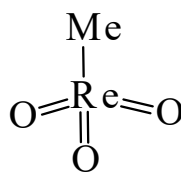




>>Entry Name: Methyltrioxorhenium, 9Cl

Synonym(s): MTO



CAS Registry Number: 70197-13-6

Related CAS Registry Numbers(s): 126001-43-2

Molecular Formula: CH₃O₃Re

Molecular Weight: 249.24

Accurate Mass: 249.963964

Percentage Composition: C 4.82%; H 1.21%; O 19.26%; Re 74.71%

Source/Synthesis: Synth. from Re₂O₇ and SnMe₄, or from [ReO₄]⁽⁻⁾ (e.g. Ag[ReO₄]), Me₃SiCl and SnMe₄

Use/Importance: Commercially available. Catalyses alkene metathesis, alkene oxidn. and alkyne oxidn. (→ enones, diones); catalyses aldehyde alkenation, including alkenation by reaction between an aldehyde and a diazoalkane. Epoxidation catalyst for alkenes; catalyses conversion of allenes to α-hydroxyketones; epoxides → diols by H₂O; ROMP catalyst; catalyses Diels-Alder reactions of α,β-unsaturated aldehydes, ketones with dienes; catalyses formn. of 1,3-dioxolanes from epoxides and aldehydes or ketones; catalyses the oxidn. of secondary amines to nitrones and pyridines to their N-oxides by hydrogen peroxide. Also catalyses the 1,3-transposition of allylic alcohols

Physical Description: Colourless cryst. (by subl. *in vacuo*), thermally stable, dec. at 200°

Melting Point: Mp 111° (106°)

Boiling Point: Subl. 80° *in vacuo*

Solubility: Sol. CHCl₃, C₆H₆, Et₂O, MeCN, EtOH, H₂O; spar. sol. CS₂, hexane

Other Data: Ir ν_{Re-O} 1000ms, 970vs, 966m; ν_{Re-C} 566w cm⁻¹ (Ar matrix). Polymerises in H₂O forming a golden coloured graphite-like weakly paramagnetic, electrically conducting solid

Aldrich: 41291-0

References:

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- Huston, P. *et al.*, *Inorg. Chem.*, 1993, **32**, 4517, (*use, epoxidn catalyst*)
- Junga, H. *et al.*, *Tet. Lett.*, 1993, **34**, 3731, (*use, ROMP catalyst*)
- Herrmann, W.A. *et al.*, *J.A.C.S.*, 1995, **117**, 3223, (*polym*)
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- Romao, C.C. *et al.*, *Chem. Rev.*, 1997, **97**, 3197-3246, (*rev*)
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- Zhu, Z. *et al.*, *J.A.C.S.*, 1997, **119**, 3507-3512, (*use, Diels-Alder catalyst*)
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- Copéret, C. *et al.*, *J.O.C.*, 1998, **63**, 1740-1741, (*use, oxidn of pyridines*)
- Jacob, J. *et al.*, *Organometallics*, 1998, **17**, 1835-1840, (*use, isom. of allylic alcohols*)