



>>Entry Name: Manganese oxide (Mn<sub>2</sub>O<sub>3</sub>), 11Cl

Synonym(s): Dimanganese trioxide. Manganese sesquioxide. Cassel brown. C.I. 77727. Cologne earth. Rubens brown. Vandyke brown. Many other names

CAS Registry Number: 1317-34-6

Mn<sub>2</sub>O<sub>3</sub>

Molecular Formula: Mn<sub>2</sub>O<sub>3</sub>

Molecular Weight: 157.874

Accurate Mass: 157.860839

Percentage Composition: Mn 69.60%; O 30.40%

Use/Importance: High purity grades used in prod. of ferrites, thermistors and other electronic applications. Pigment

Physical Description: Insol. H<sub>2</sub>O

Melting Point: Mp 871-887 dec.°

Aldrich: 37745-7

>>Variant: α-form

Molecular Formula: Mn<sub>2</sub>O<sub>3</sub>

Molecular Weight: 157.874

Accurate Mass: 157.860839

Percentage Composition: Mn 69.60%; O 30.40%

Source/Synthesis: Synth. by heating hydrated Mn(NO<sub>3</sub>)<sub>2</sub> at 150-200° and then heating the product to constant weight at 600°. Above this temp. O<sub>2</sub> lost

Physical Description: Black cryst. Reacts with SO<sub>2</sub> when heated to give MnSO<sub>4</sub> and Mn<sub>3</sub>O<sub>4</sub>. With CO Mn<sub>3</sub>O<sub>4</sub> and CO<sub>2</sub> formed

Other Data: μ<sub>eff</sub> = 3.5μ<sub>B</sub> (293K). Forms Mn<sub>3</sub>O<sub>4</sub> when heated *in vacuo* at 300-500°. Antiferromagnetic *ca.* 80K

>>Variant: γ-form

Molecular Formula: Mn<sub>2</sub>O<sub>3</sub>

Molecular Weight: 157.874

Accurate Mass: 157.860839

Percentage Composition: Mn 69.60%; O 30.40%

Source/Synthesis: Synth. by heating γ-MnO<sub>2</sub> *in vacuo* at 500° or careful dehydration of γ-MnOOH

Physical Description: Brown or black

Other Data: Unstable and transforms to α-Mn<sub>2</sub>O<sub>3</sub>. μ<sub>eff</sub> = 4.1μ<sub>B</sub> (293K)

#### References:

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Norrestam, J.R., *Acta Chem. Scand.*, 1967, **21**, 2871, (*cryst struct*)

Grant, R.W. *et al.*, *Phys. Rev.*, 1968, **175**, 686, (*magnetism*)

Tandon, S.P. *et al.*, *Z. Angew. Phys.*, 1970, **29**, 164, (*uv*)

Geller, S., *Acta Cryst. B*, 1971, **27**, 821, (*cryst struct*)

White, W.B. *et al.*, *Spectrochim. Acta A*, 1972, **28**, 501, (*ir*)

*Gmelin Handbook Inorg. Chem., Syst. No. 56*, 1973, **C1**, 97, (*rev, bibl*)

*Kirk-Othmer Encycl. Chem. Technol.*, 3rd edn., Wiley, 1978, **14**, 844, (*uses, props*)

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