

### CHEMICAL REACTIONS OF TUNGSTEN

<u>Substance</u>	<u>Temperature</u>	<u>Reaction</u>
Air or oxygen	20 °C 400 °C	Stable Oxidation starts
Hydrogen	All temperatures	Stable
Nitrogen	>1500 °C	Nitriding starts
Water	20 °C	Stable
Steam	>700 °C	Oxidation
CO	>900 °C	Carburization
CO <sub>2</sub>	>1200 °C	Oxidation
Fluorine	20 °C	Fluoride forms
Chlorine	>250 °C	Chloride forms
Bromine	Red heat	Bromide forms
Iodine	Red heat	Iodide forms
H <sub>2</sub> S	Red heat	Superficial action
Sulfur	Red heat	Attacked slowly
Phosphorus	Red heat	No action
Carbon	>900 °C	Carburization
Hydrocarbons	>900 °C	Carburization
Silicon	>1000 °C	Silicide forms
Mercury	600 °C	Slight amalgamation
Sodium	900 °C	Stable
Potassium	900 °C	Stable
Magnesium	20 °C	Stable
NaOH, 10% solution	20 °C	Stable
NaOH, KOH	Molten	Rapid attack
Na- / K- nitrite or nitrate, aqueous	Room temp.	Very slight reaction
Na- / K- nitrite or nitrate	Molten	Dissolves aggressively
H <sub>2</sub> SO <sub>4</sub> , dilute	20 °C 100 °C	Stable Slight attack
H <sub>2</sub> SO <sub>4</sub> , conc.	20 °C 110	Slight attack Slight attack
HCl, conc.	20 °C 100 °C	Stable Slight attack
HNO <sub>3</sub> , conc.	100 °C	Slight attack
Aqua Regia	100 °C	Rapid attack
HF	100 °C	Slight attack
HF + HNO <sub>3</sub>	20 °C	Rapid attack