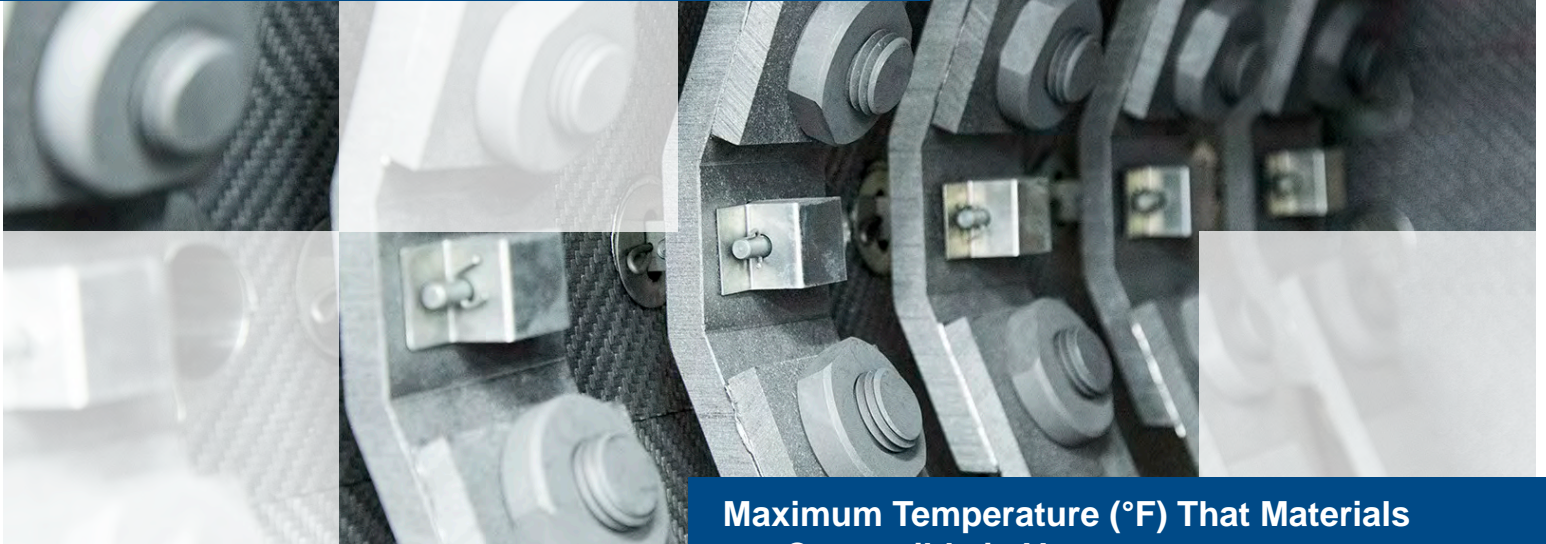


# Technical Data



## Maximum Temperature (°F) That Materials are Compatible in Vacuum

	W	Mo	Al <sub>2</sub> O <sub>3</sub>	BeO	MgO	SiO <sub>2</sub>	ThO <sub>2</sub>	ZrO <sub>2</sub>	Ta	Ti	Ni	Fe	C
W	4,600	3,500	3,300	3,200	2,500	2,500	4,000	2,900			2,300	2,200	2,700
Mo	3,500	3,500	3,300	3,200	2,500	2,500	3,450	3,450	3,500	2,300	2,300	2,200	2,700
Al <sub>2</sub> O <sub>3</sub>	3,300	3,300	3,300						3,300				
BeO	3,200	3,200		3,200	2,500		3,200	3,200	2,900				3,200
MgO	2,500	2,500		2,500	2,500		2,500	2,500	2,500				2,500
SiO <sub>2</sub>	2,500	2,500				2,500							2,500
ThO <sub>2</sub>	4,000	3,450		3,200	2,500		3,600	4,000	3,450				3,600
ZrO <sub>2</sub>	2,900	3,450		3,200	2,500		4,000	3,700	2,900				2,900
Ta		3,500	3,300	2,900	2,500		3,450	2,900	4,250	2,300	2,300	2,200	3,500
Ti		2,300							2,300	2,300	1,700	1,900	2,300
Ni	2,300	2,300							2,300	1,700	2,300	2,200	2,300
Fe	2,200	2,200							2,200	1,900	2,200	2,200	2,000
C	2,700	2,700		3,200	2,500	2,500	3,600	2,900	3,500	2,300	2,300	2,000	4,000

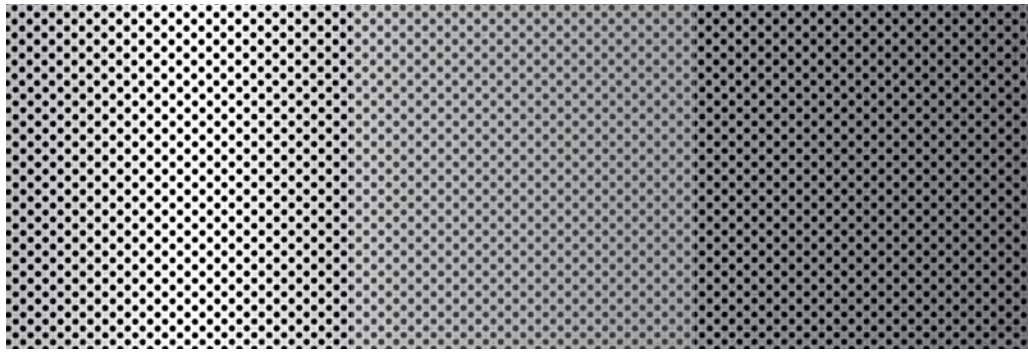
Note: 1. For vacuums of 10<sup>-3</sup> to 10<sup>-4</sup> mmHg

2. Though various materials may be compatible at a particular temperature, one material itself may be unstable at that level of vacuum

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Ipsen delivers proven vacuum heat-treating technology that allows you to achieve maximum flexibility and meet strict industry demands. Whether your process can benefit from increased heating and cooling control, precise case depth and uniformity or flexible quenching options, Ipsen has the heat treatment solutions for you. Ipsen's vacuum furnaces also offer a wide range of sizes and versatility of processes, including annealing, brazing, hardening, low-pressure carburizing, solution nitriding, stress relieving and tempering.

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