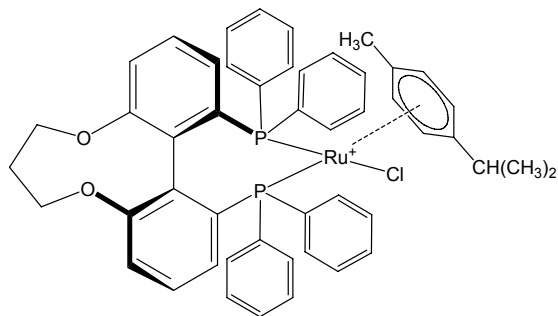


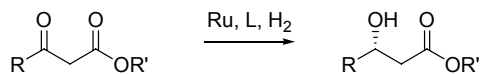
Catalog # 44-0109 Chloro{(R)-(-)-1,13-bis(diphenylphosphino)-7,8-dihydro-6H-dibenzo[f,h][1,5]dioxonin}(p-cymene)ruthenium(II) chloride (R)-C₃-TUNEPHOS-Ru



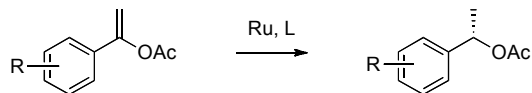
Note: Sold in collaboration with Chiral Quest for research purposes only. Patent US 6,521,769. Chiral Quest Catalyst and Ligand Toolbox Kit component.

Technical Notes:

1. New generation of chiral biaryl phosphine ligands with tunable dihedral angles. The ability to modify the dihedral angle allows for the fine tuning of the catalyst system and optimization of enantioselectivity. See 15-0175.
2. Ru-C₃-TUNEPHOS complexes are used for asymmetric hydrogenation of β -ketoesters¹, enol acetates², cyclic β -amino acids³, α -phthalimide ketones⁴, and α -keto esters⁵.



Tech. Note (2)
Ref. (1)



Tech. Note (2)
Ref. (2)

References:

1. *J. Org. Chem.*, **2000**, 65, 6223.
2. *Org. Lett.*, **2002**, 4, 4495.
3. *J. Am. Chem. Soc.*, **2003**, 125, 9570.
4. *J. Am. Chem. Soc.*, **2004**, 126, 1626.
5. *Synlett.*, **2006**, 126, 1169.