ChemFiles

Vol. 4 No. 1

Polymer-Supported Scavengers and Reagents for Solution-Phase Synthesis

Electrophile Scavengers

Nucleophile Scavengers

Metal Scavengers

Polymer-Supported Bases

Polymer-Supported Oxidizing Reagents

Polymer-Supported Reducing Reagents

Polymer-Supported Coupling Reagents

Polymer-Supported Reagents

Polymer-Supported Catalysts

Polymer-Supported Phosphines

Polymer-Supported Wittig Reagents

sigma-aldrich.com

ALDRICH®

Polymer-Supported Scavengers and Reagents for Solution-Phase Synthesis

Solid-supported reagents and scavengers have been used in organic synthesis for many years. The prominence of parallel synthesis has provided this group of reagents renewed attention. With the use of these products, removal of excess reagents and reaction by-products can be achieved by simple filtration instead of standard workup techniques.

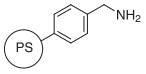
Sigma-Aldrich has developed a variety of scavenger resins and polymer-bound reagents useful for a wide variety of solution-based synthetic reactions. If you do not see a particular supported reagent or scavenger please contact bseitz@sial.com.

In addition to polymer-supported scavengers and reagents, Sigma-Aldrich lists a number of functionalized silica gels and resins for solid-phase synthesis. For a listing of these products, please visit our web site at www.sigma-aldrich.com/drug discovery.

Electrophile Scavengers

Aminomethylated polystyrene

47,366-9
200-400 mesh
2.0 mmol/g
2% DVB



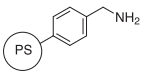
1g
5g
25g

Scavenges acids, acid chlorides, anhydrides, aldehydes and other electrophiles.[1-3]

(1) Flynn, D.L. et al. *J. Am. Chem. Soc.* **1997**, *119*, 4874. (2) Chen J. et al. *Tetrahedron Lett.* **1999**, *40*, 9195. (3) Kaldor, S.W. et al. *ibid.* **1996**, *37*, 7193.

Aminomethylated polystyrene

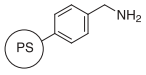
47,367-7
200-400 mesh
4.0 mmol/g
2% DVB



5g
25g
100g

Aminomethylated polystyrene

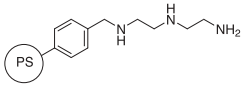
52,276-7
50-100 mesh
2.0 mmol/g
1%DVB



10g
50g

Diethylenetriamine, polymer-bound

49,438-0
200-400 mesh
4.0-5.0 mmol/g
1% DVB



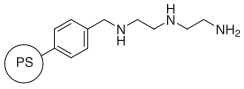
5g
25g

Scavenges acids, acid chlorides, anhydrides, etc.[1-2]

(1) Flynn, D.L. et al. *J. Am. Chem. Soc.* **1997**, *119*, 4874. (2) Booth R.J. Hodges, J.C. *ibid.* **1997**, *119*, 4882.

Diethylenetriamine, polymer-bound

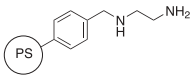
47,978-0
200-400 mesh
2.5-3.0 mmol/g
2% DVB



5g
25g

Ethylenediamine, polymer-bound

47,209-3
200-400 mesh
2.5-3.0 mmol/g
1% DVB



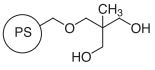
5g
25g
100g

Scavenges aldehydes.

Flynn, D.L. et al. *J. Am. Chem. Soc.* **1997**, *119*, 4874.

2-Hydroxymethyl-1,3-propanediol, polymer-bound

63,432-8
50-100 mesh
2.5-3.0 mmol/g
1% DVB



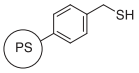
1g
5g

Polymer-bound boronic acid scavenger.

Carboni, B. *Tetrahedron Lett.* **1999**, *40*, 7979.

Mercaptomethyl, polymer-bound

58,998-5
100-200 mesh
2.0-3.0 mmol/g
1% DVB

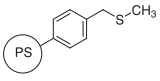


5g
25g
100g

Scavenger for allyl and benzyl halides. Also be used as a scavenger for some oxidants.

Methylsulfanylmethyl, polymer-bound

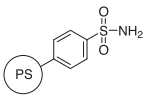
54,956-8
100-200 mesh
0.5-1.3 mmol/g
1% DVB



5g
25g
100g

Sulfonyl amide, polymer-bound

51,621-1
100-200 mesh
1.5-2.0 mmol/g
1% DVB



5g
25g

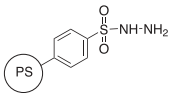
Scavenges acids, acid chlorides, anhydrides, aldehydes, isocyanates and chloroformates.

TO ORDER: Contact your local Sigma-Aldrich office (see back cover), call 1-800-558-9160 (USA), or visit sigma-aldrich.com.

Sulfonyl hydrazine, polymer-bound

56,439-7
30-60 mesh
1.5-3.0 mmol/g
macroporous

5g
25g

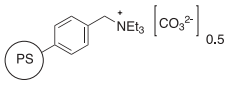


Readily reacts with aldehydes and ketones.

Tetraalkylammonium carbonate, polymer-bound

54,029-3
50-90 mesh
2.5-3.5 mmol/g
macroporous

5g
25g



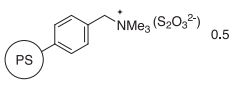
Polymer-supported base used for scavenging acidic molecules.[1-3]

(1) Parlow, J. et al. *Tetrahedron Lett. 38*, 7959. (2) Ley, S. V. et al. *J. Chem. Soc. Perkin Trans. I* **1999**, 1251. (3) Stauffer, S. R.; Katzenellenbogen, *J. Comb. Chem. 2*, 318.

Thiosulfate, polymer-bound

58,997-7
16-50 mesh
3.0-4.0 mmol/g
macroporous

5g
25g
100g



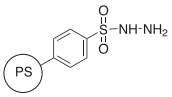
This resin has been reported to successfully quench Dess–Martin and Grieco–Dess–Martin periodinane reagents after oxidation step.[1] Also can be used as a scavenger for allyl and benzyl halides.

(1) Parlow, J.J. et al. *Tetrahedron* **1999**, *55*, 6785.

p-Toluenesulfonyl hydrazide, polymer-bound

53,232-0
100-200 mesh
~2.5 mmol/g
1% DVB

1g
5g
25g



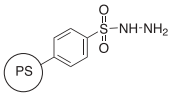
Scavenges aldehydes and ketones.

Shapiro, R.H. *Org. React.* **1979**, *23*, 405.

p-Toluenesulfonyl hydrazide, polymer-bound

53,233-9
100-200 mesh
~1.5 mmol/g
1% DVB

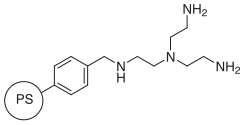
1g
5g
25g
100g



Tris(2-aminoethyl)amine, polymer-bound

47,210-7
200-400 mesh
4.0-5.0 mmol/g
1% DVB

5g
25g
100g



Scavenges acids, isocyanates, imines, acid chlorides and other electrophiles.[1-4]

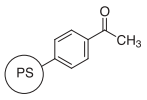
(1) Booth, R.J.; Hodges, J.C. *J. Am. Chem Soc.* **1997**, *119*, 4882. (2) Creswell, M.W. et al. *Tetrahedron* **1998**, *54*, 3983. (3) Blackburn, C. et al. *Tetrahedron Lett.* **1998**, *39*, 3635. (4) Weidner, J. J. et al. *ibid.* **1999**, *40*, 239.

Nucleophile Scavengers

Acetylpolystyrene resin

54,939-8
100-200 mesh
1.0-1.5 mmol/g
1% DVB

1g
5g
25g

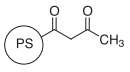


Resin can be used to scavenge nucleophiles.

Activated ketone, polymer-bound

55,147-3
50-90 mesh
3.0 mmol/g
1% DVB

5g
25g
100g



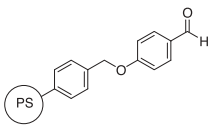
Scavenges primary amines in the presence of secondary amines.[1] Also a highly efficient scavenger for hydrazines.[2]

(1) Yu, Z. et al. *Tetrahedron Lett.* **2000**, *41*, 8963. (2) Shön, V. et al. *Synlett* **2003**, *8*, 983.

4-Benzyloxybenzaldehyde, polymer-bound

47,208-5
200-400 mesh
2.5-3.0 mmol/g
1% DVB

5g
25g
100g



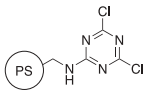
Scavenges primary amine in the presence of secondary amines.[1,2] This resin is also used for the immobilization of amines. Oxidative cleavage from the support is accomplished using DDQ.[3] Used in the synthesis of 2,3-dihydro-4-pyridones via imine intermediates. The 2,3-dihydro-4-pyridones are cleaved from the resin using TFA/dichloromethane (1:1).[4]

(1) Creswell, M.W., et al. *Tetrahedron* **1998**, *54*, 3983. (2) Kaldor, S.W., et al. *Tetrahedron Lett.* **1996**, *37*, 7193. (3) Kobayashi, S.; Aoki, Y. *Tetrahedron Lett.* **1998**, *39*, 7345. (4) Wang, Y.; Wilson, S.R., *ibid.* **1997**, *38*, 4021.

4,6-Dichloro-1,3,5-triazene, polymer-bound

57,929-7
100-200 mesh
1.0-2.0 mmol/g
1% DVB

5g
25g



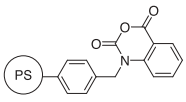
Scavenges alcohols, thiols, phosphines and phosphine oxides.

Falchi, A. et al. *Org Lett.* **2000**, *2*, 3429.

Isatoic anhydride, polymer-bound

51,437-3
200-400 mesh
2.0-2.5 mmol/g
1% DVB

5g
25g



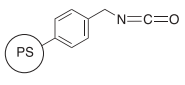
Scavenges primary and secondary amines.

Coppola, G.M., *Tetrahedron Lett.* **1998**, *39*, 8233.

Isocyanate, polymer-bound

47,368-5
200-400 mesh
~2.0 mmol/g
2% DVB

1g
5g
25g

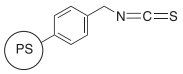


Scavenges amines, anilines and hydrazines.[1-5]

(1) Kaldor, S.W., et al. *Tetrahedron Lett.* **1996**, *37*, 7193. (2) Booth, R.J.; Hodges, J.C., *J. Am. Chem. Soc.* **1997**, *119*, 4882. (3) Dressman, B.A., et al. *Tetrahedron Lett.* **1998**, *39*, 3631. (4) Creswell, M.W., et al. *Tetrahedron* **1998**, *54*, 3983. (5) Hulme, C. et al. *Tetrahedron Lett.* **1999**, *40*, 7925.

Isothiocyanate, polymer-bound

53,860-4
100-200 mesh
>1.0 mmol/g
1% DVB

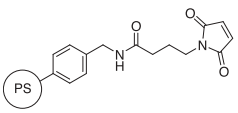


5g
25g
100g

Scavenges amines and hydrazines.

(4-Maleimidobutyramidomethyl)polystyrene

63178
200-400 mesh
~0.4 mmol/g
1% DVB

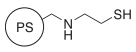


250mg
1g
5g

Polymer reagent used for the trapping of thiols from different solutions and for immobilization fo SH-containing substances.

2-Mercaptoethylamine, polymer-bound

64,102-2
70-90 mesh
1.0-2.0 mmol/g
1% DVB



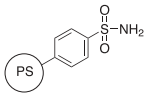
5g
25g

Scavenges benzyl and allyl halides, aldehydes and ketones.

Sheppeck, J.E. et al. *Tetrahedron Lett.* **2000**, *41*, 5329.

Sulfonyl amide, polymer-bound

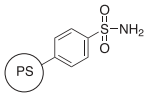
56,437-0
30-60 mesh
1.5-3.0 mmol/g
macroporous



5g
25g

Sufonyl amide, polymer-bound

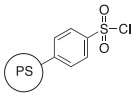
56,438-9
70-90 mesh
1.5-3.0 mmol/g
macroporous



5g
25g

Sulfonyl chloride, polymer-bound

49,921-8
100-200 mesh
1.0-1.5 mmol/g
1% DVB

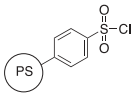


5g
25g
100g

Reacts with nucleophiles.

Sulfonyl Chloride, polymer-bound

49,821-1
100-200 mesh
1.5-2.0 mmol/g
1% DVB

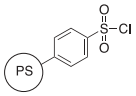


5g
25g
100g

Reacts with nucleophiles.

Sulfonyl Chloride, polymer-bound

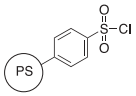
51,623-6
100-200 mesh
1.5 mmol/g
1% DVB



5g
25g
100g

Sulfonyl Chloride, polymer-bound

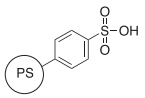
51,622-8
70-90 mesh
2.5-3.0 mmol/g
1% DVB



5g
25g
100g

p-Toluenesulfonic acid, polymer-bound

53,231-2
30-60 mesh
2.0-3.5 mmol/g
macroporous



1g
5g
25g
100g

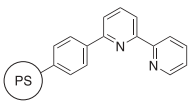
Scavenges nitrogen nucleophiles,[1] activated ester electrophiles,[2] and bases such as EDC.[3]

(1) Chen, J., et al. *Tetrahedron Lett.* **1999**, *40*, 9195. (2) Weidner, J.J. et al. *ibid.* **1999**, *40*, 239. (3) Flynn, D.L. et al. *J. Am. Chem Soc.* **1997**, *119*, 4874.

Metal Scavengers

Bipyridine, polymer-bound

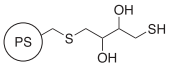
58,999-3
100-200 mesh
1.0-2.0 mmol/g
1% DVB



5g
25g
100g

Dithiothreitol, polymer-bound

64,194-4
100-200 mesh
1.0-2.0 mmol/g
1% DVB

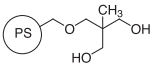


5g
25g

Palladium scavenger.

2-Hydroxymethyl-1,3-propanediol, polymer-bound

63,432-8
50-100 mesh
1.0-2.0 mmol/g
1% DVB



1g
5g

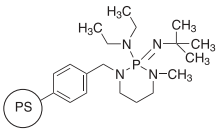
Polymer-bound boronic acid scavenger.

Carboni, B. *Tetrahedron Lett.* **1999**, *40*, 7979.

Polymer-Supported Bases

BEMP, polymer-bound

54,649-0
100-200 mesh
~2.2 mmol/g
1% DVB



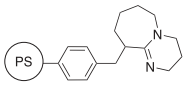
1g
5g
25g

Polymer-bound BEMP[1] has been used as a strong base in the *N*-alkylation of weakly acidic products.[2,3]

(1) Schwesinger, R. Chimia 39, 269 (1985). (2) Baxendale, I.R.; Ley, S.V. *Bioorg. & Med. Chem. Lett.* **2000**, *10*, 1983. (3) Shuttleworth, S.J. *Bioorg. & Med. Chem. Lett.* **2000**, *10*, 2501.

1,8-Diazabicyclo[5.4.0]undec-7-ene, polymer-bound (DBU)

59,512-8
50-100 mesh
1.15 mmol N/g
1% DVB



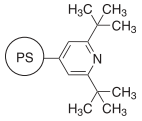
1g
5g

Polymer-supported base.

Tamura, Y. et al. *Synth. Commun.* **1994**, *24*, 2907.

2,6-Di-*tert*-butylpyridine, polymer-bound

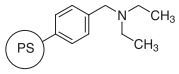
37,782-1
200-400 mesh
~1.8 mmol/g
1% DVB



1g
5g
25g

Diethylamine, polymer-bound

53,733-0
100-200 mesh
1.0-1.5 mmol/g
1% DVB

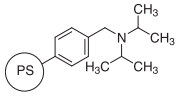


1g
5g
25g

This tertiary amine base catalyzes acylation reations. It also serves as a scavenger of protons and acids.

Diisopropylamine, polymer-bound

53,873-6
100-200 mesh
2.0-3.5 mmol/g
1% DVB



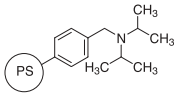
5g
25g

Used in conjunction with polymer-bound isocyanate to scavenge amines.

Hulme, C. et al. *Tetrahedron Lett.* **1999**, *40*, 7925.

Diisopropylamine, polymer-bound

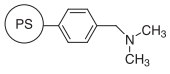
53,846-9
50-90 mesh
3.0-4.0 mmol/g
1% DVB



5g
25g

Dimethylaminomethyl-polystyrene

39205
200-400 mesh
3.0-4.0 mmol/g
2% DVB

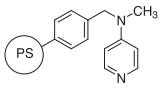


5g
25g

This tertiary amine base catalyzes acylation reactions. It also serves as a scavenger of protons and acids.

Dimethylaminopyridine, polymer-bound, dry

35,988-2
200-400 mesh
5.0-6.0 mmol/g
2% DVB



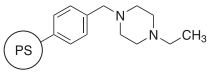
1g
5g
25g
100g

Polymer-bound equivalent of DMAP. Can be used as a catalyst for acylation reactions.[1-3]

(1) Shinkai, S. et al. *Bull. Chem. Soc. Jpn.* **1981**, *54*, 631. (2) Tomoi, M. et al. *Macromol. Chem. Rapid Commun.* **1982**, *3*, 537. (3) Scriven, E.F.V. *Chem. Soc. Rev.* **1983**, *12*, 129.

Ethyl piperazine, polymer-bound

59,000-2
100-200 mesh
3.0-4.0 mmol/g
1% DVB

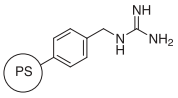


5g
25g
100g

Polymer-bound base.

(Guanidinomethyl)polystyrene

51021
100-300 mesh
~1.0 mmol/g
2% DVB

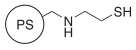


5g
25g

Strong immobilized base.

2-Mercaptoethylamine, polymer-bound

64,102-2
70-90 mesh
1.0-2.0 mmol/g
1% DVB



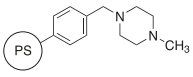
5g
25g

Scavenges benzyl and allyl halides, aldehydes and ketones.

Sheppeck, J.E. et al. *Tetrahedron Lett.* **2000**, *41*, 5329.

Methyl piperazine, polymer-bound

59,001-0
100-200 mesh
3.0-4.0 mmol/g
1% DVB

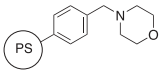


5g
25g
100g

Polymer-bound base.

Morpholine, polymer-bound

49,381-3
200-400 mesh
2.75-3.25 mmol/g
1% DVB



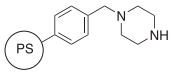
5g
25g

This polymer-bound tertiary amine is used as a base in the synthesis of sulfonamides and amides,[1] serves as a catalyst in the functionalization of secondary amines, with acid chlorides.[2] This resin was also used as a poymer-bound base to scavenge excess acid.[3]

(1) Booth, R.J.; Hodges, J.C. *J. Am. Chem. Soc.* **1997**, *119*, 4882. (2) Blackburn, C. et al. *Tetrahedron Lett.* **1998**, *39*, 3635. (3) Creswell, M.W. et al. *Tetrahedron* **1998**, *54*, 3983.

Piperazine, polymer-bound

52,629-0
200-400 mesh
~1.5 mmol/g
2% DVB



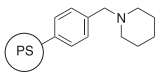
5g
25g
100g

This supported amine has been developed to serve as a Knoevenagel catalyst. Because it is polymer-bound, it eliminates piperidine-derived by-products and reduces transesterification while using alcohol as a solvent.[1] Recently, this resin was shown to be recyclable in the synthesis of benzopyrones using "resin capture" methodology.[2]

(1) Simpson, J. et al. *Tetrahedron Lett.* **1999**, *40*, 7031. (2) Bhat, A.S. et al. *J. Comb. Chem.* **2000**, *2*, 597.

Piperidine, polymer-bound

49,461-5
200-400 mesh
3.0-4.0 mmol/g
1% DVB



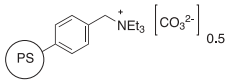
5g
25g
100g

This polymer-bound tertiary amine eases the purification step of organic synthesis.

Booth, R.J.; Hodges, J.C. *J. Am. Chem. Soc.* **1997**, *119*, 4882.

Tetraalkylammonium carbonate, polymer-bound

54,029-3
50-90 mesh
2.5-3.0 mmol/g
macroporous



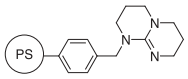
5g
25g

Polymer-supported base used for scavenging acidic molecules.[1-3]

(1) Parlow, J. et al. *Tetrahedron Lett.* *38*, 7959. (2) Ley, S. V. et al. *J. Chem. Soc. Perkin Trans. I* **1999**, 1251. (3) Stauffer, S. R.; Katzenellenbogen, J. *Comb. Chem.* *2*, 318.

1,5,7-Triazobicyclo[4.4.0]dec-5-ene (TBD), polymer-bound

35,875-4
200-400 mesh
2.6 mmol base/g
2% DVB



1g
5g
25g
100g

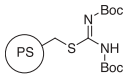
This versatile polymer-bound base has been used as a reusable basic catalyst for regioselective acylations;[1] as both a base for the deprotonation of phenols and as a scavenger of excess phenol in the synthesis of aryl ethers from phenols;[2] in the addition of dialkyl phosphites to a variety of carbonyl compounds, as well as, serving as a catalyst in the nitroaldol (Henry) reaction;[3] and as a scavenger of activated ester electophiles.[4]

(1) Tamura, Y. et al. *Synth. Commun.* **1994**, *24*, 2907. (2) Xu, W. et al. *Tetrahedron Lett.* **1997**, *38*, 7337. (3) Simoni, D. et al. *ibid.* **2000**, *41*, 1607. (4) Weidner, J.J. et al. *ibid.* **1999**, *40*, 239.

Polymer-Supported Oxidizing Reagents

Bis(*tert*-butoxycarbonyl)thiopseudourea, polymer-bound

54,038-2
100-200 mesh
~1.0 mmol/g
1% DVB



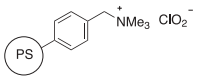
5g
25g

This resin has been utilized in the synthesis of substituted guanidines.

Dodd, D.S.; Wallace, O.B. *Tetrahedron Lett.* **1998**, *39*, 5701.

Chlorite, polymer-bound

56,876-7
20-50 mesh
~2.0 mmol/g
macroporous



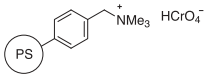
5g
25g
100g

Polymer-supported oxidizing reagent.

Takemoto, T. *Synlett* **2001**, *10*, 1555.

Chromic acid, polymer-supported

35,982-3
20-50 mesh
~2.5 mmol/g
macroporous



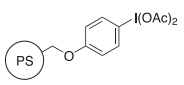
5g
25g
100g

Polymer-supported reagent for the clean oxidation of primary and secondary alcohols to carbonyl compounds in high yields.[1,2] Reagent for the synthesis of aldehydes and ketones from allylic and benzylic halides.[3]

(1) Cainelli, G. et al. *J. Am. Chem. Soc.* **1976**, *98*, 6737. (2) Wade, L.G.; Stell, L.M. *J. Chem Educ.* **1980**, *57*, 438. (3) Cardillo, G. et al. *Tetrahedron Lett.* **1976**, 3985.

4-Hydroxyiodobenzene diacetate, polymer-bound

63,477-8
100-200 mesh
0.5-1.5 mmol/g

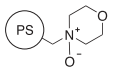


5g
25g
100g

Polymer-bound oxidant.

Morpholine-*N*-oxide, polymer-bound

58,968-3
50-100 mesh
2.0-3.0 mmol/g
1% DVB



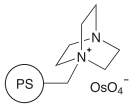
5g
25g

Polymer-supported oxidizing reagent.

W. Kerr et al. *Synlett* **2000**, *11*, 1573.

Osmium tetroxide, polymer-bound

58,996-9
100-200 mesh
0.20-0.30 mmol/g
1% DVB

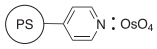


5g
25g

(1) Cainelli, G. *Synthesis* **1989**, 45.

Osmium tetroxide, 1 wt. % on poly(4-vinylpyridine)

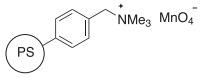
36,509-2



5g
25g

Permanganate, polymer-bound

57,405-8
16-50 mesh
1.5-2.0 mmol/g
macroporous

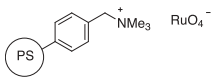


25g
100g

TO ORDER: Contact your local Sigma-Aldrich office (see back cover), call 1-800-558-9160 (USA), or visit sigma-aldrich.com.

Perruthenate, polymer-bound

51,158-7
16-50 mesh
macroporous



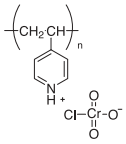
5g
25g

This resin is used to oxidize primary and secondary alcohols to aldehydes and ketones, respectively[1,2] and to oxidize secondary hydroxylamines to provide nitrones.[3] Polymer-supported perruthenate and polymer-support cyanoborohydride were used in tandem in oxidative-reductive amination reactions to convert alcohols to amines.[4]

(1) Hinzen, B.; Ley, S.V. *J. Chem Soc. Perkin Trans. I* **1997**, 1907. (2) Hinzen, B. et al. *Synthesis* **1998**, 977. (3) Hinzen, B.; Ley, S.V. *J. Chem Soc. Perkin Trans. I* **1998**, 1 (4) Ley, S.V., et al. *J. Am. Chem. Soc., Perkin Trans. I* **1998**, 2239.

Pyridinium chlorochromate, polymer-bound

82805
100-200 mesh
~3.5 mmol/g
2% DVB



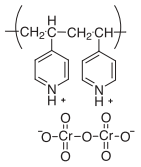
25g
100g

Polymeric recyclable oxidizing agent.[1,2]

(1) Frechet, J.M.J. et al. *J. Org. Chem*. **1978**, *43*, 2618. (2) Bergbreiter, D.E.; Chendran, R. *J. Am. Chem. Soc.* **1985**, *107*, 4792.

Pyridinium dichromate, polymer-bound

82813
100-200 mesh
~2.2 mmol/g
2% DVB



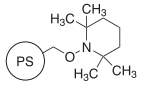
25g
100g

Recyclable polymeric oxidation reagent that is used for the oxidation of alcohols.

Frechet J.M.J. et al. *J. Org. Chem.* **1981**, *46*, 1728.

TEMPO, polymer-bound

56,609-8
100-200 mesh
~1.0 mmol/g
1% DVB



1g
5g

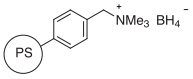
Polymer-bound oxidizing reagent.

Kerr, W. et al. *Synlett* **2000**, *11*, 1573.

Polymer-Supported Reducing Reagents

Borohydride, polymer-supported on Amberlite IRA-400

32,864-2
20-50 mesh
2.5 mmol/g
macroporous



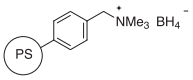
25g
100g
250g

Polymer-supported reducing agent possessing greater selectivity than the corresponding alkali borohydrides.[1] This versatile resin has been shown to effectively reduce α-β unsaturated carbonyl compounds to the corresponding unsaturated alcohols;[2] olefinic bonds,[3] aryl azides and arylsulfonyl azides to the corresponding aromatic amines and aryl sulfonamides using MeOH as solvent;[4] α-β unsaturated nitroalkenes to nitroalkanes;[5] aromatic oximes to the corresponding amines;[6] and aldehydes and ketones to the corresponding alcohols.[7]

(1) Gibson, H.W.; Bailey, J. *J. Chem. Soc. Chem Comm*. **1997**, 815. (2) Sande, A.R. et al. *Tetrahedron Lett*. **1984**, *25*, 3501. (3) Nag, A. et al. *Synth. Commun*. **1987**, *17*, 1007. (4) Kabalka, G.W. et al. *ibid*. **1990**, *20*, 293. (5)Goudgaon, N.M. et al. *ibid.* **1989**, 805. (6) Bandgar, B.P. et al. *ibid.* **1995**, *25*, 863. (7) Yoon, N.M. et al. *Tetrahedron Lett.* **1983**, *24*, 5367.

Borohydride, polymer-supported on Amberlite A-26

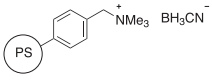
35,994-7
20-50 mesh
2.0-5.0 mmol/g
macroporous



2g
10g
50g
250g

Cyanoborohydride, polymer-supported

52,630-4
30-50 mesh
2.0 mmol/g
macroporous



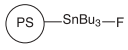
5g
25g
100g

Polymer-supported reducing agent used in reductive amination reactions at room temperature.[1] This resin was utilized with polymer-supported perruthenate (51,158-7 p.5) in oxidative-reductive amination reactions to convert alcohols to amines.[2] It was also employed in the preparation of piperidino-thiomorpholine libraries via reductive amination of ketones.[3]

(1) Hutchins, R.O. et al. *J. Chem. Soc. Chem. Commun*. **1978**, 1088. (2) Ley, S.V. et al. *J. Chem. Soc. Perkin Trans. I* **1998**, 2239. (3) Habermann, J. et al. *J. Chem. Soc. Perkin Trans. I* **1998**, 3127.

Tributyltin fluoride, polymer-bound

27,583-2



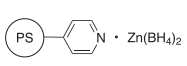
5g
25g

Reagent for the selective desilylation of bis(silyl)enol ethers

Urabe, H.; Kuwajima, I. et al. *Tetrahedron Lett*. **1983**, *24*, 5001.

Zinc borohydride, polymer-bound

59,603-5
16-50 mesh
0.6 mmol/g
1% DVB



5g
25g

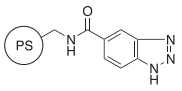
Used to the chemoselective reduction of aldehydes in the presence of ketones.

Firouzabadi, H.; Tamami, B. *Synth. Comm*. **1991**, *21*, 2275-2285.

Polymer-Supported Coupling Reagents

1*H*-Benzotriazole, polymer-bound

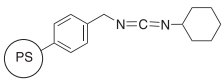
58,904-7
50-100 mesh
1.38 mmol/g
1% DVB



5g
25g

N-Benzyl-*N*'-cyclohexylcarbodiimide, polymer-bound

56,184-3
100-200 mesh
>1.3 mmol/g
1% DVB



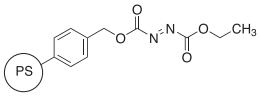
5g
25g
100g

Polymer-supported coupling reagent.[1] Used for the preparation of a dicarboxamidocyclopentanol library.[2]

(1) Weinshenker, G. et al. *Org. Synth. Coll. Vol. VI*, 951 **1988**. (2) Guan, Y. et al. *J. Comb. Chem.* **2000**, *2*, 297.

Diethylazodicarboxylate, polymer-bound

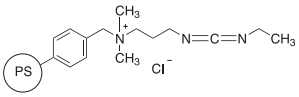
56,185-1
100-200 mesh
1.0-1.5 mmol/g
1% DVB



5g
25g

1-(3-Dimethylaminopropyl)-3-ethyl-carbodiimide, polymer-bound

42,433-1
200-400 mesh
0.5-1.5 mmol/g
2% DVB



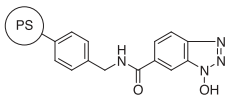
5g
25g

Polymer-supported carbodiimide.[1,2]

(1) Desai, M.C. et al. *Tetrahedron Lett.* **1993**, *34*, 7685. (2) Buckman, B.O. et al. *ibid.***1998**, *39*, 1487.

1*H*-Hydroxybenzotriazole, polymer-bound

09656
100-300 mesh
1.1 mmol/g
2% DVB



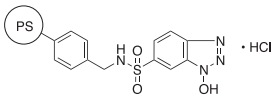
25g

Polymer-bound HOBt for the syntheis of amides and peptides with carbodiimides and other activating reagents without racemization.[1,2]

(1) Pop, I. E. et al. *J. Org. Chem.* **1997**, *62*, 2594. (2) Dendrinos, K. et al. *Chem Commun.* **1998**, 499.

1-Hydroxybenzotriazole-6-sulfonamidomethyl HCl, polymer-bound

56,189-4
100-200 mesh
0.8-1.0 mmol/g
1% DVB

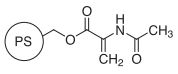


5g
25g

Polymer-Supported Reagents

N-Acetamidoacrylic acid, polymer pound

64,144-8
100-200 mesh
0.5-1.5 mmol/g
1% DVB



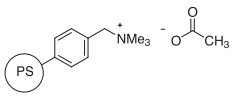
5g
25g

Polymer-bound reagent for α-substituted amino acid and indole synthesis.[1,2]

(1) Kondo, Y. et al. *J. Chem. Soc. Perkin Trans I* **2002**, 2137. (2) Barbaste, M. *Tetrahedron Lett.* **1998**, *39*, 6287.

Acetate, polymer-supported

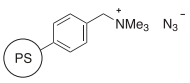
17098
20-50 mesh
1.5 mmol/g
macroporous



10g
50g

Azide on Amberlite IRA-400

36,834-2
20-50 mesh
3.8 mmol/g
macroporous



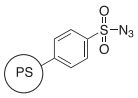
10g
50g

Used to replace activated and nonactivated alkyl halides at room temperature.

Hassner, A.; Stern, M. *Angew. Chem. Int. Ed. Engl.* **1986**, *25*, 478.

Benzenesulfonyl azide, polymer-bound

57,297-7
50-100 mesh
~1.5 mmol/g
macroporous



5g
25g

Polymer-supported diazo transfer reagent.

Green, G.M. et al. *J. Org. Chem.* **2001**, *66*, 2509.

Boronic acid, polymer-bound

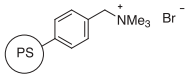
63,262-7
50-100 mesh
1.0-2.0 mmol/g
1% DVB

1g
5g

Polymer reagent for oligosaccharide synthesis

Bromide, polymer-supported

51,376-8
40-60 mesh
3.5 mmol/g
macroporous



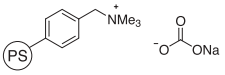
25g

Polymer-supported reagent used in the preparation of alkyl bromides from alkyl chlorides.[1] And in the chlorobromination of olefins and acetylenes.[2]

(1) Cainelli, G. et al. *Synthesis* **1976**, 472. (2) Bongini, A. et al. *ibid.* **1980**, 143.

Carbonate, polymer-supported

21850
20-50 mesh
3.5 mmol/g
macroporous
water ~20%



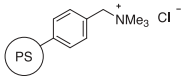
10g
50g
?g

Polymeric reagent for the conversion of alkyl halides to alcohols in an aprotic solvent.[1-3] This resin has also been used in the synthesis of oxazolidinones[4] and aziridines.[5]

(1) Cardillo, G. et al. *Synthesis* **1981**, 793. (2) Bongini, A. et al. *J. Org. Chem.* **1982**, *47*, 4626. (3) Cardillo G. et al. *Chem. Commun.* **1982**, 1309. (4) Cardillo G. et al. *Tetrahedron* **1985**, *41*, 163. (5) Bongini, A. *J. Chem. Soc. Perkin Trans. I* **1986**, 1339.

Chloride, polymer-supported (Amberlyst A-27 Cl- form)

24898
20-50 mesh
~1.0 mmol/g
macroporous



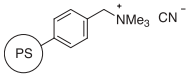
10g
50g

Reagent for substitution reactions.

Cainelli, G. *Synthesis* **1976**, 472.

Cyanide on Amberlyst A-26

33,424-3
20-50 mesh
~3.0 mmol/g
macroporous



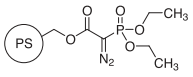
10g
50g

Polymer-supported reagent for the synthesis of alkyl and acyl cyanides from the corresponding halides under aprotic conditions.[1] Catalyst for the benzoin condensation.[2]

(1) Harrison, C.R.; Hodge, P. *Synthesis* **1980**, 299. (2) Castells, J.; Dunach, E. *Chem Lett.* **1984**, 1859.

α-Diazophosphonoacetate, polymer-bound

64,040-9
50-100 mesh
1.0-2.0 mmol/g
1% DVB



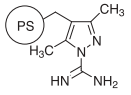
5g
25g

Diazotransfer reagent.

Yamazaki, K.; Kondo, Y. *Chem. Commun.* **2002**, 210.

3,5-Dimethyl-1-1*H*-pyrazole-1-carboxamidine, HCl, polymer-bound

63,342-9
100-200 mesh
1.0-2.0 mmol/g
1% DVB

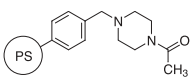


1g
5g

Polymer-bound reagent for amidation of amines to make guanidines.

1-Formylpiperazine, polymer-bound

63,745-9
100-200 mesh
2.0-3.0 mmol/g
1% DVB

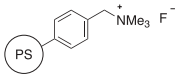


25g
100g

Supported *N*-formyl piperidine equivalent.

Fluoride, polymer-bound

38,778-9
20-50 mesh
2.0-3.0 mmol/g
macroporous



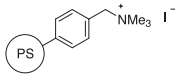
10g
50g

For a convenient synthesis of alkyl fluorides from alkyl halides or sulfonates.

Cainelli, G. et al. *Synthesis* **1976**, 472.

Iodide, polymer-supported

57895
16-50 mesh
2.9 mmol/g
macroporous
water ≤2%



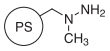
5g
25g

Polymer-supported reagent for the preparation of alkyl iodides from other alkyl halides.

Cainelli, G. et al. *Synthesis* **1976**, 472.

N-Methylhydrazine, polymer-bound

64,034-4
100-200 mesh
2.0-3.0 mmol/g
1% DVB



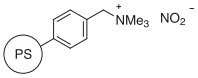
5g
25g

Polymer-bound reagent used to convert aldehydes to nitriles.

Ley, S. *Synlett* **2002**, *5*, 775.

Nitrite, polymer-supported

72580
16-50 mesh
4.0 mmol/g
macroporous
water ~14%



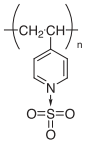
10g
50g

Polymer-supported reagent for the synthesis of nitroalkanes from alkyl halides.

Gelbard, G.; Colonna, S. *Synthesis* **1977**, 113.

Sulfur trioxide pyridine complex, polymer-bound

84738
2.2 mmol/g



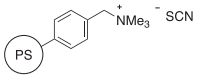
5g
25g

Polymer-supported reagent used for the reduction of α-haloketones,[1] and deoxygenations of sulfoxides.[2]

(1) Olah, G.A. et al. *Synthesis* **1979**, 59. (2) Idem, *ibid*. **1979**, 984.

Thiocyanate, polymer-supported

88547
20-50 mesh
2.5-3.5 mmol/g
macroporous



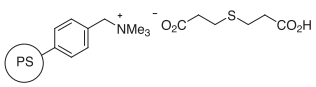
5g
25g

Polymer-supported reagent for the preparation of thiocyanates and isothiocyanates from alkyl halides and sulfonyl halides.[1,2]

(1) Cainelli, G. et al. *Synthesis* **1979**, 141. (2) Harrison, C.R.; Hodge, P. *Synthesis* **1980**, 299.

3,3'-Thiodipropionic acid, polymer-bound

45,901-1 10g
16-50 mesh 50g
2.6 mmol/g
macroporous

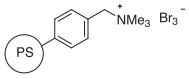


This product serves as a replacement for volatile dimethyl sulfide and has been used for reductive quenching of ozonolysis reactions.

Appell, R.B. et al. *Synth. Commun.* **1995**, *25*, 3589.

Tribromide, polymer-supported

33,809-5 5g
16-50 mesh 25g
1.0 mmol/g 100g
macroporous

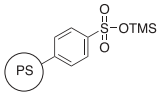


Polymer-supported brominating agent.[1-4]

(1) Cacchi, S. et al. *Synthesis* **1979**, 64. (2) Bongini, A. et al. *Synthesis* **1980**, 143. (3) Smith K. et al. *J. Chem Sock. Perkin Trans. I* **1992**, 1877. (4) Parlow J. J. *Tetrahedron Lett.* **1995**, *36*, 1395.

Trimethylsilyl toluenesulfonate, polymer-bound

59,362-3 5g
16-50 mesh 25g
3.0-4.0 mmol/g
1% DVB



Polymer-supported silylating reagent.

Murata, S.; Noyori, R. *Tetrahedron Lett.* **1980**, *21*, 767-768.

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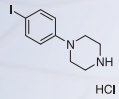
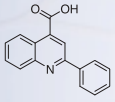
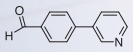
L16,323-6
$C_{10}H_{14}ClIN_2$
MW 324.59
250mg



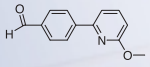
L16,316-3
$C_{16}H_{11}NO_2$
MW 249.27
250mg



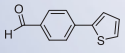
L30,010-1
$C_{12}H_9NO$
MW 183.21
1g



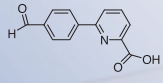
L30,013-6
$C_{13}H_{11}NO_2$
MW 213.24
1g



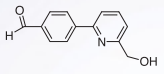
L30,014-4
$C_{11}H_8OS$
MW 188.25
1g



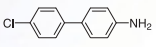
L30,015-2
$C_{13}H_9NO_3$
MW 227.22
1g



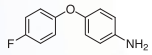
L30,016-0
$C_{13}H_{11}NO_2$
MW 213.24
1g



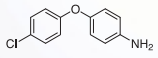
L30,082-9
$C_{12}H_{10}ClN$
MW 203.67
250mg



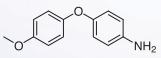
L30,083-7
$C_{12}H_{10}FNO$
MW 203.22
250mg



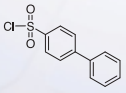
L30,084-5
$C_{12}H_{10}ClNO$
MW 219.67
250mg



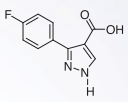
L30,085-3
$C_{13}H_{13}NO_2$
MW 215.25
250mg



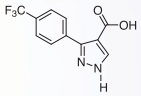
L30,108-6
$C_{12}H_9ClO_2S$
MW 252.72
5g



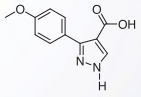
L32,455-8
$C_{10}H_7FN_2O_2$
MW 206.18
250mg



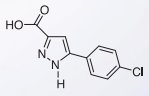
L32,456-6
$C_{11}H_7F_3N_2O_2$
MW 256.19
250mg



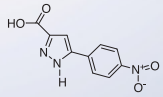
L32,457-4
$C_{11}H_{10}N_2O_3$
MW 218.21
250mg



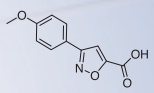
L32,458-2
$C_{10}H_7ClN_2O_2$
MW 222.63
250mg



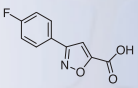
L32,459-0
$C_{10}H_7N_3O_4$
MW 233.18
250mg



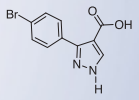
L32,460-4
$C_{11}H_9NO_4$
MW 219.20
250mg



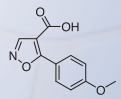
L32,461-2
$C_{10}H_6FNO_3$
MW 207.16
250mg



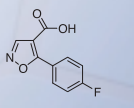
L32,462-0
$C_{10}H_7BrN_2O_2$
MW 267.08
250mg



L32,463-9
$C_{11}H_9NO_4$
MW 219.20
250mg



L32,464-7
$C_{10}H_6FNO_3$
MW 207.16
250mg



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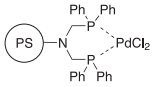
Polymer-Supported Catalysts

Dichlorobis(triphenylphosphine)palladium(0), polymer-bound

59,693-0
100-200 mesh
1.0-2.0 mmol/g
1% DVB

1g
5g



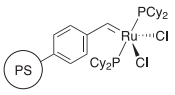
Polymer-supported catalyst for Suzuki[1] and Sonogashira[2] coupling reactions.

(1) Shieh, W.-C. et al. *Synth. Commun.* **2002**, *32*, 1181. (2) Gonthier, E.; Breinbauer, R. *Synlett* **2003**, *7*, 1049.

Grubbs Catalyst, polymer-bound

91501
100-200 mesh
0.1 mmol/g
1% DVB

1g
5g



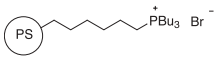
Highly efficient catalyst for various types of metathesis reactions.[1-3]

(1) Schwab, P. et al. *J. Am. Chem. Soc.* **1996**, *118*, 100. (2) Furstner, A.; Langemann, K. *ibid.* **1997**, *119*, 9130. (3) Miller, S. J. et al. *ibid.* **1996**, *118*, 9606.

Hexyltributylphosphonium bromide, polymer-supported

35,933-5
200-400 mesh
~0.5 mmol/g
2% DVB

1g
5g
25g



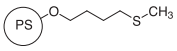
Very efficient phase-transfer catalyst.

Tundo, P. et al. *Synthesis* 1978, 315.

4-(Methylthio)-1-butanol, polymer-bound

58,926-8
100-200 mesh
1.0-2.0 mmol/g
1% DVB

5g
25g



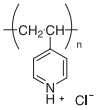
Catalyst used for Khand Cyclization Reaction.

W. Kerr et al. *Chem. Comm.* **2000**, 1467.

Pyridine hydrochloride, polymer-bound

82803
100-200 mesh
~6.5 mmol/g
2% DVB

10g
50g



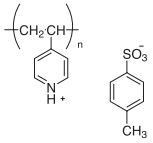
Polymeric catalyst for the acetalization of carbonyl compounds, the esterification of carboxylic acids and preparation of enamines.

Yoshida, J. et al. *Bull. Chem. Soc. Jpn.* **1981**, *54*, 309.

Pyridinium toluene-4-sulfonate, polymer-bound

82817
100-200 mesh
~3.5 mmol/g
2% DVB

10g
50g



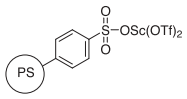
Polymeric catalyst for the tetrahydropyranylation of alcohols.

Menger, F.M.; Chu, C.H. *J. Org. Chem.* **1981**, *46*, 5044.

Scandium trifluoromethanesulfonate, polymer-bound

59,031-2
30-60 mesh
0.5-1.5 mmol/g
macroporous

1g
5g
25g



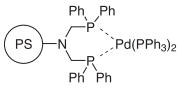
Polymer-supported catalyst.

Kobayashi, S. et al *J. Chem. Comm.* **2001**, *3*, 401.

Tetrakis(triphenylphosphine)palladium (0), polymer-bound

51,157-9
100-200 mesh
0.5-0.9 mmol/g
2% DVB

1g
5g



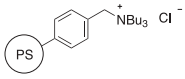
Polymer-bound catalyst for Suzuki Coupling reactions.[1,2]

(1) Jang, S-B. *Tetrahedron Lett.* **1997**, 38, 1793. (2) Idem, *ibid.* **1997**, *38*, 4421.

Tributylmethylammonium chloride, polymer-bound

90806
200-400 mesh
~1.2 mmol/g
1% DVB

5g
25g



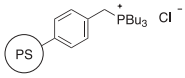
Immobilized tetraalkylammonium salt with high catalytic activity in phase transfer reactions.[1,2]

(1) Cinquini, M. et al. *Chem. Commun.* **1976**, 394. (2) Molinari, H. et al. *J. Am. Chem. Soc.* **1979**, *101*, 3920.

Tributylmethylphosphonium chloride, polymer-bound

90808
200-400 mesh
~1.4 mmol/g
1% DVB

5g
25g



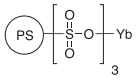
Immobilized tetraalkylphosphonium salt with high catalytic activity in phase transfer reactions.[1-6]

(1) Molinari, H. et al. *J. Am. Chem. Soc.* **1979**, *101*, 3920. (2) Regen, S.L. et al. *J. Org. Chem.* **1981**, *46*, 2511. (3) Chiles, M.S. et al. *ibid.* **1980**, *45*, 2915. (4) Tomoi, M.; Ford, W. T. *J. Am. Chem. Soc.* **1981**, *103*, 3821. (5) Namada, Y. et al. *Chem Pharm. Bull.* **1981**, *29*, 2246. (6) Montanari, F. et al. *J. Org. Chem.* **1983**, *48*, 199.

Ytterbium (III) polystyrenesulfonate

64,103-0
30-60 mesh
0.5-1.5 mmol/g
macroporous

5g
25g



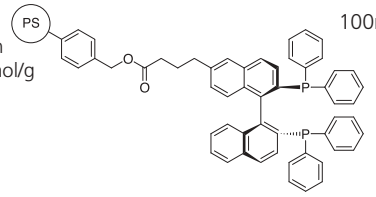
Polymer-bound Lewis Acid.[1,2]

(1) Yu, L. *J. Org. Chem.* **1997**, *62*, 3575. (2) Dondoni, A.; Massi, A. *Tetrahedron Lett.* **2001**, *42*, 7975.

Polymer-Supported Phosphines

R-(+)-2,2'-Bis(diphenylphosphino)-1,1'binaphthalene, polymer-bound

10855
100-200 mesh
0.32-0.45 mmol/g
1% DVB



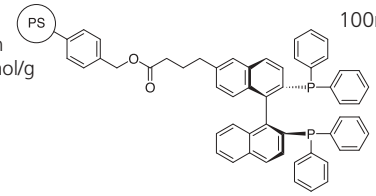
100mg
1g

Used as a polymer-supported BINAP hydrogenation catalyst.

Bayston, D.J. et al. *J. Org. Chem.* **1998**, *63*, 3137.

S-(–)-2,2'-Bis(diphenylphosphino)-1,1'binaphthalene, polymer-bound

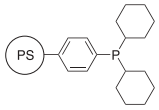
10856
100-200 mesh
0.32-0.45 mmol/g
1% DVB



100mg
1g

Dicyclohexylphenylphosphine, polymer-bound

63,212-0
50-100 mesh
~1.0 mmol/g
1% DVB

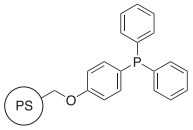


5g
25g

Polymer-bound equivalent of tricyclohexylphoshine.

(4-Hydroxyphenyl)diphenylphosphine, polymer-bound

59,673-6
50-100 mesh
1.0-2.0 mmol/g
1% DVB

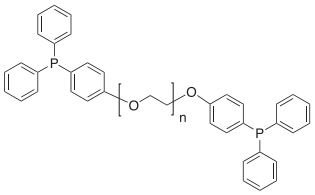


5g
25g

Polymer reagent source of phosphine for Pd coupling reactions.

Poly(ethylene glycol)triphenylphosphine

53,264-9

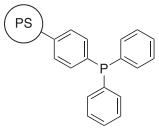


1g
5g

PEG version of polymer-supported triphenylphosphine. Expands the use of this product to include polar solvents.

Triphenylphosphine, polymer-supported

36,645-5
200-400 mesh
~3.0 mmol/g
2% DVB



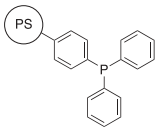
1g
5g
25g
100g

Polymer-bound triphenylphosphine can be used for the preparation of polymer-bound ylides which are useful in Wittig reactions.[1] It can also be used to convert alcohols or carboxylic acids to the corresponding chlorides under relatively mild conditions in high yield.[2-4] Also used in Mitsunobu reactions to prepare aryl ethers.[5]

(1) Bernard, M. et al. *J. Org. Chem.* **1983**, *48*, 326 (and references herein). (2)Relles, H.M.; Schluenz, R.W. *J. Am. Chem. Soc.* **1974**, *96*, 6469. (3) Regen, S.L.; Lee, D.P. *J. Org. Chem.* **1975**, *40*, 1669. (4) Landi, J. J. Jr.; Brinkman, H.R. *Synthesis* **1992**, 1093. (5) Tunoori, A.R.; et al. *Tetrahedron Lett.* **1998**, *39*, 8951.

Triphenylphosphine, polymer-supported

93094
100-200 mesh
~1.6 mmol/g
1% DVB



5g
25g

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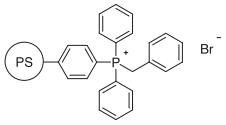
Polymer-Supported Wittig Reagents

Benzyltriphenylphosphonium bromide, polymer-bound

57,292-6
200-400 mesh
~2.0 mmol/g
2% DVB



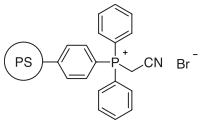
5g
25g

Polymer-supported Wittig reagent.

Bolli, M.H.; Ley, S.V. *J. Chem Soc. Perkin I* 1198, 2243.

(Cyanomethyl)triphenylphosphonium bromide, polymer-bound

57,295-0
200-400 mesh
~2.0 mmol/g
2% DVB



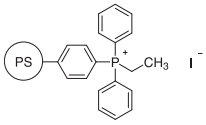
5g
25g

Polymer-supported Wittig reagent.

Bolli, M.H.; Ley, S.V. *J. Chem Soc. Perkin I* 1198, 2243.

(Ethyl)triphenylposphonium iodide, polymer-bound

57,293-4
200-400 mesh
~2.0 mmol/g
2% DVB



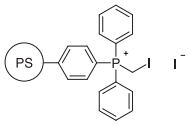
5g
25g

Polymer-supported Wittig reagent.

Bolli, M.H.; Ley, S.V. *J. Chem Soc. Perkin I* 1198, 2243.

Iodomethyltriphenylphosphonium iodide, polymer-bound

57,296-9
200-400 mesh
~2.0 mmol/g
2% DVB



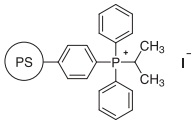
5g
25g

Polymer-supported Wittig reagent.

Bolli, M.H.; Ley, S.V. *J. Chem Soc. Perkin I* 1198, 2243.

Isopropyltriphenylphosphonium iodide, polymer-bound

57,299-3
200-400 mesh
~2.0 mmol/g
2% DVB



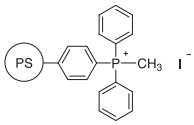
5g
25g

Polymer-supported Wittig reagent.

Bolli, M.H.; Ley, S.V. *J. Chem Soc. Perkin I* 1198, 2243.

Methyltriphenylphosphomium iodide, polymer-bound

57,294-2
200-400 mesh
~2.0 mmol/g
2% DVB



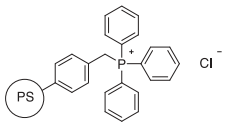
5g
25g

Polymer-supported Wittig reagent.

Bolli, M.H.; Ley, S.V. *J. Chem Soc. Perkin I* 1198, 2243.

Triphenylphosphonium chloride, polymer-bound

54,937-1
100-200 meshh
0.7-1.3 mmol/g



1g
5g
25g

This polymer-bound Wittig reagent is useful for preparing vinyligous polystyrene resins.

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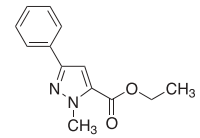
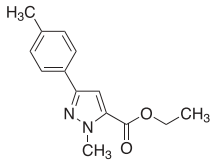
L20,136-7

$C_{13}H_{14}N_2O_2$
MW 230.27
250mg



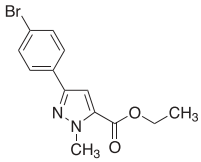
L20,137-5

$C_{14}H_{16}N_2O_2$
MW 244.30
250mg



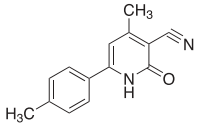
L20,138-3

$C_{13}H_{13}BrN_2O_2$
MW 309.16
250mg



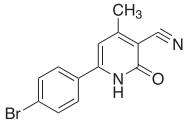
L23,277-7

$C_{14}H_{12}N_2O$
MW 224.26
250mg



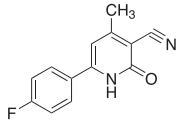
L23,279-3

$C_{13}H_9BrN_2O$
MW 289.13
250mg



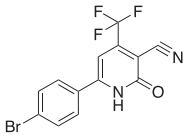
L23,280-7

$C_{13}H_9FN_2O$
MW 228.23
250mg



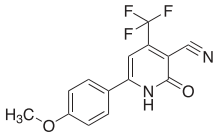
L23,285-8

$C_{13}H_6BrF_3N_2O$
MW 343.10
250mg



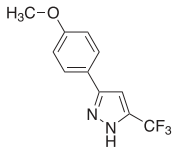
L23,287-4

$C_{14}H_9F_3N_2O_2$
MW 294.24
250mg



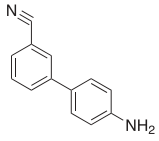
L23,306-4

$C_{11}H_9F_3N_2O$
MW 242.20
250mg



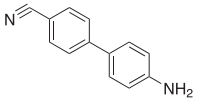
L30,068-3

$C_{13}H_{10}N_2$
MW 194.24
500mg



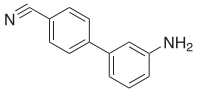
L30,069-1

$C_{13}H_{10}N_2$
MW 194.24
500mg



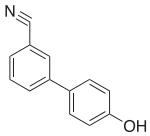
L30,070-5

$C_{13}H_{10}N_2$
MW 194.24
500mg



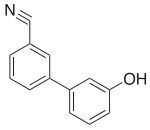
L30,071-3

$C_{13}H_9NO$
MW 195.22
500mg



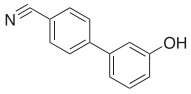
L30,072-1

$C_{13}H_9NO$
MW 195.22
500mg



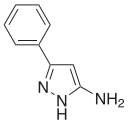
L30,074-8

$C_{13}H_9NO$
MW 195.22
500mg



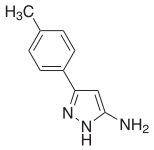
L31,783-7

$C_9H_9N_3$
MW 159.19
250mg



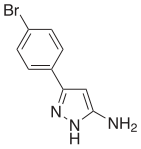
L31,784-5

$C_{10}H_{11}N_3$
MW 173.22
250mg



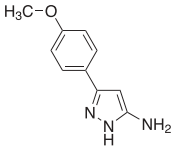
L31,786-1

$C_9H_8BrN_3$
MW 238.09
250mg



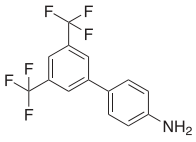
L31,788-8

$C_{10}H_{11}N_3O$
MW 189.22
250mg



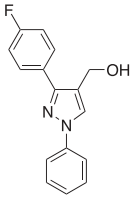
L44,655-6

$C_{14}H_9F_6N$
MW 305.22
250mg



L45,046-4

$C_{16}H_{13}FN_2O$
MW 268.29
250mg



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