

Maximum application temperature of high temperature materials in contact with each other



Al₂O₃ ¹⁾	1950																																																		
AlN ²⁾	1800	1850																																																	
BeO	1700	1800	2300																																																
BN ³⁾	1700	1850	1900	2300																																															
C ⁴⁾	1600	1850	1700	2300	2500																																														
CaO ⁵⁾	1300	1800	1450	2000	1800	2200																																													
Cr₂O₃	1900	1700	2000	1700	1300	1900	2200																																												
HfO₂	1800	1800	1750	1900	1750	2200	1950	2300																																											
MgO ⁶⁾	1950	1600	1800	1700	1500	2200	2100	2100	2200																																										
Mo ⁷⁾	1900	1800	1900	1900	1100	1800	1800	2000	1600	2000																																									
MoSi₂ ⁸⁾	1300	1800	1400	1900	1500	1300	1600	1900	1400	1800	1900																																								
Pt	1700	1600	1700	1500	1600	1700	1700	1700	1700	1700	1200	1700																																							
SiC ⁹⁾	1900	1850	1800	1800	2200	2000	1700	1950	1700	1300	1900	1400	2200																																						
Si₃N₄ ¹⁰⁾	1850	1800	1850	1800	1750	1850	1700	1850	1700	1400	1900	1400	1800	1900																																					
SiO₂ ¹¹⁾	1540	1250	1670	1250	1250	1200	1650	1650	1450	1300	1600	1600	1600	1600	1670																																				
TiO₂ ¹²⁾	1400	1350	1700	1350	1300	1350	1650	1700	1600	1600	1300	1600	1400	1400	1440	1700																																			
W ⁷⁾	2000	1850	2100	2000	1400	1800	1800	2000	1600	2000	1800	1700	1400	1400	1400	1700	2500																																		
Y₂O₃	1600	1650	1580	2000	1700	1700	2000	2200	1900	2000	1300	1700	2100	1850	1650	1700	2200	2200																																	
ZrO₂	1800	1750	2000	1900	1700	2000	2100	2300	1800	1800	1800	1700	1800	1850	1650	1700	1800	2200	2300																																
	Al₂O₃ ¹⁾	AlN ²⁾	BeO	BN ³⁾	C ⁴⁾	CaO ⁵⁾	Cr₂O₃	HfO₂	MgO ⁶⁾	Mo ⁷⁾	MoSi₂ ⁸⁾	Pt	SiC ⁹⁾	Si₃N₄ ¹⁰⁾	SiO₂ ¹¹⁾	TiO₂ ¹²⁾	W ⁷⁾	Y₂O₃	ZrO₂																																

- 1) Al₂O₃: Sapphire up to 2000 °C
- 2) AlN: in atmosphere containing oxygen only up to 1200 °C
- 3) BN: in atmosphere containing oxygen only up to 600 °C
- 4) C: in air beginning oxidation above 700 °C
- 5) CaO: below 800 °C decomposition in air
- 6) MgO: in reducing atmosphere only up to 1700 °C
- 7) Mo, W: in oxidizing atmosphere only up to 400 °C
- 8) MoSi₂: alternation oxidizing/reducing: only up to 1500 °C
- 9) SiC: in air only up to 1650 °C
- 10) Si₃N₄: in atmosphere containing oxygen only up to 1300 °C
- 11) SiO₂: reducing only up to 1300 °C
- 12) TiO₂: very low-stoichiometric in reducing atmosphere

Above the temperatures shown in the intersection of two materials, contact reactions are to be expected.
The temperatures listed in the table are based both on experience and literature references and are to be considered when pure dead-burnt materials come into contact with each other for a time period of hours.
If other materials and impurities are involved and in specialist gas atmospheres, the maximum temperatures may be tremendously lower.
We do not assume any liability for damages resulting from the use of the above data.

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