

Manufactured under license of Takasago patent.

### 96-6955 Takasago ATH (Asymmetric Transfer Hydrogenation) Catalyst Kit

Contains 250mg unit of the 8 catalysts listed below.

RuCl [FSDPEN] (p-cymene)	RuCl [TSDPEN] (p-cymene)	RuCl [TSDPEN] (mesitylene)
<p><b>44-0156</b></p>	<p><b>44-0148</b></p>	<p><b>44-0154</b></p>
<p><b>44-0157</b></p>	<p><b>44-0149</b></p>	<p><b>44-0155</b></p>
<b>RUCY™</b>		
<p><b>44-0217</b></p>	<p><b>44-0218</b></p>	
<p><b>44-0156</b> <b>Chloro{[(1R,2R)-(-)-2-amino-1,2-diphenylethyl](pentafluorophenylsulfonyl)amido}(p-cymene) ruthenium(II), min. 90%</b>  <b>RuCl[(R,R)-Fsdpen](p-cymene) [1026995-71-0]</b>  <math>C_{30}H_{28}ClF_5N_2O_2RuS</math>; FW: 712.14; orange to brown pwdr.  <i>air sensitive</i></p> <p>Technical Note:            1. See 44-0155.</p>	<p>250mg 1g 5g</p>	
<p><b>44-0157</b> <b>Chloro{[(1S,2S)-(+)-2-amino-1,2-diphenylethyl](pentafluorophenylsulfonyl)amido}(p-cymene) ruthenium(II), min. 90%</b>  <b>RuCl[(S,S)-Fsdpen](p-cymene) [1026995-72-1]</b>  <math>C_{30}H_{28}ClF_5N_2O_2RuS</math>; FW: 712.14; orange to brown pwdr.  <i>air sensitive</i></p> <p>Technical Note:            1. See 44-0155.</p>	<p>250mg 1g 5g</p>	

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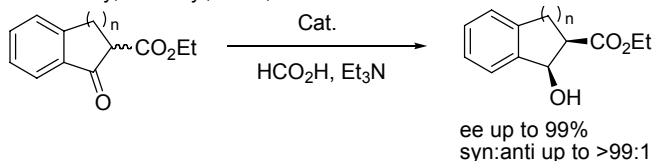
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**44-0148** **NEW** Chloro{[(1R,2R)-(-)-2-amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(p-cymene) ruthenium(II), min. 95%  
**RuCl[(R,R)-Tsdpen](p-cymene)** [192139-92-7]  
 C<sub>31</sub>H<sub>35</sub>ClN<sub>2</sub>O<sub>2</sub>RuS; FW: 636.21; orange to brown powdr.  
*air sensitive*

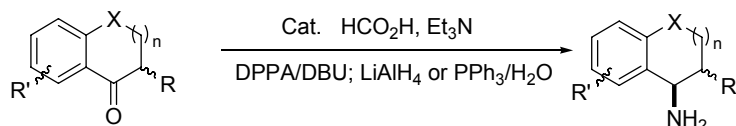
250mg  
1g  
5g

Technical Note:

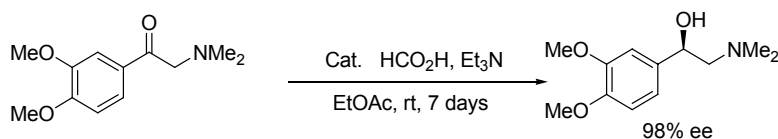
1. This catalyst has shown to effect highly enantioselective hydrogenation of functionalized ketones where the substituents are dialkylamino, hydroxy, siloxy, carbonyl, ester, amide or thioester.



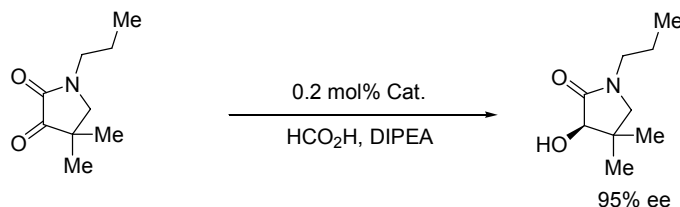
Tech. Note (1)  
Ref. (1)



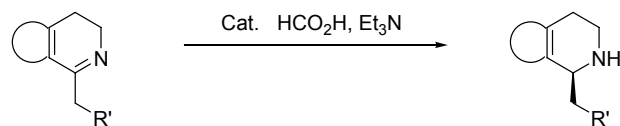
Tech. Note (1)  
Ref. (2)



Tech. Note (1)  
Ref. (3)



Tech. Note (1)  
Ref. (4-6)



Tech. Note (1)  
Ref. (7,8)

References:

1. *Tetrahedron*, **2007**, 63, 7532.
2. *Tetrahedron*, **2007**, 63, 6755.
3. *Tetrahedron: Asymmetry*, **2009**, 20, 1138.
4. *J. Org. Chem.*, **2009**, 74, 1411.
5. *Org. Lett.*, **2007**, 9, 2461.
6. *Org. Lett.*, **2009**, 11, 935.
7. *Angew. Chem. Int. Ed.*, **2009**, 48, 7616.
8. *Biorg. Med. Chem. Lett.*, **2008**, 18, 4110.

**44-0149** **NEW** Chloro{[(1S,2S)-(+)-2-amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(p-cymene)ruthenium(II), min. 95%  
**RuCl[(S,S)-Tsdpen](p-cymene)** [192139-90-5]  
 C<sub>31</sub>H<sub>35</sub>ClN<sub>2</sub>O<sub>2</sub>RuS; FW: 636.21; orange to brown powdr.  
*air sensitive*

250mg  
1g  
5g

Technical Note:

1. See 44-0148.

**44-0154** **NEW** Chloro{[(1R,2R)-(-)-2-amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(mesitylene)ruthenium(II), min. 90%  
**RuCl[(R,R)-Tsdpen(mesitylene)]** [174813-82-2]  
 C<sub>30</sub>H<sub>33</sub>ClN<sub>2</sub>O<sub>2</sub>RuS; FW: 622.18; orange powdr.  
*air sensitive*

250mg  
1g  
5g

Technical Note:

1. See 44-0155.

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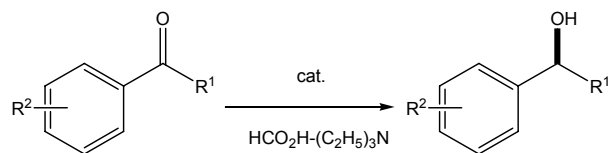
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**44-0155** **NEW** Chloro{[(1*S*,2*S*)-(+)-2-amino-1,2-diphenylethyl](4-toluenesulfonylamido)(mesitylene)ruthenium(II), min. 90%  
**RuCl[(*S*,*S*)-Tsdpen](mesitylene)** [174813-81-1]  
 C<sub>30</sub>H<sub>33</sub>ClN<sub>2</sub>O<sub>2</sub>RuS; FW: 622.18; orange powdr.  
*air sensitive*

250mg  
1g  
5g

Technical Note:

1. Catalyst used in the asymmetric transfer hydrogenation of ketones using formic acid-triethylamine mixture.



Tech. Note (1)  
Ref. (1)

Reference:

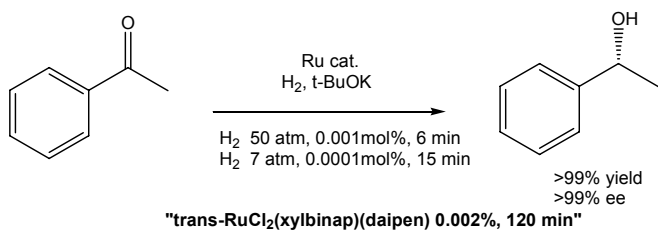
1. *J. Am. Chem. Soc.*, **1996**, *118*, 2521.

**44-0217** **NEW** Chloro{[(*R*)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl][(2*R*)-(-)-1-(4-methoxyphenyl)-1'-(4-methoxyphenyl-kC)-3-methyl-1,2-butandiamine]ruthenium(II) (*R*)-RUCY™-XylBINAP  
 C<sub>71</sub>H<sub>73</sub>ClN<sub>2</sub>O<sub>2</sub>P<sub>2</sub>Ru<sub>2</sub>; FW: 1184.82; yellow to dark brown/green solid  
*air sensitive*  
 Note: Manufactured under license of Takasago patent application no. JP2010-104552. Takasago BINAP Ru Diamine Catalyst Kit component.

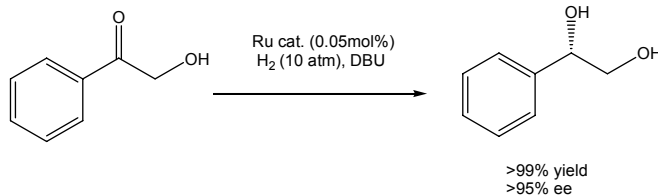
250mg  
1g  
5g

Technical Note:

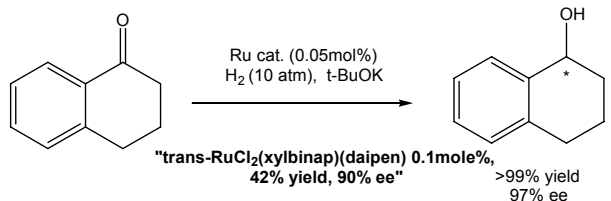
1. Catalyst used for the rapid, and highly selective hydrogenation of ketones.



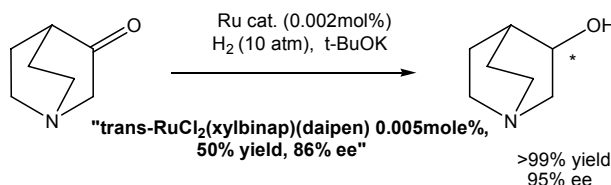
Tech Note (1)  
Ref. (1)



Tech. Note (2)  
Ref. (1)



Tech. Note (3)  
Ref. (1)



Tech. Note (4)  
Ref. (1)

Reference:

1. *Patent Application No.* JP2010-104552.

**44-0218** **NEW** Chloro{(*S*)-(-)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl][(2*S*)-(+)-1-(4-methoxyphenyl)-1'-(4-methoxyphenyl-kC)-3-methyl-1,2-butandiamine]ruthenium(II) (*S*)-RUCY™-XylBINAP [1312713-89-5]  
 C<sub>71</sub>H<sub>73</sub>ClN<sub>2</sub>O<sub>2</sub>P<sub>2</sub>Ru; FW: 1184.82; yellow to dark brown/green solid  
*air sensitive*  
 Note: Manufactured under license of Takasago patent application no. JP2010-104552. Takasago BINAP Ru Diamine Catalyst Kit component.

250mg  
1g  
5g

Technical Note:

1. See 44-0217.

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