substance: boron compounds with group VI elements
property: properties of boron-molybdenum compounds

Mo_2B

Metallic; preparation [75S], crystalline structure [77L], electronic structure [79P], solid state properties [75S]

critical temperature of superconductivity

T_c	5.86 K	91F, 69E

High temperature thermodynamic properties in [86B].

Thermodynamic properties at temperatures above 300 K [90B].

Low temperature electron heat capacity [86P].

α-MoB

Metallic; preparation [75S, 77G], crystalline structure [76C, 77G], electronic structure [79P], solid state properties [75S], electrical conductivity [79L]

High temperature thermodynamic properties in [86B].

Thermodynamic properties at temperatures above 300 K [90B].

standard enthalpy of formation

ΔH_f^0	−103.9(12) kJ mol^{-1}		experimental	93L

β-MoB

Metallic; preparation [75S, 77G], crystalline structure [76C, 77G], electronic structure [79P], solid state properties [75S], electrical conductivity [79L]

MoB_2

Metallic; preparation [77L] crystalline structure [77L], electronic structure [79P], electronic transport [79K]

Structure: Mo_2B_{5-x} type

Space group: $R\bar{3}m$

lattice parameters

a	3.0152(8) Å	*T* = 300 K	X-ray diffraction	86H
c	20.971(7) Å			

Atomic positions, thermal factors and interatomic distances in [86H].

Further lattice parameters in [96K].

Superconductivity in MoB_2 (compared with NbB_2) [94K3].

Low temperature electron heat capacity [86P].

Mo_2B_5 (Mo_2B_{5-y})

Metallic; preparation [75S], crystalline structure [76S, 76C, 77L], electronic transport [79K]

Structure: rhombohedral

Space group: $R\bar{3}m$

Structure in Fig. 1 [86H, 87O, 96K].

lattice parameters
(in Å)

a	3.0092(4)...3.1201(12)	*T* = 300 K	X-ray diffraction,	96K
c	20.916(7)...16.949(7)			

The lattice parameters depend on the actual composition of the compound or the condition of preparation (temperature of preparation (1400...1800 °C), duration of annealing, furnace type). For a detailed investigation of the homogeneity range within the phase diagram see [96K].

Growth and crystal data for preparation by high temperature solution growth [84L] and references therein.

Refinement of the Mo_2B_5 structural type; defect layers of type K' were identified instead of the previously assumed layers of type K [92K].

critical temperature of superconductivity

T_c	7.45 K	91F, 70C

High temperature thermodynamic properties in [86B].

Thermodynamic properties at temperatures above 300 K [90B].

$Mo_{1-x}B_3$

Preparation [73L], crystalline structure [73L]

MoB_4

Metallic; preparation [75S], crystalline structure [75S], electronic transport [79K]

$Mo_{1-x}Ti_xB_2$

The system and its physico-mechanical properties [99M].

Mo_2FeB_2

Corrosion behaviour of sintered Mo_2FeB_2 base hard alloys [89K].

Sintering mechanism and physical properties of Mo_2FeB_2 type complex borides [94T].

Sintering mechanism and physical properties in [94K1].

Effects of cobalt on the properties and phase formation of Mo_2FeB_2 complex boride base hard alloys [91K].

Mo_2NiB_2

Crystal structural change of boride observed in boride base hard alloys [94O].

$Mo_{1-x}Cr_xAlB$

Preparation by the high-temperature metal-solution method [95Y].

Structure: orthorhombic

Space group: Cmcm

lattice parameters
(in Å)

a	3.1702(6)	$Mo_{1-x}Cr_xAlB$ (x = 0.39)	95Y
b	13.948(2)		
c	3.0743(4)		

Mo_2BC

critical temperature of superconductivity

T_c	7.1 K	91F 70C

M_3B_2 ($M(1)_2M(2)_1B_2$); M(1) = Mo, Cr; M(2) = Ni, Cr, W)

Structure: orthorhombic

Space group: Immm

Unit cell in [94K4].

lattice parameters
(in nm)

a	0.70945 nm	*T* = 300 K	X-ray diffraction, Mo_2NiB_2	94K4
b	0.45746 nm			
c	0.31733 nm			

Structure: tetragonal

Space group: P4/mbm.

Unit cell in [94K4].

lattice parameters

a	0.58042 nm	*T* = 300 K	X-ray diffraction, $(Mo, Cr)_3B_2$	94K4
c	0.31367 nm			

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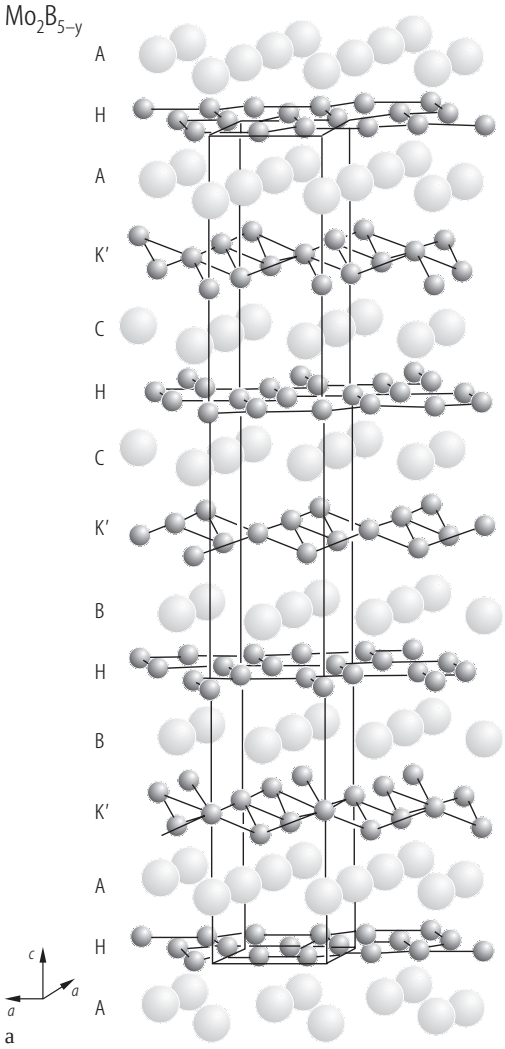
Fig. 1.

Mo_2B_{5-y}. Crystal structure. **(a)** Large circles within the A, B, and C layers represent molybdenum atoms; the small circles in the H and K‘ layers represent boron atoms. **(b)** Detailed view of the K or K‘ layer. Bold lines show the unit cell edges. "Dark grey" ($z = ½ + \delta$) and "grey" ($z = ½ - \delta$) circles represent boron atoms in the puckered hexagonal ring; "light grey" circles represent the site at the center of the puckered ring ($z = ½$). All three sites are filled in K layers, while the central site is unoccupied in K‘ layers [86H, 87O, 96K].



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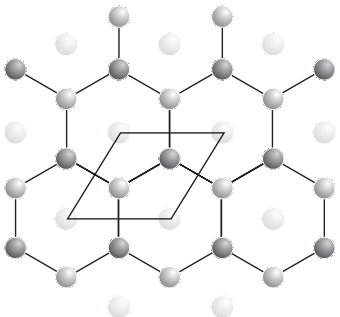

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