



>>Entry Name: Barium copper yttrium oxides

CAS Registry Number: 107539-20-8

Related CAS Registry Numbers(s): 109301-94-2 110779-07-2

Molecular Formula: [BaCuOY]

General Statement: Phases in the BaO-CuO-Y₂O₃ system. 3 stable phases exhibit high-temp. superconductivity: Ba₂Cu₃YO_{7-δ}, Ba₂Cu₄YO₈, and Ba₄Cu₇Y₂O_{15.δ}

>>Variant: Barium copper yttrium oxide (BaCuY₂O₅)

CAS Registry Number: 82642-06-6

Molecular Formula: BaCuO₅Y₂

Molecular Weight: 458.682

Accurate Mass: 458.631103

Percentage Composition: Ba 29.94%; Cu 13.85%; O 17.44%; Y 38.77%

General Statement: Struct. contains 11-coord. Ba, square pyramidal Cu and capped trigonal prismatic Y

Source/Synthesis: Synth. from BaCO₃ + Y₂O₃ + CuO at approx. 900°

Physical Description: Green cryst.

Other Data: Non-superconducting. V. many comparisons with high temp. superconductor Ba₂Cu₃YO_{7-δ}

>>Variant: Barium copper yttrium oxide (Ba₂Cu₃YO₇)

Synonym(s): YBCO. Y-123

CAS Registry Number: 109064-29-1

Extra CAS Registry Numbers(s): 108470-72-0 109466-64-0 109489-85-2 109769-06-4 110584-09-3 110602-48-7 110621-08-4 110757-95-4 110757-96-5 111189-04-9 111346-84-0 111369-57-4 111418-74-7 111746-91-9 112802-56-9 112957-65-0 112973-63-4 116269-10-4

Molecular Formula: Ba₂Cu₃O₇Y

Molecular Weight: 666.194

Accurate Mass: 665.499512

Percentage Composition: Ba 41.23%; Cu 28.62%; O 16.81%; Y 13.35%

General Statement: Oxygen deficient; may be formulated as Ba₂Cu₃YO_{7-δ}. Perovskite struct.

Source/Synthesis: Prepd. by heating Y₂O₃ + BaCO₃ + CuO

Use/Importance: High-temp. superconductor with transition temp. 90K

Physical Description: Black

>>Variant: Barium copper yttrium oxide (Ba₂Cu₄YO₈)

CAS Registry Number: 114104-80-2

Molecular Formula: Ba₂Cu₄O₈Y

Molecular Weight: 745.739

Accurate Mass: 744.434025

Percentage Composition: Ba 36.83%; Cu 34.08%; O 17.16%; Y 11.92%

Use/Importance: High-temp. superconductor with transition temp. 81K

>>Variant: Barium copper yttrium oxide (Ba₄Cu₇Y₂O₁₅)

CAS Registry Number: 124365-83-9

Molecular Formula: Ba₄Cu₇O₁₅Y₂

Molecular Weight: 1411.933

Accurate Mass: 1409.933537

Percentage Composition: Ba 38.90%; Cu 31.50%; O 17.00%; Y 12.59%

General Statement: Oxygen deficient; may be formulated as Ba₄Cu₇Y₂O_{15.δ}

Use/Importance: High-temp. superconductor with transition temp. 94K

References: