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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 ₂ | >1200 °C | Oxidation |
| Fluorine | 20 °C | Fluoride forms |
| Chlorine | >250 °C | Chloride forms |
| Bromine | Red heat | Bromide forms |
| Iodine | Red heat | Iodide forms |
| H ₂ 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 ₂ SO ₄ , dilute | 20 °C 100 °C | Stable Slight attack |
| H ₂ SO ₄ , conc. | 20 °C 110 | Slight attack Slight attack |
| HCl, conc. | 20 °C 100 °C | Stable Slight attack |
| HNO ₃ , conc. | 100 °C | Slight attack |
| Aqua Regia | 100 °C | Rapid attack |
| HF | 100 °C | Slight attack |
| HF + HNO ₃ | 20 °C | Rapid attack |