

Volume III/7: Crystal Structure Data of Inorganic Compounds

Editors: K.-H. Hellwege and A.M. Hellwege

Authors: W. Pies, A. Weiss. In cooperation with H.-P. Boehm, H.J. Meyer (c3); G. Will (d1 α); G. Pieper (d1 β); R. Allmann (d2)

Part f: Key Elements: d⁴...d⁸-Elements

1977. 14 figs., XXVII, 778 pages. ISBN 3-540-08080-5

Contents

Introduction

1 Subject matter	XIII
2 Arrangement of the substances	XIII
Survey: Distribution of substances within the subvolumes III/7a ... III/7h	XIV
3 Selection and arrangement of information in the tables	XVII
3.1 Selection of information	XVII
3.2 Arrangement of information	XVIII
3.3 Reference sources	XVIII
4 References used in the introduction	XXV
5 List of the space-group symbols for various settings	see volume III/7a, page XXIV
6 List of symbols and abbreviations	XXVI

Tables

XIX Compounds with the key elements chromium, molybdenum, and tungsten	1
XIX.1 Compounds with the key element chromium	1
XIX.1.1 Simple oxo-compounds of chromium (oxochromates)	1
XIX.1.2 Simple oxo-compounds of chromium with H ₂ O, NH ₃ , (oxochromates with H ₂ O, NH ₃ , ...)	50
XIX.1.3 Hydroxo-compounds of chromium (hydroxochromates)	57
XIX.1.4 Oxo-compounds of chromium with further anions	57
XIX.1.4.1 Tetraoxochromates(VI) with further anions	57
XIX.1.4.1.1 Tetraoxochromates(VI) with Fe ⁻ , ... , I	57
XIX.1.4.1.2 Tetraoxochromates(VI) with Fe ⁻ , ..., I and H ₂ O, NH ₃ ,	59
XIX.1.4.1.3 Tetraoxochromates(VI) with O ²⁻ as additional anion	59
XIX.1.4.1.4 Tetraoxochromates(VI) with O ²⁻ as additional anion and H ₂ O, NH ₃	61
XIX.1.4.1.5 Tetraoxochromates(VI) with OH ⁻ as additional anion	62
XIX.1.4.1.6 Tetraoxochromates(VI) with OH ⁻ as additional anion and H ₂ O, NH ₃ ,	65
XIX.1.4.1.7 Tetraoxochromates(VI) with IO ₃ ⁻ , SO ₄ ²⁻ , PO ₄ ³⁻ , ... as further anions	67
XIX.1.4.2 Halogenooxochromates	70
XIX.1.4.2.1 Fluorooxochromates	70
XIX.1.4.2.2 Chlorooxochromates	72
XIX.1.5 Halogenothiochromates, halogenoselenochromates, and halogenotellurochromates	73
XIX.2 Compounds with the key element molybdenum	74
XIX.2.1 Simple oxo-compounds of molybdenum (oxomolybdates)	74
XIX.2.2 Simple oxo-compounds of molybdenum with H ₂ O, NH ₃ , (exomolybdates with H ₂ O, NH ₃ , ...)	193
XIX.2.2.1 Oxomolybdates with H ₂ O	193
XIX.2.2.2 Oxomolybdates with NH ₃	212
XIX.2.3 Oxo-compounds of molybdenum with further anions	212
XIX.2.3.1 Fluorooxomolybdates	212
XIX.2.3.1.1 Anhydrous fluorooxomolybdates	212
XIX.2.3.1.2 Fluorooxomolybdates with H ₂ O	217
XIX.2.3.2 Chloro- and bromooxomolybdates	218
XIX.2.3.3 Oxomolybdates with O ²⁻ as additional anion	220
XIX.2.3.4 Hydroxooxomolybdates	222
XIX.2.3.5 Oxomolybdates with VO ₄ ³⁻ , CrO ₄ ³⁻ , ... as further anions	223
XIX.2.4 Oxothio-, thio-, oxoseleno-, seleno-, and oxoselenothiomolybdates	224
XIX.3 Compounds with the key element tungsten	226
XIX.3.1 Simple oxo-compounds of tungsten (oxotungstates)	226
XIX.3.2 Simple oxo-compounds of tungsten with H ₂ O, NH ₃ , ... (oxotungstates with H ₂ O, NH ₃ ,...)	391

XIX.3.2.1	Oxotungstates with H ₂ O	391
XIX.3.2.2	Oxotungstates with NH ₃	426
XIX.3.3	Oxo-compounds of tungsten with further anions	426
XIX.3.3.1	Fluorooxotungstates	426
XIX.3.3.1.1	Anhydrous fluorooxotungstates	426
XIX.3.3.1.2	Fluorooxotungstates with H ₂ O	432
XIX.3.3.2	Chlorooxotungstates, oxotungstates with chloride ions, and bromooxotungstates	432
XIX.3.3.3	Oxotungstates with O ²⁻ as additional anion and hydroxooxotungstates	434
XIX.3.4	Oxothio-, thio-, oxoseleno-, seleno-, and oxoselenothiotungstates	436
XX	Compounds with the key elements manganese, technetium, and rhenium	438
XX.1	Compounds with the key element manganese	438
XX.1.1	Simple oxo-compounds of manganese (oxomanganates)	438
XX.1.2	Simple oxo-compounds of manganese with H ₂ O, NH ₃ ... (oxomanganates with H ₂ O, NH ₃ , ...)	493
XX.1.2.1	Oxomanganates with H ₂ O	493
XX.1.2.2	Oxomanganates with NH ₃	495
XX.1.3	Oxo-compounds of manganese with further anions	496
XX.1.3.1	Tetraoxomanganates with further anions (F ⁻ , ... , OH ⁻ , SO ₄ ²⁻ , CrO ₄ ²⁻ ...)	496
XX.1.3.2	Halogeno- and hydroxooxomanganates	498
XX.2	Compounds with the key element technetium	500
XX.2.1	Simple oxo-compounds of technetium (oxotechnetates)	500
XX.2.2	Halogenohydroxo- and oxo-hydroxotechnetates	509
XX.3	Compounds with the key element rhenium	509
XX.3.1	Simple oxo-compounds of rhenium (oxorhenates)	509
XX.3.2	Simple oxo-compounds of rhenium with H ₂ O, NH ₃ ... (oxorhenates with H ₂ O, NH ₃ ...)	531
XX.3.2.1	Oxorhenates with H ₂ O	531
XX.3.2.2	Oxorhenates with NH ₃	536
XX.3.3	Oxo-compounds of rhenium with further anions (F ⁻ , ... , O ²⁻ , ...)	537
XX.3.4	Oxothiorhenates	538
XXI	Compounds with the key elements iron, cobalt, nickel, ruthenium, rhodium palladium, osmium, iridium, and platinum	539
XXI.1	Compounds with the key element iron	539
XXI.1.1	Simple oxo-compounds of iron (oxoferrates)	539
XXI.1.2	Oxo-compounds of iron with H ₂ O and hydroxo-compounds of iron	710
XXI.1.2.1	Oxoferrates with H ₂ O	710
XXI.1.2.2	Hydroxoferrates	711
XXI.1.2.3	Hydroxooxoferrates	712
XXI.1.3	Oxo- and hydroxo-compounds of iron with further anions	714
XXI.1.3.1	Fluorooxoferrates	714
XXI.1.3.2	Oxo- and hydroxooxoferrates with Cl ⁻ , ... , SO ₄ ²⁻ , ... as further anions	719
XXI.2	Compounds with the key element cobalt	720
XXI.2.1	Simple oxo-compounds of cobalt (oxocobaltates)	720
XXI.3	Compounds with the key element nickel	732
XXI.3.1	Simple oxo-compounds of nickel (oxoniccolates)	732
XXI.4	Compounds with the key elements ruthenium, rhodium, and palladium	742
XXI.4.1	Oxo-compounds of ruthenium (oxoruthenates)	742
XXI.4.1.1	Anhydrous simple oxoruthenates	742
XXI.4.1.2	Further oxoruthenates	748
XXI.4.2	Oxo-compounds of rhodium (oxorhodates)	749
XXI.4.3	Oxo-compounds of palladium (oxopalladates)	757
XXI.5	Compounds with the key elements osmium, iridium, and platinum	759
XXI.5.1	Oxo-compounds of osmium	759
XXI.5.1.1	Simple oxo-compounds of osmium (oxoosmates)	759
XXI.5.1.2	Halogenooxo- and hydroxooxoosmates	763
XXI.5.1.3	Nitridooxoosmates	764
XXI.5.2	Oxo-compounds of iridium (oxoiridates)	765
XXI.5.3	Compounds with the key element platinum	771
XXI.5.3.1	Simple oxo-compounds of platinum (oxoplatinates)	771
XXI.5.3.2	Hydroxoplatinates	778

XXI.5.3.3 Sulfidoplatinates

778