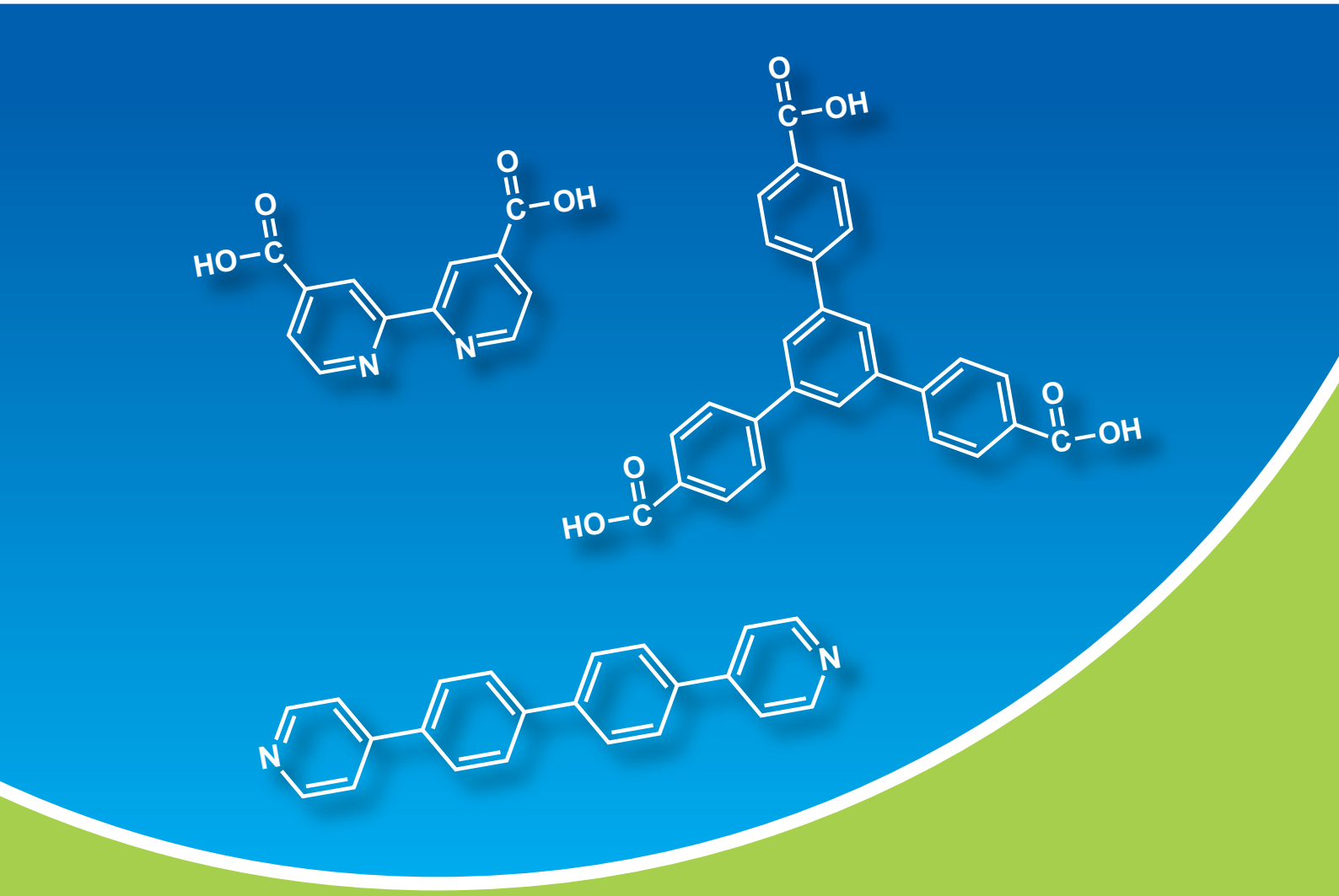
MATERIALS

Organic Linker Molecules for Metal Organic Frameworks (MOFs)



Oxygenated Organic Linkers

Nitrogenated Organic Linkers

Other Organic Linkers

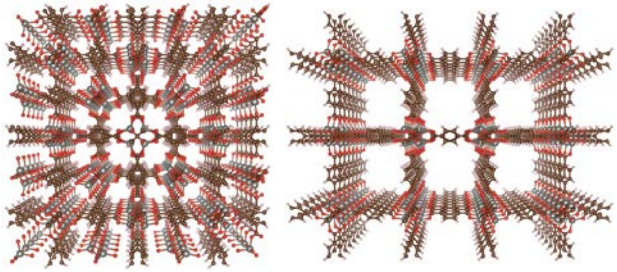
Organic Linker Molecules for Metal Organic Frameworks (MOFs)

More than 20,000 examples of metal organic frameworks (MOFs) and porous coordination polymers (PCPs) have been reported to date. The unique structures of MOFs and PCPs have allowed for extensive and varied chemical combinations between metal ions and organic ligands.[1,2] MOFs and PCPs feature porous coordination networks with extensive surface area, exceeding that of activated carbon and zeolite. The nanometer sized pores are capable of absorbing small molecules, and are expected to be used in applications for gas storage and separation, sensors, and for catalysis.

Imidazole-based metal organic frameworks with a zeolitic function, the so-called ZIFs (Zeolitic Imidazolate Frameworks), have received great attention due to the thermodynamic stability, chemical stability, and particularly they are stable in water.[3,4]

The 'crystal sponge method', wherein MOFs and PCPs uptake small molecules, enables us to solve the X-ray structure of small molecules by taking advantage of the crystalline nature of MOF's and PCP's. A task otherwise impossible for small molecules whom do not easily crystalize. X-ray structure analyses of amorphous and gas organic molecules are also possible by the method.[5,6]

We are able to design various MOFs and PCPs by taking into account the metal coordination number and organic ligand structure, as well as identify a unique function for the given MOF or PCP by introducing additional functional groups on the organic ligand. TCI offers rich variety of organic ligands (organic linker) for the design various MOFs/PCPs.



References

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S. Kitagawa, R. Kitaura, S. Noro, *Angew. Chem. Int. Ed.* **2004**, *43*, 2334.

2) **Structuring of metal–organic frameworks at the mesoscopic/macroscopic scale**
S. Furukawa, J. Reboul, S. Diring, K. Sumida, S. Kitagawa, *Chem. Soc. Rev.* **2014**, *43*, 5700.

3) **High-Throughput Synthesis of Zeolitic Imidazolate Frameworks and Application to CO_2 Capture**
R. Banerjee, A. Phan, B. Wang, C. Knobler, H. Furukawa, M. O'Keeffe, O. M. Yaghi, *Science* **2008**, *319*, 939.

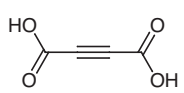
4) **Synthesis, Structure, and Carbon Dioxide Capture Properties of Zeolitic Imidazolate Frameworks**
A. Phan, C. J. Doonan, F. J. Uribe-Romo, C. B. Knobler, M. O'Keeffe, O. M. Yaghi, *Acc. Chem. Res.* **2010**, *43*, 58.

5) **X-ray analysis on the nanogram to microgram scale using porous complexes**
Y. Inokuma, S. Yoshioka, J. Ariyoshi, T. Arai, Y. Hitora, K. Takada, S. Matsunaga, K. Rissanen, M. Fujita, *Nature* **2013**, *495*, 461.

6) **Molecular containers**
P. Ballester, M. Fujita, J. Rebek, Jr., *Chem. Soc. Rev.* **2015**, *44*, 392.

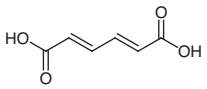
Oxygenated Organic Linkers

A0088 5g 25g



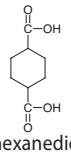
Acetylenedicarboxylic Acid
CAS RN: 142-45-0

M0473 1g



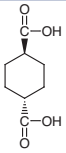
trans,*trans*-Muconic Acid
CAS RN: 3588-17-8

C0788 25g 500g



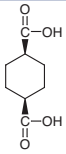
1,4-Cyclohexanedicarboxylic Acid (*cis*- and *trans*- mixture)
CAS RN: 1076-97-7

C0475 25g 100g 500g



trans-1,4-Cyclohexanedicarboxylic Acid
CAS RN: 619-82-9

C0789 25g 100g



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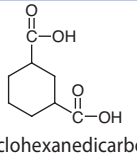
CAS RN: 619-81-8

C2186 5g 25g



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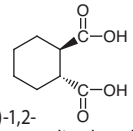
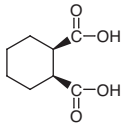
C1953 1g 5g



(1*R*,2*R*)-1,2-Cyclohexanedicarboxylic Acid
CAS RN: 46022-05-3

C0458 25g 500g



cis-1,2-Cyclohexanedicarboxylic Acid
CAS RN: 610-09-3

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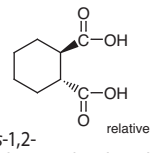
C0474 25g 500g



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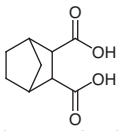
CAS RN: 2305-32-0

N0753 5g 25g



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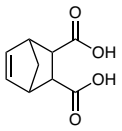
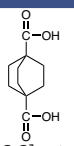


5-Norbornene-2,3-dicarboxylic Acid
CAS RN: 3813-52-3

B5595 1g



Bicyclo[2.2.2]octane-1,4-dicarboxylic Acid
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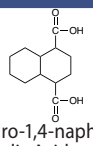
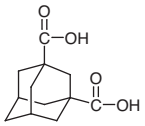
D4383 1g



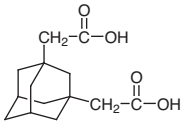
Decahydro-1,4-naphthalene-dicarboxylic Acid
(mixture of isomers)
CAS RN: 879360-14-2

A1358 5g 25g



1,3-Dicarboxyadamantane
CAS RN: 39269-10-8

A1357 5g



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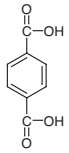

Terephthalic Acid
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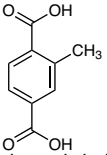

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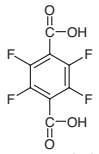

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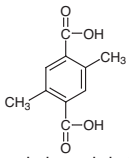

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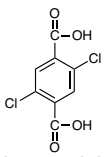

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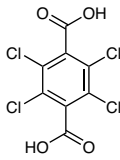

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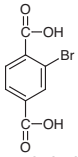

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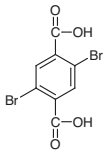

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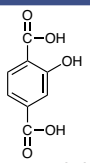

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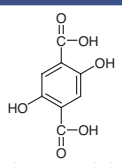

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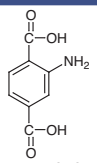

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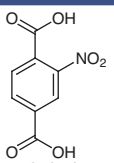

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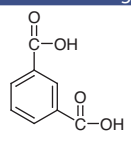

Isophthalic Acid
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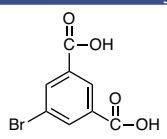

5-Bromoisophthalic Acid
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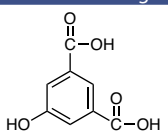
H0794 25g 500g



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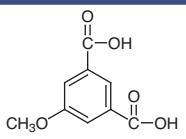

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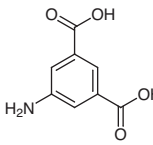

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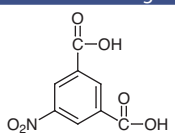

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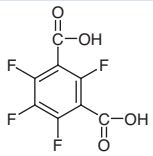
T1374 1g 5g



Tetrafluoroisophthalic Acid
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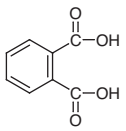

Phthalic Acid
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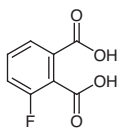

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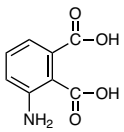
A1516 1g 5g



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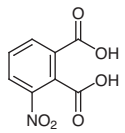

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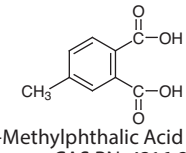
M0560 25g 500g



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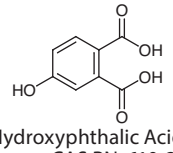

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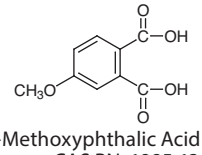

4-Methoxyphthalic Acid
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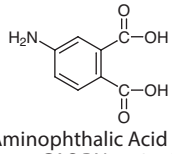
A1512 5g 25g



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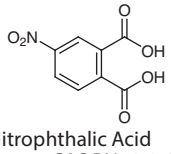
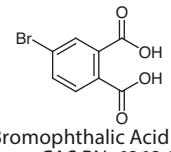


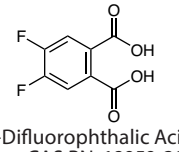
4-Nitrophthalic Acid
CAS RN: 610-27-5

B2257 1g 5g 25g



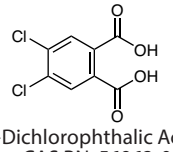
4-Bromophthalic Acid
CAS RN: 6968-28-1

D6038 1g 5g



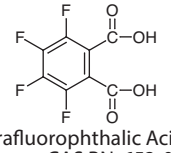
4,5-Difluorophthalic Acid
CAS RN: 18959-31-4

D2350 1g 5g



4,5-Dichlorophthalic Acid
CAS RN: 56962-08-4

T0986 5g 25g

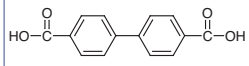


Tetrafluorophthalic Acid
CAS RN: 652-03-9

T0070 25g 500g

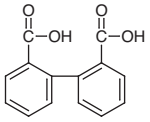
Tetrachlorophthalic Acid
Hemihydrate
CAS RN: 632-58-6

B1191 5g 25g



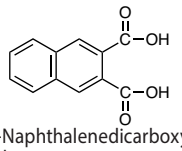
4,4'-Bibenzoic Acid
CAS RN: 787-70-2

D0864 25g 100g



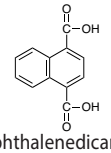
2,2'-Bibenzoic Acid
CAS RN: 482-05-3

N0526 5g 25g



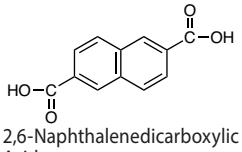
2,3-Naphthalenedicarboxylic Acid
CAS RN: 2169-87-1

N0606 25g 100g



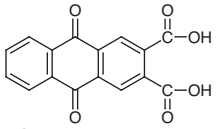
1,4-Naphthalenedicarboxylic Acid
CAS RN: 605-70-9

N0377 5g 25g 100g



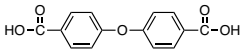
2,6-Naphthalenedicarboxylic Acid
CAS RN: 1141-38-4

A1681 1g



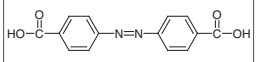
Anthraquinone-2,3-dicarboxylic Acid
CAS RN: 27485-15-0

D2115 25g 100g



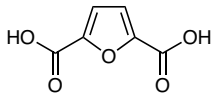
4,4'-Dicarboxydiphenyl Ether
CAS RN: 2215-89-6

A1596 1g 5g



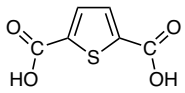
4,4'-Azodibenzoic Acid
CAS RN: 586-91-4

F0710 5g 25g



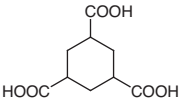
2,5-Furandicarboxylic Acid
CAS RN: 3238-40-2

T2347 5g 25g



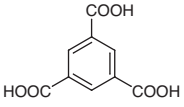
2,5-Thiophenedicarboxylic Acid
CAS RN: 4282-31-9

C2029 5g 25g



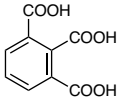
1,3,5-Cyclohexanetricarboxylic Acid (*cis*- and *trans*- mixture)
CAS RN: 25357-95-3

B0043 25g 100g 500g



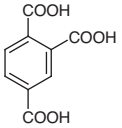
1,3,5-Benzenetricarboxylic Acid
CAS RN: 554-95-0

H1592 5g



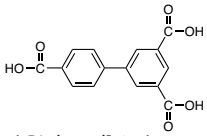
Hemimellitic Acid
CAS RN: 569-51-7

B0042 25g 100g 500g



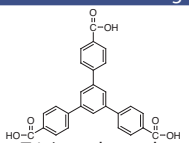
Trimellitic Acid
CAS RN: 528-44-9

B5795 1g



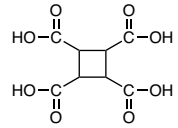
[1,1'-Biphenyl]-3,4',5-tricarboxylic Acid
CAS RN: 677010-20-7

T2647 1g 5g



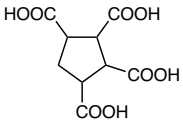
1,3,5-Tris(4-carboxyphenyl)-benzene
CAS RN: 50446-44-1

C2502 1g



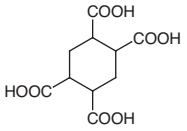
1,2,3,4-Cyclobutane-tetracarboxylic Acid
CAS RN: 53159-92-5

C0856 5g 25g



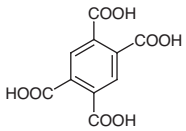
1,2,3,4-Cyclopentane-tetracarboxylic Acid
CAS RN: 3724-52-5

C2198 5g 25g



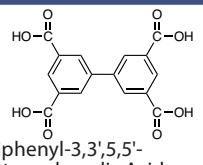
1,2,4,5-Cyclohexane-tetracarboxylic Acid
CAS RN: 15383-49-0

B0039 25g 100g 500g



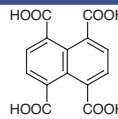
Pyromellitic Acid
CAS RN: 89-05-4

B3792 200mg



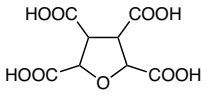
Biphenyl-3,3',5,5'-tetracarboxylic Acid
CAS RN: 4371-28-2

N0770 25g 250g



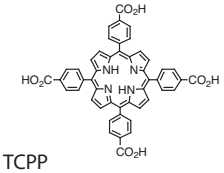
1,4,5,8-Naphthalenete-tracarboxylic Acid (contains Monoanhydride)
CAS RN: 128-97-2

T0975 25g 500g



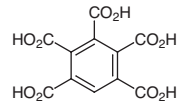
Tetrahydrofuran-2,3,4,5-tetracarboxylic Acid
CAS RN: 26106-63-8

A5015 100mg 1g



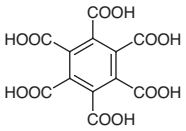
TCPP
CAS RN: 14609-54-2

B0952 5g 25g



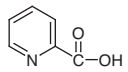
Benzenepentacarboxylic Acid
CAS RN: 1585-40-6

B0246 5g 25g



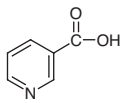
Mellitic Acid
CAS RN: 517-60-2

P0421 25g 100g 500g



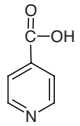
Picolinic Acid
CAS RN: 98-98-6

N0082 25g 500g



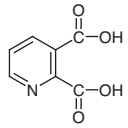
Nicotinic Acid
CAS RN: 59-67-6

I0207 25g 500g



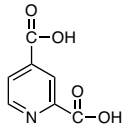
Isonicotinic Acid
CAS RN: 55-22-1

P0550 25g 500g



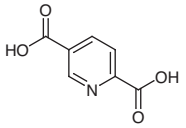
Quinolinic Acid
CAS RN: 89-00-9

P2416 5g 25g



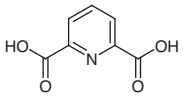
2,4-Lutidinic Acid
CAS RN: 499-80-9

P0552 25g



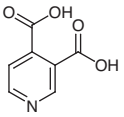
Isocinchomeronic Acid
CAS RN: 100-26-5

P0554 25g 100g 500g



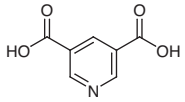
Dipicolinic Acid
CAS RN: 499-83-2

P0682 5g 25g



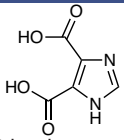
Cinchomeronic Acid
CAS RN: 490-11-9

P0551 5g 25g



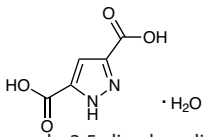
3,5-Pyridinedicarboxylic Acid
CAS RN: 499-81-0

I0003 5g



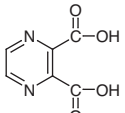
1*H*-Imidazole-4,5-dicarboxylic Acid
CAS RN: 570-22-9

P1048 5g 25g



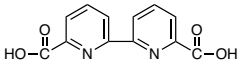
Pyrazole-3,5-dicarboxylic Acid Monohydrate
CAS RN: 303180-11-2

P0545 25g



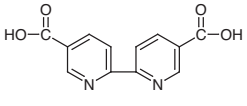
2,3-Pyrazinedicarboxylic Acid
CAS RN: 89-01-0

B3533 1g 5g



2,2'-Bipyridine-6,6'-dicarboxylic Acid
CAS RN: 4479-74-7

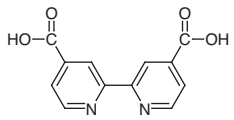
B3502 1g 5g



2,2'-Bipyridine-5,5'-dicarboxylic Acid
CAS RN: 1802-30-8

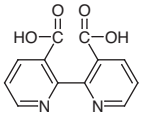
Please inquire for pricing and availability of listed products to our local sales representatives.

B1876 100mg 1g



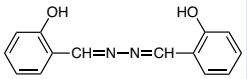
2,2'-Biisonicotinic Acid
CAS RN: 6813-38-3

B3622 1g



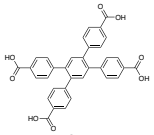
2,2'-Bipyridine-3,3'-dicarboxylic Acid
CAS RN: 4433-01-6

S0850 5g 25g



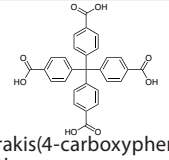
Salicylaldehyde Azine
CAS RN: 959-36-4

T3894 200mg 1g



1,2,4,5-Tetrakis(4-carboxyphenyl)benzene
CAS RN: 1078153-58-8

T3896 1g



Tetrakis(4-carboxyphenyl)-methane
CAS RN: 160248-28-2

Nitrogenated Organic Linkers

D0134 25g 100g 500g

DABCO
CAS RN: 280-57-9

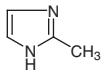
H0093 25g 500g

HMTA
CAS RN: 100-97-0

I0001 25g 100g 500g

Imidazole
CAS RN: 288-32-4

M0345 25g 100g 500g

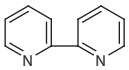


2-Methylimidazole
CAS RN: 693-98-1

P0544 25g 500g

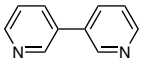
Pyrazine
CAS RN: 290-37-9

B0468 25g 100g 500g



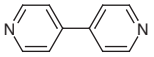
2,2'-Bipyridyl
CAS RN: 366-18-7

B3984 1g 5g



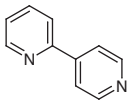
3,3'-Bipyridyl
CAS RN: 581-46-4

B0469 25g 100g



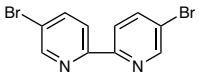
4,4'-Bipyridyl
CAS RN: 553-26-4

B0863 1g 5g



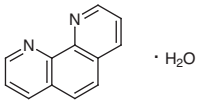
2,4'-Bipyridyl
CAS RN: 581-47-5

D4358 1g



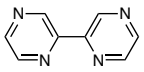
5,5'-Dibromo-2,2'-bipyridyl
CAS RN: 15862-18-7

P0221 1g 25g



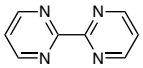
1,10-Phenanthroline Monohydrate
CAS RN: 5144-89-8

B4297 100mg 500mg



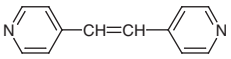
2,2'-Bipyrazine
CAS RN: 10199-00-5

B2496 200mg 1g



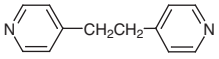
2,2'-Bipyrimidyl
CAS RN: 34671-83-5

D0276 10g 25g



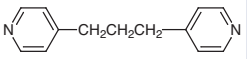
1,2-Di(4-pyridyl)ethylene
CAS RN: 13362-78-2

D3752 1g 5g



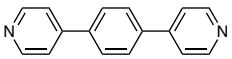
1,2-Di(4-pyridyl)ethane
CAS RN: 4916-57-8

D0938 25g 500g



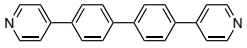
1,3-Di(4-pyridyl)propane
CAS RN: 17252-51-6

P1550 200mg 1g



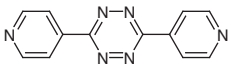
1,4-Di(4-pyridyl)benzene
CAS RN: 113682-56-7

D4203 200mg 1g



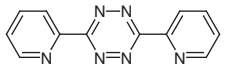
4,4'-Di(4-pyridyl)biphenyl
CAS RN: 319430-87-0

D3211 1g 5g



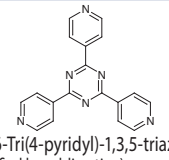
3,6-Di(4-pyridyl)-1,2,4,5-tetrazine
CAS RN: 57654-36-1

D3640 1g 5g



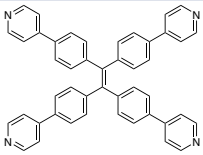
3,6-Di(2-pyridyl)-1,2,4,5-tetrazine
CAS RN: 1671-87-0

T1937 1g 5g



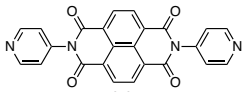
2,4,6-Tri(4-pyridyl)-1,3,5-triazine
(purified by sublimation)
CAS RN: 42333-78-8

T4263 1g



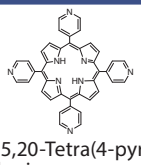
TPTPE
CAS RN: 1227195-24-5

D4152 1g 5g



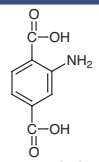
N,N'-Di(4-pyridyl)-1,4,5,8-naphthalenetetracarboxdiimide
CAS RN: 34151-49-0

T2222 1g 5g



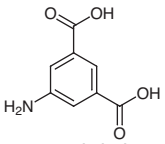
5,10,15,20-Tetra(4-pyridyl)-porphyrin
CAS RN: 16834-13-2

A1291 25g



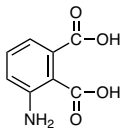
2-Aminoterephthalic Acid
CAS RN: 10312-55-7

A1290 25g 100g 500g



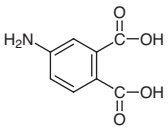
5-Aminoisophthalic Acid
CAS RN: 99-31-0

A1516 1g 5g



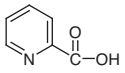
3-Aminophthalic Acid
CAS RN: 5434-20-8

A1512 5g 25g



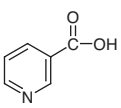
4-Aminophthalic Acid
CAS RN: 5434-21-9

P0421 25g 100g 500g



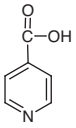
Picolinic Acid
CAS RN: 98-98-6

N0082 25g 500g



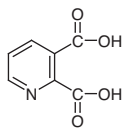
Nicotinic Acid
CAS RN: 59-67-6

I0207 25g 500g



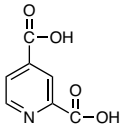
Isonicotinic Acid
CAS RN: 55-22-1

P0550 25g 500g



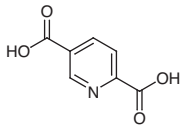
Quinolinic Acid
CAS RN: 89-00-9

P2416 5g 25g



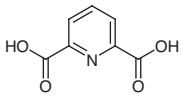
2,4-Lutidinic Acid
CAS RN: 499-80-9

P0552 25g



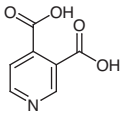
Isocinchomeronic Acid
CAS RN: 100-26-5

P0554 25g 100g 500g



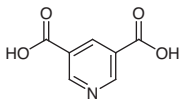
Dipicolinic Acid
CAS RN: 499-83-2

P0682 5g 25g



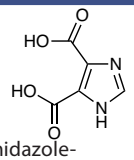
Cinchomeronic Acid
CAS RN: 490-11-9

P0551 5g 25g



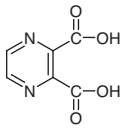
3,5-Pyridinedicarboxylic Acid
CAS RN: 499-81-0

I0003 5g



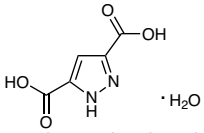
1*H*-Imidazole-
4,5-dicarboxylic Acid
CAS RN: 570-22-9

P0545 25g



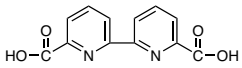
2,3-Pyrazinedicarboxylic Acid
CAS RN: 89-01-0

P1048 5g 25g



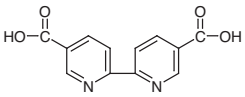
Pyrazole-3,5-dicarboxylic
Acid Monohydrate
CAS RN: 303180-11-2

B3533 1g 5g



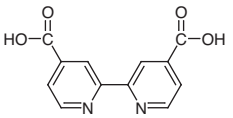
2,2'-Bipyridine-
6,6'-dicarboxylic Acid
CAS RN: 4479-74-7

B3502 1g 5g



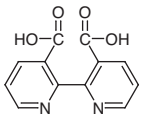
2,2'-Bipyridine-
5,5'-dicarboxylic Acid
CAS RN: 1802-30-8

B1876 100mg 1g



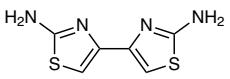
2,2'-Biisonicotinic Acid
CAS RN: 6813-38-3

B3622 1g



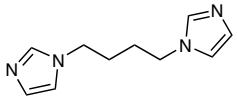
2,2'-Bipyridine-
3,3'-dicarboxylic Acid
CAS RN: 4433-01-6

D4273 200mg



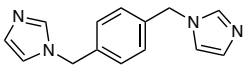
2,2'-Diamino-4,4'-bithiazole
CAS RN: 58139-59-6

B6458 250mg



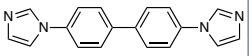
1,4-Di(1*H*-imidazol-1-yl)-
butane
CAS RN: 69506-86-1

B4023 1g 5g



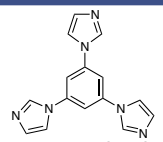
1,4-Bis[(1*H*-imidazol-1-yl)-
methyl]benzene
CAS RN: 56643-83-5

D5777 1g 5g



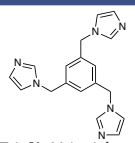
4,4'-Di(1*H*-imidazol-1-yl)-
1,1'-biphenyl
CAS RN: 855766-92-6

T3903 1g



1,3,5-Tri(1*H*-imidazol-1-yl)-
benzene
CAS RN: 528543-96-6

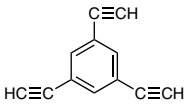
T3479 1g 5g



1,3,5-Tris[(1*H*-imidazol-
1-yl)methyl]benzene
CAS RN: 147951-02-8

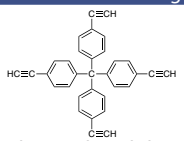
Other Organic Linkers

T2760 1g 5g



1,3,5-Triethynylbenzene
CAS RN: 7567-63-7

T3151 100mg 1g



Tetrakis(4-ethynylphenyl)-
methane
CAS RN: 177991-01-4

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E-mail : Sales-US@TCIchemicals.com

TCI EUROPE N.V.
Tel : +32 (0)3 735 07 00
Fax : +32 (0)3 735 07 01
E-mail : Sales-EU@TCIchemicals.com

TCI Deutschland GmbH
Tel : +49 (0)6196 64053-00
Fax : +49 (0)6196 64053-01
E-mail : Sales-DE@TCIchemicals.com

Tokyo Chemical Industry UK Ltd.
Tel : +44 (0)1865 78 45 60
E-mail : Sales-UK@TCIchemicals.com

梯希爱(上海)化成工业发展有限公司
Tel : 800-988-0390 / 021-67121386
Fax : 021-6712-1385
E-mail : Sales-CN@TCIchemicals.com

Tokyo Chemical Industry (India) Pvt. Ltd.
Tel : 1800 425 7889 / 044-2262 0909
E-mail : Sales-IN@TCIchemicals.com

TOKYO CHEMICAL INDUSTRY CO., LTD.
Tel : +81 (0)3-5640-8878
E-mail : globalbusiness@TCIchemicals.com