





Chemical resistance table

The chemical resistance table serves as a guide for the resistance to media of all asbestos-free gaskets. All information is provided in accordance with the current state of knowledge and subject to alteration.

If in doubt, please use our free technical fax service. Details are given inside.



Chemical resistance table

Medium	Chemical formula		0								Ca	ckat	mata	rial
<i>Medialli</i>	GHEIIIICAI TOTTIIUIA	1 1	200		300	324		133		327	Ua	sket . 88	13681	TIAI
		il-M	raph	90	13/43	34/43	0	30/4	0	9//	00	18/44	19/44	60
		Top-sil-ML 1	Top-graph 2000	C-4106	C-4243/4300	C-4304/4324	C-4400	C-4430/4433	C-4500	C-6307/6327	C-8200	C-4408/4438	C-4409/4439	C-4509
Acetaldehyde	CH₃CH0													
Acetamide	CH_3CONH_2													
Acetic acid 10%	<i>CH</i> ₃ <i>COOH</i>													
Acetic acid 100% (glacial acetic acid)	<i>CH</i> ₃ <i>COOH</i>													
Acetic acid ester	$CH_3COOC_2H_5$													
Acetone	CH_3COCH_3													
Acetylene	C_2H_2	•												•
Adipic acid	H00C(CH ₂) ₄ C00H	•						•					•	
Air								•						•
Aliphatic hydrocarbons (see under specific name)														_
Alcohol (see under specific name)														
Alum	KAI(SO ₄) ₂		•	•				•					•	•
Aluminum acetate	(CH ₃ COO) ₂ AI OH	•												
Aluminum chlorate	$AI(CIO_3)_3$													•
Aluminum chloride	$AICI_3$													•
Ammonia	NH_3													•
Ammonium carbonate	(NH ₄) ₂ CO ₃													•
Ammonium chloride	NH ₄ CI													
Ammonium hydrogenphosphate (diammonium phos	sphate) $(NH_4)_2HPO_4$													
Ammonium hydroxide	NH₄OH													
Amyl acetate	CH ₃ COOC ₅ H ₁₁													
Aniline	$C_6H_5NH_2$													
Anon (Cyclohexanone)	C ₆ H ₁₀ O													
Arcton 12 (Frigen or Freon 12)	CCI_2F_2													
Arcton 22 (Frigen or Freon 22)	CHF ₂ CI													
Aromatic hydrocarbons (see under specific name)														
Asphalt (tar)		•												
B arium chloride	BaCl ₂													
Benzene	C_6H_6													•
Benzoic acid	C ₆ H ₅ COOH													
Blast furnace gas														•
Bleaching liquor (chloride of lime)														
Boiler feed water and boiler water (alkaline)														
Borax	Na ₂ B ₄ O ₇ · 10H ₂ O	•												
Boric acid	B (OH) ₃													
Brine	NaCl													•
Butane	C_4H_{10}													
Butanol (butyl alcohol)	C_4H_9OH				•	•		•	•				•	•
Butanone (2) (M.E.K.)	$CH_3COC_2H_5$													
Butyl acetates	$CH_3COOC_4H_9$								•					
Butyl alcohol	C_4H_9OH													•
Butylamine	$C_4H_9NH_2$													
Butyric acid	C ₃ H ₇ C00H				•			•	•				•	•
Subject to technical alternations. 01.2005	<u> </u>			•	Resis	tant* ■	■ Con	dit. re	comm	nended	l ▲ Nr	ot reco	тте	nded

* Resistant means: Suitable for the appropriate use as a compressed gasket between flange surfaces.





For your choice of the right gasket we offer you a proven communication concept which leads you step by step to the right decision.

1. Application survey

A comparison of the sealing material characteristics with the criteria for typical fields of application gives you a first general survey.

2. Documentation of the product:

A technical data sheet is available for every material including the

pT diagram, which demonstrates different material behaviour to further facilitate your choice.

3. Resistance to media:

Here you find statements on the resistance of every Klinger gasket material.

Medium	Chemical formula										Ga	sket	mate	or.
viculani	onomical formula	Top-sil-ML 1	Top-graph	2000 C-4106	C-4243/4300	C-4304/4324	C-4400	C-4430/4433	C-4500	C-6307/6327	C-8200	C-4408/4438	C-4409/4439	
C alcium chloride	CaCl ₂	•	•	•	•	•	•	•	•	0	•	0	•	_
Calcium hydroxide	Ca(OH) ₂	•	•	•	•	•	•	•	•	•	•	•	•	_
Calcium hypochlorite	Ca(OCI) ₂	•												_
Calcium sulfate	CaSO ₄			•										
Carbolic acid 100% (phenol)	C ₆ H ₅ OH	A										_		
Carbon dioxide	CO ₂	•								•	•		•	
Carbon disulfide		•												
Carbon tetrachloride														
Castor oil	7	•	•			•		•	•	•	•	•	•	_
Chlorine (dry)	CI ₂	•	•	_	•	•	•	•	•		•	•	•	
Chlorine (wet)	CI ₂			A										_
Chlorine water (circa 0,5%)	3.2	•	•	•	•	•	•	•	•	•	•	•		
Chloroform	CHCI ₃									<u> </u>				-
Chromic acid	H_2CrO_4	\equiv		_						_				-
Citric acid	(CH ₂ COOH) ₂ C(OH)COOH	_	_		_	_	_	_	_	_	_	_	_	-
Clophen T 64	(011200011)20(011)00011	•	•		•		•	•	•	<u> </u>		•	•	_
Coagulating baths (up to 10%)	H ₂ SO ₄			_						_	_			-
Condensation water	H ₂ O 4	_	_		_	_	_	_	•	_		_	_	-
Copper acetate	(CH ₃ COO) ₂ Cu													-
Copper sulfate	CuSO ₄													-
Cresol	$C_6H_4(OH)CH_3$	_									_			-
Cyclohexanol	$C_6H_{11}OH$	=	=	_	_	=	_	_		=	_	=	_	-
Cyclohexanone (see anon)	061111011													-
D ecaline	C ₁₀ H ₁₈													_
Dibenzyl ether	$\frac{C_{10} \cap 1_{18}}{(C_6 H_5 C H_2)_2 O}$	_	_	_	_	_	_	_	_	_	_	_	_	-
Dibutyl phthalate	$C_6H_4(COOC_4H_9)_2$			_			_			_	_		_	_
Diesel oil	06114(00004119)2	-	-	-	-	-	-	-	-		-	-	-	_
Diethyl ether	С Н ОС Н	-	-				-	-		_	-	-		_
Dimethyl formamide	$\frac{C_2H_5OC_2H_5}{HCON(CH_3)_2}$	_	_	_	_	_	_	_		_	_	_	_	-
Diphyl (Dowtherm A)	110011(0113)2			-	_				-			_	_	_
Dipriyr (Downleriir A) Dye baths (alkaline, neutral, acidic)		•	-	_	-	-		-	-	-	-	-		-
Ethane	СИ	-	•		-	•	-	-	-		•	•		-
	C_2H_6	_	_	-	-	_	-	-	_	_	-	-	_	_
Ethanol (ethyl alcohol)	C ₂ H ₅ OH	_											_	_
Ethyl acetate (acetic ethylester)	CH ₃ C00C ₂ H ₅													_
Ethyl alcohol	C ₂ H ₅ OH	_			_			_		<u> </u>				_
Ethyl chloride	C ₂ H ₅ CI													_
Ethylene Ethylene ablarida	C_2H_4	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>		A	<u> </u>	_
Ethylene chloride	(CH ₂ CI) ₂		<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	_	<u> </u>	<u> </u>	<u> </u>	-
Ethylenediamine Ethylene alveel	(CH ₂ NH ₂) ₂		A	A	_	A	A	<u> </u>	A		<u> </u>	<u> </u>	<u>A</u>	_
Ethylene glycol	$\frac{(CH_2OH)_2}{(CH_2OH)_2}$	•			•			•						_
Fatty acids from C_6 upwards (see palmitic, s			_	_	_	_	_	_	_	_	_	_		_
Fluorosilicic acid	H_2SiF_6		•		•	•	•	0	•	0		•		_
Formaldehyde	НСНО													

* Resistant means: Suitable for the appropriate use as a compressed gasket between flange surfaces.



4. Technical fax service:

Provide us with the data for your sealing situation and you will receive a reliable response from Klinger, often within 24 hours.

5. Sealing calculation with the help of your PC:

The efficient computer program

KLINGERexpert® for the experienced specialist. It helps to answer all questions on construction, design and maintenance. Software and on-linehelp on CD-ROM.

6. The best way: to test

We will deliver original material for a test under your service conditions.

7. On-the-spot advice

With very difficult tasks we will advise you on the spot. We offer adapted designs you on the basis of our standard qualities and special designs for your needs.

The efficient computer program	test under your service co	nditi	ions											
Medium	Chemical formula		000		_			~		_	Ga	sket		rial
		Top-sil-ML 1	Top-graph 2000		C-4243/4300	C-4304/4324		C-4430/4433		C-6307/6327		C-4408/4438	C-4409/4439	
		- <i>Sil-</i>	-gra	C-4106	243/	304/	C-4400	430/	C-4500	307/	C-8200	408/	409/	C-4509
		Тор	Тор	C-4	C-4	C-4	C-4	C-4	C-4	9-0	0-8	C-4	C-4	J7
F ormamide	HCONH ₂													
Formic acid 10%	НСООН													
Formic acid 85%	НСООН													
Freon 12, Frigen 12, Arcton 12	CCI_2F_2													
Freon 22, Frigen 22, Arcton 22	CHF ₂ CI													
Fuel oil														•
G enerator gas														•
Glacial acetic acid	CH₃COOH													•
Glycerol	(CH ₂ OH) ₂ CHOH													•
H eating oil														•
Heptane	C_7H_{16}													
Hydraulic oil (mineral)														
Hydraulic oil (phosphate ester type)														
Hydraulic oil (glycol based)														•
Hydrazine hydrate	(NH ₂) ₂ H ₂ 0													•
Hydrochloric acid 20%	HCI													
Hydrochloric acid 37%	HCI													A
Hydrofluoric acid 10%	HF													
Hydrofluoric acid 40%	HF													
Hydrogen	H_2													•
Hydrogen chloride (dry)	НСІ													
Hydrogen peroxide (up to 6% by weight)	H ₂ O ₂													•
Isooctane (2, 2, 4 -trimethylpentan)	(CH ₃) ₃ CCH ₂ CH(CH ₃) ₂													•
Isopropyl alcohol	(CH ₃) ₂ CH0H													•
Kerosene														•
Lactic acid 50%	СН₃СНОН СООН													•
Lead acetate (sugar of lead)	(CH ₃ COO) ₂ PB													•
Lead arsenate	$Pb_3(AsO_4)_2$													•
Lime water	Ca(OH) ₂													
Linseed oil														•
Lubricating oil (see mineral oils)														
Magnesium sulfate	$MgSO_4$													•
Malic acid	H00C-CH0H-CH ₂ -C00H													•
M.E.K. (2-butanone)	CH₃COC₂H₅													
Methane	CH ₄			•	•	•	•	•	•	•	•	•		•
Methyl alcohol (methanol)	CH₃OH	•		•	•	•	•	•	•	•	•	•	•	•
Methyl chloride	CH ₃ CI													
Methylene chloride	CH ₂ CI ₂													A
Mineral oil - ASTM Oil No. 1														
Mineral oil - ASTM Oil No. 3									•			•		•
Monochlormethane	CH ₃ CI													

* Resistant means: Suitable for the appropriate use as a compressed gasket between flange surfaces





The recommendations given here are intended to be an aid in the selection of the suitable gasket quality. It is not possible to provide a warranty because the function and durability of the products depend largely a number of factors over which the manufacturer has no influence. Should there be special approval regulations, these have to be complied with.

The nomenclature of the media corresponds to the IUPAC (German nomenclature commission): e.g. chemical compounds which are written with Ae are changed to E and can be found under this letter in the alphabet.

Medium	Chemical formula		00								Ga	sket		eria
		11 1	Top-graph 2000		300	324		C-4430/4433		C-6307/6327		C-4408/4438	439	
		Sil-N	grapi	90	43/4	04/4	90	30/4	00	9//0	00	08/4	09/4	60
		Top-sil-ML 1	op-í	C-4106	C-4243/4300	C-4304/4324	C-4400	7-44	C-4500	7-63	C-8200	7-44	C-4409/4439	C-4509
N aphtha		•	•	•	•	•	•	•	•		•	•	•	
Natural gas														•
Nitric acid 20%	HNO_3													
Nitric acid 40%	HNO_3													
Nitric acid 96%	HNO_3													
Nitrobenzene	$C_6H_5NO_2$													
Nitrogen	N_2		•										•	•
Octane														•
Oleic acid	C ₁₇ H ₃₃ COOH													•
Oleum (fuming sulfuric acid))	H_2SO_4 with free SO_3													
Oxalic acid	(COOH) ₂													
Oxygen (check local regulations for use)	O_2	•	•		•	•	•	•	•	•	•	•		•
P almitic acid	C ₁₅ H ₃₁ C00H	•	•	•	•	•	•		•	•	•	•		•
Paraffin (kerosene)	10 01													•
Pentane	C ₅ H ₁₂													•
Perchlorethylene	C_2CI_4													
Petrol (fuel)		•				•	•							•
Petroleum			•										•	•
Petroleum ether														
Phenol	<i>C₆H₅OH</i>													
Phosphoric acid (all concentrations)	H_3PO_4													•
Phthalic acid	$C_6H_4(COOH)_2$													•
Potassium acetate	CH ₃ COOK													•
Potassium carbonate	K_2CO_3											•		•
Potassium chlorate	KCIO ₃													
Potassium chloride	KCI													
Potassium chromium sulfate	KCr(SO ₄) ₂ · 12H ₂ O													•
Potassium cyanide	KCN													
Potassium dichromate	$K_2Cr_2O_7$													
Potassium hydroxide	KOH													
Potassium hypochlorite (eau de Javelle)	KOCI													•
Potassium iodide	KJ													
Potassium nitrate (salpetre)	KNO ₃	•	•											
Potassium permanganate	KMnO₄												•	
Propane	C_3H_8													•
Pyridine	C_5H_5N													
Rapeseed oil														•
R134a	CH_2FCF_3		•			•	•		•		•	•		•
S alicylic acid	$C_6H_4(OH)COOH$		•	•	•	•	•		•	•	•	•	•	•
Salt (rock salt)	NaCl	•	•	•	•	•	•	•	•	•	•	•	•	•
Sea water			•	•	•	•	•		•	•	•	•	•	•
Silicone oil		•	•	•	•	•	•	•	•	•	•	•	•	•
Skydrol 500		_	_	_	_	_		_	_		_	_	_	<u> </u>
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* Resistant means: Suitable for the appropriate use as a compressed gasket between flange surfaces.

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■ Resistant* ■ Condit. recommended ▲ Not recommended





Certified according to DIN EN ISO 9001:2000

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		I formula & Gasket materia												
Medium	Chemical formula	1	Top-graph 2000		00	24		(33		27	Ga			rial
		I-ML	aph	2	3/43	4/43,	0	7/44	0	2//63)	8/44	9/44	6
		Top-sil-ML 1	16-da	C-4106	C-4243/4300	C-4304/4324	C-4400	C-4430/4433	C-4500	C-6307/6327	C-8200	C-4408/4438	C-4409/4439	C-4509
S 0ap		Tr	77	C	<u>C</u>	C	C	<i>C</i>	C	C	C	C	C	<u>C</u>
Soda (sodium carbonate)	Na_2CO_3	•		•	•	•	•			•			•	
Sodium aluminate	Na_3AIO_3	•	•	•	•	•	•	•	•	•	•	•	•	•
Sodium hydrogencarbonate	NaHCO ₃	•	•	•	•	•	•	•	•	•	•	•	•	•
Sodium hydrogensulfite	NaHSO ₃	•	•	•	•	•	•	•	0	•	•	•	•	•
Sodium chloride (Salt)	NaCl		•	•	•	•			•	•	•	•	•	•
Sodium cyanide	NaCN	•	•	•	•	•	•	•		•	•	•	•	•
Sodium hydroxide	NaOH								•		•			
Sodium silicate (water-glass)	$Na_2SiO_3K_2SiO_3$	•	•	•	•	•	•	•	•	•	•	•	•	•
Sodium sulfate	Na ₂ SO ₄	•	•	•	•	•	•	•	•	•	•	•	•	•
Sodium sulfide	Na_2S	•	•		•	•	•	•	•	•	•	•	•	•
Spirit		•							•				•	•
Starch	$(C_6H_{10}O_5)_n$								•				•	
Steam (temperature limit see pT-diagram)	H ₂ O	•	•		•	•	•	•	•	•	•	•	•	•
Stearic acid	C ₁₇ H ₃₅ COOH			•									•	
Sugar	17 00	•	•	•	•	•	•	•	•	•	•	•	•	•
Sulfur dioxide	SO ₂										•			
Sulfuric acid 20 %	H_2SO_4													
Sulfuric acid 50 %	H_2SO_4													
Sulfuric acid 96 %	H_2SO_4													
Sulfurous acid	H_2SO_3													
T annic acid	C ₇₆ H ₅₂ O ₄₆			•										
Tar (asphalt)		•												
Tartaric acid	(CH0HC00H) ₂													
Tetrachlorethane	$C_2H_2CI_4$													
Tetralin (1, 2, 3, 4 -tetrahydronaphtalene)	C ₁₀ H ₁₂													
Toluene	$C_6H_5CH_3$													
Town gas														
Transformer oil														
Trichlorethylene	C_2HCI_3													
Triethanolamine	$N(CH_2CH_2OH)_3$													
Turpentine														
U rea	(NH ₂) ₂ CO													
Vinyl acetate	CH ₃ COOC ₂ H ₃	•	•		•	•					•	•		•
Water	H ₂ 0		•	•		•			•		•	•		•
Water-glass	$Na_2SiO_3K_2SiO_3$		•	•		•			•		•	•		•
White Spirit		•		•	•	•	•						•	•
X ylene	$C_6H_4(CH_3)_2$													•

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