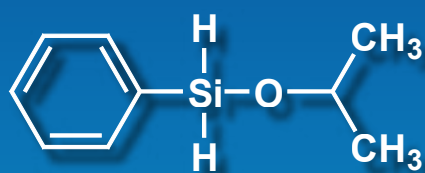


New

CHEMISTRY

TCI

# Hydrosilane for Alkene Hydrogenation and Quaternary Carbon Construction through C–C Bond Formation



Isopropoxy(phenyl)silane

1g / 10g

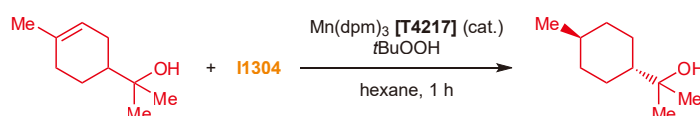
[I1304]

## Advantages

- Easy-to-handle liquid.
- Generates iron hydride from inexpensive iron catalysts, enabling alkyl radical formation via metal-hydride hydrogen atom transfer (MHAT) to poly-substituted alkenes.
- Can also be applied to highly sterically hindered substrates and allows hydrogen transfer reactions as well as quaternary carbon construction via hydroalkylation.

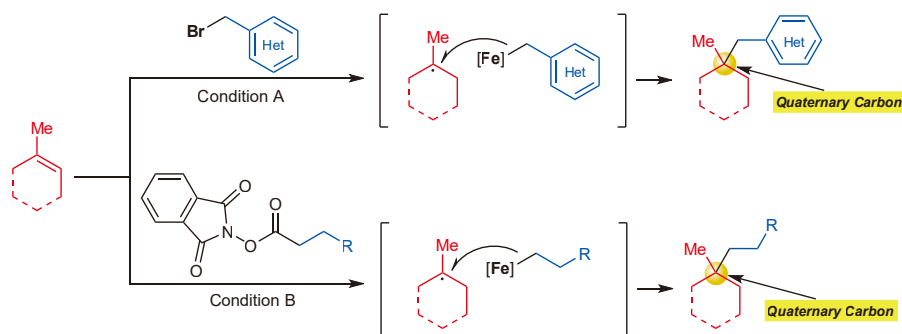
## Applications

### Hydrogen Transfer Reaction of Alkenes <sup>1)</sup>



Hydrogen transfer reactions using **I1304** achieve faster reaction rates, reduced catalyst loadings, and an expanded range of compatible solvents compared to conventional phenylsilane conditions. In addition to hydrogenation, **I1304** is broadly applicable to Mukaiyama-type hydration, hydroamination, and conjugate addition reactions. <sup>1)</sup>

### Markovnikov-type Hydroalkylation of Alkenes <sup>2,3,4)</sup>



Condition A: **I1304**, Fe(acac)<sub>3</sub> [I0079] (cat.), FeTPP(Cl) [I0937] (cat.), *i*PrOH, room temp., air  
Condition B: **I1304**, FeTPP(Cl) [I0937] (cat.), CsOAc [C2430], DCE/acetone, room temp., Ar

- References
- 1) C. Obradors, R. M. Martínez, R. A. Shenvi, *J. Am. Chem. Soc.* **2016**, *138*, 4962. <https://doi.org/10.1021/jacs.6b02032>
  - 2) X. Gan, R. A. Shenvi, *et al.*, *J. Am. Chem. Soc.* **2023**, *145*, 15714. <https://doi.org/10.1021/jacs.3c05428>
  - 3) N. Dao, X. Gan, R. A. Shenvi, *J. Org. Chem.* **2024**, *89*, 16106. <https://doi.org/10.1021/acs.joc.4c00260>
  - 4) X. Gan, P. S. Baran, R. A. Shenvi, *et al.*, *Science* **2024**, *384*, 113. <https://doi.org/10.1126/science.adn5619>

## Related Products

Tris(dipivaloylmethanato)manganese (= Mn(dpm)<sub>3</sub>)

1g / 5g [T4217]

Tris(2,4-pentanedionato)iron(III) (= Fe(acac)<sub>3</sub>)

25g / 100g / 500g [I0079]

Iron(III) Tetraphenylporphyrin Chloride (= FeTPP(Cl))

200mg / 1g [I0937]

Cesium Acetate (= CsOAc)

25g / 100g [C2430]

## Ordering and Customer Service

### TCI AMERICA

Tel : 800-423-8616 / 503-283-1681  
Fax : 888-520-1075 / 503-283-1987  
E-mail : Sales-US@TCIchemicals.com

### TCI EUROPE N.V.

Tel : +32 (0)3 735 07 00  
Fax : +32 (0)3 735 07 01  
E-mail : Sales-EU@TCIchemicals.com

### TCI Deutschland GmbH

Tel : +49 (0)6196 64053-00  
Fax : +49 (0)6196 64053-01  
E-mail : Sales-DE@TCIchemicals.com

### Tokyo Chemical Industry UK Ltd.

Tel : +44 (0)1865 78 45 60  
E-mail : Sales-UK@TCIchemicals.com

### 梯希爱(上海)化成工业发展有限公司

Tel : 800-988-0390 / 021-67121386  
Fax : 021-6712-1385  
E-mail : Sales-CN@TCIchemicals.com

### Tokyo Chemical Industry (India) Pvt. Ltd.

Tel : 1800 425 7889 / 044-2262 0909  
E-mail : Sales-IN@TCIchemicals.com

### TOKYO CHEMICAL INDUSTRY CO., LTD.

Tel : +81 (0)3-5640-8878  
E-mail : globalbusiness@TCIchemicals.com

\* Chemicals itemized in this brochure are for research and testing use only. Please avoid use other than by chemically knowledgeable professionals. \* Information such as listed products and its specifications and so on are subject to change without prior notice. \* The contents may not be reproduced or duplicated in whole or in part without permission of Tokyo Chemical Industry Co., Ltd.