

# MATERIAL SAFETY DATA SHEET

MSDS 4.411



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NFPA 704 DESIGNATION



## SECTION I

CHEMICAL FAMILY: Metal Alloy  
CHEMICAL NAME: Palladium - Ruthenium alloy  
TRADE NAME: ELKONIUM® 405

## SECTION II - INGREDIENTS AND HAZARDS

INGREDIENT		CAS REGISTRY #	%	ACGIH TLV/TWA mg/m <sup>3</sup>	OSHA PEL/TWA mg/m <sup>3</sup>
Palladium	(Pd)	7440-05-3	89	N/A	N/A
Ruthenium	(Ru)	7440-18-8	11	N/A	N/A

## SECTION III - PHYSICAL DATA

MELTING POINT °C: (≈ 1500)  
VAPOR PRESSURE AT ROOM TEMPERATURE: N/A  
VAPOR DENSITY: N/A  
SOLUBILITY IN WATER: Insoluble  
PERCENT VOLATILE (BY VOLUME %): N/A  
SPECIFIC GRAVITY (g/cc): 12.1  
APPEARANCE: Grey metal

## SECTION IV - FIRE AND EXPLOSIVE DATA

FLASH POINT AND METHOD: N/A  
AUTOIGNITION TEMPERATURE °C: N/A  
FLAMMABILITY LIMITS IN AIR: UPPER: N/A LOWER: N/A  
EXTINGUISHING MEDIA: Type C or type ABC extinguisher  
FIRE FIGHTING PROCEDURES: Use self contained breathing apparatus with a full face piece operated in a pressure demand or positive pressure mode.

### UNUSUAL FIRE AND EXPLOSION HAZARDS:

If this material is reduced to powder form, caution must be used to prevent fire or explosion. To extinguish a metal powder fire use dry graphite or other class "D" fire extinguishing powder. Do NOT use water.

References: *Threshold Limit Values and Biological Exposure Indices*, ACGIH, 1992-1993  
*Code of Federal Regulations - Labor #29*, Rev. July 1, 1990  
*Pocket Guide to Chemical Hazards*, NIOSH, 1990  
*Chemical Regulatory Cross Reference*, 3<sup>rd</sup> Edition, J. J. Keller, 1992 (w updates)  
"NFPA Hazard Rating Index Chart", Labor Safety Supply Co., 1987  
*Fire Protection Guide on Hazardous Materials*, 9<sup>th</sup> Edition, Quincy, MA, 1986  
*Registry of Toxic Effects of Chemical Substances*, NIOSH, 1985-1986  
*Occupational Health Guidelines for Chemical Hazards*, NIOSH/OSHA, 1981  
*Dangerous Properties of Industrial Materials*, 5<sup>th</sup> Edition, Van Nostrand Reinhold Co., 1979

