



CORROSION RESISTANCE OF EKasic[®], EKasin[®] AND TETRABOR[®]

Corrosion resistance of EKasic [®] Silicon Carbide, EKasin [®] Silicon Nitride and TETRABOR [®] Boron Carbide materials in aqueous media*																	
Material	Symbol/ Unit	EKasic [®] F		EKasic [®] C		EKasic [®] G		EKasic [®] P		EKasic [®] F plus		EKasic [®] T		EKasin [®] S		TETRABOR [®]	
Temperature	[°C]	120	220	120	220	120	220	120	220	120	220	120	220	120	220	120	220
Medium																	
Deionised water	DI-H ₂ O	++	++	++	++	++	+	++	+	++	++	+	-	+	0	+	-
Concentrated acids (pH < 0)																	
Phosphoric acid	H ₃ PO ₄ (85%)	++	++	++	++	++	++	++	+	++	++	0	--	++	+	+	0
Sulfuric acid	H ₂ SO ₄ (96%)	++	++	++	++	++	++	++	++	++	++	++	0	++	+	++	+
Nitric acid	HNO ₃ (65%)	++	+	++	+	++	++	++	+	++	+	++	++	+	0	+	--
Hydrochloric acid	HCl (32%)	++	++	++	++	++	++	++	++	++	++	0	--	-	--	++	+
Hydrofluoric acid	HF (40%)	+	0	+	-	+	--	0	--	+	0	0	-	0	-	++	+
Hydrofluoric acid/hydrochloric acid mixture	HF/HNO ₃ (1:1)	0	--	0	--	0	--	-	--	0	--	-	--	-	--	0	--
Concentrated alkalines (pH > 14)																	
Sodium hydroxide	NaOH (30%)	++	++	++	++	++	++	++	++	++	++	0	--	-	--	++	+
Potassium hydroxide	KOH (30%)	++	+	++	+	++	+	++	+	++	+	++	+	-	--	++	+

* This general information is based on results of static corrosion tests with a duration of 168 hours. The corrosion attack is characterized by the remained, uneffected, load bearing cross sectional area of the test bars. Legend: 100,0 - 99,00 % = (++) ; 98,99 - 95,00 % = (+) ; 94,99 - 90,00 % = (0) ; 89,99 - 85,00 % = (-) ; < 85,00 % = (- -)

Remark: Experiences in the field show that under tribo-chemical corrosion loading EKasic[®] C exhibits significantly improved resistance compared to EKasic[®] F. Such conditions can not be realized in lab tests.



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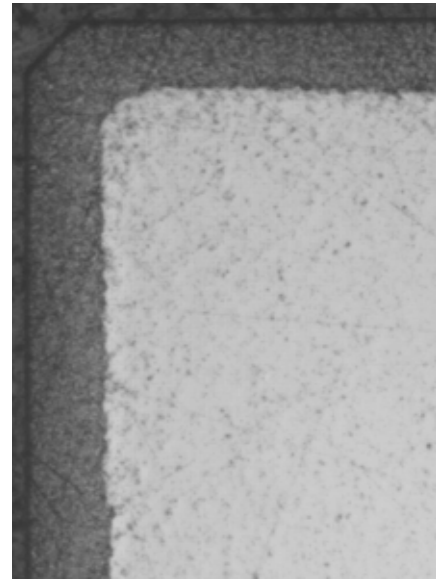
Optical microscope images of polished cross sections of samples after corrosion tests in phosphoric acid at 220 °C for 168 hours.



EKasic[®] F (++)



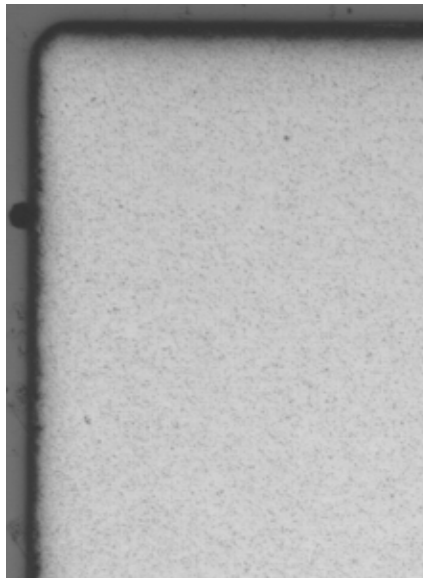
EKasic[®] C (++)



EKasic[®] T (-)



EKasin[®] S (+)



TETRABOR[®] (0)

1000 µm

TDS/corrosion resistance/e-01-2011

The data presented in this leaflet are in accordance with the present state of our knowledge, but do not absolve the user from carefully checking all supplies immediately on receipt. We reserve the right to alter product constants within the scope of technical progress or new developments. The recommendations made in this leaflet should be checked by preliminary trials because of conditions during processing over which we have no control, especially where other companies' raw materials are also being used. The recommendations do not absolve the user from the obligation of investigating the possibility of infringement of third parties' rights and, if necessary, clarifying the position. Recommendations for use do not constitute a warranty, either express or implied, of the fitness or suitability of the products for a particular purpose.

The management system has been certified according to DIN EN ISO 9001, DIN EN ISO 14001. EKasic[®], EKasin[®] und TETRABOR[®] are registered trademarks of ESK Ceramics GmbH Co. KG.

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