>>**Entry Name: Molybdenum**

CAS Registry Number: 7439-98-7
Related CAS Registry Numbers(s): 16065-87-5 16727-12-1 21175-08-6 22541-84-0 22541-86-2 23267-94-9 54687-18-2

Mo

Molecular Formula: Mo
Molecular Weight: 95.94
Accurate Mass: 97.905406
Percentage Composition: Mo 100.00%

spectroscopy. Discovered by P.J. Hjelm (Uppsala) in 1781. Has bcc (A2 type) struct. Abundance: 1.2 ppm (earth's crust), 0.01 ppm (sea water)
Source/Synthesis: Main ore is molybdenite (MoS_2), but wulfenite and powellite are also important. Sulfide roasted to MoO_3. Metal obt. by H_2 reduction of oxide, or by aluminothermal process. Also obt. as a by-product of Cu production. Normally obt. in powder form
Use/Importance: Has essential biological role. Alloying element in steels; imparts strength, toughness and wear resistance (most important use). Used in electric and electronic parts e.g. heaters of vacuum tubes. Deposited as thin layer on metals e.g. aluminium to produce friction and wear-resistant surface
Physical Description: Lustrous, silver white appearance in massive state; dull grey as powder. Fairly soft when pure. Less reactive than Cr to acids. Combines with O_2 on heating to give MoO_3
Melting Point: Mp 2626°
Boiling Point: Bp 5560° (4610°)
Hazard & Toxicity: Toxic

Aldrich: 35720-0
Fluka: 69840
Sigma: M8260

>>**Variant: Molybdenum 90**

CAS Registry Number: 15690-77-4

Source/Synthesis: Prod. from Nb (p,4n), or ^{90}Zr (α,4n)
Other Data: I = +0. Decays by orbital electron capture, or $\beta^{(+)}$ emission to ^{90}Nb

>>**Variant: Molybdenum 91**

CAS Registry Number: 14682-99-6

Source/Synthesis: Prod. by Mo (p,d), or Mo (n,2n)
Other Data: I = + 9/2 . Decays by orbital electron capture or $\beta^{(+)}$ emission to ^{91}Nb. There is also an isomer ^{91m}Mo, $t_{½}$ 1.087 min.

>>**Variant: Molybdenum 92**

CAS Registry Number: 14191-67-4

Other Data: I = +0

>>**Variant: Molybdenum 93**

CAS Registry Number: 14119-13-2

Source/Synthesis: Prod. from Mo (n,γ), or ^{93}Nb (p,n)
Other Data: I = + 5/2 . Decays by orbital electron capture to ^{93}Nb

>>**Variant: Molybdenum 93m**

Source/Synthesis: Prod. from Nb (d,2n), ^{90}Zr (α,n), ^{93}Nb (p,n), or ^{92}Zr (α,3n)
Other Data: $I = +^{21}/_2$; μ = +9.21 μ_N. Decays by isomeric transition to ^{93}Mo

>>**Variant: Molybdenum 94**

CAS Registry Number: 14683-00-2

Other Data: I = +0

>>**Variant: Molybdenum 95**