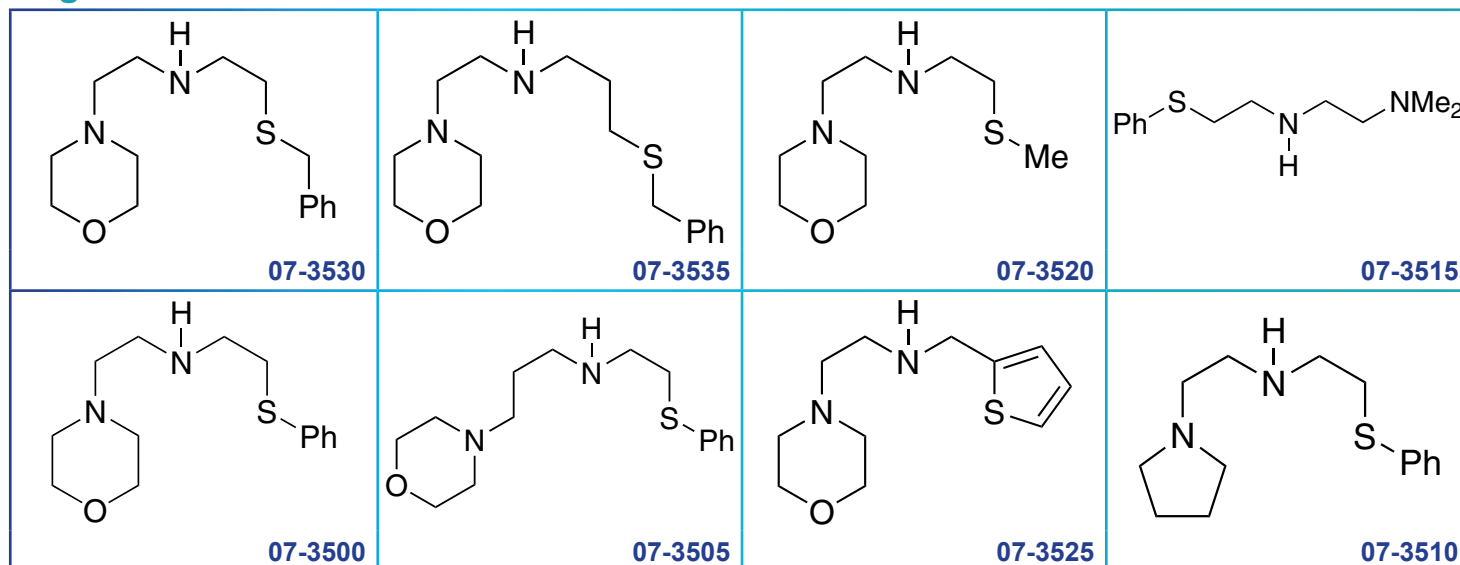
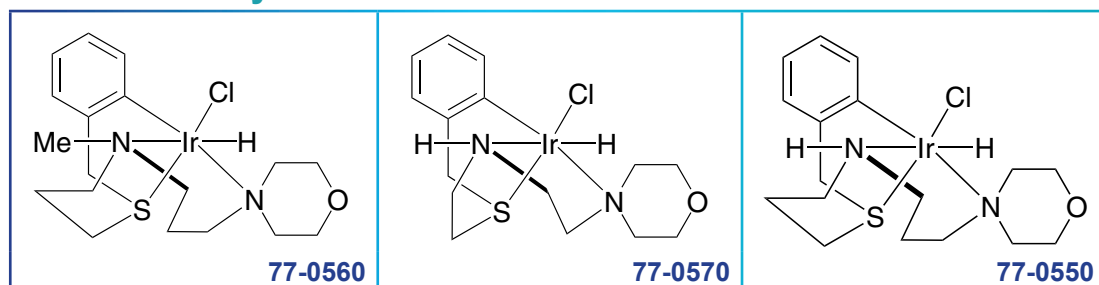


U.S. Patent: PCT/US2015/034793.

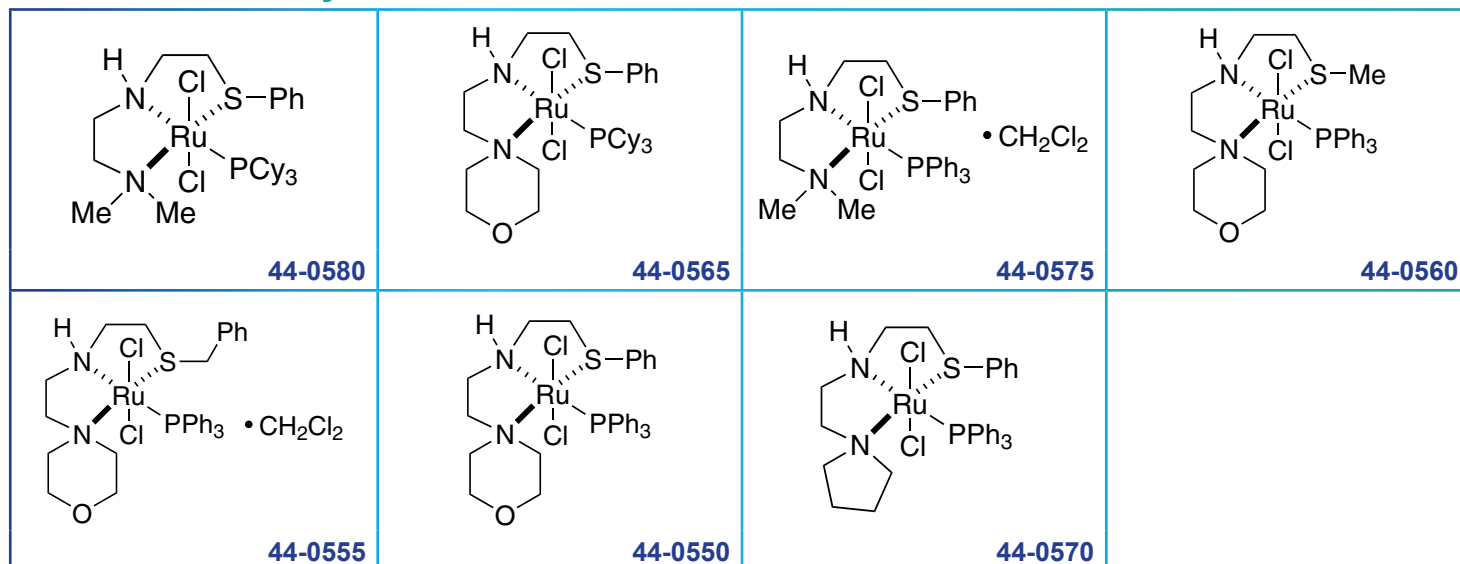
Ligands



Iridium Catalysts



Ruthenium Catalysts



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NITROGEN LIGANDS

07-3530 2-(Benzylthio)-N-(2-morpholinoethyl)ethan-1-amine (1799787-08-8) 50mg
 $C_{15}H_{24}N_2OS$; FW: 280.43; Clear yellow liq.
air sensitive, moisture sensitive

Technical Note:

1. See 07-3500

07-3535 3-(Benzylthio)-N-(2-morpholinoethyl)propan-1-amine (1799787-09-9) 50mg
 $C_{16}H_{26}N_2OS$; FW: 294.46; Clear yellow liq.
air sensitive, moisture sensitive

Technical Note:

1. See 07-3500

07-3515 N1,N1-Dimethyl-N2-[2-(phenylthio)ethyl]ethane-1,2-diamine (1179900-47-0) 100mg
 $C_{12}H_{20}N_2S$; FW: 224.37; Clear yellow liq.
air sensitive, moisture sensitive

Technical Note:

1. See 07-3500

07-3520 2-(Methylthio)-N-(2-morpholinoethyl)ethan-1-amine (1342746-15-9) 100mg
 $C_9H_{20}N_2OS$; FW: 204.33; clear colorless liq.
air sensitive, moisture sensitive

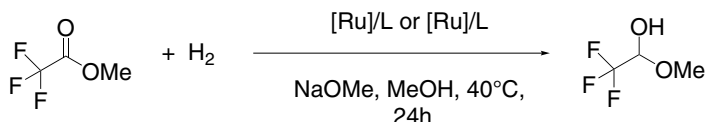
Technical Note:

1. See 07-3500

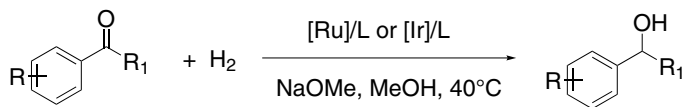
07-3500 2-Morpholino-N-[2-(phenylthio)ethyl]ethan-1-amine (1179894-18-8) 100mg
 $C_{14}H_{22}N_2OS$; FW: 266.40; clear yellow liq.
air sensitive, moisture sensitive

Technical Notes:

1. Ligand for Ru or Ir-catalyzed hydrogenation of carbonyl functionalities.
2. Ligand for Ru or Ir-catalyzed hydrogenation of select aromatic ketones.



Tech. Note (1)
 Ref. (1-3)



Tech. Note (2)
 Ref. (1-3)

References:

1. *Organometallics* **2015**, *34*, 4464.
2. Patent No. WO 2015191505 A1 (2015).
3. Patent No. US 20170088571 A1 (2017).

07-3505 3-Morpholino-N-(2-(phenylthio)ethyl)propan-1-amine (1500636-48-5) 100mg
 $C_{15}H_{24}N_2OS$; FW: 280.43; clear yellow liq.
air sensitive, moisture sensitive

Technical Note:

1. See 07-3500

07-3525 2-Morpholino-N-(thiophen-2-ylmethyl)ethan-1-amine (775293-39-5) 100mg
 $C_{11}H_{18}N_2OS$; FW: 226.34; Clear dark yellow liq.
air sensitive, moisture sensitive

Technical Note:

1. See 07-3500

07-3510 2-(Phenylthio)-N-[2-(pyrrolidin-1-yl)ethyl]ethan-1-amine (1494801-76-1) 100mg
 $C_{14}H_{22}N_2S$; FW: 250.40; clear yellow liq.
air sensitive, moisture sensitive

Technical Note:

1. See 07-3500

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RUTHENIUM CATALYSTS

44-0580 Dichloro[N1,N1-dimethyl-N2-[2-(phenylthio-κS)ethyl]-1,2-ethanediamine-κN1,κN2](tricyclohexylphosphine) ruthenium(II) (1839552-39-4) 100mg
 $C_{30}H_{53}Cl_2N_2PRuS$; FW: 676.77; brown powdr.
air sensitive, moisture sensitive

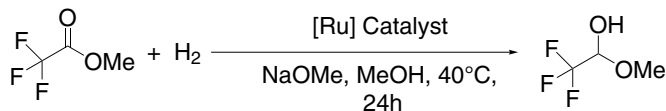
Technical Note:

1. See 44-0565

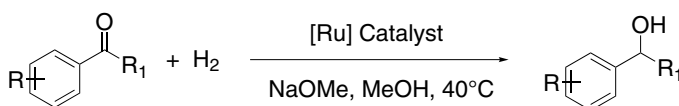
44-0565 Dichloro[N-2-(phenylthio-κS)ethyl]-[4-morpholineethanamine-κNN1,κN1](tricyclohexylphosphine) ruthenium(II) (1799787-22-6) 100mg
 $C_{32}H_{55}Cl_2N_2OPRuS$; FW: 718.81; brown powdr.
air sensitive, moisture sensitive

Technical Notes:

1. Ruthenium catalyst for hydrogenation of carbonyl functionalities.
2. Ruthenium catalyst for hydrogenation of selected aromatic ketones.



Tech. Note (1)
Ref. (1-2)



Tech. Note (2)
Ref. (2-3)

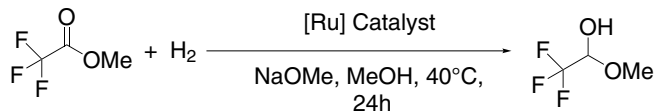
References:

1. *Organometallics* **2015**, 34, 4464.
2. Patent No. WO 2015191505 A1 (2015).
3. Patent No. US 20170088571 A1 (2017).

44-0575 Dichloro[rel-[N2(S)]-N1,N1-dimethyl-N2-[2-[(R)-phenylthio-κS]ethyl]-1,2-ethanediamine-κNN1,κN2] (triphenylphosphine)ruthenium(II), compd. with dichloromethane (1799787-31-7) 100mg
 $C_{30}H_{35}Cl_2N_2PRuS \cdot 1CH_2Cl_2$; FW: 658.63; burgundy xtl.
air sensitive, moisture sensitive

Technical Note:

1. Ruthenium catalyst for hydrogenation of carbonyl functionalities.



Tech. Note (1)
Ref. (1-2)

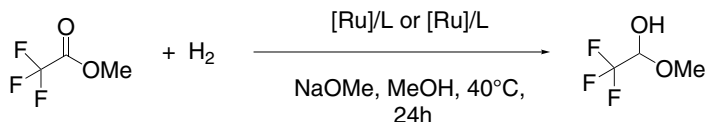
References:

1. *Organometallics* **2015**, 34, 4464.
2. Patent No. WO 2015191505 A1 (2015).

44-0560 Dichloro[rel-[N(S)]-N-2-[(R)-methylthio-κS]ethyl]-4-morpholineethanamine-κNN4,κN4](triphenylphosphine) ruthenium(II) (1799824-01-3) 100mg
 $C_{27}H_{35}Cl_2N_2OPRuS$; FW: 638.59; red xtl.
air sensitive, moisture sensitive

Technical Note:

1. Ligand for Ru or Ir-catalyzed hydrogenation of carbonyl functionalities.



Tech. Note (1)
Ref. (1)

References:

1. *Organometallics* **2015**, 34, 4464.

44-0555 Dichloro[rel-[N(R)]-N-2-[(R)-(phenylmethyl)thio-κS]ethyl]-4-morpholineethanamine-κNN4,κN4](triphenylphosphine)ruthenium(II), compd. with dichloromethane (1799787-29-3) 50mg
 $C_{33}H_{39}Cl_2N_2OPRuS \cdot 0.5(CH_2Cl_2)$; FW: 799.62; red xtl.
air sensitive, moisture sensitive

Technical Note:

1. See 07-3500

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44-0550 Dichloro[rel-[N(S)-N-[2-[(R)-phenylthio-κS]ethyl]-4-morpholineethanamine-κNN4,κN4] (triphenylphosphine)ruthenium(II) (1799787-13-5) 100mg
 C₃₂H₃₇Cl₂N₂OPRuS; FW: 700.66; pink pwdr.
air sensitive, moisture sensitive

Technical Note:

1. See 07-3500

44-0570 Dichloro[rel-[N(S)-N-[2-[(R)-phenylthio-κS]ethyl]-[1-pyrrolidineethanamine-κNN1,κN1] (triphenylphosphine)ruthenium(II) (1799787-20-4) 100mg
 C₃₂H₃₇Cl₂N₂PRuS; FW: 684.67; pink pwdr.
air sensitive, moisture sensitive

Technical Note:

1. See 44-0565

IRIDIUM CATALYSTS

77-0560 Chlorohydro[2-[[[3-[methyl[3-(4-morpholinyl-κN4)propyl]amino-κN]propyl]thio-κS]methyl]phenyl-κC] iridium(III) (1839552-43-0) 50mg
 C₁₈H₃₀ClIrN₂OS; FW: 550.18; yellow xtl.
air sensitive, moisture sensitive

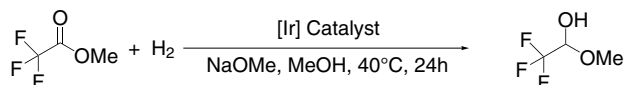
Technical Note:

1. See 77-0550

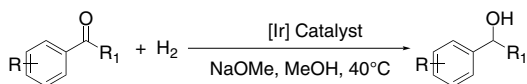
77-0570 Chlorohydro[2-[[[3-[(R)-[2-[(R)-[2-(4-morpholinyl-κN4)ethyl]amino-κN]ethyl]thio-κS]methyl]phenyl-κC] iridium(III) (1799787-26-0) 50mg
 C₁₅H₂₄ClIrN₂OS; FW: 508.10; white pwdr.
air sensitive, moisture sensitive

Technical Notes:

1. Iridium catalyst for hydrogenation of carbonyl functionalities.
2. Iridium catalyst for hydrogenation of selected aromatic ketones.



Tech. Note (1)
Ref. (1-2)



Tech. Note (2)
Ref. (2-3)

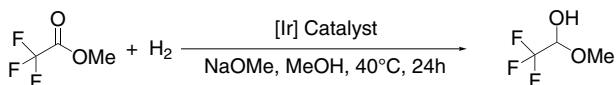
References:

1. *Organometallics* **2015**, 34, 4464.
2. Patent No. WO 2015191505 A1 (2015).
3. Patent No. US 20170088571 A1 (2017).
4. *J. Am. Chem. Soc.* **2017**, 139, 1245.

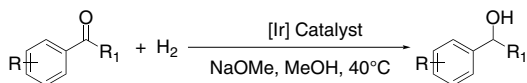
77-0550 Chlorohydro[2-[[[3-[3-(4-morpholinyl-κN4)propyl]amino-κN]propyl]thio-κS]methyl]phenyl-κC] iridium(III) (1799787-28-2) 25mg
 C₁₇H₂₈ClIrN₂OS; FW: 536.15; white pwdr.
air sensitive, moisture sensitive

Technical Notes:

1. Iridium catalyst for hydrogenation of carbonyl functionalities.
2. Iridium catalyst for hydrogenation of selected aromatic ketones.



Tech. Note (1)
Ref. (1-2)



Tech. Note (2)
Ref. (2-4)

References:

1. *Organometallics* **2015**, 34, 4464.
2. Patent No. WO 2015191505 A1 (2015).
3. Patent No. US 20170088571 A1 (2017).
4. *J. Am. Chem. Soc.* **2017**, 139, 1245.

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