	100%	+	+	+	+
Amyl Chloride#	100%	-	-	-	-
Aniline#*	100%	+	-	-	o
Aqua Regia+		-	-	-	-
Arsenic Acid	all conc	+	+	+	+
Aromatic Hydrocarbons#*		-	-	-	-
Ascorbic Acid	10%	+	+	+	+
Barium Carbonate	sat'd	+	+	+	+
Barium Chloride	sat'd	+	+	+	+
Barium Hydroxide		+	+	+	+
Barium Sulphate	sat'd	+	+	+	+
Barium Sulphide	sat'd	+	+	+	+
Beer		+	+	+	+
Benzene#*		-	-	-	-
Benzoic Acid	all conc	+	+	+	+
Bismuth Carbonate	sat'd	+	+	+	+
Bleach Lye	10%	+	+	+	+
Borax	sat'd	+	+	+	+
Boric Acid	all conc	+	+	+	+
Boron Trifluoride		+	+	+	+
Brine		+	+	+	+
Bromine+	liquid	-	-	-	-
Bromine Water#	sat'd	-	-	-	-
Butanediol*	10%	+	+	+	+
Butanediol*	60%	+	+	+	+
Butanediol*	100%	+	+	+	+
Butter*		+	+	+	+
n-Butyl Acetate#*	100%	o	-	+	o
n-Butyl Alcohol*	100%	+	+	+	+
Butyric Acid#	conc	-	-	-	-
Calcium Bisulphide		+	+	+	+
Calcium Carbonate	sat'd	+	+	+	+
Calcium Chlorate	sat'd	+	+	+	+
Calcium Chloride	sat'd	+	+	+	+
Calcium Hydroxide	conc	+	+	+	+
Calcium Hypochloride	bleach sol	+	+	+	+
Calcium Nitrate	50%	+	+	+	+
Calcium Oxide	sat'd	+	+	+	+

REAGENT	CONCENTRATION	LDPE		HDPE	
		70°	140°	70°	140°
Calcium Sulphate		+	+	+	+
Camphor Oil#*		-	-	o	-
Carbon Dioxide	all conc	+	+	+	+
Carbon Disulphide		-	-	-	-
Carbon Monoxide		+	+	+	+
Carbon Tetrachloride#		-	-	o	-
Carbonic Acid		+	+	+	+
Castor oil*	conc	+	+	+	+
Chlorine+	100% dry gas	o	-	-	-
Chlorine Liquid+		-	-	-	-
Chlorine Water+	2% sat'd sol	+	+	+	+
Chlorobenzene#*		-	-	-	-
Chloroform*#		-	-	o	-
Chlorosulphonic Acid	100%	-	-	-	-
Chrome Alum	sat'd	+	+	+	+
Chromic Acid	80%	-	-	-	-
Chromic Acid	50%	+	o	+	o
Chromic Acid	10%	+	+	+	+
Cider*		+	+	+	+
Citric Acid*	sat'd	+	+	+	+
Coconut oil Alcohols*		+	+	+	+
Coffee		+	+	+	+
Cola Concentrate*		+	+	+	+
Copper Chloride	sat'd	+	+	+	+
Copper Cyanide	sat'd	+	+	+	+
Copper Fluoride	2%	+	+	+	+
Copper Nitrate	sat'd	+	+	+	+
Copper Sulphate	sat'd	+	+	+	+
Corn oil*		+	+	+	+
Cottonseed oil*		+	+	+	+
Cuprous Chloride	sat'd	+	+	+	+
Detergents Synthetic*		+	+	+	+
Developers Photographic		+	+	+	+
Dextrin	sat'd	+	+	+	+
Dextrose	sat'd	+	+	+	+
Diazo Salts		+	+	+	+
Dibutylphthalate*		o	o	o	o
Dichlorobenzene#*		-	-	-	-
Diethyl Ketone#*		o	-	o	o
Diethylene Glycol*		+	+	+	+
Diglycolic Acid*		+	+	+	+
Dimethylamine		-	-	-	-
Disodium Phosphate		+	+	o	+
Emulsions, Photographic*		+	+	+	+
Ethyl Acetate#* 100%	100%	o	-	o	-
Ethyl Alcohol* 100%	100%	+	+	+	+
Ethyl Alcohol* 35%	35%	+	+	+	+
Ethyl Benzene#*		-	-	-	-
Ethyl Chloride#		-	-	-	-
Ethyl Ether#		-	-	-	-
Ethylene Chloride#*		-	-	-	-
Ethylene Glycol*		+	+	+	+
Fatty Acids*		+	+	+	+
Ferric Chloride	sat'd	sat'd	+	+	+
Ferric Nitrate	sat'd	sat'd	+	+	+
Ferrous Chloride	sat'd	sat'd	+	+	+
Ferrous Sulphate			+	+	+
Fish Solubles*			+	+	+
Fluoboric Acid			+	+	+
Fluosillcic Acid	conc	conc	+	o	+
Fluosillcic Acid	32%	32%	+	+	+
Formic Acid conc	all	all conc	+	+	+
Fructose	sat'd	d	+	+	+
Fruit Pulp*			+	+	+

Eva-tech® surface chemical resistance

REAGENT	CONCENTRATION		LDPE		HDPE	
			70°	140°	70°	140°
Furtural#	100%	100%	-	-	o	-
Furturyl Alcohol#*			-	-	o	-
Gallic Acid*	sat'd		+	+	+	+
Gasoline#*			-	-	o	o
Glucose			+	+	+	+
Glycerine*			+	+	+	+
Glycol*			+	+	+	+
Glycolic Acid*	30%	30%	+	+	+	+
Grape Sugar			+	+	+	+
n-Heptane#*			-	-	o	o
Hexachlorobenzene			+	+	+	-
Hexanol Tertiary*			+	+	+	+
Hydrobromic Acid 50%		50%	+	+	+	+
Hydrochloric Acid conc	all	all conc	+	+	+	+
Hydrocyanic Acid	sat'd	sat'd	+	+	+	+
Hydrofluoric Acid* 60%		60%	+	+	+	+
Hydrogen	100%		+	+	+	+
Hydrogen Chloride gas	dry	dry gas	+	+	+	+
Hydrogen Peroxide	30%	30%	+	+	+	+
Hydrogen Peroxide	10%	10%	+	+	+	+
Hydrogen Sulphide			+	+	+	+
Hydroquinone			+	+	+	+
Hypochlorous Acid conc.		conc.	+	+	+	+
Inks*			+	+	+	+
Iodine+ sol'n	in KI	in KIsol'd	o	-	o	-
Isopropyl Alcohol 100%		100%	-	-	-	-
Lead Acetate	sat'd	sat'd	+	+	+	+
Lead Nitrate			+	+	+	+
Lactic Acid*	20%	20%	+	+	+	+
Linseed Oil* 100%		100%	o	-	o	-
Magnesium Carbonate		sat'd	+	+	+	+
Magnesium Chloride		sat'd	+	+	+	+
Magnesium Hydroxide		sat'd	+	+	+	+
Magnesium Nitrate		sat'd	+	+	+	+
Magnesium Sulphate		sat'd	+	+	+	+
Mercuric Chloride		40%	+	+	+	+
Mercuric Cyanide		sat'd	+	+	+	+
Mercury			+	+	+	+
Methyl Alcohol*		100%	+	+	+	+
Methylethyl Ketone#*		100%	o	-	o	-
Methylene Chloride#*		100%	-	-	o	o
Milk			+	+	+	+
Mineral Oils#			o	-	o	-
Molasses			+	+	+	+
Naphtha#*			o	-	o	-
Naphthalene#*			-	-	o	-
Nickel Chloride		conc	+	+	+	+
Nickel Nitrate		sat'd	+	+	+	+
Nickel Sulphate		conc	+	+	+	+
Nicotine*		dilute	+	+	+	+
Nitric Acid		0-30%	+	+	+	+
Nitric Acid+		30-50%	+	o	+	o
Nitric Acid+		70%	+	o	+	o
Nitric Acid+		95-98%	-	-	-	-
Nitrobenzene#*		100%	-	-	-	-
n-Octane			+	+	+	+
Oleic Acid			o	-	o	-
Oxalic Acid*		sat'd	+	+	+	+
Perchloroethylene#			-	-	-	-
Phosphoric Acid		95%	+	o	+	+
Photographic Solutions			+	+	+	+
Plating Solutions*						
Brass			+	+	+	+
Cadmium			+	+	+	+

REAGENT	CONCENTRATION	LDPE		HDPE	
		70°	140°	70°	140°
Chromium		+	+	+	+
Copper		+	+	+	+
Gold		+	+	+	+
Indium		+	+	+	+
Lead		+	+	+	+
Nickel		+	+	+	+
Rhodium		+	+	+	+
Sliver		+	+	+	+
Tin		+	+	+	+
Zinc		+	+	+	+
Potassium Bicarbonate	sat'd	+	+	+	+
Potassium Bromide	sat'd	+	+	+	+
Potassium Bromate	10%	+	+	+	+
Potassium Carbonate		+	+	+	+
Potassium Chlorate	sat'd	+	+	+	+
Potassium Chloride	sat'd	+	+	+	+
Potassium Chromate	40%	+	+	+	+
Potassium Cyanide	sat'd	+	+	+	+
Potassium Dichromate	40%	+	+	+	+
Potassium Ferri/Ferro Cyanide	Ferro sat'd	+	+	+	+
Potassium Fluoride		+	+	+	+
Potassium Hydroxide	conc	+	+	+	+
Potassium Nitrate	sat'd	+	+	+	+
Potassium Perborate	sat'd	+	+	+	+
Potassium Perchlorate	10%	+	+	+	+
Potassium Permanganate	20%	+	+	+	+
Potassium Persulphate	sat'd	+	+	+	+
Potassium Sulphate	conc	+	+	+	+
Potassium Sulphide	conc	+	+	+	+
Potassium Sulphite	conc 100%	+	+	+	+
Propargyl Alcohol*		+	+	+	+
n-Propyl Alcohol*		+	+	+	+
Propylene Dichloride#*		-	-	-	-
Propylene GlyCol*	sat'd	+	+	+	+
Pyridine*		+	-	+	-
Resorcinol		+	+	+	+
Salicylic Acid	sat'd	+	+	+	+
Sea Water		+	+	+	+
Selenic Acid Shortening*	any conc	+	+	+	+
Sliver Nitrate Sol'n		+	+	+	+
Soap Solutions*	any conc	+	+	+	+
Sodium Acetate	sat'd	+	+	+	+
Sodium Benzoate	35%	+	+	+	+
Sodium Biscarbonate	sat'd	+	+	+	+
Sodium Bisulphate	sat'd	+	+	+	+
Sodium Bisulphite	sat'd	+	+	+	+
Sodium Borate	dilute	+	+	+	+
Sodium Bromide	dilute	+	+	+	+
Sodium Carbonate	conc	+	+	+	+
Sodium Chlorate	sat'd	+	+	+	+
Sodium Chloride	sat'd	+	+	+	+
Sodium Cyanide	sat'd	+	+	+	+
Sodium Dichromate	sat'd	+	+	+	+
Sodium Ferri/Ferro Cyanide	sat'd	+	+	+	+
Sodium Fluoride	sat'd	+	+	+	+
Sodium Hydroxide	conc	+	+	+	+
Sodium Hypochlorite	sat'd	+	+	+	+
Sodium Nitrate	sat'd	+	+	+	+

REAGENT	CONCENTRATION	LDPE		HDPE	
		70°	140°	70°	140°
Sodium Sulphate	sat'd	+	+	+	+
Sodium Sulphide	sat'd	+	+	+	+
Sodium Sulphite	sat'd	+	+	+	+
Stannic Chloride	sat'd	+	+	+	+
Stannous Chloride	sat'd	+	+	+	+
Starch Solution*	sat'd	+	+	+	+
Stearic Acid*	100%	+	+	+	+
Sulphuric Acid	0-50%	+	+	+	+
Sulphuric Acid+	70%	+	o	+	o
Sulphuric Acid+	80%	+	-	+	-
Sulphuric Acid+	96%	o	-	o	-
Sulphuric Acid+	98-conc	o	-	o	-
Sulphuric Acid+	fuming	-	-	-	-
Sulphurous Acid Tallow#	sat'd	+	+	+	+
Tannic Acid*	sat'd	+	o	+	-
Tartaric Acid Tetrolydrofuran#*	sat'd	+	+	+	+
Titanium Tetrochloride Toluene#*	sat'd	+	+	+	+
Trichloroethylene#*	sat'd	-	-	-	-
Triethylene Glycol*	sat'd	-	-	o	o
Trisodium Phosphate	sat'd	+	+	+	+
Turpentine# Urea	0-30%	- +	- +	o +	o +

REAGENT	CONCENTRATION	LDPE		HDPE	
		70°	140°	70°	140°
Urine		+	+	+	+
Vanilla Extract*		+	+	+	+
Vinegar		+	+	+	+
Water		+	+	+	+
Wetting Agents*		+	+	+	+
Whiskey*		+	+	+	+
Wines*		+	+	+	+
Xylene#		-	-	o	o
Yeast		+	+	+	+
Zinc Bromide	sat'd	+	+	+	+
Zinc Carbonate	sat'd	+	+	+	+
Zinc Chloride	sat'd	+	+	+	+
Zinc Oxide	sat'd	+	+	+	+
Zinc Stearate		+	+	+	+
Zinc Sulphate	sat'd	+	+	+	+

Codes

+	Resistant no indication that serviceability would be impaired.
o	Variable resistance, depending on conditions of use.

"REAGENT" + # Plasticizer.

Certain types of chemicals are absorbed to varying degrees by poly- ethylene causing swelling, weight-gain, softening and some loss of yield strength. These plasticizing materials cause no actual chemical degradation of the resin. Several of these chemicals have a strong plasticizing effect (e.g. aromatic hydrocarbons benzene), whereas others have weaker effects (e.g. gasoline). Certain plasticizers are sufficiently volatile that if they are removed from contact with the polyethylene, the part will "dry" out and return to its original condition with no loss of properties.

"REAGENT"+ = Oxidizers.

Oxidizers are the only group of materials capable of chemically degrading polyethylene. The effects on the poly- ethylene may be gradual even for strong oxidizers and short-term effects may not be measurable. However, if continuous long-term exposure is intended, the chemical effects should be checked regularly.