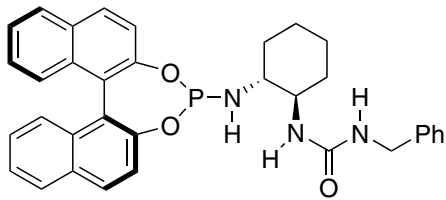
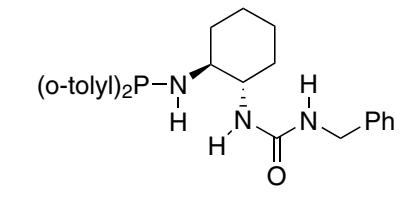
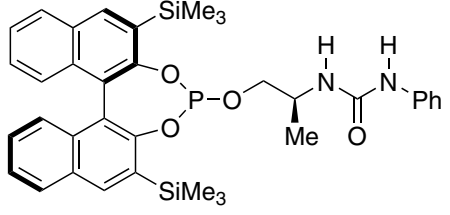
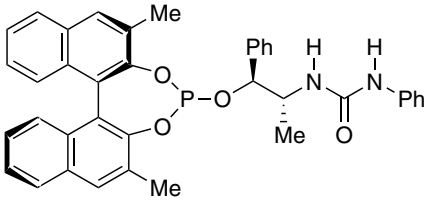
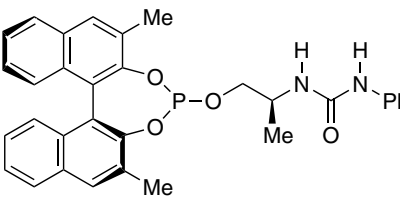
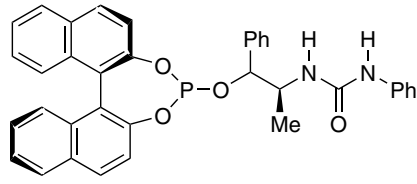
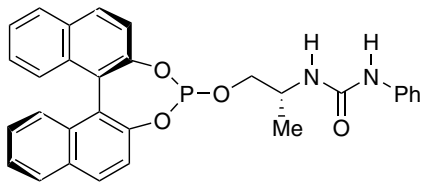
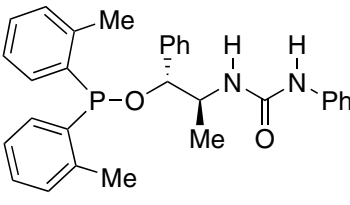
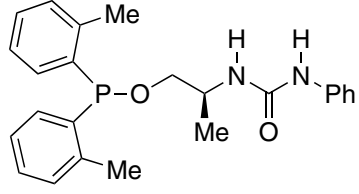
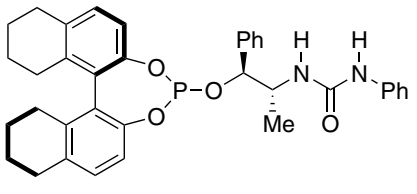
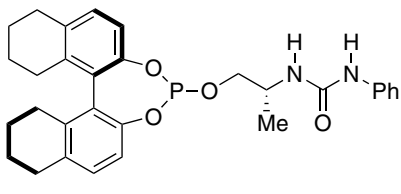




# UREAPhos & METAMORPhos Ligand Kit

for Asymmetric Hydrogenation

# UREAPhos

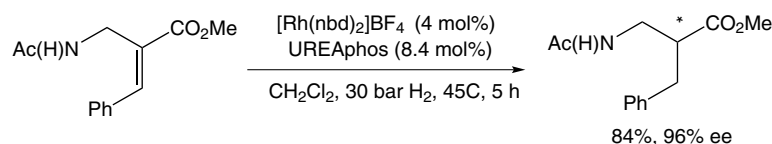
 <p>Item# 15-2208</p>	 <p>Item# 15-2210</p>	 <p>Item# 15-2216</p>
 <p>Item# 15-2206</p>	 <p>Item# 15-2204</p>	 <p>Item# 15-2202</p>
 <p>Item# 15-2200</p>	 <p>Item# 15-2214</p>	 <p>Item# 15-2212</p>
 <p>Item# 15-2224</p>	 <p>Item# 15-2222</p>	

## UREAPhos

15-2208	1-Benzyl-3-((1R,2R)-2-((11bS)-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-ylamino)cyclohexyl)urea, min. 97% (1198080-57-7) C <sub>34</sub> H <sub>32</sub> N <sub>3</sub> O <sub>3</sub> P; FW: 561.61; white powder moisture sensitive, (store cold) Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.	50mg 250mg
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### Technical Note:

- The UREAphos ligands are a new class of ligands containing a urea group, which due to its self-complementary hydrogen bond character, enables the formation of bidentate ligands in a supramolecular fashion. This interesting feature makes this ligand class highly suitable for combinatorial approaches and high throughput experimentation.



### References:

- J. Chem. Soc. Chem. Comm.*, **2007**, 864.
- WO2004103559A2.

15-2210	1-Benzyl-3-[(1S,2S)-2-(di-o-tolylphosphinoamino)cyclohexyl]urea, min. 97% (1858223-87-6) C <sub>28</sub> H <sub>34</sub> N <sub>3</sub> OP; FW: 459.56; white powder moisture sensitive, (store cold) Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.	50mg 250mg
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### Technical Note:

- See 15-2208 (page 3)

15-2216	1-{2S)-1-[(11bR)-2,6-Bis(trimethylsilyl)dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]propan-2-yl}-3-phenylurea, min. 97% (1357562-70-9) C <sub>36</sub> H <sub>41</sub> N <sub>2</sub> O <sub>4</sub> PSi <sub>2</sub> ; FW: 652.87; white powder moisture sensitive, (store cold) Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.	50mg 250mg
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### Technical Note:

- See 15-2208 (page 3)

15-2206	1-[(1S,2R)-1-[(11bR)-2,6-Dimethyldinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]-1-phenylpropan-2-yl]-3-phenylurea, min. 97% (1858223-86-5) C <sub>38</sub> H <sub>33</sub> N <sub>2</sub> O <sub>4</sub> P; FW: 612.65; white powder moisture sensitive, (store cold) Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.	50mg 250mg
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### Technical Note:

- See 15-2208 (page 3)

15-2204	1-[(2S)-1-[(11bS)-2,6-Dimethyldinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]propan-2-yl]-3-phenylurea, min. 97% (1357562-63-0) C <sub>32</sub> H <sub>29</sub> N <sub>2</sub> O <sub>4</sub> P; FW: 536.56; white powder moisture sensitive, (store cold) Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.	50mg 250mg
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### Technical Note:

- See 15-2208 (page 3)

15-2202	1-((1R,2S)-1-((11bR)-Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy)-1-phenylpropan-2-yl)-3-phenylurea, min. 97% (1198080-55-5) C <sub>36</sub> H <sub>29</sub> N <sub>2</sub> O <sub>4</sub> P; FW: 584.60; white powder moisture sensitive, (store cold) Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.	50mg 250mg
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Technical Note:

1. See 15-2208 (page 3)

15-2200	1-((2R)-1-((11bR)-Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy)propan-2-yl)-3-phenylurea, min. 97% UREAPhos (1198080-53-3) C <sub>30</sub> H <sub>25</sub> N <sub>2</sub> O <sub>4</sub> P; FW: 508.50; white powder moisture sensitive, (store cold) Note: Sold under license from InCatT for research purposes only. WO2009/065856. UREAPhos and METAMORPhos Ligand Kit component.	50mg 250mg
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Technical Note:

1. See 15-2208 (page 3)

15-2214	1-((1R,2S)-1-(Di-o-tolylphosphinoxy)-1-phenylpropan-2-yl)-3-phenylurea, min. 97% (1391410-56-2) C <sub>30</sub> H <sub>31</sub> N <sub>2</sub> O <sub>2</sub> P; FW: 482.55; white powder moisture sensitive, (store cold) Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.	50mg 250mg
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Technical Note:

1. See 15-2208 (page 3)

15-2212	1-((2S)-1-(Di-o-tolylphosphinoxy)propan-2-yl)-3-phenylurea, min. 97% C <sub>24</sub> H <sub>27</sub> N <sub>2</sub> P; FW: 406.46; white powder moisture sensitive, (store cold) Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.	50mg 250mg
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Technical Note:

1. See 15-2208 (page 3)

15-2224	1-((1S,2R)-1-((11bR)-8,9,10,11,12,13,14,15-Octahydrodinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy)-1-phenylpropan-2-yl)-3-phenylurea, min. 97% (1858224-21-1) C <sub>36</sub> H <sub>37</sub> N <sub>2</sub> O <sub>4</sub> P; FW: 592.86; white powder moisture sensitive, (store cold) Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.	50mg 250mg
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Technical Note:

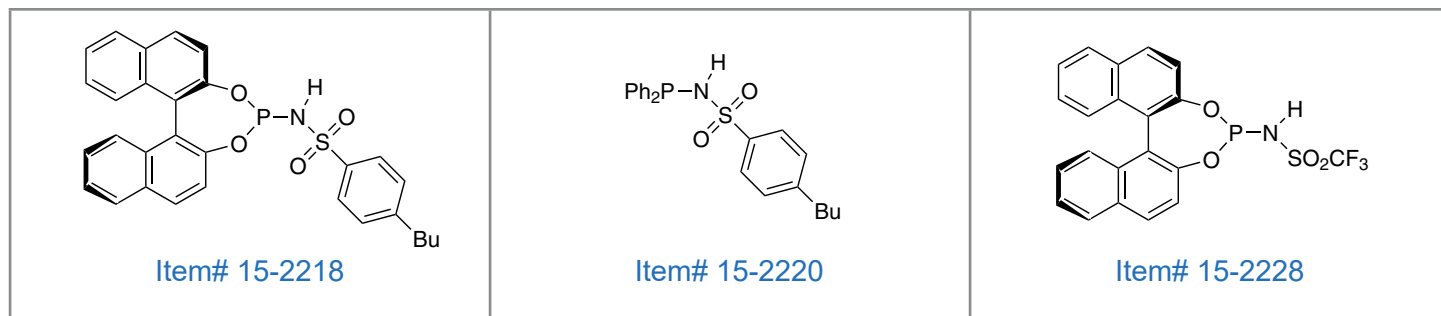
1. See 15-2208 (page 3)

15-2222	1-((2R)-1-((11bR)-8,9,10,11,12,13,14,15-Octahydrodinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy)propan-2-yl)-3-phenylurea, min. 97% (1858223-90-1) C <sub>30</sub> H <sub>33</sub> N <sub>2</sub> O <sub>4</sub> P; FW: 516.57; white powder moisture sensitive, (store cold) Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.	50mg
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Technical Note:

1. See 15-2208 (page 3)

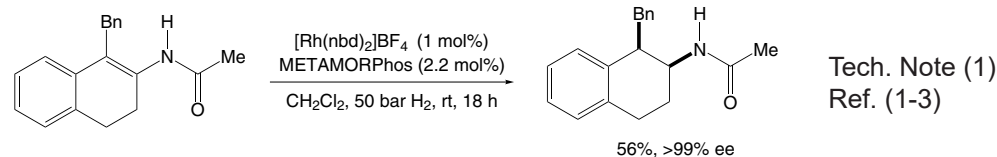
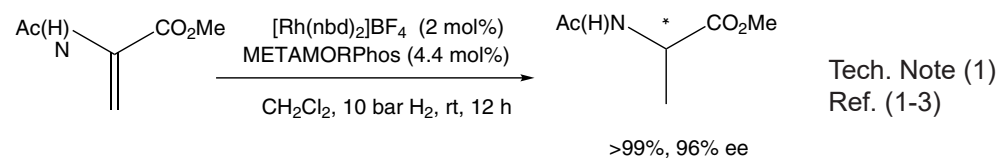
# METAMORPhos



15-2218 4-Butyl-N-[(11bR)-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yl]benzenesulfonamide triethylamine adduct, min. 97% (1150592-91-8) 50mg  
250mg  
C<sub>30</sub>H<sub>26</sub>NO<sub>4</sub>PS·(CH<sub>3</sub>CH<sub>2</sub>)<sub>3</sub>N; FW: 527.57 (628.76); white powder  
moisture sensitive, (store cold)  
Note: Sold under license from InCatT for research purposes only. WO2009/065856.  
UREAPhos and METAMORPhos Ligand Kit component.

## Technical Note:

- Chiral ligand for the rhodium-catalyzed asymmetric hydrogenation of α-β unsaturated substrates.



## References:

- J. Am. Chem. Soc.*, **2009**, 131, 6683.
- Angew. Chem. Int. Ed.*, **2008**, 47, 3180.
- Patent WO2009065856.

15-2220 4-Butyl-N-(diphenylphosphino)benzenesulfonamide, min. 97% (1025096-61-0) 50mg  
250mg  
C<sub>22</sub>H<sub>26</sub>NO<sub>2</sub>PS; FW: 397.47; white powder  
moisture sensitive, (store cold)  
Note: Sold under license from InCatT for research purposes only. WO2009/065856.  
UREAPhos and METAMORPhos Ligand Kit component.

## Technical Note:

- See 15-2218 (page 5)

15-2228 N-[(11bS)-Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yl]-1,1,1-trifluoromethanesulfonamide triethylamine adduct, min. 97% METAMORPhos (1493790-73-0) 50mg  
250mg  
C<sub>21</sub>H<sub>13</sub>F<sub>3</sub>NO<sub>4</sub>PS·(C<sub>2</sub>H<sub>5</sub>)<sub>3</sub>N; FW: 564.56; white powder  
moisture sensitive, (store cold)  
Note: Sold under license from InCatT for research purposes only. WO2009/065856.  
UREAPhos and METAMORPhos Ligand Kit component.

## Technical Note:

- See 15-2218 (page 5)





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