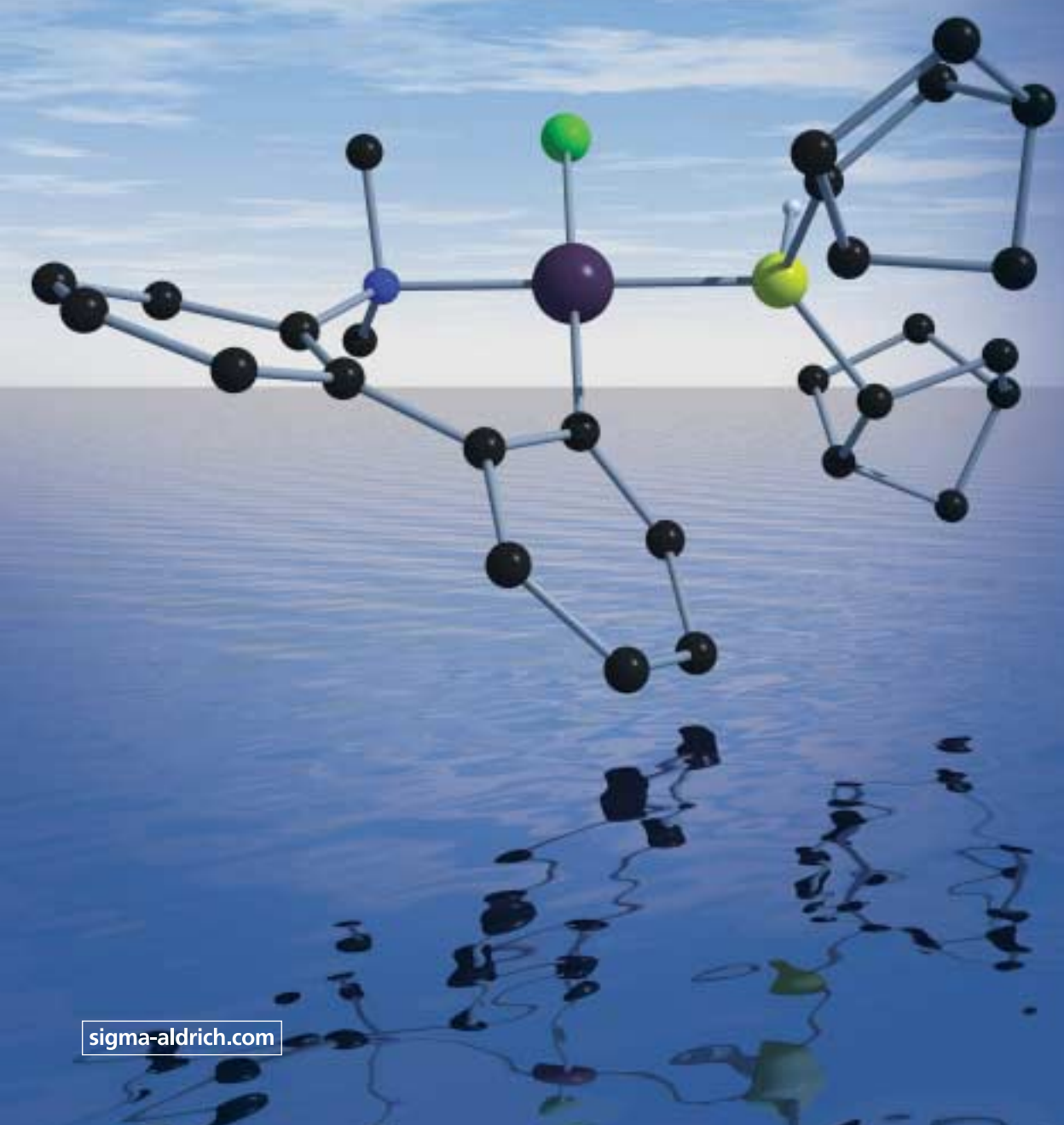
ChemFiles

Vol. 3 No. 5

LATEST NEW PRODUCTS FOR

Organic and Medicinal Chemists



Organometallic Complexes and Ligands

Ionic Liquids

SmartBlocs™

Halogenated Aryl Derivatives

Aryl Sulfonyl Chlorides

Bifunctionalized Building Blocks

Alkoxysilanes

Aromatic Terminal Alkynes

Solid-Phase Polymer-Bound Reagents

Functionalized Silica Gel Scavengers

Fluka

ALDRICH®

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Introduction

Organic synthesis has evolved over the centuries from a discipline based on intuition and guesswork to a more scientific approach where scientists can more accurately determine reaction mechanisms, intermediates and final products. Developments in such areas as medicinal chemistry, molecular biology, pharmaceutical chemistry, physiology, and genetics has led for the need of more varied and multifunctional building blocks as potential leads for fighting diseases, as new catalysts, and as new synthetic pathways for molecules.

This ChemFile contains a comprehensive listing of our latest new products for organic synthesis and medicinal chemistry. For a more comprehensive list of new products available from Sigma-Aldrich, please visit us on the Web at www.sigma-aldrich.com/new.

New Products in this ChemFile Include:

- Organometallic Complexes and Ligands
- Ionic Liquids
- SmartBlocs™
- Halogenated Aryl Derivatives
- Aryl Sulfonyl Chlorides
- Bifunctionalized Building Blocks
- Alkoxysilanes
- Aromatic Terminal Alkynes
- Solid-Phase Polymer-Bound Reagents

We are committed to being your preferred supplier of building blocks for organic synthesis. Our wide range of high-quality products, superior distribution facilities, user-friendly ordering systems, and vast chemical knowledge make us the ideal source for all of your research and development needs. We welcome the opportunity to show you our capabilities.

Is there a building block you are interested in that we do not offer? We are always eager to add new and innovating products to our extensive list of product offerings. Please contact (800)-231-8327 (USA) or your local Sigma-Aldrich sales office with your new product suggestions. See the back cover of this brochure for a complete list of our worldwide sales offices.

You Are Only a Click Away...

Visit our award-winning website, **www.sigma-aldrich.com** for the latest information on new and existing products. In addition, you will find a wealth of technical pages, structure searching, lot-specific information and technical updates; you will also be able to request literature all at the click of your mouse. If you are interested in learning more about how you can begin to purchase your Sigma-Aldrich products through the website, please call your local Sigma-Aldrich sales office for more information.

On the Cover

3-D structure of coupling catalyst SK-CC01-A (Fluka Product Number 36037), distributed in collaboration with Solvias.

To place an order contact your local Sigma-Aldrich office (see back cover of ChemFile).

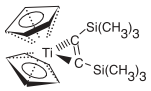
Our Latest New Organometallic Complexes and Ligands

The unique and novel properties of organometallic complexes and ligands make them potential key intermediates in a variety of organic transformations such as pharmaceuticals, polymers, medicinal chemistry, as catalysts in homogeneous and heterogeneous organic synthesis, and as new catalysts for drug discovery. We, at Sigma-Aldrich, are working hard to offer you the latest novelties of these very useful compounds.

Complexes

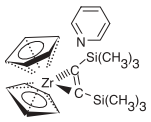
Bis(trimethylsilyl)acetylene-bis(cyclopentadienyl)titanium

94732 500mg
purum
$C_{18}H_{28}Si_2Ti$
MW 348.5



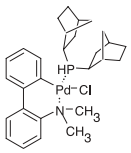
Bis(trimethylsilyl)acetylene-bis(cyclopentadienyl)titanium pyridine complex

95257 500mg
purum
$C_{23}H_{33}NSi_2Zr$
MW 470.9



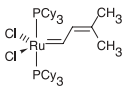
2'-(Dimethylamino)-2-biphenylyl-palladium(II) chloride Dinorbornylphosphine complex SK-CC01-A

36037 250mg 1g 5g
puriss, ≥99%
$C_{28}H_{37}ClNPPd$
MW 560.4



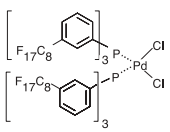
3-Methyl-2-butenylidene-bis(tricyclohexylphosphine)dichlororuthenium

44297 250mg
purum
$C_{41}H_{74}Cl_2P_2Ru$
MW 800.9



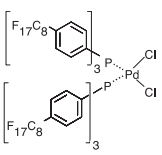
Bis[tris(3-(heptadecafluorooctyl)-phenyl)-phosphine]palladium(II) dichloride

88508 100mg 500mg
purum, ≥95%
$C_{84}H_{24}Cl_2F_{102}P_2Pd$
MW 3210



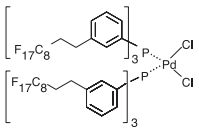
Bis[tris(4-(heptadecafluorooctyl)-phenyl)phosphine]palladium(II) dichloride

95421 100mg 500mg
purum, ≥95%
$C_{84}H_{24}Cl_2F_{102}P_2Pd$
MW 3210



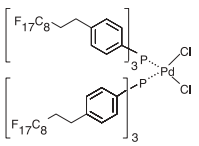
Bis[tris(4-(heptadecafluorooctyl)-phenyl)phosphine]palladium(II) dichloride

93521 100mg 500mg
techn.
$C_{84}H_{24}Cl_2F_{102}P_2Pd$
MW 3378



Bis[tris(4-(1H,1H,2H,2H-perfluorodecyl)phenyl)phosphine]palladium(II) dichloride

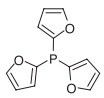
95447 100mg 500mg
techn.
$C_{96}H_{48}Cl_2F_{102}P_2Pd$
MW 3378



Ligands

Tri-2-furylphosphine

82163 250mg 1g
99%
$C_{12}H_9O_3P$
MW 232.2



Tri-*tert*-butylphosphine

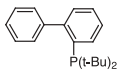
89984 1g 5g 10g
purum, ≥99%
$C_{12}H_{27}P$
MW 202.3

Tricyclopentylphosphine

94096 5g 25g
purum, ≥96%
$C_{15}H_{27}P$
MW 238.3

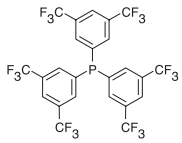
(2-Biphenylyl)di-*tert*-butylphosphine

96004 250mg 1g
purum, ≥97%
$C_{20}H_{27}P$
MW 298.4



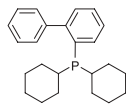
Tris[3,5-bis(trifluoromethyl)-phenyl]phosphine

74231 500mg
purum, ≥97%
$C_{24}H_9F_{18}P$
MW 670.3



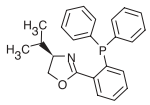
(2-Biphenylyl)dicyclohexylphosphine

94859 250mg 1g
puriss, ≥99%
$C_{24}H_{31}P$
MW 350.5



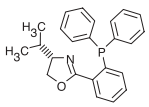
(R)-(+)-2-[2-(Diphenylphosphino)-phenyl]-4-isopropyl-2-oxazoline

72575 500mg
purum, ≥97%
$C_{24}H_{24}NOP$
MW 373.4



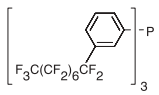
(S)-(-)-2-[2-(Diphenylphosphino)-phenyl]-4-isopropyl-2-oxazoline

91716 500mg
purum, ≥97%
$C_{24}H_{24}NOP$
MW 373.4



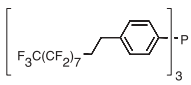
Tris[3-(heptadecafluorooctyl)-phenyl]phosphine

49822 1g 5g
purum, ≥95%
$C_{42}H_{12}F_{51}P$
MW 1516



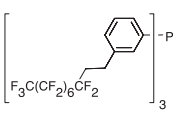
Tris[4-(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl)phenyl]phosphine

84928 1g 5g
purum, ≥97%
$C_{48}H_{24}F_{51}P$
MW 1600



Tris[3-(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl)phenyl]phosphine

83934 1g 5g
techn., ≥95%
$C_{48}H_{24}F_{51}P$
MW 1600



Ready to scale up? For larger quantities, please contact your local Sigma-Aldrich office (see back cover of ChemFile) for availability.

Our Latest Developments in Ionic Liquids

Ionic liquids have received tremendous attention over the last few years, primarily because of the need for environmentally friendly reaction solvent alternatives. Ionic liquids also offer certain advantages over traditional solvents such as enhanced reaction rates, higher selectivities and higher reaction yields, as well as nonflammability, chemical and thermal stability, and no significant vapor pressure. These products also work well for a wide range of reactions including the Diels–Alder,[1] Stille,[2] Suzuki,[3] and Heck reaction,[4] as well as the Beckmann rearrangement.[5] For an excellent review of ionic liquid applications in organic synthesis, please see Dr. Hua Zhao's and Dr. Sanjay V. Malhotra's recent article in the *Aldrichimica Acta*.[6]

Sigma-Aldrich is continually expanding its offerings of ionic liquids to keep pace with the accelerating developments in these types of applications. For a complete list of ionic liquids that Sigma-Aldrich offers, please visit our website at **www.sigma-aldrich.com/ionicliquids**.

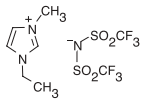
References: (1) Liu, F. et al. *Chem. Comm.* **2001**, 433. (2) Howarth, J. et al. *Tetrahedr Lett.* **2000**, *41*, 10319. (3) Mathews, C.J. et al. *J. Chem. Soc., Chem. Commun.* **2000**, 1249. (4) Carmichael, A. et al. Seddon, K. *Org. Lett.* **1999**, *1(7)*, 997. (5) Kitazume, T.; Kasai, K. *Green Chem.* **2001**, 3, 30. (6) Zhao, H.; Malhotra, S. V. *Aldrichimica Acta* **2002**, *35*, 75.

New Highly Fluorinated Ionic Liquids

Highly fluorinated hydrophobic anions are useful in performing water-immiscible separations, making them ideal for two-phase applications.

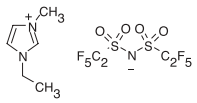
1-Ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide [EMIM][BMeI]

11291 1g 5g
purum, ≥97%
$C_8H_{11}F_6N_3O_4S_2$
MW 391.3



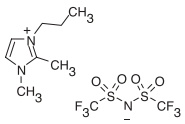
1-Ethyl-3-methylimidazolium bis(pentafluoroethylsulfonyl)imide

39056 1g 5g
purum, ≥97%
$C_{10}H_{11}F_{10}N_3O_4S_2$
MW 491.3



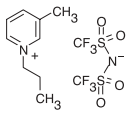
1,2-Dimethyl-3-propylimidazolium bis(trifluoromethylsulfonyl)imide [DMPIM][BMeI]

50807 1g 5g
purum, ≥97%
$C_{10}H_{15}F_6N_3O_4S_2$
MW 419.4



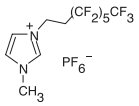
3-Methyl-1-propylpyridinium bis(trifluormethylsulfonyl)imide [PMPy][BMeI]

30565 1g 5g
purum, ≥97%
$C_{11}H_{14}F_6N_2O_4S_2$
MW 416.4



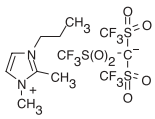
1-Methyl-3-(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)imidazolium hexafluorophosphate

44979 1g
purum, ≥97%
$C_{12}H_{10}F_{19}N_2P$
MW 574.2



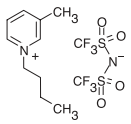
1,2-Dimethyl-3-propylimidazolium tris(trifluoromethylsulfonyl)methide [DMPIM][TMeM]

74305 1g 2.5g
purum, ≥97%
$C_{12}H_{15}F_9N_2O_6S_3$
MW 550.4



1-Butyl-3-methylpyridinium bis-(trifluormethylsulfonyl)imide [BMPy][BMeI]

14654 1g 5g
purum, ≥97%
$C_{12}H_{16}F_6N_2O_4S_2$
MW 430.4



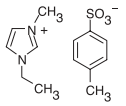
Products protected by U.S. Patent 5,827,602 assigned to Covalent Associates, Inc.

New Halogen-Free Ionic Liquids

Halogen-free ionic liquids address the problem of disposing halogenated liquids and environmental compatibility.

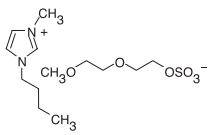
1-Ethyl-3-methylimidazolium tosylate [EMIM][Ts]

89155 5g 50g
purum, ≥98%
$C_{13}H_{18}N_2O_3S$
MW 282.4



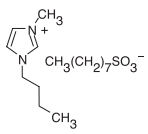
1-Butyl-3-methylimidazolium 2-(2-methoxyethoxy)ethyl sulfate [BMIM][MEESO$_4$]

67421 5g 50g
purum, ≥98%
$C_{13}H_{26}N_2O_6S$
MW 338.4



1-Butyl-3-methylimidazolium octyl sulfate [BMIM][OctSO$_4$]

75059 5g 50g
purum, ≥98%
$C_{16}H_{32}N_2O_4S$
MW 348.5



To place an order contact your local Sigma-Aldrich office (see back cover of ChemFile).

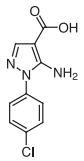
New Building Blocks for Organic Synthesis and Medicinal Chemistry

SmartBlocks™ are a unique collection of products having a wide range of applications in organic synthesis and medicinal chemistry. SmartBlocks™ contain two points of reactivity and could serve as the common core for library synthesis. Below are examples of some of the newest additions of heterocyclic monomers and polyfunctional template molecules.

5-Amino-1-(4-chlorophenyl)-1*H*-pyrazole-4-carboxylic acid

L25,199-2 250mg

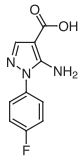
$C_{10}H_8ClN_3O_2$
MW 237.65



5-Amino-1-(4-fluorophenyl)-1*H*-pyrazole-4-carboxylic acid

L25,203-4 250mg

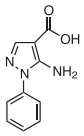
$C_{10}H_8FN_3O_2$
MW 221.19



5-Amino-1-phenyl-1*H*-pyrazole-4-carboxylic acid

L25,198-4 250mg

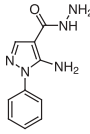
$C_{10}H_9N_3O_2$
MW 203.20



5-Amino-1-phenyl-1*H*-pyrazole-4-carbohydrazide

L25,153-4 250mg

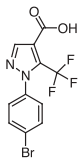
$C_{10}H_{11}N_5O$
MW 217.23



1-(4-Bromophenyl)-5-(trifluoromethyl)-1*H*-pyrazole-4-carboxylic acid

L25,141-0 250mg

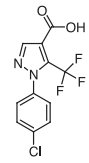
$C_{11}H_6BrF_3N_2O_2$
MW 335.08



1-(4-Chlorophenyl)-5-(trifluoromethyl)-1*H*-pyrazole-4-carboxylic acid

L25,137-2 250mg

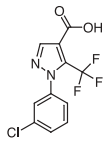
$C_{11}H_6ClF_3N_2O_2$
MW 290.63



1-(3-Chlorophenyl)-5-(trifluoromethyl)-1*H*-pyrazole-4-carboxylic acid

L25,142-9 250mg

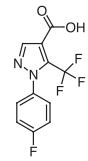
$C_{11}H_6ClF_3N_2O_2$
MW 290.63



1-(4-Fluorophenyl)-5-(trifluoromethyl)-1*H*-pyrazole-4-carboxylic acid

L25,140-2 250mg

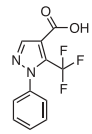
$C_{11}H_6F_4N_2O_2$
MW 274.18



1-Phenyl-5-(trifluoromethyl)-1*H*-pyrazole-4-carboxylic acid

L25,136-4 250mg

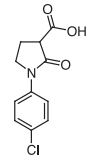
$C_{11}H_7F_3N_2O_2$
MW 256.19



1-(4-Chlorophenyl)-2-oxo-3-pyrrolidinecarboxylic acid

L18,300-8 250mg

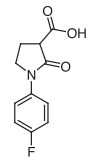
$C_{11}H_{10}ClNO_3$
MW 239.66



1-(4-Fluorophenyl)-2-oxo-3-pyrrolidinecarboxylic acid

L18,296-6 250mg

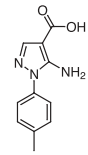
$C_{11}H_{10}FNO_3$
MW 223.21



5-Amino-1-(4-methylphenyl)-1*H*-pyrazole-4-carboxylic acid

L25,201-8 250mg

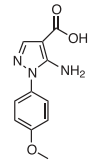
$C_{11}H_{11}N_3O_2$
MW 217.23



5-Amino-1-(4-methoxyphenyl)-1*H*-pyrazole-4-carboxylic acid

L25,202-6 250mg

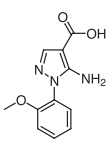
$C_{11}H_{11}N_3O_3$
MW 233.23



5-Amino-1-(2-methoxyphenyl)-1*H*-pyrazole-4-carboxylic acid

L25,207-7 250mg

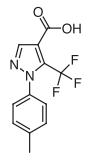
$C_{11}H_{11}N_3O_3$
MW 233.23



1-(4-Methylphenyl)-5-(trifluoromethyl)-1*H*-pyrazole-4-carboxylic acid

L25,138-0 250mg

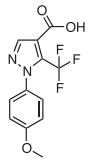
$C_{12}H_9F_3N_2O_2$
MW 270.21



1-(4-Methoxyphenyl)-5-(trifluoromethyl)-1*H*-pyrazole-4-carboxylic acid

L25,139-9 250mg

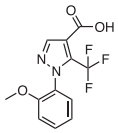
$C_{12}H_9F_3N_2O_3$
MW 286.21



1-(2-Methoxyphenyl)-5-(trifluoromethyl)-1*H*-pyrazole-4-carboxylic acid

L25,143-7 250mg

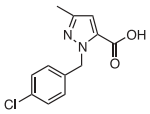
$C_{12}H_9F_3N_2O_3$
MW 286.21



1-(4-Chlorobenzyl)-3-methyl-1*H*-pyrazole-5-carboxylic acid

L20,129-4 250mg

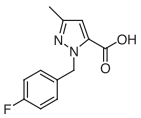
$C_{12}H_{11}ClN_2O_2$
MW 250.69



1-(4-Fluorobenzyl)-3-methyl-1*H*-pyrazole-5-carboxylic acid

L20,130-8 250mg

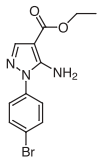
$C_{12}H_{11}FN_2O_2$
MW 234.23



Ethyl 5-amino-1-(4-bromophenyl)-1*H*-pyrazole-4-carboxylate

L25,149-6 250mg

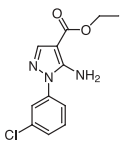
$C_{12}H_{12}BrN_3O_2$
MW 310.15



Ethyl 5-amino-1-(3-chlorophenyl)-1*H*-pyrazole-4-carboxylate

L25,151-8 250mg

$C_{12}H_{12}ClN_3O_2$
MW 265.70

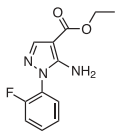


Ready to scale up? For larger quantities, please contact your local Sigma-Aldrich office (see back cover of ChemFile) for availability.

Ethyl 5-amino-1-(2-fluorophenyl)-1*H*-pyrazole-4-carboxylate

L25,152-6 250mg

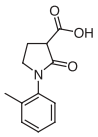
$C_{12}H_{12}FN_3O_2$
MW 249.25



1-(2-Methylphenyl)-2-oxo-3-pyrrolidinecarboxylic acid

L18,297-4 250mg

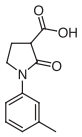
$C_{12}H_{13}NO_3$
MW 219.24



1-(3-Methylphenyl)-2-oxo-3-pyrrolidinecarboxylic acid

L18,298-2 250mg

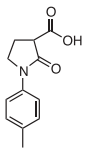
$C_{12}H_{13}NO_3$
MW 219.24



1-(4-Methylphenyl)-2-oxo-3-pyrrolidinecarboxylic acid

L18,293-1 250mg

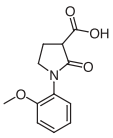
$C_{12}H_{13}NO_3$
MW 219.24



1-(2-Methoxyphenyl)-2-oxo-3-pyrrolidinecarboxylic acid

L18,292-3 250mg

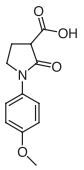
$C_{12}H_{13}NO_4$
MW 235.24



1-(4-Methoxyphenyl)-2-oxo-3-pyrrolidinecarboxylic acid

L18,295-8 250mg

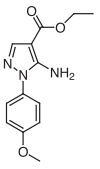
$C_{12}H_{13}NO_4$
MW 235.24



Ethyl 5-amino-1-(4-methoxyphenol)-1*H*-pyrazole-4-carboxylate

L25,146-1 250mg

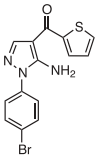
$C_{13}H_{15}N_3O_3$
MW 261.28



5-Amino-1-(4-bromophenyl)-1*H*-pyrazol-4-yl)(2-thienyl)methanone

L25,226-3 250mg

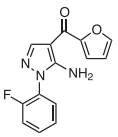
$C_{14}H_{10}BrN_3OS$
MW 348.22



(5-Amino-1-(2-fluorophenyl)-1*H*-pyrazol-4-yl)(2-furyl)methanone

L25,221-2 250mg

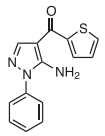
$C_{14}H_{10}FN_3O_2$
MW 271.25



(5-Amino-1-phenyl-1*H*-pyrazol-4-yl)-(2-thienyl)methanone

L25,209-3 250mg

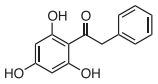
$C_{14}H_{11}N_3OS$
MW 269.33



2-Phenyl-1-(2,4,6-trihydroxyphenyl)-ethanone

L25,120-8 250mg

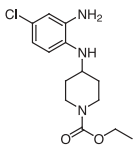
$C_{14}H_{12}O_4$
MW 244.25



Ethyl 4-(2-amino-4-chloroanilino)-1-piperidinecarboxylate

L15,785-6 250mg

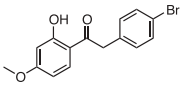
$C_{14}H_{20}ClN_3O_2$
MW 297.79



2-Phenyl-1-(2,4,6-trihydroxyphenyl)-ethanone

L25,118-6 250mg

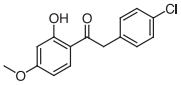
$C_{15}H_{13}BrO_3$
MW 321.17



2-(4-Chlorophenyl)-1-(2-hydroxy-4-methoxyphenyl)ethanone

L25,115-1 250mg

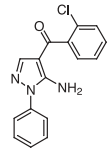
$C_{15}H_{13}ClO_3$
MW 276.72



(5-Amino-1-phenyl-1*H*-pyrazol-4-yl)-(2-chlorophenyl)methanone

L25,168-2 250mg

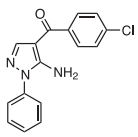
$C_{16}H_{12}ClN_3O$
MW 297.75



(5-Amino-1-phenyl-1*H*-pyrazol-4-yl)-(4-chlorophenyl)methanone

L25,167-4 250mg

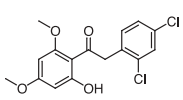
$C_{16}H_{12}ClN_3O$
MW 297.75



2-(2,4-Dichlorophenyl)-1-(2-hydroxy-4,6-dimethoxyphenyl)ethanone

L25,130-5 250mg

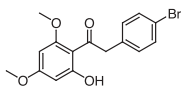
$C_{16}H_{14}Cl_2O_4$
MW 341.19



2-(4-Bromophenyl)-1-(2-hydroxy-4,6-dimethoxyphenyl)ethanone

L25,129-1 250mg

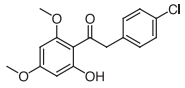
$C_{16}H_{15}BrO_4$
MW 351.20



2-(4-Chlorophenyl)-1-(2-hydroxy-4,6-dimethoxyphenyl)ethanone

L25,126-7 250mg

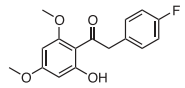
$C_{16}H_{15}ClO_4$
MW 306.75



2-(4-Fluorophenyl)-1-(2-hydroxy-4,6-dimethoxyphenyl)ethanone

L25,128-3 250mg

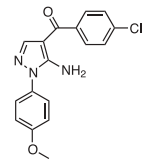
$C_{16}H_{15}FO_4$
MW 290.29



(5-Amino-1-(4-methoxyphenyl)-1*H*-pyrazol-4-yl)(4-chlorophenyl)-methanone

L25,174-7 250mg

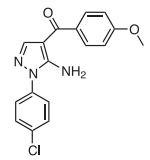
$C_{17}H_{14}ClN_3O_2$
MW 327.77



(5-Amino-1-(4-chlorophenyl)-1*H*-pyrazol-4-yl)(4-methoxyphenyl)-methanone

L25,179-8 250mg

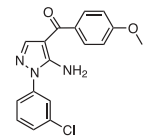
$C_{17}H_{14}ClN_3O_2$
MW 327.77



(5-Amino-1-(3-chlorophenyl)-1*H*-pyrazol-4-yl)(4-methoxyphenyl)-methanone

L25,191-7 250mg

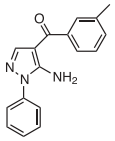
$C_{17}H_{14}ClN_3O_2$
MW 327.77



(5-Amino-1-phenyl-1*H*-pyrazol-4-yl)-(3-methylphenyl)methanone

L25,170-4 250mg

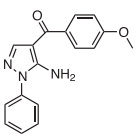
$C_{17}H_{15}N_3O$
MW 277.33



(5-Amino-1-phenyl-1*H*-pyrazol-4-yl)-(4-methoxyphenyl)methanone

L25,166-6 250mg

$C_{17}H_{15}N_3O_2$
MW 293.33



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New Halogenated Building Blocks

Researchers are continually seeking new and interesting building blocks for synthesis applications. Sigma-Aldrich is adding new products monthly to meet this increasing demand. We have gathered some of our newest building blocks including halogenated aryl derivatives and aryl sulfonyl chlorides that have been becoming increasing popular for organic synthesis.

Halogentated Aryl Derivatives—Aryl Fluorides and Iodides

Although fluorinated compounds are very rare in nature, the fact that the fluorine atom is small and strongly electronegative, and bonds very strongly to carbon, raises the possibility of interesting and useful properties displayed once inside living systems. Replacing one or two hydrogens with fluorine atoms has almost no effect on molecular volume, which is of critical importance to researchers concerned with the confined spaces of receptor molecules and enzyme active sites. The high electronegativity affects the chemistry of neighboring functional groups very strongly, and the high strength of the C–F bond effectively blocks metabolic oxidation at fluorinated sites. It is not surprising that medicinal chemists find selectively fluorinated molecules very attractive as potential anticancer, antiviral, and antibacterial agents.[1]

The need to create new carbon–carbon bonds is of prime importance in medicinal chemistry today. A number of metal-catalyzed coupling reactions, including the Heck, Suzuki, Stille,[2] and Negishi[3] couplings have successfully used aryl iodides in creating these types of bonds due to their higher reactivity over bromine and chlorine derivatives.[4]

Sigma-Aldrich offers a wide range of aryl fluorides and iodides to meet your research needs.

References: (1) (a) Mohar, B. et al. *Angew. Chem., Ed. Engl.* **2001**, *40*, 4214. (b) Banks, R. E. *J. Fluorine Chem.* **1998**, *87*, 1. (c) Dollery, C. *Therapeutic Drugs* Churchhill Livingstone: Edinburgh, UK: **1991**. (2) Franzén, R. *Can. J. Chem.*, **2000**, *78*, 957. (3) Negishi, E. et al. *J. Org. Chem.*, **1977**, *42*, 1821. (4) Fitton, P.; Rick, E.A. *J. Organomet. Chem.* **1971**, *28*, 287.

4-Chloro-2-fluoroiodobenzene

54,118-4 5g, 25g
97%
C_6H_3ClFI
MW 256.44

3-Chloro-4-fluoroiodobenzene

54,290-3 25g
98%
C_6H_3ClFI
MW 256.44

3-Chloro-2-fluoroiodobenzene

55,865-6 1g, 5g
97%
C_6H_3ClFI
MW 256.44

1,2-Dichloro-4-iodobenzene

54,175-3 25g, 250g
98%
$C_6H_3Cl_2I$
MW 272.9

2,5-Difluoroiodobenzene

55,859-1 1g, 5g
97%
$C_6H_3F_2I$
MW 239.99

3,5-Difluoroiodobenzene

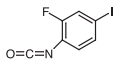
55,860-5 1g, 5g
97%
$C_6H_3F_2I$
MW 239.99

2-Fluoro-5-iodobenzonitrile

55,245-3 1g, 5g
97%
C_7H_3FIN
MW 247.01

2-Fluoro-4-iodophenyl isocyanate

56,904-6 1g, 5g
95%
C_7H_3FINO
MW 263.01

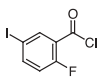


2-Fluoro-6-iodobenzoyl chloride

55,244-5 1g, 5g
95%
C_7H_3ClFIO
MW 284.45

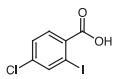
2-Fluoro-5-iodobenzoyl chloride

55,246-1 1g, 5g
97%
C_7H_3ClFIO
MW 284.45



4-Chloro-2-iodobenzoic acid

56,014-6 1g, 5g
97%
$C_7H_4ClIO_2$
MW 282.46

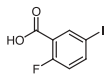


2-Fluoro-5-iodobenzaldehyde

54,331-4 1g
97%
C_7H_4FIO
MW 250.01

2-Fluoro-5-iodobenzoic acid

55,243-7 1g, 5g
97%
$C_7H_4FIO_2$
MW 266.01

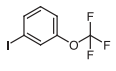


2-(Trifluoromethoxy)iodobenzene

55,439-1 1g, 5g
97%
$C_7H_4F_3IO$
MW 287.99

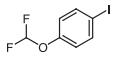
3-(Trifluoromethoxy)iodobenzene

56,354-4 1g, 5g
97%
$C_7H_4F_3IO$
MW 288.01



4-(Difluoromethoxy)iodobenzene

54,259-8 1g
97%
$C_7H_5F_2IO$
MW 270.02



4-Cyano-2-iodoaniline

57,801-0 1g, 5g
98%
$C_7H_5IN_2$
MW 244.03

2-Iodobenzaldehyde

55,077-9 1g
97%
C_7H_5IO
MW 232.02

Ready to scale up? For larger quantities, please contact your local Sigma-Aldrich office (see back cover of ChemFile) for availability.

3-Iodobenzaldehyde

55,076-0 1g
97%
C_7H_5IO
MW 232.02

4-Iodo-3-nitrotoluene

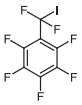
54,044-7 1g 5g
98%
$C_7H_6INO_2$
MW 263.03

5-Iodoindole

56,383-8 5g 25g
98%
C_8H_6IN
MW 243.04

Heptafluorobenzyl iodide

54,811-1 5g
tech
C_7H_7I
MW 343.97



2′-Iodoacetophenone

54,067-6 1g 5g
97%
C_8H_7IO
MW 246.05

2-Iodo-3-methylbenzoic acid

56,049-9 1g 5g
97%
$C_8H_7IO_2$
MW 262.05

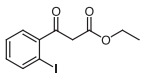
1-Iodo-2,4-dimethoxybenzene

57,773-1 5g 25g
97%
$C_8H_9IO_2$
MW 264.06

Ethyl (2-iodobenzoyl)acetate

55,907-5 1g 5g

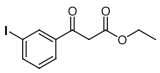
$C_{11}H_{11}IO_3$
MW 318.11



Ethyl (3-iodobenzoyl)acetate

55,922-9 1g 5g

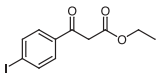
$C_{11}H_{11}IO_3$
MW 318.11



Ethyl (4-iodobenzoyl)acetate

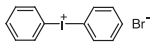
55,919-9 1g 5g

$C_{11}H_{11}IO_3$
MW 318.11



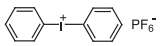
Diphenyliodonium bromide

56,535-0 5g 25g
97%
$C_{12}H_{10}IO_3$
MW 361.02



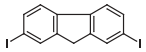
Diphenyliodonium hexafluorophosphate

54,801-4 5g 25g
≥98%
$C_{12}H_{10}F_6IP$
MW 426.08



2,7-Diiodofluorene

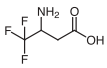
54,677-1 1g 5g
98%
$C_{13}H_8I_2$
MW 418.01



Other Useful Halogenated Molecules

3-Amino-4,4,4-trifluorobutyric acid

69289 500mg
purum, ≥98%
$C_4H_6F_3NO_2$
MW 157.09

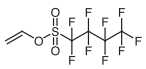


4-Chloro-3-fluoropyridine

71585 5g 25g
purum, ≥95%
C_5H_3ClFN
MW 131.54

Vinyl nonafluoro-1-butanesulfonate

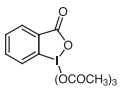
88416 1g 5g
purum, ≥95%
$C_6H_3F_9O_3S$
MW 326.14



Dess–Martin Periodinane, 0.3*M* solution in dichloromethane

55,987-3 1mL 5mL 25mL

$C_{13}H_{13}IO_8$
MW 424.15



To place an order contact your local Sigma-Aldrich office (see back cover of ChemFile).

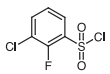
New Aryl Sulfonyl Chloride Derivatives

Aryl sulfonyl chloride derivatives are frequently used in parallel synthesis to synthesize sulfonamides and sulfonate linkages.

Roush, W.; Gwaltney, S. II; Cheng, J.; Scheidt, K.; McKerrow, J.; Hansell, E. *J. Am. Chem. Soc.* **1998**, *120*, 10994.

3-Chloro-2-fluorobenzenesulfonyl chloride

55,867-2 1g
97%
$C_6H_3Cl_2FO_2S$
MW 229.06

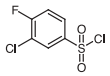


5-Chloro-2-fluorobenzenesulfonyl chloride

55,868-0 1g
97%
$C_6H_3Cl_2FO_2S$
MW 229.06

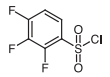
3-Chloro-4-fluorobenzenesulfonyl chloride

56,182-7 1g 5g
97%
$C_6H_3Cl_2FO_2S$
MW 229.06



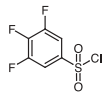
2,3,4-Trifluorobenzenesulfonyl chloride

55,590-8 1g
97%
$C_6H_2ClF_3O_2S$
MW 230.59



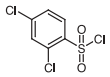
3,4,5-Trifluorobenzenesulfonyl chloride

55,599-1 1g
97%
$C_6H_2ClF_3O_2S$
MW 230.59



2,4-Dichlorobenzenesulfonyl chloride

54,569-4 1g 5g
97%
$C_6H_3Cl_3O_2S$
MW 245.51

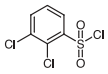


2,6-Dichlorobenzenesulfonyl chloride

54,570-8 1g 5g
97%
$C_6H_3Cl_3O_2S$
MW 245.51

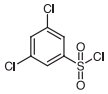
2,3-Dichlorobenzenesulfonyl chloride

54,691-7 5g 25g
97%
$C_6H_3Cl_3O_2S$
MW 245.51



3,5-Dichlorobenzenesulfonyl chloride

54,693-3 5g 25g
97%
$C_6H_3Cl_3O_2S$
MW 245.51

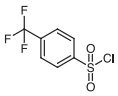


3-Bromobenzenesulfonyl chloride

54,571-6 1g 5g
96%
$C_6H_4BrClO_2S$
MW 255.52

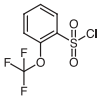
4-(Trifluoromethyl)benzenesulfonyl chloride

56,584-9 1g 5g
97%
$C_7H_4ClF_3O_2S$
MW 244.62



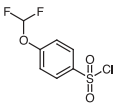
2-(Trifluoromethoxy)benzenesulfonyl chloride

57,994-7 1g
97%
$C_7H_4ClF_3O_3S$
MW 260.6



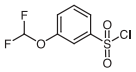
4-(Difluoromethoxy)benzenesulfonyl chloride

55,226-7 1g 5g
97%
$C_7H_5ClF_2O_3S$
MW 242.63



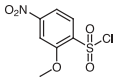
3-(Difluoromethoxy)benzenesulfonyl chloride

55,440-5 1g 5g
97%
$C_7H_5ClF_2O_3S$
MW 242.63



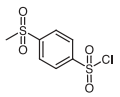
2-Methoxy-4-nitrobenzenesulfonyl chloride

55,593-2 1g 5g
96%
$C_7H_6ClNO_5S$
MW 251.64



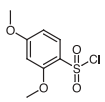
4-Methylsulfonylbenzenesulfonyl chloride

55,731-5 1g 5g
97%
$C_7H_7ClO_4S_2$
MW 254.71



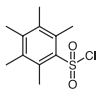
2,5-Dimethoxybenzenesulfonyl chloride

55,223-2 5g 25g
98%
$C_8H_9ClO_4S$
MW 236.67



Pentamethylbenzenesulfonyl chloride

56,536-9 5g 25g
97%
$C_{11}H_{15}ClO_2S$
MW 246.75



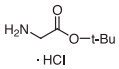
Our Latest Highlights in Bifunctionalized Building Blocks

Bifunctionalized building blocks offer the possibility of unique reactions and products because of their multiple reaction sites. Because of this, new reaction pathways and products for organic synthesis may be possible.

tert-Butyl Protected Building Blocks

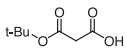
Glycine *tert*-butyl ester hydrochloride

42604 1g 5g
puriss, ≥99%
$C_6H_{13}NO_2$
MW 131.17



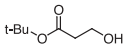
Mono-*tert*-butyl malonate

73974 5g 25g
purum, ≥95%
$C_7H_{12}O_4$
MW 220.23



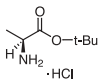
tert-Butyl 3-hydroxypropionate

90218 1g 5g
purum
$C_7H_{14}O_3$
MW 206.24



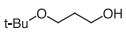
D-Alanine *tert*-butyl ester hydrochloride

30178 1g 5g
puriss, ≥99%
$C_7H_{16}ClNO_2$
MW 181.66



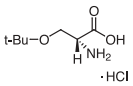
3-*tert*-Butyloxy-1-propanol

89743 5mL
purum, ≥98%
$C_7H_{16}O_2$
MW 132.2



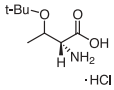
O-*tert*-butyl-L-serine methyl ester hydrochloride

78994 1g 5g
purum, ≥98%
$C_8H_{18}ClNO_3$
MW 211.7



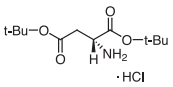
O-*tert*-butyl-L-threonine methyl ester hydrochloride

81655 5g
purum
$C_9H_{20}ClNO_3$
MW 225.7



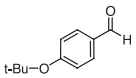
L-Aspartic acid di-*tert* butyl ester hydrochloride

94861 1g 5g
puriss, ≥99%
$C_{12}H_{24}ClNO_4$
MW



4-(*tert*-Butyloxy)benzaldehyde

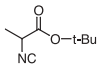
82164 1g 5g
purum, 97%
$C_{11}H_{14}O_2$
MW 178.23



Isocyano & Isothiocyano tert-Butyl Protected Building Blocks

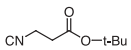
tert-Butyl 2-isocyanopropionate

40803 250mg
purum, ≥97%
$C_8H_{13}NO_2$
MW 155.19



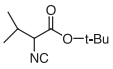
tert-Butyl 3-isocyanopropionate

08608 250mg
purum, ≥97%
$C_8H_{13}NO_2$
MW 155.19



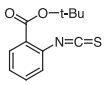
tert-Butyl 2-isocyano-3-methylbutyrate

18992 250mg
purum, ≥97%
$C_{10}H_{17}NO_2$
MW 183.25



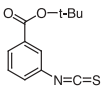
tert-Butyl 2-isothiocyanatobenzoate

59813 1g 5g
purum, ≥98%
$C_{12}H_{13}NO_2S$
MW 235.31



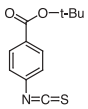
tert-Butyl 3-isothiocyanatobenzoate

59814 1g 5g
purum, ≥97%
$C_{12}H_{13}NO_2S$
MW 235.31



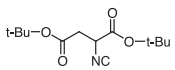
tert-Butyl 4-isothiocyanatobenzoate

59816 1g
purum, ≥97%
$C_{12}H_{13}NO_2S$
MW 325.31



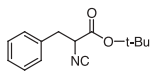
Di-*tert*-butyl 2-isocyanosuccinate

51492 250mg
purum, ≥97%
$C_{13}H_{21}NO_4$
MW 255.31



tert-Butyl 2-isocyano-3-phenylpropionate

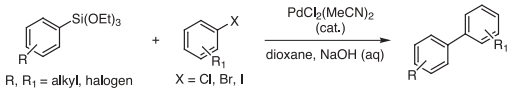
16521 250mg
purum, ≥96%
$C_{14}H_{17}NO_2$
MW 231.29



To place an order contact your local Sigma-Aldrich office (see back cover of ChemFile).

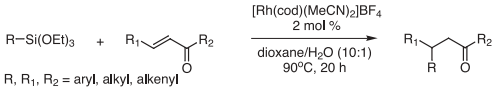
New Alkoxysilanes for C–C Coupling Reactions

The use of silicon compounds as transmetalation reagents has attracted much attention as a viable alternative to the popular Stille and Suzuki coupling reactions mainly due to the formation of nontoxic byproducts and stability to many reaction conditions.[1] Silicon-based coupling reactions can be carried out



using aryl-, heteroaryl-, or alkenyl- halides and alkoxysilanes in the presence of palladium or rhodium catalysts. Among the various types of silicon compounds available, alkoxysilanes are more effective in coupling reactions.[2]

Recently, considerable attention has been paid to the rhodium-catalyzed addition of aryl(trialkoxy)silanes to carbonyl compounds, such as aldehydes, α,β-unsaturated ketones and esters.[3]



References: (1) (a) Hatanaka, Y.; Hiyama, T. *Synlett* **1991**, 845. (b) Chuit, C. et al. *Chem. Rev.* **1993**, *93*, 1371. (c) Horn, K. A. *ibid*. **1995**, *95*, 1317. (d) Hiyama, T.; Shirakawa, E. In *Topics of Current Chemistry*; Miyaura, N., Ed.; Spinger-Verlag: Heidelberg, 2002; vol. 219, p 61. (2) (a) Denmark, S. E.; Sweis, R. F. *Acc. Chem. Res.* **2002**, *35*, 835. (b) Tamao, K. et al. *Tetrahedron Lett.* **1989**, *30*, 6051. (c) Shibata, K. et al. *Chem. Commun*. **1997**, 1309. (d) Mowery, M. E.; DeShong, P. *J. Org. Chem*. **1999**, *64*, 1684. (e) Mowery, M. E.; DeShong, P. *Org. Lett.* **1999**, *1*, 2140. (f) Lee, H. M.; Nolan, S. P. *ibid*. **2000**, *2*, 2053. (g) Murata. M. et al. *Synthesis* **2001**, 2231. (3) Oi, S. et al. *Org. Lett*. **2002**, *4*, 667.

Chloromethyl(methyl)dimethoxysilane

59,742-2 5g
97% 25g
$C_4H_{11}ClO_2Si$
MW 154.67

Chloromethyl(methyl)ethoxysilane

59,400-8 5g
97% 25g
$C_5H_{13}ClOSi$
MW 152.69

Chloromethyl(methyl)diethoxysilane

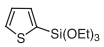
59,754-6 5g
97% 25g
$C_6H_{15}ClO_2Si$
MW 182.72

Triethoxyvinylsilane

17,556-0 100mL
97% 500mL
$C_8H_{18}O_3Si$
MW 190.32

Triethoxy-2-thienysilane

59,700-7 1g
97% 10g
$C_{10}H_{18}O_3SSi$
MW 246.4

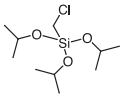


3-(Triethoxysilyl)furan

59,231-5 5g
96%
$C_{10}H_{18}O_4Si$
MW 230.33

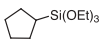
Chloromethyltriisopropoxysilane

59,697-3 5g
97% 25g
$C_{10}H_{23}ClOSi$
MW 254.83



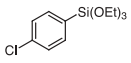
Triethoxysilylcyclopentane

59,604-3 5g
98%
$C_{11}H_{24}O_3Si$
MW 232.09



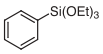
1-Chloro-4-triethoxysilylbenzene

59,791-0 1g
97% 10g
$C_{12}H_{19}ClO_3Si$
MW 274.82



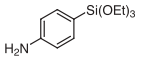
Phenyltriethoxysilane

17,560-9 5g
98% 250g
$C_{12}H_{20}O_3Si$ 1kg
MW 240.38



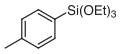
4-Triethoxysilylaniline

59,647-7 1g
97% 10g
$C_{12}H_{21}NO_3Si$
MW 255.39



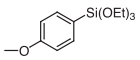
Triethoxy-p-tolylsilane

59,157-2 1g
97% 5g
$C_{13}H_{22}O_3Si$
MW 254.4



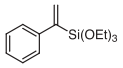
1-Triethoxysilylanisole

59,701-5 5g
97% 20g
$C_{13}H_{22}O_4Si$
MW 270.4



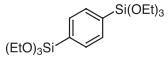
α-(Triethoxysilyl)styrene

59,635-3 1g
98% 10g
$C_{14}H_{22}O_3Si$
MW 266.41



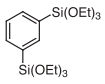
1,4-Bis(triethoxysilyl)benzene

59,803-8 5g
96% 20g
$C_{18}H_{34}O_6Si_2$
MW 402.63



1,3-Bis(triethoxysilyl)benzene

59,813-5 1g
96% 10g
$C_{18}H_{34}O_6Si_2$
MW 402.63



Ready to scale up? For larger quantities, please contact your local Sigma-Aldrich office (see back cover of ChemFile) for availability.

New Aromatic Terminal Alkynes

The terminal alkyne functionality has a wide range of applications including most recently the synthesis of spiropyran substituted 2,3-dicyanopyrazines[1] and (±)-asteriscanolide,[2] as well as conversion to enamines using resin-bound 2° amines.[3] Sigma-Aldrich offers a number of aromatic alkynes that can further enhance the reactivity of the alkyne group resulting in many new reactions and products for organic synthesis and medicinal chemistry.

(1) Lee, B. et al. *Bull. Korean Chem.* Soc. **2002**, *23*(8), 1. (2) Drafft, M. E. et al. *Synthesis* **2000**, 1020. (3) Aznar, F. et al. *Tetrahedron Lett.* **2000**, *41*, 5683.

3-Ethynylthiophene

57,879-7 1g 5g
96%
C_6H_4S
MW 108.16

3-Ethynylpyridine

52,044-6 1g 5g
98%
C_7H_5N
MW 103.12

4-Bromo-1-ethynyl-2-fluorobenzene

51,925-1 5g
96%
C_8H_4BrF
MW 199.02

1-Ethynyl-2,4-difluorobenzene

55,644-0 5g
97%
$C_8H_4F_2$
MW 138.12

1-Ethynyl-3,5-difluorobenzene

59,017-7 1g
97%
$C_8H_4F_2$
MW 138.12

3-Chloro-1-ethynylbenzene

63,026-8 1g 5g
C_8H_5Cl
MW 136.58

1-Ethynyl-3-fluorobenzene

51,940-5 5g
98%
C_8H_5F
MW 120.13

Phenylacetylene

11,770-6 25mL 100mL
98%
C_8H_6
MW 102.14

2-Ethynyl-α,α,α-trifluorotoluene

52,118-3 1g
97%
$C_9H_5F_3$
MW 170.14

4-Ethynyl-α,α,α-trifluorotoluene

55,643-2 5g
97%
$C_9H_5F_3$
MW 170.14

3-Ethynyl-α,α,α-trifluorotoluene

55,733-1 5g
97%
$C_9H_5F_3$
MW 170.14

2-Ethynylbenzaldehyde

59,063-0 1g 5g
97%
C_9H_6O
MW 130.15

3-Ethynyltoluene

52,114-0 1g 5g
97%
C_9H_8
MW 116.16

2-Ethynyltoluene

55,878-8 1g 5g
97%
C_9H_8
MW 116.16

3-Ethynylanisole

51,941-3 5g
96%
C_9H_8O
MW 132.16

Phenyl propargyl ether

78960 10mL 50mL
>90%
C_9H_8O
MW 132.16

(R)-Phenyl-2-propyn-1-ol

78976 1g
purum, >99%
C_9H_8O
MW 132.136

1-Phenyl-2-propyn-1-ol

22,661-0 1g 10g
98%
C_9H_8O
MW 132.16

1,1,1-Trifluoro-2-phenyl-3-butyn-2-ol

55,329-8 500mg 1g
96%
$C_{10}H_7F_3O$
MW 200.16

Propargyl benzoate

54,398-5 5g 25g
98%
$C_{10}H_8O_2$
MW 160.17

1-Ethyl-4-ethynylbenzene

55,889-3 5g
98%
$C_{10}H_{10}$
MW 130.19

1-Ethynyl-3,5-dimethoxybenzene

58,852-0 1g 5g
98%
$C_{10}H_{10}O_2$
MW 162.19

1-Butyl-4-ethynylbenzene

52,108-6 5g 25g
97%
$C_{12}H_{14}$
MW 158.25

4-Ethynylbiphenyl

52,117-5 5g
97%
$C_{14}H_{10}$
MW 178.24

1-Ethynylnaphthalene

55,792-7 5g
97%
$C_{14}H_{10}$
MW 178.24

9-Ethynylphenanthrene

52,116-7 1g 5g
97%
$C_{16}H_{10}$
MW 202.26

To place an order contact your local Sigma-Aldrich office (see back cover of ChemFile).

Solid-Phase Polymer-Bound Reagents

The current interest in parallel synthesis for the creation of small-molecule libraries has led to a greater interest in polymer-supported reagents for solution- and solid-phase synthesis.[1] The ease of workup, purification, and isolation of final product from reaction impurities makes these reagents especially well suited for these applications.

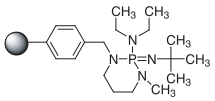
Below are some of our latest polymer-bound products that we know you will find useful.

(1) (a) Akelah, A.; Sherrington, D. C. *Chem. Rev.* **1981**, *81*, 557. (b) Alkeah, A.; Sherrington, D. C. *Polymer* **1983**, *24*, 1369.

Supported Bases

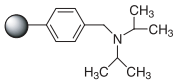
2-*tert*-Butylimino-2-diethylamino-1,3-dimethylperhydro-1,3,2-diazaphosphorine, polymer bound (BEMP resin)

53,649-0	1% DVB, 100–200 mesh, 2.0–2.5 mmol/g	1g 5g 25g



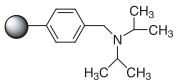
Diisopropylamine, polymer bound (PS-DIEA)

53,846-9	1% DVB, 50–90 mesh, 3.0–4.0 mmol N/g	5g 25g



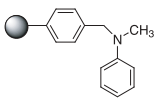
Diisopropylamine, polymer bound (PS-DIEA)

53,873-6	1% DVB, 100–200 mesh, 2.0–3.5 mmol N/g	5g 25g



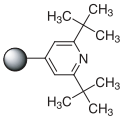
Dimethylaminopyridine, polymer bound (PS-DMAP)

35,988-2	2% DVB, *ca.* 2.5 mmol "DMAP"/g 2.0–3.5 mmol N/g	1g 5g 25g 100g



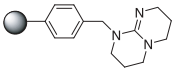
2,6-Di-*tert*-butylpyridine, polymer bound

37,782-1	1% DVB, 200–400 mesh, *ca.* 1.8 mmol/g	1g 5g 25g



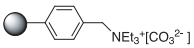
1,3,4,6,7,8-Hexahydro-2*H*-pyrimido-[1,2-a]pyrimidine, polymer bound (TBD, polymer bound)

35,875-4	2% DVB, *ca.* 2.6 mmol/g (*ca.* 7.8 mmol N/g)	1g 5g 25g 100g



Tetraalkylammonium carbonate, polymer bound, macroporous (MP-Carbonate)

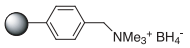
54,028-5	18–50 mesh, 2.5–3.5 mmol N/g (*ca.* 7.8 mmol N/g)	5g 25g 100g



Supported Reducing Reagents

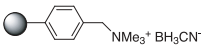
Borohydride, polymer supported

35,994-7	20–50 mesh, 2.0–5.0 mmol BH_4^-/g	10g 50g 100g



Cyanoborohydride, polymer supported

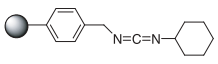
52,630-4	18–50 mesh, 2.0–3.0 mmol/g	5g 25g 100g



Supported Coupling Reagents

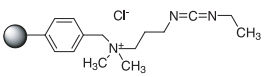
N-Benzyl-N'-cyclohexylcarbodiimide, polymer bound

56,184-3	1% DVB, 100–200 mesh, 1.3 mmol/g	5g 25g 100g



1-(3-Dimethylaminopropyl)-3-ethylcarbodiimide, polymer bound (EDC, polymer bound)

42,433-1	2% DVB, 200–400 mesh, *ca.* 0.9 mmol N/g	5g 25g



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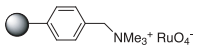
Supported Oxidizing Reagents

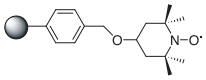
Perruthenate, polymer-bound, polystyrene cross-linked with 1% DVB

83715 capacity: ~0.3 mmol/g — 2.5g
particle size: 20–50 mesh — 10g



2,2,6,6-Tetramethylpiperidine *N*-oxyl, polymer-bound, polystyrene cross-linked with 1% DVB

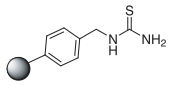
72601 (TEMPO-4-oxymethyl)polystyrene) — 5g
capacity: ~2.5 mmol/g — 25g
particle size: 200–400 mesh



Other Supported Reagents

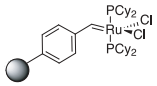
Methylthiourea, polymer-bound, polystyrene cross-linked with 2% DVB

84094 capacity: ~2.0 mmol/g — 5g
particle size: 200–400 mesh



Benzylidenebis(tricyclohexylphosphine)dichlororuthenium, polymer-bound, polystyrene cross-linked with 1% DVB

91501 (Grubbs catalyst on polystyrene) — 1g
capacity: ~0.1 mmol/g — 5g
particle size: 100–200 mesh



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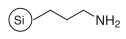
Functionalized Silica Gel Scavengers

Sigma-Aldrich Corporation and SiliCycle Inc. have collaborated to offer scientists ultra pure functionalized silica gels for medicinal and parallel chemistry. These silica gels offer several advantages over traditional polystyrene based products:

- Broad solvent compatibility, including polar solvents
- Minimal swelling, which facilitates the use in automated flow-through systems
- Ease of handling, since they develop no static charge; this simplifies filling cartridges and columns
- Thermal stability, which allows their use in microwave-assisted reactions

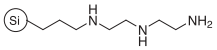
Highlighted below are the functionalized silica gels that can be utilized as scavengers in organic synthesis. For a complete listing of all of SiliCycle's products offered by Sigma-Aldrich, please email bseitz@sial.com.

3-Aminopropyl-functionalized silica gel

36,425-8  10g 50g 250g

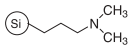
Reacts with:
Acids, acid chlorides, anhydrides, aldehydes, isocyanates, and chloroformates

3-(Diethylenetriamino)propyl-functionalized silica gel

53,792-6  5g 25g 100g

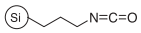
Reacts with:
Acids, acid chlorides, anhydrides, aldehydes, isocyanates, and chloroformates

3-(Dimethylamino)propyl-functionalized silica gel

53,804-3  5g 25g 100g

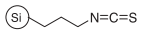
Reacts with:
Acids

3-(Isocyanato)propyl-functionalized silica gel

53,778-0  5g 25g 100g

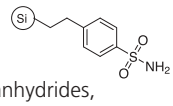
Reacts with:
Amines (primary and secondary), anilines, and hydrazines

3-(Thiocyanato)propyl-functionalized silica gel

53,794-2  5g 25g 100g

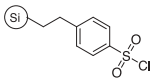
Reacts with:
Amines (primary and secondary), anilines, and hydrazines

4-Ethylbenzenesulfonamide-funtionalized silica gel

53,793-4  5g 25g 100g

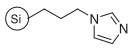
Reacts with:
Acids, acid chlorides, anhydrides, isocyanates, and chloroformates

4-Ethylbenzenesulfonylchloride-functionalized silica gel

53,797-7  5g 25g 100g

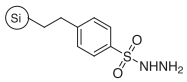
Reacts with:
Alcohols, amines, and other nucleophiles

3-(Imidazol-1-yl)propyl-functionalized silica gel

53,795-0  5g 25g 100g

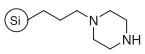
Reacts with:
Acids

2-(4-Toluenesulfonylhydrazino)ethyl-functionalized silica gel

55,259-3  5g 25g 100g

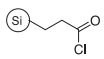
Reacts with:
Aldehydes and ketones

3-(1-Piperazino)propyl-functionalized silica gel

55,260-7  5g 25g 100g

Reacts with:
Fmoc and Bsmoc protecting groups

Propionyl chloride-functionalized silica gel

53,807-8  5g 25g 100g

Reacts with:
Amines and other nucleophiles

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