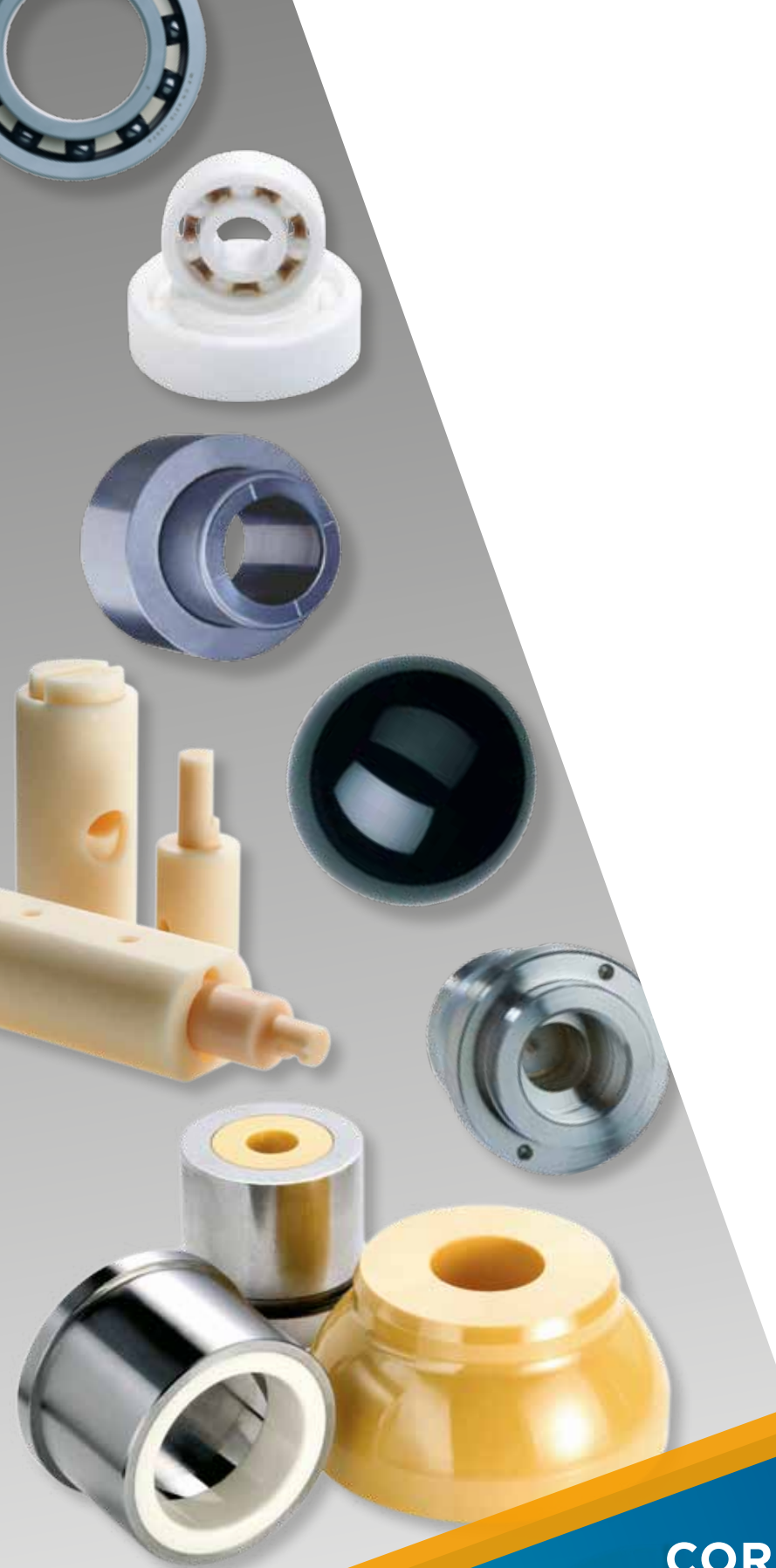


Aliaxis



FRIALIT®-DEGUSSIT®
CORROSION RESISTANCE

High-Performance Ceramics

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Corrosion resistance for oxide ceramics and other special materials

FRIALIT®-DEGUSSIT® OXIDE CERAMIC MATERIALS

FRIALIT F99,7

Pure Al_2O_3 , dense, extremely resistant to wear and corrosion, very high electrical insulating properties

DEGUSSIT AL23

Pure Al_2O_3 , dense, excellent thermal and electrical properties, corrosion resistant

FRIALIT FZT

Al_2O_3 doped with ZrO_2 , dense, high strength, good resistance to thermal shock, extremely resistant to wear and corrosion, fine grain size

FRIALIT FZM

ZrO_2 partially stabilized with MgO , dense, high strength and wear resistance, extremely resistant to corrosion and thermal shock

The following tables show the corrosion properties of oxide ceramics and other special materials. These data are based on chemical conditions as far as we know them.

To a large extent the corrosion resistance data of the different materials result from laboratory tests. Generally, however, corrosive conditions in practical operation are essentially more differentiated. The smallest portions of an intermediate product appearing only for short time may finally determine corrosive attacks.

In cases where a particular application cannot be based on reliable experiences, the corrosion resistance of our materials is to be determined by test specimens under process conditions.

ABBREVIATIONS:

A	resistant
B	weak reaction
C	strong reaction
rt	room temperature
b	boiling
conc.	concentrated
sat.	saturated
Empty cells	no data available

Get in touch with us for your request of our latest brochures and product program. With FRIALIT-DEGUSSIT High-Performance Ceramics we ensure you the highest quality and function for your products and applications.

Agent	Chemical Formula	Conc. (%)	Temp. (°C)	Oxide Ceramics			Graphite impregnated	PTFE	Viton	Perbunan	Neopren	Natural rubber	Butyl rubber	Hypalon
				F99,7 AL23	FZM	FZT								
Acetaldehyde	CH ₃ CHO		rt	A	A	A	A	A	C	C	C	B	B	C
Acetic acid	CH ₃ COOH	5	rt	A	A	A	A	A	C	C	A	B	B	B
		5	b	A	A	A	A	A	C	C	A	B	B	B
		10	rt	A	A	A	A	A	C	C	A	B	B	B
		10	b	A	A	A	A	A	C	C	A	B	B	B
		50	rt	A	A	A	A	A	C	C	A	B	B	B
		50	b	A	A	A	A	A	C		A	B	B	B
		80	rt	A	A	A	A	A	C	C	A	B	B	B
		80	b	A	A	A	A	A	C	C	A	B	B	B
		conc.	rt	A	A	A	A	A	C	C	A	B	B	B
		conc.	b	A	A	A	A	A	C	C	A	B	B	B
Acetic acid anhydride	(CH ₃ CO) ₂ O		rt	A	A	A	A	A	C	C	A	B	B	B
Acetone	CH ₃ COCH ₃	100	rt	A	A	A	A	A	C	C	B	B	A	C
Alum	K ₂ Al ₂ (SO ₄) ₄	10	rt	A	A	A	A	A	A	B	A	A	A	A
Aluminiumchloride	AlCl ₃	10	rt	A	A	A	A	A	A	B	A	B	A	A
		10	100	A	A	A	A	A	A	B	A	B	A	A
		25	60	A	A	A	A	A	A	B	A	B	A	A
		25	100	A	A	A	A	A	A	B	A	B	A	A
		80	b	A	A	A	A	A	A	B	A	B	A	A
		80	100	A	A	A	A	A	A	B	A	B	A	A
Aluminiumsulfate	Al ₂ (SO ₄) ₃	10	rt	A	A	A	A	A	A	B	A	A	A	A
		10	b	A	A	A	A	A	A	B	A	A	A	A
		15	50	A	A	A	A	A	A	B	A	A	A	A
		20	55	A	A	A	A	A	A	B	A	A	A	A
		25	b	A	A	A	A	A	A	B	A	A	A	A
		50	b	A	A	A	A	A	A	B	A	A	A	A
		55	40	A	A	A	A	A	A	B	A	A	A	A
		57	120	A	A	A	A	A	A	B	A	A	A	A
Ammonia, Ammoniumhydroxide	NH ₃ NH ₄ OH	10	rt	A	A	A	A	A	B	B	A	A	A	A
		10	b	A	A	A	A	A	B	B	A	A	A	A
		20	b	A	A	A	A	A	B	B	A	A	A	A
		25	b	A	A	A	A	A	B	B	A	A	A	A
		conc.	rt	A	A	A	A	A	B	B	A	A	A	A
		conc.	100	A	A	A	A	A	B	B	A	A	A	A
Ammoniumbromide	NH ₄ Br	10	25	A	A	A	A	A	A	A	A	A	A	A
Ammoniumcarbonate	(NH ₄) ₂ CO ₃	10-20	b	A	A	A	A	A	A	B	A	A	A	A
		30	80	A	A	A	A	A	A	B	A	A	A	A
		30	b	A	A	A	A	A	A	B	A	A	A	A
		40	b	A	A	A	A	A	A	B	A	A	A	A
		50	b	A	A	A	A	A	A	B	A	A	A	A
		sat.	rt	A	A	A	A	A	A	B	A	A	A	A
		sat.	b	A	A	A	A	A	A	B	A	A	A	A
Ammoniumchloride	NH ₄ Cl	10	rt	A	A	A	A	A	A	A	A	A	A	A
		10	b	A	A	A	A	A	A	A	A	A	A	A
		25	rt	A	A	A	A	A	A	A	A	A	A	A

Agent	Chemical Formula	Conc. (%)	Temp. (°C)	Oxide Ceramics			Graphite impregnated	PTFE	Viton	Perbunan	Neopren	Natural rubber	Butyl rubber	Hypalon
				F99,7 AL23	FZM	FZT								
		25	b	A	A	A	A	A	A	A	A	A	A	A
		50	rt	A	A	A	A	A	A	A	A	A	A	A
Ammoniumchloride	NH ₄ Cl	50	b	A	A	A	A	A	A	A	A	A	A	A
		sat.	rt	A	A	A	A	A	A	B	A	A	A	A
		sat.	b	A	A	A	A	A	A	B	A	A	A	A
Ammoniumfluoride	NH ₄ F	20	80				A				A	A		
Ammoniumhydroxide	NH ₄ OH	28	20-60	A	A	A	A	A	B	B	A	A	A	A
Ammoniumnitrate	NH ₄ NO ₃	10	rt	A	A	A		A	A	B	A	A	A	A
		20	rt	A	A	A		A	A	B	A	A	A	A
		20	rt	A	A	A		A	A	B	A	A	A	A
		50	rt	A	A	A		A	A	B	A	A	A	A
		50	b	A	A	A		A	A	B	A	A	A	A
Ammoniumsulfate	(NH ₄) ₂ SO ₄	all	rt	A	A	A	A	A	A	B	A	A	A	A
		all	b	A	A	A	A	A	A	B	A	A	A	A
Aniline	C ₆ H ₅ NH ₂		rt	A	A	A	A	A	A	C	C	B	A	C
			b	A	A	A	A	A	A	C	C	B	A	C
Aqua regia	HCl:HNO ₃	3:1	rt	A	A	A	A	A	B	C	C	C	C	B
Arsenic acid	H ₃ AsO ₃		rt	A	A	A	A	A	A	B	A	A	A	A
Bariumchloride	BaCl ₂	20	rt	A	A	A	A	A	A	A	A	A	A	A
		20	100	A	A	A	A	A	A	A	A	A	A	A
Bariumhydroxide	Ba(OH) ₂	sat.	rt	A	A	A	A	A		A	A	A		
		sat.	b	A	A	A	A	A						
Benzenesulfonic acid	C ₆ H ₅ SO ₃ H		70	A	A	A	A	A				A		
Benzoic acid	C ₆ H ₅ COOH	all	rt	A	A	A	A	A				A		
Benzol, Benzene	C ₆ H ₆		rt	A	A	A	A	A	A	C	C	C	C	C
Boric acid	H ₃ BO ₃	10	b	A	A	A	A	A	A	B	A	A	A	A
		50	b	A	A	A	A	A	A	B	A	A	A	A
Bromide	Br	dry	rt	A	A	A	C	A	B	C	C	C	C	B
			b	A	A	A	C	A	B	C	C	C	C	B
Butylacetate	C ₆ H ₁₂ O ₂		rt	A	A	A	A	A	C	C	C	C	B	C
Butylalcohol	C ₄ H ₉ OH		rt	A	A	A	A	A	A	B	A	A	A	B
			b	A	A	A	A	A	A	B	A	A	A	B
Butyric acid	C ₃ H ₇ COOH	100	rt	A	A	A	A	A			A	A		
		100	b	A	A	A	A	A			A	A		
Calcium bisulfite	Ca(HSO ₃) ₂		rt	A	A	A	A	A	A	C	B	B	A	A
Calciumhypochlorite	CaCl ₂ O ₂	20	40	A	A	A	A	A	A	C	B	C	C	A
Calciumnitrate	Ca(NO ₃) ₂		rt	A	A	A	A	A	A	B	A	A	A	A
Calciumsulfate	CaSO ₄	1-5	rt	A	A	A	A	A	A	B	A	A	A	A
		10	b	A	A	A	A	A	A	B	A	A	A	A
Carbon disulfide	CS ₂		rt	A	A	A	A	A	A	C	C	C	C	C
			b	A	A	A	A	A	A	C	C	C	C	C
Carbon tetrachloride	CCl ₄		rt	A	A	A	A	A	B	C	C	C	C	C
Carnallite	MgCl ₂ KCl ₆ H ₂ O		90	A	A	A	A	A	A	B	A	A	A	A
Chloral	CCl ₃ CHO		50	A	A	A	A	A						
Chloride	Cl ₂	dry	rt	A	A	A	A	A	A	C	C	C	B	B

Agent	Chemical Formula	Conc. (%)	Temp. (°C)	Oxide Ceramics			Graphite impregnated	PTFE	Viton	Perbunan	Neopren	Natural rubber	Butyl rubber	Hypalon
				F99,7 AL23	FZM	FZT								
Chloride	$\text{Cl}_2 + \text{H}_2\text{O} > 0.6\%$	moist	70	A	A	A	C	A	A	C	C	C	B	B
			rt	A	A	A	A	A	A	C	C	C	C	B
			100	A	A	A	C	A	A	C	C	C	C	B
Chloroacetic acid	CH_2ClCOOH	50	20	A	A	A	A	A	C	C	C	C	B	B
			70	b	A	A	A	A	A	C	C	C	C	B
			100	rt	A	A	A	A	A	C	C	C	C	B
Chloroacetic acid	CH_2ClCOOH	100	b	A	A	A	A	A	C	C	C	C	B	B
			rt	A	A	A	A	A	C	C	C	C	C	
			100	b	A	A	A	A	A	C	C	C	C	C
Chlorobenzene	$\text{C}_6\text{H}_5\text{Cl}$	20	rt	A	A	A	A	A	B	C	C	C	C	C
			rt	A	A	A	A	A	C	C	C	C	C	
			b	A	A	A	C	A	C	C	C	C	C	
Chlorosulfonic acid	$\text{SO}_2(\text{OH})\text{Cl}$	10	rt	A	A	A	A	A	A	C	C	C	C	C
			10	b	A	A	A	C	A	A	C	C	C	C
			50	rt	A	A	A	C	A	A	C	C	C	C
Chromium acid	H_2CrO_4	50	b	A	A	A	C	A	A	C	C	C	C	B
			50	b	A	A	A	C	A	A	C	C	C	C
			50	rt	A	A	A	C	A	A	C	C	C	C
Citric acid	$\text{C}_6\text{H}_8\text{O}_7$	5	rt	A	A	A	A	A	A	B	A	A	A	A
			5	b	A	A	A	A	A	A	B	A	A	A
			25	rt	A	A	A	A	A	A	B	A	A	A
Copper sulfate	CuSO_4	5	rt	A	A	A	A	A	A	A	A	A	A	A
			5	b	A	A	A	A	A	A	A	A	A	A
			25	b	A	A	A	A	A	A	A	A	A	A
Copper(II)-chloride	$\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$	all	b	A	A	A	A	A	A	A	A	A	A	A
			20	rt	A	A	A	A	A	A	A	A	A	A
			20	b	A	A	A	A	A	A	A	A	A	A
Copper(II)-chloride	$\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$	40	b	A	A	A	A	A	A	A	A	A	A	A
			40	b	A	A	A	A	A	A	A	A	A	A
			50	rt	A	A	A	A	A	A	A	A	A	A
Copper(II)-chloride	$\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$	sat.	b	A	A	A	A	A	A	A	A	A	A	A
			sat.	b	A	A	A	A	A	A	A	A	A	A
			100	50	A	A	A	A	A		C		C	
Dichloro ethane	$\text{C}_2\text{H}_4\text{Cl}_2$	100	50	A	A	A	A	A			C			
Dichloro ethylene	$\text{C}_2\text{H}_2\text{Cl}_2$		b	A	A	A	A	A			C			
Dioxane	$\text{O}_2(\text{CH}_2)_4$			A	A	A	A	A		C	C	C	C	
Diphenyl	$\text{C}_6\text{H}_5\text{C}_6\text{H}_5$			A	A	A	A	A	C	C	C	C	C	
Ether	$(\text{C}_2\text{H}_5)_2\text{O}$		rt	A	A	A	A	A	C	C	C	C	C	
Ethylacetate	$\text{CH}_3\text{COOC}_2\text{H}_5$		rt	A	A	A	A	A	C	C	C	C	B	
Ethylalcohol, Ethanol	$\text{C}_2\text{H}_5\text{OH}$		rt	A	A	A	A	A	A	B	A	A	A	
Ethylchloride	$\text{C}_2\text{H}_5\text{Cl}$		rt	A	A	A	A	A	B	C	C	C	C	
Ferric nitrate	$\text{Fe}(\text{NO}_3)_3$	all	rt	A	A	A	A	A	A	B	A	A	A	
Ferric(II)-Chloride	FeCl_2	30	100	A	A	A	A	A	A	B	A	B	A	
			10	b	A	A	A	A	A	A	B	A	B	A
			30	rt	A	A	A	A	A	A	B	A	B	A
Ferric(II)-Sulfate	$\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$	10	50	A	A	A	A	A	A	B	A	B	A	
			50	50	A	A	A	A	A	A	B	A	B	A
			sat.	100	A	A	A	A	A	A	B	A	B	A

Agent	Chemical Formula	Conc. (%)	Temp. (°C)	Oxide Ceramics			Graphite impregnated	PTFE	Viton	Perbunan	Neopren	Natural rubber	Butyl rubber	Hypalon	
				F99,7 AL23	FZM	FZT									
Ferric-(III)-Chloride	FeCl ₃	all	b	A	A	A	A	A	A	B	A	B	A	A	
		5	25	A	A	A	A	A	A	B	A	B	A	A	
		10	65	A	A	A	A	A	A	B	A	B	A	A	
		15	25	A	A	A	A	A	A	B	A	B	A	A	
		45	25	A	A	A	A	A	A	B	A	B	A	A	
		50	50	A	A	A	A	A	A	B	A	B	A	A	
Ferric-(III)-Sulfate	Fe(SO ₄) ₃	50	b	A	A	A	A	A	A	B	A	B	A	A	
		til 30	til 65	A	A	A	A	A	A	B	A	B	A	A	
Flourosilic acid	H ₂ SiF ₆		rt	A	B	A	A	A			A	A			
		30	30	A	C	A	A	A			A	A			
Formaldehyde	CH ₂ O	all	til b	A	A	A	A	A	A	B	A	A	A	A	
Formic acid	HCOOH	10	rt	A	A	A	A	A	B	C	B	B	A	A	
		10	65	A	A	A	A	A	B	C	B	B	A	A	
		10	b	A	A	A	A	A	B	C	B	B	A	A	
		20-40	65	A	A	A	A	A	B	C	B	B	A	A	
		50	rt	A	A	A	A	A	B	C	B	B	A	A	
		50	b	A	A	A	A	A	B	C	B	B	A	A	
		60	65	A	A	A	A	A	B	C	B	B	A	A	
		80	rt	A	A	A	A	A	B	C	B	B	A	A	
		80	65	A	A	A	A	A	B	C	B	B	A	A	
		80	b	A	A	A	A	A	B	C	B	B	A	A	
		90	100	A	A	A	A	A	B	C	B	B	A	A	
		conc.	rt	A	A	A	A	A	B	C	B	B	A	A	
		conc.	b	A	A	A	A	A	B	C	B	B	A	A	
Fuming sulfuric acid	H ₂ S ₂ O ₇	10	rt	A	A	A	C	A	A	C	C	C	C	B	
		10	b	A	A	A	C	A	A	C	C	C	C	B	
		25	rt	A	A	A	C	A	A	C	C	C	C	B	
		25	b	A	A	A	C	A	A	C	C	C	C	B	
Furfuryl alcohol	C ₅ H ₄ O ₂	25	b	A	A	A	A	A	C	C	C	A	A	A	
		100	rt	A	A	A	A	A	C	C	C	A	A	A	
Glycerine	CH ₂ OHCHOH	100	b	A	A	A	A	A	C	C	C	A	A	A	
			rt	A	A	A	A	A	A	A	A	A	A	A	
Hydrochloric acid	HCl	0,5	rt	A	A	A	A	A	A	C	B	B	B	A	
		0,5	b	A	A	A	A	A	B	C	C	C	C	B	
		5	rt	A	A	A	A	A	A	A	C	B	B	B	A
		5	60	A	A	A	A	A	A	A	C	B	B	B	A
		5	b	A	A	A	A	A	B	C	C	C	C	B	
		10	rt	A	A	A	A	A	A	A	C	B	B	B	A
		10	50	A	A	A	A	A	A	A	C	B	B	B	A
		10	b	A	A	A	A	A	B	C	C	C	C	B	
		15	rt	A	A	A	A	A	A	A	C	B	B	B	A
		15	b	A	A	A	A	A	B	C	C	C	C	B	
		20	rt	A	A	A	A	A	A	A	C	B	B	B	A

Agent	Chemical Formula	Conc. (%)	Temp. (°C)	Oxide Ceramics			Graphite impregnated	PTFE	Viton	Perbunan	Neopren	Natural rubber	Butyl rubber	Hypalon
				F99,7 AL23	FZM	FZT								
		20	b	A	A	A	A	A	B	C	C	C	C	B
		30	rt	A	A	A	A	A	A	C	B	B	B	A
		30	b	A	A	A	A	A	B	C	C	C	C	B
		37	rt	A	A	A	A	A	A	C	B	B	B	A
		37	b	A	A	A	A	A	B	C	C	C	C	B
Hydrochloric acid + Nitric acid	HCl:HNO ₃	3:1	rt	A	A	A	A	A	B	C	C	C	C	B
Hydrogen bromide	HBr		rt	A	A	A	A	A	A	C	B	C	A	A
Hydrogen bromide	HBr	0-50	b	A	A	A	A	A	A	C	B	C	A	A
Hydrogen cyanide	HCN		rt	A	A	A	A	A	A	B	B	B	B	A
Hydrogen flouride	HF	1	rt	A	C	A	A	A	A	C	B	B	B	A
		40	rt	A	C	A	A	A	A	C	B	B	B	A
		40	50	A	C	A	A	A	A	C	C	C	C	B
		50	rt	A	C	A	A	A	A	C	B	B	B	A
		100	rt	A	C	A	C	A	A	C	C	C	C	A
		100	b	B	C	B	C	A	A	C	C	C	C	B
Hydrogen sulfide	H ₂ S		rt	A	A	A	A	A	A	C	B	C	A	A
			100	A	A	A	A	A	A	C	C	C	A	A
Lactic acid	H ₆ C ₃ O ₃	1,5	rt	A	A	A	A	A	B	B	B	C	B	B
		1,5	b	A	A	A	A	A	B	B	B	C	B	B
		10	rt	A	A	A	A	A	B	B	B	C	B	B
		10	b	A	A	A	A	A	B	B	B	C	B	B
Lead acetate	C ₄ H ₆ O ₄ Pb	conc.	b	A	A	A	A	A	B	B	B	C	B	B
		all	rt	A	A	A	A	A	A	A	A	A	A	A
Magnesium chloride	MgCl ₂	10	rt	A	A	A	A	A	A	B	A	A	A	A
		20	b	A	A	A	A	A	A	B	A	A	A	A
		30	rt	A	A	A	A	A	A	B	A	A	A	A
Magnesium sulfate	MgSO ₄	42	b	A	A	A	A	A	A	B	A	A	A	A
		10	rt	A	A	A	A	A	A	B	A	A	A	A
		25		A	A	A	A	A	A	B	A	A	A	A
		50		A	A	A	A	A	A	B	A	A	A	A
		sat.		A	A	A	A	A	A	B	A	A	A	A
Maleic acid	C ₄ H ₄ O ₄	10	til 80	A	A	A	A	A	C	C	A	B	B	A
		10	b	A	A	A	A	A	C	C	A	B	B	A
		50	100	A	A	A	A	A	C	C	A	B	B	A
Malic acid	C ₄ H ₆ O ₅	til 50	rt	A	A	A	A	A	A	A	A	A	A	A
			b	A	A	A	A	A	A	A	A	A	A	A
Manganese chloride	MnCl ₂	5	100	A	A	A	A	A	A		A	A		
		20	100	A	A	A	A	A	A		A	A		
		50	100	A	A	A	A	A	A		A	A		
Manganese sulfate	MnSO ₄	all	rt	A	A	A	A	A	A		A	A		
Mercury	Hg		20	A	A	A	A	A	A	A	A	A	A	A
			50	A	A	A	A	A	A	A	A	A	A	A
			b	A	A	A	C							
Methanol	CH ₃ OH	all	rt	A	A	A	A	A	C	B	A	A	A	A

Agent	Chemical Formula	Conc. (%)	Temp. (°C)	Oxide Ceramics			Graphite impregnated	PTFE	Viton	Perbunan	Neopren	Natural rubber	Butyl rubber	Hypalon		
				F99,7 AL23	FZM	FZT										
Methylene chloride	CH ₂ Cl ₂	all	b	A	A	A	A	A	C	B	A	A	A	A		
			rt - b	A	A	A	A	A	B	C	C	C	C	C		
Monochloro acetic	CH ₂ ClCO ₂ H	50	rt	A	A	A	A	A	C	C	C	C	B	B		
			70	b	A	A	A	A	A	C	C	C	C	B	B	
			100	rt	A	A	A	A	A	C	C	C	C	B	B	
			100	b	A	A	A	A	A	C	C	C	C	B	B	
Naphta	C ₁₀ H ₈		rt	A	A	A	A	A	B	C	C	C	C	C		
Nickel chloride	NiCl ₂ ·6H ₂ O	10	60	A	A	A	A	A	A	A	A	A	A	A		
			10	b	A	A	A	A	A	A	A	A	A	A	A	
			20	rt	A	A	A	A	A	A	A	A	A	A	A	
			30	b	A	A	A	A	A	A	A	A	A	A	A	
			80	95	A	A	A	A	A	A	A	A	A	A	A	
Nickel nitrate	Ni(NO ₃) ₂ ·6H ₂ O		rt	A	A	A	A	A	A	A	A	A	A	A		
Nickel sulfate	NiSO ₄ ·7H ₂ O		80	A	A	A	A	A	A	A	A	A	A	A		
Nitric acid	HNO ₃	7	rt	A	A	A	A	A	B	C	C	C	C	B		
			7	b	A	A	A	B	A	B	C	C	C	C	B	
			10	rt	A	A	A	A	A	B	C	C	C	C	B	
			10	b	A	A	A	C	A	B	C	C	C	C	B	
			25	rt	A	A	A	B	A	B	C	C	C	C	B	
			25	b	A	A	A	C	A	B	C	C	C	C	B	
			37	rt	A	A	A	C	A	B	C	C	C	C	B	
			37	b	A	A	A	C	A	B	C	C	C	C	B	
			50	rt	A	A	A	C	A	B	C	C	C	C	B	
			50	b	A	A	A	C	A	B	C	C	C	C	B	
			65	rt	A	A	A	C	A	B	C	C	C	C	B	
			65	b	A	A	A	C	A	B	C	C	C	C	B	
			70	100	A	A	A	C	A	B	C	C	C	C	B	
			Fuming	100	rt				C	A	B	C	C	C	C	B
				100	50 - 70				C	A	B	C	C	C	C	B
	100	b				C	A	B	C	C	C	C	B			
Nitrobenzene				A	A	A	A	A	A	A	A	A	A	A		
Oxalic acid	H ₂ C ₂ O ₄	5	rt	A	A	A	A	A	A	A	A	B	A	A		
			5	b	A	A	A	A	A	A	A	A	B	A	A	
			10	rt	A	A	A	A	A	A	A	A	B	A	A	
			10	b	A	A	A	A	A	A	A	A	B	A	A	
			25	rt	A	A	A	A	A	A	A	A	B	A	A	
			25	b	A	A	A	A	A	A	A	A	B	A	A	
			50	rt	A	A	A	A	A	A	A	A	B	A	A	
			50	b	A	A	A	A	A	A	A	A	B	A	A	
			sat.	rt	A	A	A	A	A	A	A	A	B	A	A	
			sat.	b	A	A	A	A	A	A	A	A	B	A	A	
Ozone	O ₃	liquid		A	A	A	C	A	A	C	B	C	A	A		
Perchloro ethylene	C ₂ Cl ₄		rt	A	A	A	A	A	B	C	C	C	C	C		
			b	A	A	A	A	A	B	C	C	C	C	C		
Phenol	C ₆ H ₅ OH	pure	rt	A	A	A	A	A	B	C	C	C	C	C		

Agent	Chemical Formula	Conc. (%)	Temp. (°C)	Oxide Ceramics			Graphite impregnated	PTFE	Viton	Perbunan	Neopren	Natural rubber	Butyl rubber	Hypalon	
				F99,7 AL23	FZM	FZT									
Phosphorous acid	H ₃ PO ₄	1	b	A	A	A	A	A	B	C	C	C	C	C	
		1	rt	A	A	A	A	A	A	B	A	A	A	A	
		1	140	A	A	A	A	A	A	C	A	A	A	A	
		10	rt	A	A	A	A	A	A	B	A	A	A		
		10	b	A	A	A	A	A	A	C	A	A	A	A	
		30	rt	A	A	A	A	A	A	B	A	A	A	A	
		30	b	A	A	A	A	A	A	C	A	A	A	A	
		45	rt	A	A	A	A	A	A	B	A	A	A	A	
		45	b	A	A	A	A	A	A	C	A	A	A	A	
		80	rt	A	A	A	A	A	A	B	A	A	A	A	
		80	60	A	A	A	A	A	A	C	A	A	A	A	
		80	b	B	B	B	A	A	A	C	A	A	A	A	
		90	rt	A	A	A	A	A	A	B	A	A	A	A	
		90	b	B	B	B	C	A	A	C	A	A	A	A	
				conc.	rt	A	A	A	A	A	B	A	A	A	A
				conc.	b	C	C	C	C	A	A	C	A	A	A
Potassium chloride	KCl	10	rt	A	A	A	A	A	A	A	A	A	A	A	
		10	b	A	A	A	A	A	A	A	A	A	A	A	
		20	b	A	A	A	A	A	A	A	A	A	A	A	
		30	b	A	A	A	A	A	A	A	A	A	A	A	
		sat.	100	A	A	A	A	A	A	A	A	A	A	A	
Potassium cyanide	KCN	10	rt	A	A	A	A	A	B	C	A	B	A	A	
Potassium hydroxide	KOH	10	rt	A	A	A	A	A	C	B	A	A	A	A	
		10	b	A	A	A	A	A	C	B	A	A	A	A	
		20	rt	A	A	A	A	A	C	B	A	A	A	A	
		20	b	A	A	A	A	A	C	B	A	A	A	A	
		28	rt	A	A	A	A	A	C	B	A	A	A	A	
		28	b	A	A	A	A	A	C	B	A	A	A	A	
		40	til b	A	A	A	B	A	C	B	A	A	A	A	
		50	rt	A	A	A	A	A	C	B	A	A	A	A	
		50	b	B	A	B	C	A	C	B	A	A	A	A	
Potassium hypochlo-	KOCl	20g Cl/l	til 40	A	A	A	A	A	A	C	C	C			
		130g	rt	A	A	A	A	A	A	C	C	C			
		130g	150	A	A	A	C	A	A	C	C	C			
Potassium nitrate	KNO ₃	25	rt	A	A	A	A	A	A	A	A	A	A	A	
		25	b	A	A	A	A	A	A	A	A	A	A	A	
		40	rt	A	A	A	A	A	A	A	A	A	A	A	
		40	b	A	A	A	A	A	A	A	A	A	A	A	
		50	rt	A	A	A	A	A	A	A	A	A	A	A	
		50	b	A	A	A	A	A	A	A	A	A	A	A	
		sat.	rt	A	A	A	A	A	A	A	A	A	A	A	
Potassium perchlo-	KClO ₄	25	25	A	A	A	A	A			A	A			
		50	25	A	A	A	A	A			A	A			

Agent	Chemical Formula	Conc. (%)	Temp. (°C)	Oxide Ceramics			Graphite impregnated	PTFE	Viton	Perbunan	Neopren	Natural rubber	Butyl rubber	Hypalon
				F99,7 AL23	FZM	FZT								
Potassium perman-	KMnO ₄	75	25	A	A	A	A	A			A	A		
		all	rt	A	A	A	A	A			A	A		
		all	b	A	A	A	A	A			A	A		
Potassium sulfate	K ₂ SO ₄	10	rt	A	A	A	A	A	A	A	A	A	A	A
		20	til 50	A	A	A	A	A	A	A	A	A	A	A
Prussiate of potash	KCN	10	rt	A	A	A	A	A	B	C	A	B	A	A
Pyridine	C ₅ H ₅ N	50	rt - 60	A	A	A	A	A	C	C	C	C	C	B
		100	rt - 60	A	A	A	A	A	C	C	C	C	C	B
Salt water			rt	A	A	A	A	A	A	A	A	A	A	A
Sodium bicarbonate	NaHCO ₃	10	til b	A	A	A	A	A	B	B	A	A	A	A
		20	40 - b	A	A	A	A	A	B	B	A	A	A	A
		all	all	A	A	A	A	A	B	B	A	A	A	A
Sodium bisulfate	NaHSO ₄	10	rt	A	A	A	A	A			A	A		
		10	b	A	A	A	A	A			A	A		
		sat.	rt	A	A	A	A	A			A	A		
		sat.	b	A	A	A	A	A			A	A		
Sodium bisulfite	NaHSO ₃	50	rt	A	A	A	A	A			A	A		
				A	A	A	A	A			A	A		
Sodium carbonate	Na ₂ CO ₃	10	b	A	A	A	C	A	C	B	A	A	A	A
		20	rt	A	A	A	A	A	C	B	A	A	A	A
		20	50 - b	A	A	A	A	A	C	B	A	A	A	A
		50	rt	A	A	A	A	A	C	B	A	A	A	A
		50	b	A	A	A	A	A	C	B	A	A	A	A
		sat.	rt	A	A	A	A	A	C	B	A	A	A	A
		sat.	b	A	A	A	C	A	C	B	A	A	A	A
Sodium chlorate	NaClO ₃	5	rt	A	A	A	A	A	A	A	A	A	A	A
		5	b	A	A	A	A	A	A	A	A	A	A	A
Sodium chloride	NaCl	3,5	rt	A	A	A	A	A	A	A	A	A	A	A
		3,5	b	A	A	A	A	A	A	A	A	A	A	A
Sodium chloride solution		techn.	rt	A	A	A	A	A	A	A	A	A	A	A
			b	A	A	A	A	A	A	A	A	A	A	A
Sodium chlorite	NaClO ₂	5	rt	A	A	A	C	A			C	C		
		5	b	A	A	A	C	A			C	C		
		10	rt	A	A	A	C	A			C	C		
Sodium hydroxide (Caustic soda)	NaOH	10	rt	A	A	A	A	A	C	B	A	A	A	A
		10	b	A	A	A	A	A	C	B	A	A	A	A
		20	rt	A	A	A	A	A	C	B	A	A	A	A
		20	b	A	A	A	C	A	C	B	A	A	A	A
		34	rt	A	A	A	C	A	C	B	A	A	A	A
		34	b	A	A	A	C	A	C	B	A	A	A	A
		50	rt	A	A	A	C	A	C	B	A	A	A	A
		50	b	B	A	B	C	A	C	B	A	A	A	A
		60	b	B	A	B	C	A	C	B	A	A	A	A
		70	b	C	B	C	C	A	C	B	A	A	A	A

Agent	Chemical Formula	Conc. (%)	Temp. (°C)	Oxide Ceramics			Graphite impreg-nated	PTFE	Viton	Perbu-nan	Neopren	Natural rubber	Butyl rubber	Hypalon	
				F99,7 AL23	FZM	FZT									
Sodium hypochlorite (Bleaching soda)	NaOCl	10g Cl/l	rt	A	A	A	A	A	A	C	C	C	C	A	
		10g Cl/l	50	A	A	A	A	A	A	C	C	C	C	A	
		20g Cl/l	rt	A	A	A	A	A	A	C	C	C	C	A	
		20g Cl/l	40	A	A	A	A	A	A	C	C	C	C	A	
		120g	rt	A	A	A	A	A	A	C	C	C	C	A	
		120g	b	A	A	A	A	A	A	C	C	C	C	A	
Sodium nitrate	NaNO ₃		rt	A	A	A	A	A	A	A	A	A	A	A	
			100	A	A	A	A	A	A	A	A	A	A	A	
Sodium nitrite	NaNO ₂		70	A	A	A	A	A	A	A	A	A	A	A	
			100	A	A	A	A	A	A	A	A	A	A	A	
Sodium peroxide	Na ₂ O ₂	10	rt	A	A	A	A	A			A	A			
		10	b	A	A	A	C	A			A	A			
Sodium sulfate	Na ₂ SO ₄ ·10H ₂ O	sat.	rt	A	A	A	A	A	A	C	B	C	A	A	
		sat.	b	A	A	A	A	A	A	C	B	C	A	A	
Sodium sulfide	Na ₂ S·9H ₂ O	25	rt	A	A	A	A	A	A	C	B	C	A	A	
		25	b	A	A	A	A	A	A	C	B	C	A	A	
		50	rt	A	A	A	A	A	A	C	B	C	A	A	
		50	b	A	A	A	A	A	A	C	B	C	A	A	
		sat.	rt	A	A	A	A	A	A	C	B	C	A	A	
Sodium sulfite	Na ₂ SO ₃ ·7H ₂ O	25	rt	A	A	A	A	A	A	C	B	C	A	A	
		25	b	A	A	A	A	A	A	C	B	C	A	A	
		50	rt	A	A	A	A	A	A	C	B	C	A	A	
Sodium thiol	Na ₂ S ₂ O ₃ ·5H ₂ O	50	b	A	A	A	A	A	A	C	B	C	A	A	
		25	rt	A	A	A	A	A	A	C	B	C	A	A	
Spinning bath	til 10% H ₂ SO ₄ over 10% H ₂ SO ₄		70	A	A	A	A	A	A	C	A	B	A	A	
			70	A	A	A	A	A	A	C	A	B	A	A	
Stearic acid	C ₁₇ H ₃₅ COOH	techn.	100	A	A	A	A	A	A	A	B	C	C	C	
		techn.	150	A	A	A	A	A	A	A	B	C	C	C	
			100	rt	A	A	A	A	A	A	A	B	C	C	C
			100	b	A	A	A	A	A	A	A	B	C	C	C
			100	135	A	A	A	A	A	A	A	B	C	C	C
Sulfur chloride	S ₂ Cl ₂		100	315	A	A	A	C							
			rt	A	A	A	A	A	C	C	C	C	C	C	
Sulfuric acid	H ₂ SO ₄	2	rt	A	A	A	A	A	A	A	A	A	A	A	
		2	b	A	A	A	A	A	A	C	A	B	A	A	
		5	rt	A	A	A	A	A	A	A	A	A	A	A	
		5	b	A	A	A	A	A	A	C	A	B	A	A	
		10	rt	A	A	A	A	A	A	C	C	C	B	A	
		10	b	A	A	A	A	A	A	C	C	C	C	B	
		25	rt	A	A	A	A	A	A	C	C	C	B	A	
		25	b	A	A	A	A	A	A	C	C	C	C	B	
		50	rt	A	A	A	A	A	A	C	C	C	B	A	
50	b	A	B	A	A	A	A	C	C	C	C	B			

Agent	Chemical Formula	Conc. (%)	Temp. (°C)	Oxide Ceramics			Graphite impregnated	PTFE	Viton	Perbunan	Neopren	Natural rubber	Butyl rubber	Hypalon
				F99,7 AL23	FZM	FZT								
		60	rt	A	A	A	A	A	A	C	C	C	B	A
		60	b	A	B	A	A	A	A	C	C	C	C	B
		77	rt	A	A	A	A	A	A	C	C	C	B	B
		77	b	B	C	B	C	A	A	C	C	C	C	C
		80	rt	A	A	A	A	A	A	C	C	C	B	B
		80	b	B	C	B	C	A	A	C	C	C	C	C
		85	rt	A	A	A	A	A	A	C	C	C	B	B
		85	b	B	C	B	C	A	A	C	C	C	C	C
		90	rt	A	A	A	B	A	A	C	C	C	B	B
		90	b	B	C	B	C	A	A	C	C	C	C	C
		96	rt	A	A	A	B	A	A	C	C	C	B	B
		96	b	B	C	B	C	A	A	C	C	C	C	C
Sulfuric acid	H ₂ SO ₃	sat.	rt	A	A	A	A	A	A	B	B	B	B	A
Sulfuric acid + nitric acid	H ₂ SO ₄ :HNO ₃	10:90	35	A	A	A	C	A	B	C	C	C	C	B
		30:70	35	A	A	A	C	A	B	C	C	C	C	B
		50:50	35	A	A	A	C	A	B	C	C	C	C	B
		60:40	35	A	A	A	C	A	B	C	C	C	C	B
		70:30	35	A	A	A	C	A	B	C	C	C	C	B
		80:20	35	A	A	A	A	A	A	C	C	C	C	B
		90:10	35	A	A	A	A	A	A	C	C	C	C	B
Tannic acid	C ₇₆ H ₅₂ O ₄₄	99:1	35	A	A	A	A	A	A	C	C	C	C	B
		10	rt	A	A	A		A	A	C	B	B	B	A
		10	b	A	A	A		A	A	C	B	B	B	A
		50	50	A	A	A		A	A	C	B	B	B	A
		50	b	A	A	A		A	A	C	B	B	B	A
Tartaric acid	C ₄ H ₆ O ₆	all	rt	A	A	A	A	A	A	A	A	A	A	A
		all	b	A	A	A	A	A	A	A	A	A	A	A
Tin chloride	SnCl ₂ , SnCl ₄	all	rt	A	A	A	A	A	A	A	A	A	A	A
		all	150	A	A	A	A	A	A	A	A	A	A	A
Trichloro ethylene	CHCl=CCl ₂		rt	A	A	A	A	A	B	C	C	C	C	C
Uric acid	C ₅ H ₄ N ₄ O ₃		rt	A	A	A	A	A	A	A	A	A	A	A
Zinc chloride	ZnCl ₂	10	rt	A	A	A	A	A	A	B	A	B	A	A
		10	b	A	A	A	A	A	A	B	A	B	A	A
		20	rt	A	A	A	A	A	A	B	A	B	A	A
		20	b	A	A	A	A	A	A	B	A	B	A	A
		60	rt	A	A	A	A	A	A	B	A	B	A	A
		60	b	A	A	A	A	A	A	B	A	B	A	A
		100	b	A	A	A	C	A	A	B	A	B	A	A

Corrosion resistance for non-oxide ceramic materials

FRIALIT®-DEGUSSIT® NON-OXIDE CERAMIC MATERIALS

FRIALIT SiC 198

Silicon infiltrated silicon carbide SiSiC, low density, hard as diamond, high wear and corrosion resistance, excellent sliding properties, electrically conductive

FRIALIT SiC 198D

Sintered silicon carbide SSiC, high wear resistance, very good corrosion resistance, excellent sliding properties, electrically insulating

FRIALIT HP 79

Hot-pressed silicon nitride Si_3N_4 , very low density, high wear resistance, excellent bending and fracture stability, good corrosion resistance, highest thermal shock resistance, very homogene

FRIALIT GP 79

Gas-sintered silicon nitride Si_3N_4 , very low density, high wear resistance, excellent bending and fracture stability, good corrosion resistance, highest thermal shock resistance

The following tables show the corrosion properties of non-oxide ceramics. These data are based on chemical conditions as far as we know them.

To a large extent the corrosion resistance data of the different materials result from laboratory tests. Generally, however, corrosive conditions in practical operation are essentially more differentiated. The smallest portions of an intermediate product appearing only for short time may finally determine corrosive attacks.

In cases where a particular application cannot be based on reliable experiences, the corrosion resistance of our materials is to be determined by test specimens under process conditions.

ABBREVIATIONS:

A	resistant (to the specified temperature)
B	reaction takes place
C	corrosion (at the specified temperature)
conc.	concentrated
*	boiling solution
Empty cells	no data available

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Agent Hotgas-corrosion	Chemical Formula	Material							
		Silicon Carbides				Silicon Nitrides			
		SSiC	SiC 198D	SiSiC	SiC 198	SSN	GP 79	HPSN	HP 79
Air with Carbon	Air with C					B (1000°C)			
Ammonia	NH ₃	A							
Argon	Ar	A (2 000°C)		A (2 320°C)					
Argon with Sulfur	Ar with S	C (> 1 200°C)				A			
Carbon dioxide	CO ₂			A		A (1 200°C)			
Carbon monoxide	CO			A					
Chlorine	Cl ₂	A (< 700°C)		A (< 800°C)		A (900°C)			
		C (> 700°C)		C (> 800°C)					
Fluorine	F ₂	C (1 400°C)							
Hydrogen	H ₂	A (< 1 430°C)		A (1 000°C)					
		C (> 1 430°C)							
Methane	CH ₄			A					
Nitrogen	N ₂	A (1 100°C)				A (1 800°C)			
Nitrogen oxides	NO _x								
Oxygen	O ₂	B (1 150°C)							
Sulfur dioxide	SO ₂								
Sulfur trioxide	SO ₃								
Water steam	H ₂ O-steam	B (> 1 150°C)		A		A (800°C)			

Agent Acids/Bases	Chemical Formula	Material							
		Silicon Carbides				Silicon Nitrides			
		SSiC	SiC 198D	SiSiC	SiC 198	SSN	GP 79	HPSN	HP 79
Acetic acid + Anhydrid	Acetic acid + 3% Anhydrid			Weight loss 0,003 mma *					
Acetic acid + Anhydrid + Sodium chloride	Acetic acid + 3% Anhydrid + 10 ppm NaCl			Weight loss 0,005 mma *					
Ammonium hydroxide	NH ₄ OH (5 weight-%)			A		A		A	
Aqua regia	HNO ₃ + 3 HCl			A		C		A	
Formic acid	CH ₂ O ₂			Weight loss 0,005 mma *					
Formic acid + Sodium chloride	CH ₂ O ₂ + 10 ppm NaCl			Weight loss 0,004 mma *					
Hydrochloric acid	HCl diluted	A		A (100°C)		A *			
	HCl conc.	A *		A		C		A	
Hydrofluoric acid	HF	A				C		C	
Hydrochloric acid + Hydrofluoric acid	HCl conc. + 5 vol-% HF	A				B		C	
Nitric acid	HNO ₃ diluted	A *		A *		A *		A	
	HNO ₃ conc.	A *		A *					
Nitric acid + Hydrofluoric acid	HNO ₃ conc. + 5 vol-% HF	A				C		C	
Phosphoric acid	H ₂ SO ₄ conc.			A		A		A	
	H ₃ PO ₄ conc.	C (250°C)				B		A	
Potassium hydroxide	KOH-Solution (hot)	A *		B		A *		A	
Sodium hydroxide	NaOH-Solution (hot)	A		B (100°C)		A		A	
Sodium hydroxide (Caustic soda)	NaOH-solution (10 weight-%)			A		A		A	
Sulfuric acid	H ₂ SO ₄ diluted			A (100°C)		A			
Sulfuric acid + Hydrofluoric acid	H ₂ SO ₄ conc. + 5 vol-% HF	A				C		C	
Water, deionized	Deionized water			A		A		A	

Agent Salt solutions/melt slag	Chemical Formula	Material							
		Silicon Carbides		Silicon Nitrides					
		SSiC	SiC 198D	SiSiC	SiC 198	SSN	GP 79	HPSN	HP 79
Barium chloride	BaCl ₂			C (900°C)		C (1 000°C)			
Calcium carbonate	CaCO ₃ saturated solution		A			A			A
Calcium chloride	CaCl ₂ (10 weight-%)		A			A			A
Calcium oxide	CaO saturated solution		A			A			A
Calcium sulfate	CaSO ₄ saturated solution		A			A			A
Cryolite	Na ₃ AlF ₆		C						
Lead dichloride	PbCl ₂				C (1 000°C in air)				
Lithium chloride	LiCl				B (900°C)				
Lithium fluoride	LiF		A (816°C)						
Magnesium chloride	MgCl ₂				B (900°C)		A (800°C)		
Potassium chloride	KCl				A (900°C in air)				
Potassium fluoride	KF				C (900°C in air)		C (900°C)		
Potassium hydroxide	KOH-melt		C		C (500°C)		C (500°C)		
Potassium nitrate	KNO ₃ (10 weight-%)		A				B		A
Sodium carbonate	Na ₂ CO ₃ -melt		C		C (900°C)		C (900°C)		
	Na ₂ CO ₃ (10 weight-%)		A				A		A
Sodium chloride	NaCl				A (900°C in air)				
	NaCl (10 weight-%)		A				B		A
Sodium chloride + Potassium chloride	NaCl + KCl		C (800°C)				A (790°C)		
Sodium fluoride	NaF				C (900°C)				
Sodium hydroxide	NaOH-melt		C (538°C)		C		C (500°C)		
Sodium hypochlorite	NaClO (10 weight-%)		A				A		A
Sodium sulfate	Na ₂ SO ₄ (10 weight-%)		A				B		A
Trisodium phosphate	Na ₃ PO ₄		A				A		A
Water, deionized + Sodium chloride	Deionized water + 10 ppm NaCl				Weight loss 0,288 mma at 200°C				
Acidic slag									
Basic slag									

Agent Salt melts/eutectic melts	Chemical Formula	Material			
		Silicon Carbides		Silicon Nitrides	
		SSiC SIC 198D	SiSiC SIC 198	SSN GP 79	HPSN HP 79
Aluminium oxide	Al_2O_3	C			
Anhydrous borax	$Na_2B_4O_7$	B (1 000°C in air)		A (1 000°C in air)	
Boron	B	C (> 1 000°C)			
Chromium (III) oxide	Cr_2O_3				
Iron (III) oxide	Fe_2O_3	C			
Lead dioxide	PbO_2	C (900°C)		C	
Lead monoxide	PbO	C (1 000°C in air)		C (1 000°C in air)	
Manganese	Mn	C (1 600°C)			
Potassium bisulfate	$KHSO_4$	A (500°C)		A (500°C)	
Potassium nitrate	KNO_3	A (400°C)			
Potassium sulfate	K_2SO_4	C			
Sodium carbonate	Na_2CO_3	C (900°C in air)		C (900°C)	
Sodium metavanadate	$NaVO_3$	C (800°C in air)			
Sodium peroxide	Na_2O_2	C (750°C)		C (500°C)	
Sodium sulfate	Na_2SO_4	C (1 000°C in air)		C (1 000°C)	
Sulfide	S^{2-}				
Vanadium pentoxide	V_2O_5	C (800°C in air)		C (800°C in air)	

FRIALIT® - DEGUSSIT® High-Performance Ceramics

Material	Alumina Al ₂ O ₃				
	F99.7	DD 57	AL 23	AL 24	AL 25
Structural properties:					
Density (g/cm ³)	≥ 3.9	≥ 3.9	3.70-3.95	> 3.4	> 2.8
Open porosity (%)	0	0	0	≤ 5	20-30
Grain size (µm)	10	10	10	40	70
Mechanical properties:					
Hardness (Knoop) (N/mm ²) (MPa)	23 000	23 000	23 000	-	-
Compressive strength (N/mm ²) (MPa)	3 500	3 000	3 500	1 000	300
Bending strength (N/mm ²) (MPa)	350	300	300-350	150	70
Weibull modulus	> 10	> 10	> 10	-	-
E-modulus E (GPa)	380	380	380	-	-
Poisson ratio ν	0.22	0.22	0.22	-	-
Thermal properties:					
Max. operating temperature in air (°C)	1 950	1 950	1 950	1 950	1 950
Specific heat 20°C (J/kg•K)	900	900	900	-	-
Thermal conductivity 100°C (W/m•K)	30	35 ***	30	-	-
Coefficient of expansion 20-1000°C (10 ⁻⁶ /K)	8.2	8.5	8.2	8.2	8.2
Electrical properties:					
Specific resistance 20°C Ω•cm	10 ¹⁵	10 ¹⁴	10 ¹⁴	-	-
500°C Ω•cm	10 ¹¹	10 ¹⁰	10 ¹⁰	-	-
1000°C Ω•cm	10 ⁷	10 ⁷	10 ⁷	-	-
Colour:					
	ivory	red	ivory	ivory	white

* at 20-900°C

** at 900°C

*** at 20°C

The data shown in the table above is valid according to German industrial standard DIN 40685, where the given values only pertain to the measured test specimen. The given values must be taken as a guideline value and may not be applicable to other shapes of the same material.

FZT	Zirconia ZrO ₂			Silicon Carbide SiC		Silicon Nitride Si ₃ N ₄	
	FZM	FZY	FZM/K	SiC 198	SiC 198D	HP 79	GP 79
≥ 4.05	≥ 5.7	≥ 5.5	≥ 6.0	3.1	3.1	> 3.23	3.21
0	0	0	0	< 1	≤ 3	0	0
5	50	30	0.5	-	-	-	1-5
20 000	16 000	17 000	18 000	21 000	26 000	17 000	17 000
3 000	2 000	2 000	2 200	1 200	> 3 000	3 000	3 000
460	500	400	800	350	450	900	760
> 15	> 15	-	9	> 10	≥ 12	15	15
360	185	200	200	330	400	310	320
0.24	0.30	-	0.30	0.20	0.16	0.26	0.28
1 700	900	1 700	1 200	1 400	1 650	1 200	1 200
850	400	400	400	900	1 000	800	700
25	2.5	2.5	2.5	90	125	28***	25***
8.3	10.6*	10.9	10.8	4.4	4.5	3.2	3.2
-	10 ¹⁰	10 ¹⁰	10 ¹⁰	10 ⁻¹	10 ⁷	10 ¹⁰	10 ¹¹
-	10 ⁴	4•10 ²	10 ²	-	-	-	-
-	84**	15	-	-	-	10 ⁷	10 ⁷
white	yellow	white	white				



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