

Table on chemical resistance of rubber materials					
Class	little or no	effect			
Class 1	little or no	effect			
Class 2	minor	effect			
Class 3	moderate	effect			
Class 4	severe	effect			
Chemical	Conc.	Temp.	EPDM	NBR	VITON
	%	°C			
Acetic acid	10	50	3	4	4
	50	50	4	3	4
	25	100	4	4	4
	100	70	1	2	4
Acetone		RT	1	4	4
Ammonia gas		Cold	1	1	4
		Hot	2	3	4
Ammonia Liquid		RT	4	4	2
Benzene		RT	4	4	2
Boric acid	10	100	1	1	1
Bunker oil			4	1	1
Butadiene		RT	3	4	2
		50	1	1	1
Butanol		100		1	1
			4	2	1
Butylene			4	2	1
Calcium hydroxide	100			2	1
Calcium hypochlorite	15		1	3	1
Carbon dioxide			1	1	1
Carbon tetrachloride	RT	4	3	1	
Castor oil		100	1	2	1
Chlorine (gas)			3		2
Chlorine water		RT	4	4	1
Chloroform		RT	4	4	1
Chromic acid	40	50	4	4	1
Citric acid sat		70	1	1	1
Coconut oil			2	1	1
Cod liver oil		RT	2	1	1
Corn oil		RT	2	1	1
Diacetone			1	1	4
Diesel oil (see fuel oil)					
Dioxane		RT	2	4	4
Ethane			4	1	1
Ethanol		50	1	1	1
Ether		RT	3	2	4
Ethyl acetate		RT	1	4	4
Ethylene				1	1
Ethylene glycol		100	1	1	1
Ethylene oxide			3	4	4
Fluid 101 (diester oil)		100	4	1	1
Fluorine liquid			3		2
Formaldehyde	40	RT		1	1
	40	70		4	
Formic acid	sat	RT	2	2	3
	sat	70	2	3	4
Freon 12		RT	2	1	2
Freon 22		RT	1	3	
Freon 112		RT	4	2	1

Fuel oil (diesel)		70	4	1	1
Fumaric acid				1	1
Glucose			1	1	1
Glycerine		100	1	1	1
Hexane		RT	4	1	1
Hexanol		RT	3	1	1
Hydrobromic acid	37	RT	1	4	1
Hydrochloric acid	10	100	4	2	1
	21	50	2	2	1
	37	RT	1	2	1
	48	RT	1	3	1
Hydrofluoric acid	48	RT	1	3	1
	75	1	2		
Hydrogen peroxide	30	RT	1	1	1
	90		3	4	2
Hydrogen sulfide	sat	RT	1	4	4
Isobutyl alcohol		RT	1	2	1
Isopropyl alcohol			1	2	1
Kerosene		70		1	1
Lactic acid		70	1	1	1
Lard		70	3	1	1
Magnesium hydroxide				1	
Methane			4	1	1
Methanol		50	1	1	3
Methyl chloride			3	4	2
Milk			1	1	1
Mineral oil 1		100	4	1	1
Mineral oil 2		100	4	1	1
Mineral oil 3		100	4	1	1
Natural gas			4	1	1
Nitric acid conc.	65	RT	4	4	1
Nitric acid diluted	10	50	1	2	1
Nitrogen			1	1	1
Olei acid		RT	3	1	1
Olive oil		50	3	1	1
Oxygen		RT	1	1	1
Phenol		100	2	4	2
Phosporic acid	60	50	1	3	1
Propanol		50	1	2	1
Salicylic acid			1	1	1
Salt	sat	70	1	1	1
Soap sol.			1	1	1
Sodium carbonate	20	100	1	1	1
Sodium hydroxide	10	100	1	1	4
	25	100	1	4	4
Sodium hypochlorite	10	50	1	2	1
Sodium peroxide				1	1
Soybean oil		RT	3	1	1
Sucrose sol.			1	1	
Sulfur dioxide		RT		3	1
Sulfuric acid	10	100	1	3	1
	20	RT	1	1	1
	25	100	1	4	1
	50	100	1	4	1
	60	100	1	4	1

	75	100	4	4	1
	95	RT		4	1
Toluene		RT	4	4	2
Transformer oil			4	1	1
Turpentine		RT	4	1	1
Veget. Oils			2	1	1
Vynil chloride					1
Water D.I.		100	1	1	1

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## Plate materials - corrosion tables

0	corrosion rate less than 0,1 mm/year. The material is corrosion proof
1	corrosion rate 0,1-1 mm/year. The material is not corrosion proof, but can be used in certain cases.
2	corrosion rate over 1 mm/year. Serious corrosion. The material is not usable.
P,p	Risk of pitting and crevice corrosion
S,s	Risk of stress corrosion cracking
BP	Boiling solution

Corrosive medium	Conc.	Temp.	304	316	254 SMO	TI	TI PD
Acetic acid	1	90	0	0	0	0	0
	5	20	0	0	0	0	0
	10	20	0	0	0	0	0
	20	20	0	0	0	0	0
	20	100	2	0	0	0	0
	50	20	0	0	0	0	0
	50	90	1	0	0	0	0
	80	20	0	0	0	0	0
	80	85	1	0	0	0	0
	100	20	0	0	0	0	0
100	100	1	0	0	0	0	
Acetone	100	20	0	0	0	0	0
Ammonium chloride	1	20	p0	p0	p0	0	0
	5	BP	p0s	p0s	p0s	0	0
	10	20-50	p0	p0	p0	0	0
	20	20-50	p0	p0	p0	0	0
	50	115	p2s	p1s	p1s	0	0
Beer		20-70	0	0	0	0	0
Benzene		20-BP	0	0	0	0	0
Butyl alcohol		20-BP	0	0	0	0	0
Calcium chloride	5	20	p0	p0	p0	0	0
	5	50	p0	p0	p0	0	0
	10	100	p0s	p0s	p0s	0	0
	10	20	p0	p0	p0	0	0
	20	100	p0s	p0s	p0s	0	0
	25	100	p0s	p0s	p0s	0	0
	40	100	p0s	p0s	p0s	0	0
Calcium hydroxide	all	20-BP	0	0	0	0	0
Carbon tetrachloride	100	20	0	0	0	0	0
	100	76	0	0	0	0	0
Chromic acid	2	75	0	0	0	0	0

	10	40	0	0	0	0	0
	10	BP	2	2	2	0	0
	20	200	0	0	0	0	0
	20	50	1	1	1	0	0
	40	20	1	1		0	0
	40	40	2	2	2	0	0
	50	20	2	2	2	0	0
Detergents	1	80	0	0	0	0	0
Dextrose		20	0	0	0	0	0
Ether		20-BP	0	0	0	0	0
Ethyl alcohol	all conc.	20-BP	0	0	0	0	0
Fatty acids	100	20	0	0	0	0	0
	100	80-130	0	0	0	0	0
	100	150	0	0	0	0	0
	100	180	1	0	0	0	0
	100	235	1	0	0	0	0
	100	300	2	0	0	0	0
Fluorine	dry gas	20	0	0	0	0	0
	most	20	2	2	1	2	2
Formaldehyde	pure	2-BP	0	0	0	0	0
Freon		<200	0	0	0	0	0
Fruit juices		20	0	0	0	0	0
Wines		BP	0	0	0	0	0
Glucose	all conc.	20	0	0	0	0	0
Ethylene glycol	all conc.	20	0	0	0	0	0
Hydrochloric acid	0,1	20-50	p1	p0	p0	0	0
	0,1	100	p1s	p0s	p0s	0	0
	0,2	20	p1	p0	p0	0	0
	0,5	20	p1	p0	p0	0	0
	0,5	100	2	2	2	1	0
	1	20	p1	p0	p0	0	0
	1	50	2	p0	p0	0	0
	2	20	2	p0	p0	0	0
	2	60	2	2	2	0	0
	3	20	2	p0	p0	0	0
	3	60	2	p1	p1	0	0
	3	100	2	2	2	2	0
	5	20-70	2	2	2	1	0
	10	20-35	2	2	2	1	0
	20	20-35	2	2	2	2	1
Hydrogen peroxide	5	20	0	0	0	0	0

	10	40	0	0	0	1	1
	15	30-40	0	0	0	1	1
	30	40-80	0	0	0	2	2
	50	40	0	0	0	2	2
Lithium chloride	10	BP	p0s	p0s	p0s	0	0
	10	135	p1s	p0s	p0s	p0	0
	40	115	p1s	p1s	p0s	0	0
Magnesium chloride	2,5	20	p0	p0	p0	0	0
	5	BP	p0s	p0s	p0s	0	0
Phosphoric acid	1,3	25	1	0	0	2	1
	75	2	1	0	2	2	
	1,5	20	2	0	0	2	1
	75	2	1	0	2	2	
Potassium chromate	all conc	BP	0	0	0	0	0
Potassium hydroxide	10	BP	0	0	0	0	0
	20	20	0	0	0	0	0
	25	BP	0	0	0	1	1
	50	20	0	0	0	0	0
	50	BP	1s	1s	1s	2	2
	70	120	1s	1s	1s	2	2
Saccharin	all conc	100	0	0	0	0	0
Salicylic acid	5	20-85	0	0	0	0	0
	20	100	0	0	0	0	0
Silver nitrate	all conc	20-BP	0	0	0	0	0
Sodium bromide	5-10,1	20	p0	p0	p0	0	0
	20	80	p0s	p0s	p0s	0	0
Sodium carbonate	all conc	20-BP	0	0	0	0	0
Sodium fluoride	5-10,1	20-100	0	0	0	2	1
Sodium hydroxide	10	20	0	0	0	0	0
	10	90	0	0	0	0	0
	20	20	0	0	0	0	0
	20	90	0	0	0	0	0
	25	20	0	0	0	0	0
	25	BP	0	0	0	1	1
	30	20	0	0	0	0	0
	30	100	0	0	0	1	1
	40	80	0	0	0	1	1
	40	100	1	1	0	1	1
	50	60	0	0	0	0	0
	50	90	1	1	0	1	1
	50	BP	1s	1s	1s	1	1
	60	90	1	1	0	0	0
	70	90	1	1	0	0	0

	90	300	2s	1s	1s	2	2
Sodium hypochlorite	5	20	p1	p1	p0	0	0
	5	BP	p1s	p1s	p1s	0	0
Starch	all conc	60	0	0	0	0	0
Sulphuric acid	0,1	100	2	1	0	1	0
	0,5	20	0	0	0	0	0
	0,5	50	1	0	0	0	0
	0,5	100	2	1	1	1	0
	1	20	0	0	0	0	0
	1	50	1	0	0	0	0
	1	70	1	0	0	1	0
	1	85	2	1	0	1	0
	1	100	2	1	1	1	0
	2	20	0	0	0	0	0
	2	50	1	0	0	0	0
	2	60	1	0	0	1	0
	3	20	0	0	0	0	0
	3	35	1	0	0	0	0
	3	50	1	0	0	1	0
	3	85	2	1	0	1	1
	3	100	2	2	1	2	1
	5	20	1	0	0	0	0
	5	35	1	0	0	1	0
	5	60	2	1	0	1	0
	5	75	2	1	0	2	1
	5	85	2	2	1	2	1
	5	BP	2	2	2	2	1
Sulphuric acid	10	20	2	0	0	1	0
	10	50	2	1	0	2	0
	10	60	2	1	0	2	1
	10	80	2	2	1	2	1
	10	BP	2	2	2	2	2
	20	20	2	0	0	2	0
	20	40	2	1	0	2	0
	20	50	2	1	0	2	1
	20	60	2	2	1	2	1
	20	100	2	2	2	2	2
	30	20	2	1	2	1	0
	30	40	2	2	0	2	1
	30	60	2	2	1	2	2
	40	20	2	2	0	2	0
	40	40	2	2	0	2	1
	40	60	2	2	1	2	2
	40	90	2	2	2	2	2
	50	20	2	2	0	2	1
	50	40	2	2	0	2	2
	50	70	2	2	2	2	2
	60	20	2	2	0	2	2
	60	40	2	2	1	2	2
	60	70	2	2	2	2	2
	70	20	2	2	0	2	2
	70	40	2	2	1	2	2

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70	70	2	2	2	2	2
80	20	2	1	0	2	2
80	40	2	2	1	2	2
80	60	2	2	2	2	2
85	20	1	0	0	2	2
85	30	1	0	0	2	2
85	40	1	1	1	2	2
85	50	2	1	1	2	2
90	20	0	0	0	2	2
90	30	0	0	0	2	2
90	40	2	1	1	2	2
90	70	2	2	2	2	2
94	20	0	0	0	2	2
94	30	0	0	0	2	2
94	40	1	1	1	2	2
94	50	1	1	1	2	2
96	20	0	0	0	2	2
96	30	0	0	0	2	2
96	40	0	0	1	2	2
96	50	1	1	1	2	2
98	30	0	0	0	2	2
98	40	0	0	1	2	2
98	50	2	0	1	2	2
98	80	2	2	2	2	2
100	70	0	0			

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TABELLA		COMPATIBILITA'		MATERIALI	
Acciaio AISI 316 e rame					
ACQUA CONTENENTE	CONCENTRAZIONE (mg/l)	AISI 316		RAME	
Elementi organici		+		0	
Conducibilità elettrica	<500S/cm	+		+	
	>500S/cm	+		-	
NH3	<2	+		+	
	2-20	+		0	
	>20	+		-	
Cloruri	<300	+		+	
	>300	0		+	
Solfiti senza cloruri	<5	0		+	
	>5	0/-		0	
Ferro in soluzione	<10	+		+	
	>10	+		0	
Acido carbonico libero	<20	+		0	
	20-50	+		-	
	50	+		-	
Manganese in soluzione	<1	+		+	
	>1	+		0	
Valore PH	<6	0		+	
	6-9	0/+		+	
	>9	+		0	
Ossigeno	<2	+		+	
	>2	+		+	
Solfati	<70	+		+	
	70-300	+		0	
	>300	-		-	
* max. 60°C					
LEGENDA					
+	buona resistenza in	condizioni normali			
0	problemi di corrosione	possono manifestarsi in		particolar modo quando	
	più fattori portano la	valutazione 'o'			
-	da evitare				