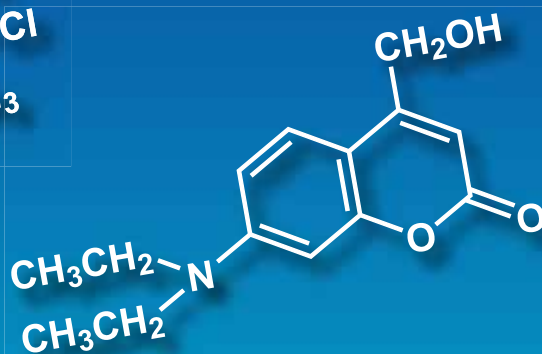
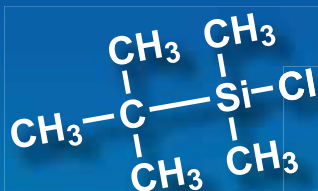
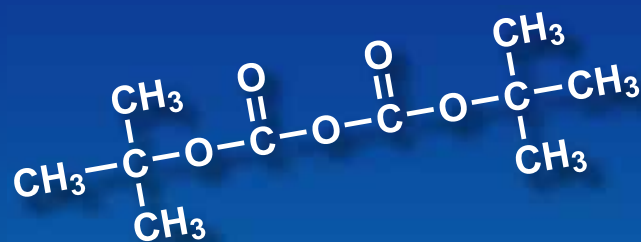


# 保护剂

## Protecting Agents



# 保护剂

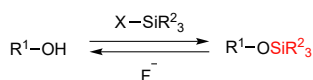
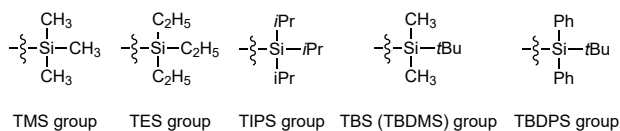
保护基团在有机合成中具有重要意义。在许多情况下，反应条件会影响多个功能，这就需要阻断几个功能基团，从而获得正确的合成转化。然而，保护基团的引入和去除需要根据它们自身的条件以及各自的化学性质，正确选择合适的保护剂对合成策略至关重要。最有用的保护剂通常需要几个关键属性：

- 保护剂必须与需要保护的目标官能团选择性反应。
- 必须在无任何副反应的情况下，以高收率引入保护基团。
- 受保护的官能团应在各种反应条件下保持稳定。
- 保护基团必须在特定条件下进行化学选择性脱除保护，而且不脱保护其他类型的保护基团。

特别是在全合成和结构复杂的化合物中，设计合成策略通常需要谨慎选择保护基团。随着时间的推移，大量的保护基团是可以获得的，部分原因是在复杂的合成过程中需要高度专业化的要求。这些试剂和保护基团都包括专门的具有高度的特异性附着和去除条件。这本小册子介绍了各种保护剂，这些保护剂是根据他们脱保护方法进行分类的。

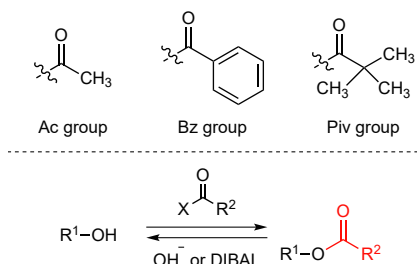
## ● 硅烷化试剂

硅基是最常用的阻止羟基功能的保护基团之一，同时也用于保护羧基和氨基。三甲基硅基(TMS)和三乙基硅基(TEOS)通常用作通用或短期的保护基团，而三异丙基硅基(TIPS)、叔丁基二甲基硅基(TBS或TBDMS)和叔丁基二苯基硅基(TBDPS)则用于引入体积较大的取代基，这些取代基更加坚固。在酸性条件下或氟离子的作用下，硅基保护基团很容易脱保护。



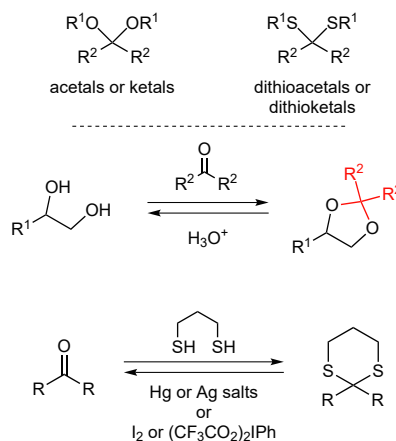
## ● 酰化试剂

酰基保护基通常用于保护羟基和氨基。乙酰基(Ac)、苯甲酰基(Bz)和新戊酰基(Piv)是常用的基团。由于Piv基团体积较大，需要选择性地保护非位阻羟基时，通常选择新戊酰基团。一般来说，酰基保护基团在酸性和氧化条件下是稳定的。酰基保护基团通常在碱性或还原性条件下(DIBAL、LAH等)脱保护。



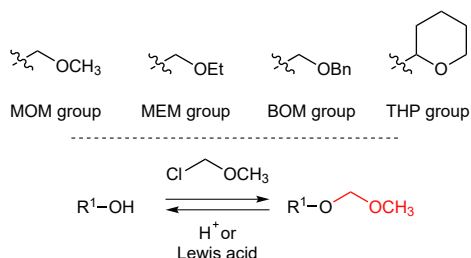
## ● 缩醛化试剂，硫缩醛化试剂

缩醛和硫缩醛最常用于保护羰基，尤其是醛和酮。缩醛和缩酮通常在酸性条件下被引入，并利用它们存在的平衡来组装它们。缩醛在碱性和还原性条件下是稳定的，对亲核试剂和有机金属试剂也是惰性的。脱保护通常在酸性条件下通过水解进行。硫缩醛具有更大的合成阻力，通常在酸性和碱性水条件下都是稳定的。硫缩醛的脱保护通常需要添加汞盐或高价碘化合物。



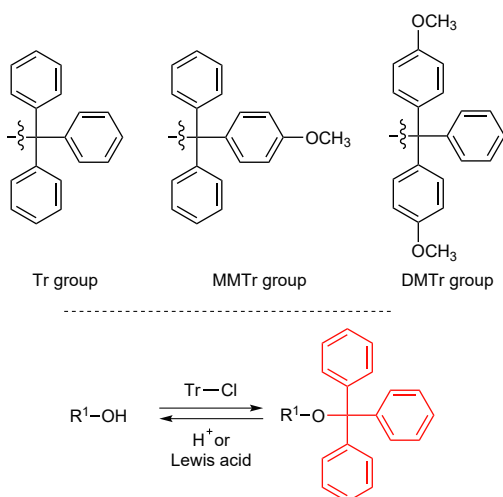
## ● 烷氧基甲基化试剂

烷氧基甲基，如甲氧基甲基(MOM)，通常用于保护羟基。由于形式上具有缩醛官能团，它们在碱性和还原性条件下是稳定的。烷氧基甲基通常由酸催化水解脱保护。



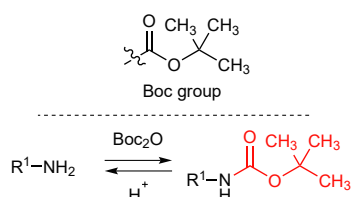
## ● 三苯甲基(Tr)化试剂

三苯甲基(Tr)基团主要用于保护羟基。由于它们的尺寸较大，可以选择性地保护位阻较小的底物。它们对碱基、氧化剂、还原剂和亲核试剂相对稳定，在酸性水解条件下进行脱保护。



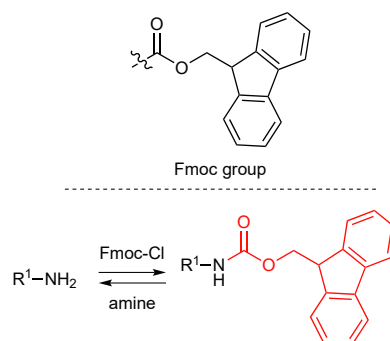
## ● 叔丁氧基羰基(BOC)化试剂

叔丁基羰基(Boc)是多肽合成中最常用的氨基保护基团之一。它也用于保护羟基。它在碱性水解条件和催化还原条件下是稳定的，对各种亲核试剂是惰性的。通常在酸性条件下用三氟乙酸脱保护。



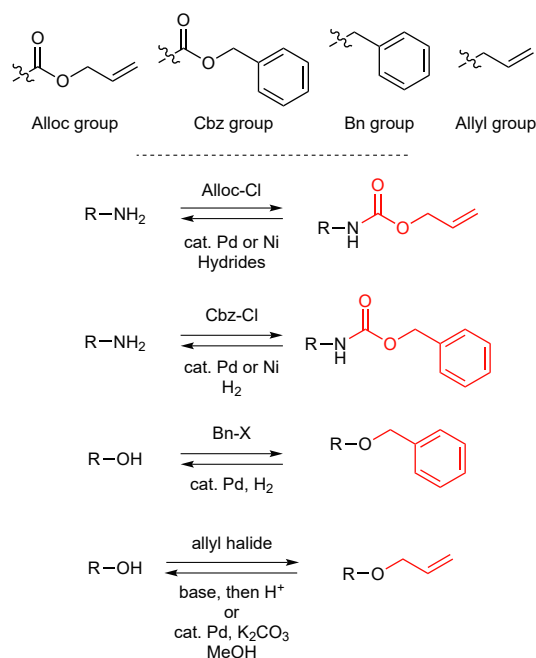
## ● 9-芴甲氧基羰基(Fmoc)化试剂

9-芴甲氧基羰基(Fmoc)是固相多肽合成中最常用的氨基保护基团之一。易被哌啶等二级胺脱保护，在酸性条件下稳定。值得注意的是，当一个分子同时含有Fmoc和Boc基团时，只有Boc基团会在酸性条件下被选择性地去除。



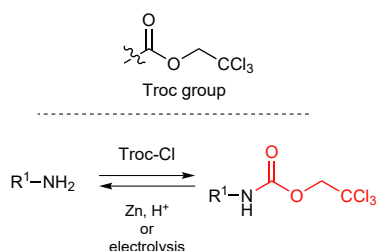
## ● 烯丙氧羰基(Alloc)化试剂、苄氧羰基(Cbz)化试剂、苄基(Bn)化试剂和烯丙基(Allyl)化试剂

烯丙氧羰基(Alloc)、苄氧羰基(Cbz)、苄基(Bn)和烯丙基(Allyl)通常用于保护氨基。这些保护基团通常被钯催化剂脱保护。



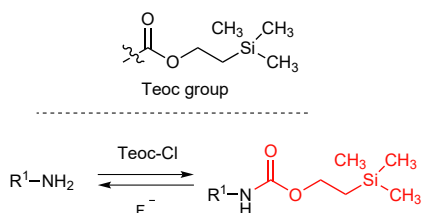
## ● 2,2,2-三氯乙氧基羰基 (Troc) 化试剂

2,2,2-三氯乙氧基羰基 (Troc) 被用作羟基和氨基的保护基团。Troc基团通常用锌粉处理或电解脱保护。



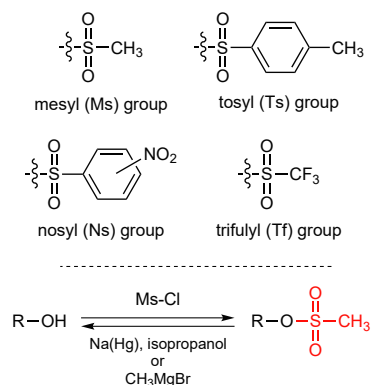
## ● 2-(三甲基硅基)乙氧基羰基 (Teoc) 化试剂

2-(三甲基硅基)乙氧基羰基 (Teoc) 作为胺类的保护基团。Teoc基团可以用氟离子源 (如 TBAF) 脱保护。



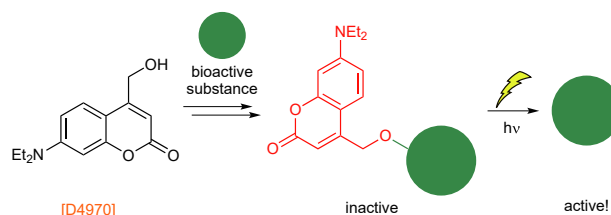
## ● 磺酰化试剂

磺酰基既可作为羟基和氨基的保护基团，也可用于羟基官能团的活化。



## ● 光敏保护剂

像7-(二乙氨基)-4-(羟甲基)香豆素 [D4970] 这样的光致保护基团可以被引入以提供“笼状”化合物，并且通常用于保护生物活性分子。生物活性分子的“笼”，尤其是具有光致保护基团的生物活性分子的“笼状”已被证明是生化研究中一种特别有用的工具。“笼状”化合物被光致保护基团灭活，并可被紫外线或可见光照射激活。近年来，利用笼状化合物控制生物分子活性的局部表达的研究已被报道，并将继续深入研究。迄今为止，已经合成和报道了几种类型的笼状生物分子，包括：核苷酸、氨基酸、生物素和糖。



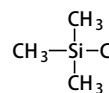
### 参考文献

- Protective Groups in Organic Synthesis*, 5th ed., ed. by T. W. Greene, P. G. M. Wuts, John Wiley & Sons, Inc., New York, 2014.
- A. Isidro-Llobet, M. Alvarez, F. Albericio, *Chem. Rev.* **2009**, 109, 2455.
- M. Schelhaas, H. Waldmann, *Angew. Chem. Int. Ed.* **1996**, 35, 2056.
- K. Jarowicki, P. Kocienski, *Contemp. Org. Synth.* **1997**, 4, 454.

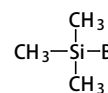
## 硅烷化试剂 Silylation Reagents

### 三甲基硅基 (TMS)化 试剂 Trimethylsilylation (TMS) Reagents

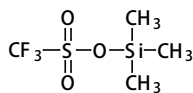
C0306 25mL 100mL 500mL

Chlorotrimethylsilane  
CAS RN: 75-77-4

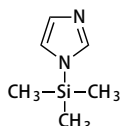
B1087 5mL 25mL 250mL

Bromotrimethylsilane  
CAS RN: 2857-97-8

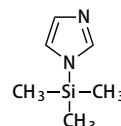
T0871 5g 25g 250g

TMSOTf  
CAS RN: 27607-77-8

T0585 25g 100g

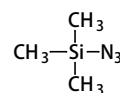
SIM  
CAS RN: 18156-74-6

T0623 12mL

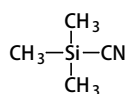


SIM (in Anhydrous Pyridine)

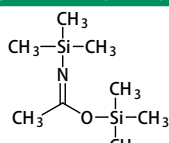
T0801 5g 25g 100g

Trimethylsilyl Azide  
CAS RN: 4648-54-8

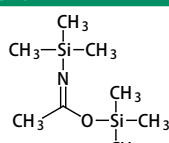
T0990 25mL 100mL 500mL

Trimethylsilyl Cyanide  
CAS RN: 7677-24-9

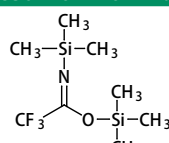
B0511 10mL 100mL

BSA  
CAS RN: 10416-59-8

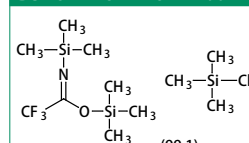
B0510 12mL

BSA (25% in Acetonitrile)  
CAS RN: 10416-59-8

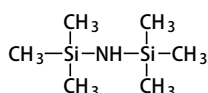
B0830 5mL 25mL 100mL

BSTFA  
CAS RN: 25561-30-2

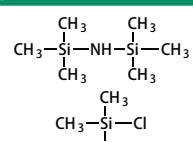
B3402 5mL 25mL 100mL

BSTFA-TMCS (99:1)  
CAS RN: 25561-30-2

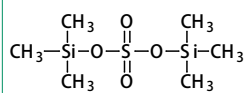
H0089 10mL 25mL 100mL 500mL

HMDS  
CAS RN: 999-97-3

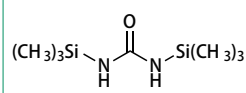
T0274 12mL

HMDS and TMCS  
(in Anhydrous Pyridine)

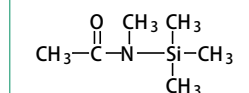
B1245 5g 25g

Bis(trimethylsilyl) Sulfate  
CAS RN: 18306-29-1

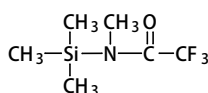
B1103 25g

BSU  
CAS RN: 18297-63-7

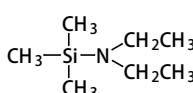
M0536 10g 25g

N-Methyl-N-TMS-acetamide  
CAS RN: 7449-74-3

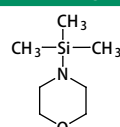
M0672 5mL 25mL

MSTFA  
CAS RN: 24589-78-4

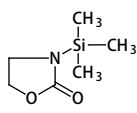
T0492 25mL

TMS-DEA  
CAS RN: 996-50-9

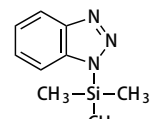
T1277 5mL 25mL

N-(Trimethylsilyl)morpholine  
CAS RN: 13368-42-8

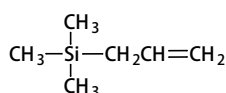
T1535 5g

3-Trimethylsilyl-2-oxazolidinone  
CAS RN: 43112-38-5

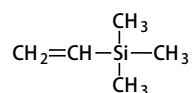
T1752 5g 25g

1-TMS-1H-benzotriazole  
CAS RN: 43183-36-4

A0729 25mL 100mL 250mL

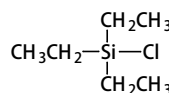
Allyltrimethylsilane  
CAS RN: 762-72-1

V0067 25mL 100mL

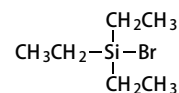
Vinyltrimethylsilane  
CAS RN: 754-05-2

### 三乙基硅基 (TES)化 试剂 Triethylsilylation (TES) Reagents

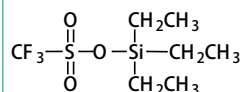
T0589 5g 25g 100g

Chlorotriethylsilane  
CAS RN: 994-30-9

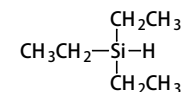
B5890 5g

Bromotriethylsilane  
CAS RN: 1112-48-7

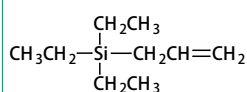
T1689 5g 25g

Triethylsilyl Triflate  
CAS RN: 79271-56-0

T0662 25mL 250mL

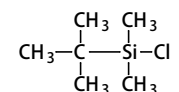
Triethylsilane  
CAS RN: 617-86-7

A2299 5g

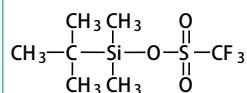
Allyltriethylsilane  
CAS RN: 17898-21-4

### 叔丁基二甲基 硅基(TBS)化 试剂 tert-Butyldimethyl- silylation (TBS) Reagents

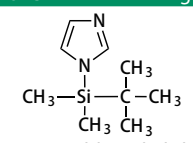
B0995 5g 25g 100g

TBSCl  
CAS RN: 18162-48-6

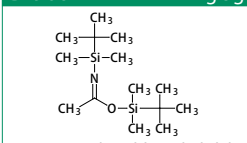
T1525 5g 25g

TBS Triflate  
CAS RN: 69739-34-0

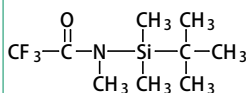
B1043 1g 5g

1-(tert-Butyldimethylsilyl)-imidazole  
CAS RN: 54925-64-3

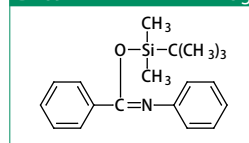
B1906 1g 5g

N,O-Bis(tert-butyldimethylsilyl)-acetamide  
CAS RN: 82112-21-8

B1150 1g 10g

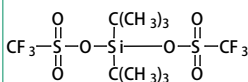
MTBSTFA  
CAS RN: 77377-52-7

B2697 5g

TBS-BEZA  
CAS RN: 404392-70-7

<p><b>三异丙基硅基 (TIPS)化试剂</b> Triisopropyl- silylation (TIPS) Reagents</p>	<p><b>T1078</b> 5mL 25mL 250mL</p> $\begin{array}{c} \text{CH}(\text{CH}_3)_2 \\   \\ (\text{CH}_3)_2\text{CH}-\text{Si}-\text{Cl} \\   \\ \text{CH}(\text{CH}_3)_2 \end{array}$ <p>TIPSCI CAS RN: 13154-24-0</p>	<p><b>T1588</b> 5g 25g</p> $\begin{array}{c} \text{O} \quad \text{CH}(\text{CH}_3)_2 \\    \quad   \\ \text{CF}_3-\text{S}-\text{O}-\text{Si}-\text{CH}(\text{CH}_3)_2 \\    \quad   \\ \text{O} \quad \text{CH}(\text{CH}_3)_2 \end{array}$ <p>Triisopropylsilyl Triflate CAS RN: 80522-42-5</p>	<p><b>T1533</b> 5mL 25mL 100mL</p> $\begin{array}{c} \text{CH}(\text{CH}_3)_2 \\   \\ (\text{CH}_3)_2\text{CH}-\text{Si}-\text{H} \\   \\ \text{CH}(\text{CH}_3)_2 \end{array}$ <p>Triisopropylsilane CAS RN: 6485-79-6</p>	<p><b>叔丁基二苯基硅基 (TBDPS)化试剂</b> <i>tert</i>-Butyldiphenyl- silylation (TBDPS) Reagents</p>
<p><b>B1223</b> 5mL 25mL 100mL</p> $\begin{array}{c} \text{C}_6\text{H}_5 \\   \\ \text{H}_3\text{C}-\text{C}-\text{Si}-\text{Cl} \\   \quad   \\ \text{H}_3\text{C} \quad \text{C}_6\text{H}_5 \end{array}$ <p>TBDPSCI CAS RN: 58479-61-1</p>	<p><b>B3566</b> 5g</p> $\begin{array}{c} \text{C}_6\text{H}_5 \\   \\ \text{H}_3\text{C}-\text{C}-\text{Si}-\text{H} \\   \quad   \\ \text{H}_3\text{C} \quad \text{C}_6\text{H}_5 \end{array}$ <p><i>tert</i>-Butyldiphenylsilane CAS RN: 33729-92-9</p>	<p><b>B2898</b> 1g 5g</p> $\begin{array}{c} \text{C}_6\text{H}_5 \\   \\ \text{H}_3\text{C}-\text{C}-\text{Si}-\text{O}-\text{S}-\text{CF}_3 \\   \quad   \quad    \\ \text{H}_3\text{C} \quad \text{C}_6\text{H}_5 \quad \text{O} \end{array}$ <p><i>tert</i>-Butyldiphenylsilyl Triflate CAS RN: 92886-86-7</p>	<p><b>其它硅烷化 试剂</b> Other Silylation Reagents</p>	<p><b>D0135</b> 5g 25g</p> $\begin{array}{c} \text{CH}_3 \\   \\ \text{Cl}-\text{Si}-\text{CH}_2\text{CH}_3 \\   \\ \text{CH}_3 \end{array}$ <p>Dimethylethylchlorosilane CAS RN: 6917-76-6</p>
<p><b>D1590</b> 5mL 25mL</p> $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3\text{CH}_2\text{CH}_2-\text{Si}-\text{Cl} \\   \\ \text{CH}_3 \end{array}$ <p>Chlorodimethylpropylsilane CAS RN: 17477-29-1</p>	<p><b>D1594</b> 5mL 25mL</p> $\begin{array}{c} \text{CH}_3 \quad \text{CH}_3 \\ \diagdown \quad / \\ \text{Si}-\text{Cl} \\ / \quad \diagdown \\ \text{CH}_3 \quad \text{CH}_3 \end{array}$ <p>Dimethylisopropylchlorosilane CAS RN: 3634-56-8</p>	<p><b>B2010</b> 25mL</p> $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3(\text{CH}_2)_3-\text{Si}-\text{Cl} \\   \\ \text{CH}_3 \end{array}$ <p>Butylchlorodimethylsilane CAS RN: 1000-50-6</p>	<p><b>D1827</b> 25mL 100mL</p> $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3(\text{CH}_2)_7-\text{Si}-\text{Cl} \\   \\ \text{CH}_3 \end{array}$ <p>Dimethyl-<i>n</i>-octylchlorosilane CAS RN: 18162-84-0</p>	<p><b>T2116</b> 5g 25g</p> $\begin{array}{c} \text{CH}_3 \quad \text{CH}_3 \quad \text{CH}_3 \\   \quad   \quad   \\ \text{CH}-\text{C}-\text{Si}-\text{Cl} \\   \quad   \\ \text{CH}_3 \quad \text{CH}_3 \end{array}$ <p>Chloro(dimethyl)-<i>thexylsilane</i> CAS RN: 67373-56-2</p>
<p><b>C1468</b> 25mL</p> $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3(\text{CH}_2)_9-\text{Si}-\text{Cl} \\   \\ \text{CH}_3 \end{array}$ <p>Chloro(decyl)dimethylsilane CAS RN: 38051-57-9</p>	<p><b>C1469</b> 25mL</p> $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3(\text{CH}_2)_{11}-\text{Si}-\text{Cl} \\   \\ \text{CH}_3 \end{array}$ <p>Chloro(dodecyl)- dimethylsilane CAS RN: 66604-31-7</p>	<p><b>D1560</b> 25mL</p> $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3(\text{CH}_2)_{17}-\text{Si}-\text{Cl} \\   \\ \text{CH}_3 \end{array}$ <p>Dimethyloctadecyl- chlorosilane CAS RN: 18643-08-8</p>	<p><b>C1207</b> 5mL 25mL</p> $\begin{array}{c} \text{CH}_3 \\   \\ \text{NC}-\text{CH}_2\text{CH}_2\text{CH}_2-\text{Si}-\text{Cl} \\   \\ \text{CH}_3 \end{array}$ <p>(3-Cyanopropyl)- dimethylchlorosilane CAS RN: 18156-15-5</p>	<p><b>B2334</b> 5g</p> $\begin{array}{c} \text{CH}_3 \\   \\ \text{C}_6\text{H}_5-\text{CH}_2-\text{Si}-\text{Cl} \\   \\ \text{CH}_3 \end{array}$ <p>Benzylchlorodimethylsilane CAS RN: 1833-31-4</p>
<p><b>D1147</b> 5mL 25mL</p> $\begin{array}{c} \text{CH}_3 \\   \\ \text{C}_6\text{H}_5-\text{Si}-\text{Cl} \\   \\ \text{CH}_3 \end{array}$ <p>Chlorodimethylphenylsilane CAS RN: 768-33-2</p>	<p><b>D2262</b> 1g 5g</p> $\begin{array}{c} \text{CH}_2\text{CH}_3 \\   \\ \text{CH}_3-\text{CH}-\text{Si}-\text{Cl} \\   \quad   \\ \text{CH}_3 \quad \text{CH}_2\text{CH}_3 \end{array}$ <p>Chlorodiethylisopropylsilane CAS RN: 107149-56-4</p>	<p><b>T3524</b> 5g 25g</p> $\begin{array}{c} (\text{CH}_2)_3\text{CH}_3 \\   \\ \text{CH}_3(\text{CH}_2)_3-\text{Si}-\text{Cl} \\   \\ (\text{CH}_2)_3\text{CH}_3 \end{array}$ <p>Tributylchlorosilane CAS RN: 995-45-9</p>	<p><b>D1390</b> 25mL</p> $\begin{array}{c} \text{C}_6\text{H}_5 \\   \\ \text{C}_6\text{H}_5-\text{Si}-\text{Cl} \\   \\ \text{CH}_3 \end{array}$ <p>Diphenylmethylchlorosilane CAS RN: 144-79-6</p>	<p><b>T0939</b> 5g 25g</p> $\begin{array}{c} \text{C}_6\text{H}_5 \\   \\ \text{C}_6\text{H}_5-\text{Si}-\text{Cl} \\   \\ \text{C}_6\text{H}_5 \end{array}$ <p>Triphenylchlorosilane CAS RN: 76-86-8</p>
<p><b>B1436</b> 5mL 25mL</p> $\begin{array}{c} \text{C}_6\text{H}_5 \\   \\ \text{H}_3\text{C}-\text{C}-\text{O}-\text{Si}-\text{Cl} \\   \quad   \\ \text{H}_3\text{C} \quad \text{C}_6\text{H}_5 \end{array}$ <p><i>tert</i>-Butoxydiphenyl- chlorosilane CAS RN: 17922-24-6</p>	<p><b>B1663</b> 1g</p> $\begin{array}{c} \text{Br} \quad \text{CH}_3 \\   \quad   \\ \text{CH}_3\text{O}-\text{Si}-\text{C}-\text{CH}_3 \\   \quad   \\ \text{C}_6\text{H}_5 \quad \text{C}_6\text{H}_5 \end{array}$ <p><i>tert</i>-Butylmethoxyphenylsilyl Bromide CAS RN: 94124-39-7</p>	<p><b>C1492</b> 5mL 25mL</p> $\begin{array}{c} \text{CH}(\text{CH}_3)_2 \\   \\ \text{H}-\text{Si}-\text{Cl} \\   \\ \text{CH}(\text{CH}_3)_2 \end{array}$ <p>Chlorodiisopropylsilane CAS RN: 2227-29-4</p>	<p><b>T0398</b> 5g 25g 500g</p> $\begin{array}{c} \text{Cl} \\   \\ \text{H}-\text{Si}-\text{Cl} \\   \\ \text{Cl} \end{array}$ <p>Trichlorosilane CAS RN: 10025-78-2</p>	<p><b>C2411</b> 5g</p> $\begin{array}{c} \text{Si}(\text{CH}_3)_3 \\   \\ (\text{CH}_3)_3\text{Si}-\text{Si}-\text{Cl} \\   \\ \text{Si}(\text{CH}_3)_3 \end{array}$ <p>Chlorotris(trimethylsilyl)- silane CAS RN: 5565-32-2</p>
<p><b>D0358</b> 25mL 100mL 500mL</p> $\begin{array}{c} \text{Cl} \\   \\ \text{CH}_3-\text{Si}-\text{CH}_3 \\   \\ \text{Cl} \end{array}$ <p>Dichlorodimethylsilane CAS RN: 75-78-5</p>	<p><b>D1976</b> 5g 25g</p> $\begin{array}{c} \text{Cl} \\   \\ \text{CH}_3\text{CH}_2-\text{Si}-\text{CH}_2\text{CH}_3 \\   \\ \text{Cl} \end{array}$ <p>Dichlorodiethylsilane CAS RN: 1719-53-5</p>	<p><b>D2603</b> 5g 25g</p> $\begin{array}{c} \text{CH}_3 \quad \text{Cl} \quad \text{CH}_3 \\ \diagdown \quad   \quad / \\ \text{Si} \\ / \quad   \quad \backslash \\ \text{CH}_3 \quad \text{Cl} \quad \text{CH}_3 \end{array}$ <p>Dichlorodiisopropylsilane CAS RN: 7751-38-4</p>	<p><b>D2469</b> 5g</p> $\begin{array}{c} \text{H}_3\text{C} \quad \text{Cl} \quad \text{CH}_3 \\   \quad   \quad   \\ \text{H}_3\text{C}-\text{C}-\text{Si}-\text{C}-\text{C}-\text{H}_3 \\   \quad   \quad   \\ \text{H}_3\text{C} \quad \text{Cl} \quad \text{CH}_3 \end{array}$ <p>Di-<i>tert</i>-butyldichlorosilane CAS RN: 18395-90-9</p>	<p><b>D1995</b> 5mL 25mL</p> $\begin{array}{c} \text{Cl} \\   \\ \text{CH}_3-\text{Si}-(\text{CH}_2)_3\text{Cl} \\   \\ \text{Cl} \end{array}$ <p>3-Chloropropyl- dichloromethylsilane CAS RN: 7787-93-1</p>
<p><b>D0362</b> 25g 100g 500g</p> $\begin{array}{c} \text{Cl} \\   \\ \text{C}_6\text{H}_5-\text{Si}-\text{C}_6\text{H}_5 \\   \\ \text{Cl} \end{array}$ <p>Dichlorodiphenylsilane CAS RN: 80-10-4</p>	<p><b>D2334</b> 5g 25g</p> $\begin{array}{c} \text{CH}_3 \quad \text{CH}_3 \\   \quad   \\ \text{Cl}-\text{Si}-\text{O}-\text{Si}-\text{Cl} \\   \quad   \\ \text{CH}_3 \quad \text{CH}_3 \end{array}$ <p>1,3-Dichloro-1,1,3,3- tetramethyldisiloxane CAS RN: 2401-73-2</p>	<p><b>D1608</b> 5g 25g</p> $\begin{array}{c} (\text{CH}_3)_2\text{HC} \quad \text{CH}(\text{CH}_3)_2 \\   \quad   \\ \text{Cl}-\text{Si}-\text{O}-\text{Si}-\text{Cl} \\   \quad   \\ (\text{CH}_3)_2\text{HC} \quad \text{CH}(\text{CH}_3)_2 \end{array}$ <p>1,3-Dichloro-1,1,3,3- tetraisopropylsiloxane CAS RN: 69304-37-6</p>	<p><b>B1688</b> 5g 25g</p> $\begin{array}{c} \text{CH}_3 \quad \text{CH}_3 \\   \quad   \\ \text{Cl}-\text{Si}-\text{CH}_2\text{CH}_2-\text{Si}-\text{Cl} \\   \quad   \\ \text{CH}_3 \quad \text{CH}_3 \end{array}$ <p>1,2-Bis(chlorodimethylsilyl)- ethane CAS RN: 13528-93-3</p>	<p><b>B1699</b> 1mL 5mL</p> $\begin{array}{c} \text{SiH}(\text{CH}_3)_2 \\   \\ \text{C}_6\text{H}_5-\text{Si}-\text{C}_6\text{H}_5 \\   \\ \text{SiH}(\text{CH}_3)_2 \end{array}$ <p>1,2-Bis(dimethylsilyl)- benzene CAS RN: 17985-72-7</p>

D3135 1g 5g

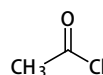
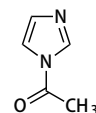
Di-tert-butylsilyl Ditriflate  
CAS RN: 85272-31-7

## 酰化试剂

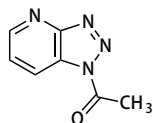
## Acylation Reagents

## 乙酰化试剂

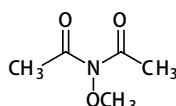
## Acetylation Reagents

Acetyl Chloride  
CAS RN: 75-36-5N-Acetylimidazole  
CAS RN: 2466-76-4

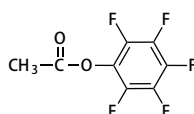
A1219 1g 5g

1-Acetyl-1H-1,2,3-triazolo[4,5-b]pyridine  
CAS RN: 107866-54-6

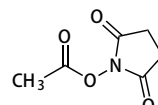
M1168 5g

N,N,N-Diacetylmethoxyamine  
CAS RN: 128459-09-6

P2192 1g 5g

Pentafluorophenyl Acetate  
CAS RN: 19220-93-0

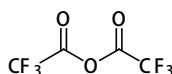
S0878 5g 25g

N-Succinimidyl Acetate  
CAS RN: 14464-29-0

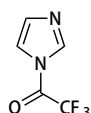
## 三氟乙酰化试剂

## Trifluoroacetylation Reagents

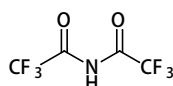
T0433 20mL 100mL 400mL

Trifluoroacetic Anhydride  
CAS RN: 407-25-0

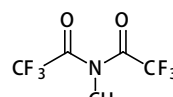
T0670 5g 25g

1-(Trifluoroacetyl)imidazole  
CAS RN: 1546-79-8

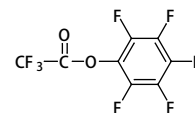
B0986 5g 25g

Bistrifluoroacetamide  
CAS RN: 407-24-9

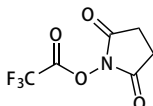
M0671 1mL 5mL

MBTFA  
CAS RN: 685-27-8

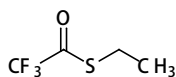
P1894 5g 25g

Pentafluorophenyl Trifluoroacetate  
CAS RN: 14533-84-7

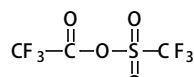
S0915 1g

N-Succinimidyl Trifluoroacetate  
CAS RN: 5672-89-9

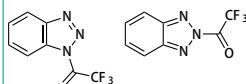
T0872 5mL

S-Ethyl Trifluoroethioacetate  
CAS RN: 383-64-2

T1531 5g

Trifluoroacetyl Trifluoromethanesulfonate  
CAS RN: 68602-57-3

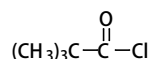
T3174 1g 5g

(Trifluoroacetyl)benzotriazole  
CAS RN: 183266-61-7

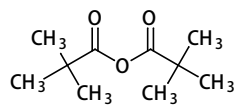
## 新戊酰化试剂

## Pivaloylation Reagents

P0677 25mL 500mL

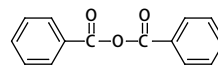
Pivaloyl Chloride  
CAS RN: 3282-30-2

P1414 25mL 250mL

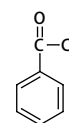
Pivalic Anhydride  
CAS RN: 1538-75-6

## 苯甲酰化试剂

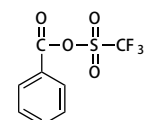
## Benzoylation Reagents

Benzoic Anhydride  
CAS RN: 93-97-0

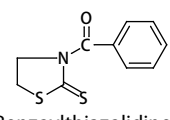
B0105 25mL 500mL

Benzoyl Chloride  
CAS RN: 98-88-4

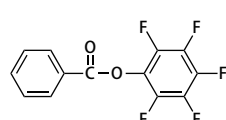
B3567 5g

Benzoyl Triflate  
CAS RN: 36967-85-8

B3571 1g 5g

3-Benzoylthiazolidine-2-thione  
CAS RN: 70326-37-3

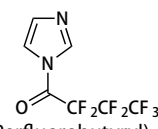
P2229 1g 5g

Pentafluorophenyl Benzoate  
CAS RN: 1548-84-1

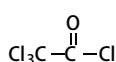
## 其它酰化试剂

## Other Acylation Reagents

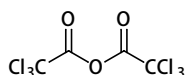
H0467 5g 25g

1-(Perfluorobutyl)imidazole  
CAS RN: 32477-35-3

T0373 25g 100g 500g

Trichloroacetyl Chloride  
CAS RN: 76-02-8

T0792 25g

Trichloroacetic Anhydride  
CAS RN: 4124-31-6

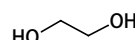
## 缩醛化试剂 硫缩醛化试剂

### Acetalization Reagents Thioacetalization Reagents

## 缩醛化试剂 (二醇衍生物)

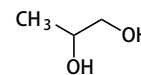
### Acetalization Reagents (Diol Derivatives)

E0105 25g 500g



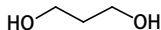
Ethylene Glycol  
CAS RN: 107-21-1

P0485 25g 100g 500g



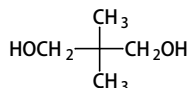
1,2-Propanediol  
CAS RN: 57-55-6

P0486 25g 100g 500g



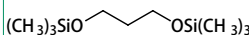
1,3-Propanediol  
CAS RN: 504-63-2

D0791 25g 500g



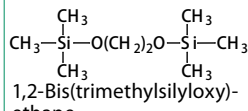
2,2-Dimethyl-1,3-propanediol  
CAS RN: 126-30-7

B3563 5g 25g



1,3-Bis(trimethylsilyloxy)propane  
CAS RN: 17887-80-8

E0478 5g 25g

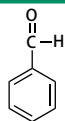


1,2-Bis(trimethylsilyloxy)ethane  
CAS RN: 7381-30-8

## 缩醛化试剂 (羰基衍生物)

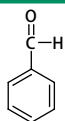
### Acetalization Reagents (Carbonyl Derivatives)

B2379 500g



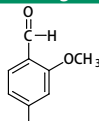
Benzaldehyde  
CAS RN: 100-52-7

A0480 25mL 500mL



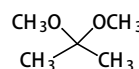
p-Anisaldehyde  
CAS RN: 123-11-5

D0626 25g 100g 500g



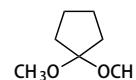
2,4-Dimethoxybenzaldehyde  
CAS RN: 613-45-6

A0057 25mL 500mL



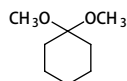
2,2-Dimethoxypropane  
CAS RN: 77-76-9

D1886 1mL 5mL



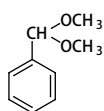
1,1-Dimethoxycyclopentane  
CAS RN: 931-94-2

D1372 25mL 500mL



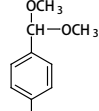
1,1-Dimethoxycyclohexane  
CAS RN: 933-40-4

B1197 25mL 100mL 500mL



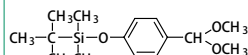
Benzaldehyde Dimethyl Acetal  
CAS RN: 1125-88-8

A1247 25mL 100mL 500mL



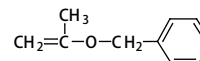
p-Anisaldehyde Dimethyl Acetal  
CAS RN: 2186-92-7

B3577 5g



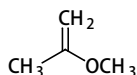
tert-Butyl[4-(dimethoxymethyl)phenoxy]dimethylsilane  
CAS RN: 118736-04-2

B1257 1mL 5mL



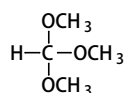
2-Benzyloxy-1-propene  
CAS RN: 32783-20-3

I0303 25mL 100mL 500mL



2-Methoxypropene  
CAS RN: 116-11-0

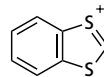
O0068 25mL 500mL



Trimethyl Orthoformate  
CAS RN: 149-73-5

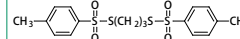
## 硫缩醛化试剂 Thioacetalization Reagents

B1151 5g



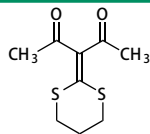
1,3-Benzodithiolium Tetrafluoroborate  
CAS RN: 57842-27-0

D2390 5g 25g



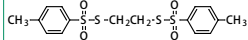
1,3-Di(p-tosylthio)propane  
CAS RN: 3866-79-3

D4208 1g 5g



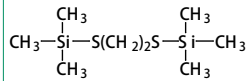
3-(1,3-Dithian-2-ylidene)-2,4-pentanedione  
CAS RN: 55727-23-6

E0471 5g 25g



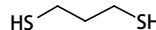
1,2-Di(p-tosylthio)ethane  
CAS RN: 2225-23-2

E0479 5g



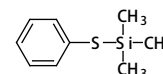
1,2-Bis(trimethylsilylthio)ethane  
CAS RN: 51048-29-4

P0763 25mL 100mL



1,3-Propanedithiol  
CAS RN: 109-80-8

P1378 5g 25g

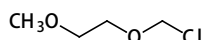


(Phenylthio)trimethylsilane  
CAS RN: 4551-15-9

## 烷氧基甲基化试剂

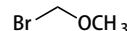
### Alkoxy methylation Reagents

M0680 25mL 100mL 500mL



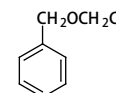
MEM-Chloride  
CAS RN: 3970-21-6

B2131 5g 25g



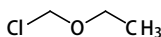
Bromomethyl Methyl Ether  
CAS RN: 13057-17-5

B1207 25g 100g 500g



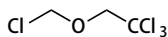
Benzyl Chloromethyl Ether  
CAS RN: 3587-60-8

C0201 25g 100g 500g



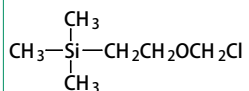
Chloromethyl Ethyl Ether  
CAS RN: 3188-13-4

C2412 5g



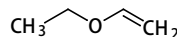
Chloromethyl 2,2,2-Trichloroethyl Ether  
CAS RN: 69573-75-7

C1339 5mL 25mL



SEM-Chloride  
CAS RN: 76513-69-4

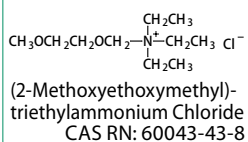
E0193 25mL 100mL 500mL



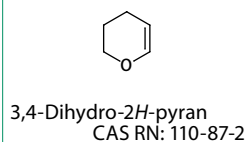
Ethyl Vinyl Ether  
CAS RN: 109-92-2



M0681 5g



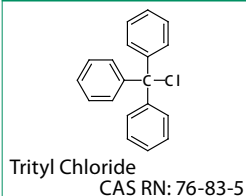
D0555 25mL 100mL 500mL



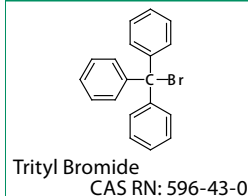
## 三苯甲基 (Tr) 化试剂

Tritylation (Tr)  
Reagents

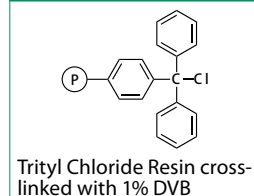
C0308 25g 100g 500g



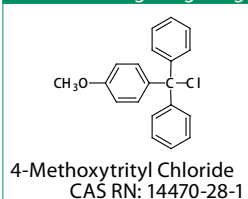
T0512 25g 100g



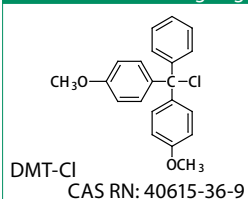
T3432 1g



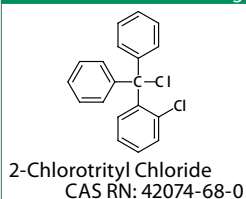
M0790 25g 100g 250g



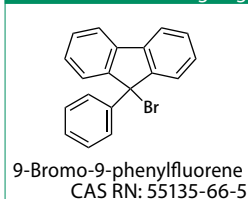
D1612 5g 25g



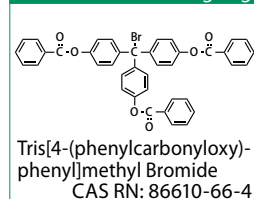
D2504 25g



B1702 5g 25g



T1071 5g 25g

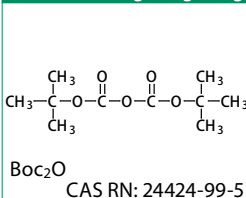


## 叔丁氧基羰基 (Boc) 化

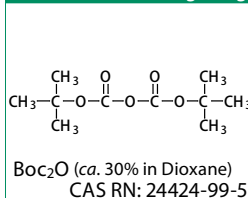
## 试剂

tert-Butoxycarbonylation  
(Boc) Reagents

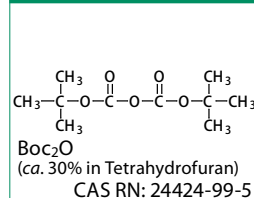
D1547 25g 100g 500g



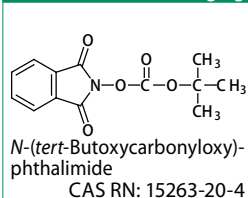
D3878 100g 500g



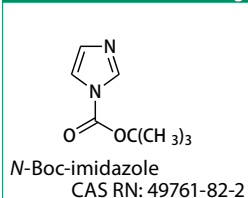
D3879 100mL 500mL



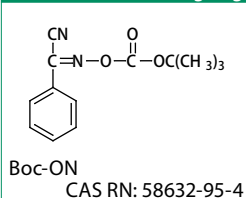
C1573 1g 5g



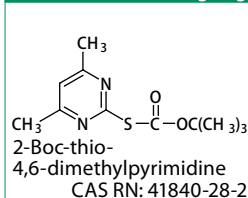
B0916 10g



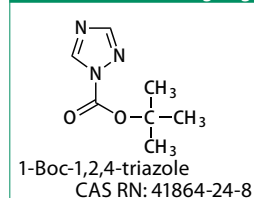
B0988 5g 25g



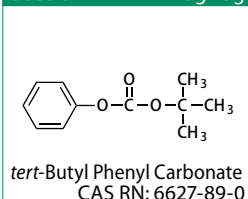
B1089 5g 25g



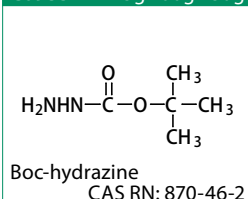
B1969 5g 25g



B3590 5g 25g



C0933 25g 100g 250g

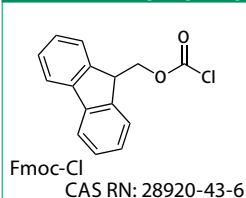


## 9-芴甲氧基羰基 (Fmoc)

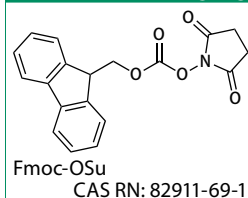
## 化试剂

9-Fluorenylmethoxy  
carbonylation (Fmoc)  
Reagents

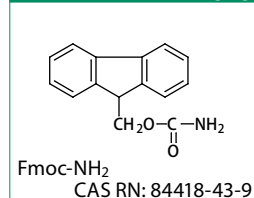
F0197 5g 25g 100g



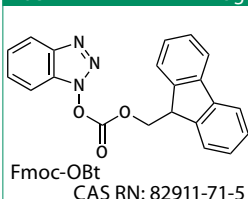
F0239 5g 25g



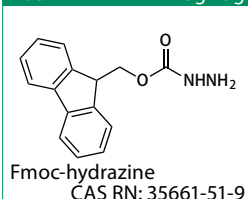
F0689 1g 5g



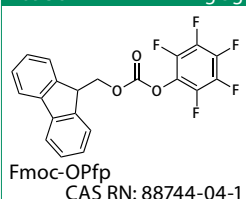
F0871 5g

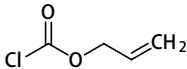
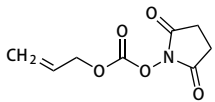
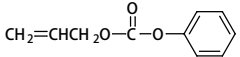
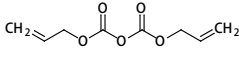
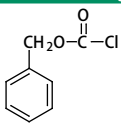
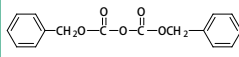
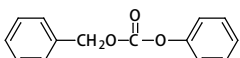
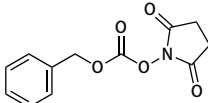
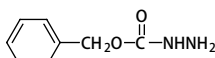
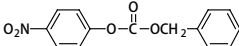
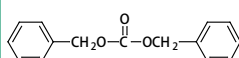
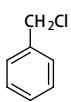
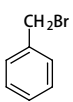
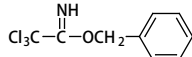
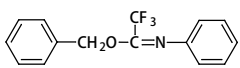
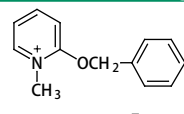
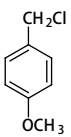
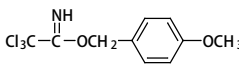
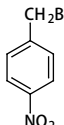
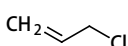
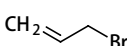
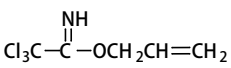
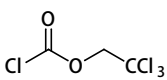
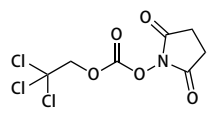
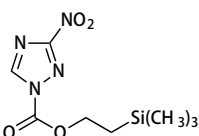
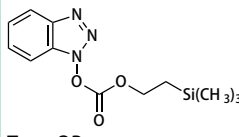
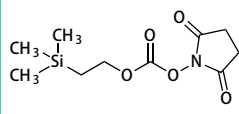


F0872 5g 25g

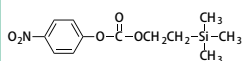


F0936 1g 5g



<p><b>烯丙氧羰基化试剂</b> <b>苄氧羰基化试剂</b> <b>苄基化试剂、烯丙基化试剂</b> Allyloxycarbonylation Reagents, Benzyloxycarbonylation Reagents, Benzylation Reagents, Allylation Reagents</p>		<p><b>烯丙氧基羰基 (Alloc) 化试剂</b> Allyloxy-carbonylation (Alloc) Reagents</p>		<p><b>A1268</b> 25g 500g</p>  <p>Allyl Chloroformate CAS RN: 2937-50-0</p>	<p><b>A2302</b> 5g 25g</p>  <p>Allyl N-Succinimidyl Carbonate CAS RN: 135544-68-2</p>
<p><b>A2303</b> 5g 25g</p>  <p>Allyl Phenyl Carbonate CAS RN: 16308-68-2</p>	<p><b>P1277</b> 1g 5g</p>  <p>Diallyl Dicarboxylate CAS RN: 115491-93-5</p>	<p><b>苄氧基羰基 (Cbz) 化试剂</b> Benzyloxy-carbonylation (Cbz) Reagents</p>		<p><b>B3021</b> 25g 250g</p>  <p>Benzyl Chloroformate CAS RN: 501-53-1</p>	<p><b>P1281</b> 5g 25g</p>  <p>Dibenzyl Dicarboxylate CAS RN: 31139-36-3</p>
<p><b>B3574</b> 5g 25g</p>  <p>Benzyl Phenyl Carbonate CAS RN: 28170-07-2</p>	<p><b>C1124</b> 25g 100g 250g</p>  <p>Cbz-OSu CAS RN: 13139-17-8</p>	<p><b>C1564</b> 5g 25g</p>  <p>Benzyl Carbamate CAS RN: 5331-43-1</p>	<p><b>C1591</b> 1g 5g</p>  <p>Benzyl 4-Nitrophenyl Carbonate CAS RN: 13795-24-9</p>	<p><b>C1600</b> 1g 5g</p>  <p>Dibenzyl Carbonate CAS RN: 3459-92-5</p>	
<p><b>苄基(Bn) 化试剂</b> Benylation(Bn) Reagents</p>		<p><b>B0412</b> 25g 500g</p>  <p>Benzyl Chloride CAS RN: 100-44-7</p>	<p><b>B0411</b> 25g 100g 500g</p>  <p>Benzyl Bromide CAS RN: 100-39-0</p>	<p><b>B1483</b> 25g</p>  <p>Benzyl 2,2,2-Trichloroacetimidate CAS RN: 81927-55-1</p>	
<p><b>B3234</b> 1g 5g</p>  <p>Benzyl 2,2,2-Trifluoro-N-phenylacetimidate CAS RN: 952057-61-3</p>	<p><b>B3361</b> 1g 5g</p>  <p>2-Benzyloxy-1-methylpyridinium Triflate CAS RN: 882980-43-0</p>	<p><b>M0676</b> 25mL 100mL</p>  <p>4-Methoxybenzyl Chloride CAS RN: 824-94-2</p>	<p><b>M2016</b> 5g 25g</p>  <p>4-Methoxybenzyl 2,2,2-Trichloroacetimidate CAS RN: 89238-99-3</p>	<p><b>N0181</b> 25g 100g 500g</p>  <p>4-Nitrobenzyl Bromide CAS RN: 100-11-8</p>	
<p><b>烯丙基(Ally) 化试剂</b> Allylation(Ally) Reagents</p>		<p><b>C0274</b> 25mL 500mL</p>  <p>Allyl Chloride CAS RN: 107-05-1</p>	<p><b>B0643</b> 25g 500g</p>  <p>Allyl Bromide CAS RN: 106-95-6</p>	<p><b>A2186</b> 5g</p>  <p>Allyl 2,2,2-Trichloroacetimidate CAS RN: 51479-73-3</p>	
<p><b>2,2,2-三氯乙氧基羰基 (Troc) 化试剂</b> 2,2,2-Trichloroethoxy-carbonylation (Troc) Reagents</p>		<p><b>C0795</b> 25g 250g</p>  <p>2,2,2-Trichloroethyl Chloroformate CAS RN: 17341-93-4</p>	<p><b>T2713</b> 5g</p>  <p>N-Succinimidyl 2,2,2-Trichloroethyl Carbonate CAS RN: 66065-85-8</p>		
<p><b>2-(三甲基硅基)乙氧基羰基 (Teoc) 化试剂</b> 2-(Trimethylsilyl)-ethoxycarbonylation (Teoc) Reagents</p>		<p><b>T2544</b> 1g 5g</p>  <p>Teoc-NT CAS RN: 1001067-09-9</p>	<p><b>T2590</b> 1g 5g</p>  <p>Teoc-OBt CAS RN: 113306-55-1</p>	<p><b>T2591</b> 1g 5g</p>  <p>Teoc-OSu CAS RN: 78269-85-9</p>	

T2872 5g

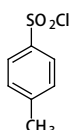


Teoc-ONp  
CAS RN: 80149-80-0

## 磺酰化试剂 Sulfonylation Reagents

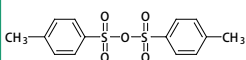
甲苯磺酰(Ts)  
化试剂  
Tosylation (Ts)  
Reagents

T0272 25g 500g



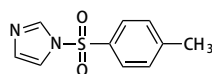
p-Toluenesulfonyl Chloride  
CAS RN: 98-59-9

T1485 5g 25g



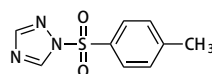
p-Toluenesulfonic Anhydride  
CAS RN: 4124-41-8

T1985 5g 25g



1-(p-Toluenesulfonyl)-imidazole  
CAS RN: 2232-08-8

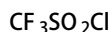
T3187 1g 5g



1-(p-Toluenesulfonyl)-1,2,4-triazole  
CAS RN: 13578-51-3

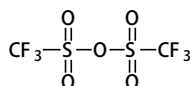
三氟甲磺酰(Tf)  
化试剂  
Triflation(Tf)  
Reagents

T1027 5g 25g



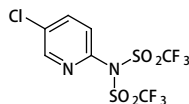
Trifluoromethanesulfonyl Chloride  
CAS RN: 421-83-0

T1100 10g 25g 250g



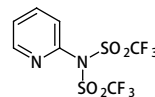
Trifluoromethanesulfonic Anhydride  
CAS RN: 358-23-6

B1865 5g 25g



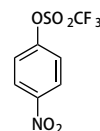
Comins Triflating Reagent  
CAS RN: 145100-51-2

B1871 5g



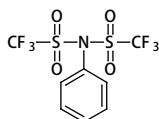
2-Pyridyltriflimide  
CAS RN: 145100-50-1

N0993 1g 5g



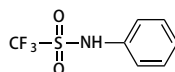
4-Nitrophenyl Triflate  
CAS RN: 17763-80-3

P1257 5g 25g



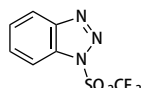
Phenyl Triflimide  
CAS RN: 37595-74-7

T2985 1g 5g



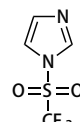
Trifluoromethanesulfonamide  
CAS RN: 456-64-4

T3167 1g 5g



1-(Trifluoromethanesulfonyl)-1H-benzotriazole  
CAS RN: 117632-84-5

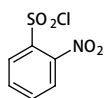
T3177 1g 5g



1-(Trifluoromethanesulfonyl)-imidazole  
CAS RN: 29540-81-6

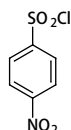
硝基苯磺酰(Ns)  
化试剂  
Nosylation(Ns)  
Reagents

N0142 25g 100g 500g



2-Nitrobenzenesulfonyl Chloride  
CAS RN: 1694-92-4

N0144 5g 25g 100g



4-Nitrobenzenesulfonyl Chloride  
CAS RN: 98-74-8

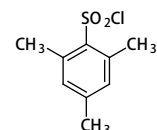
其它  
磺酰化试剂  
Other  
Sulfonylation  
Reagents

B0036 25g 500g



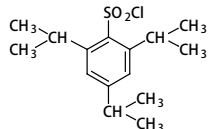
Benzenesulfonyl Chloride  
CAS RN: 98-09-9

M0071 25g 100g 500g



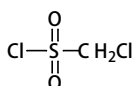
2-Mesitylenesulfonyl Chloride  
CAS RN: 773-64-8

T0459 25g 100g 500g



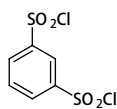
2,4,6-Trisopropylbenzenesulfonyl Chloride  
CAS RN: 6553-96-4

C0924 5g 25g



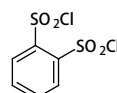
Chloromethylsulfonyl Chloride  
CAS RN: 3518-65-8

B0848 5g 25g



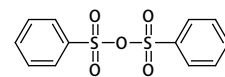
1,3-Benzenedisulfonyl Chloride  
CAS RN: 585-47-7

B1128 1g 5g 25g



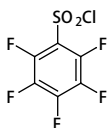
1,2-Benzenedisulfonyl Dichloride  
CAS RN: 6461-76-3

B1931 5g 25g



Benzenesulfonic Anhydride  
CAS RN: 512-35-6

P0934 5g 25g

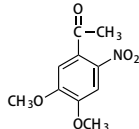


Pentafluorobenzenesulfonyl Chloride  
CAS RN: 832-53-1

## 光敏保护剂

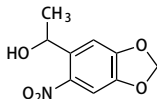
### Photolabile Protection Reagents

D5477 1g 5g



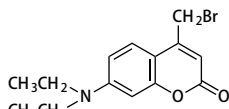
4',5'-Dimethoxy-2'-nitroacetophenone  
CAS RN: 4101-32-0

N1069 1g 5g



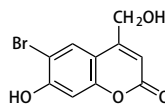
1-(6-Nitro-1,3-benzodioxol-5-yl)ethanol  
CAS RN: 159873-64-0

B5008 200mg



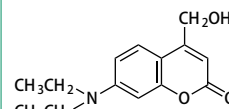
4-(Bromomethyl)-7-(diethylamino)coumarin  
CAS RN: 1256259-14-9

B5738 250mg 1g



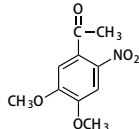
6-Bromo-7-hydroxy-4-(hydroxymethyl)coumarin  
CAS RN: 223420-41-5

D4970 200mg



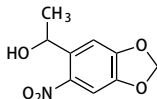
7-(Diethylamino)-4-(hydroxymethyl)coumarin  
CAS RN: 54711-38-5

D5477 1g 5g



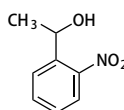
4',5'-Dimethoxy-2'-nitroacetophenone  
CAS RN: 4101-32-0

N1069 1g 5g



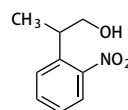
1-(6-Nitro-1,3-benzodioxol-5-yl)ethanol  
CAS RN: 159873-64-0

N1132 1g 5g



1-(2-Nitrophenyl)ethanol  
CAS RN: 3205-25-2

N1133 1g 5g

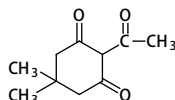


2-(2-Nitrophenyl)propan-1-ol  
CAS RN: 64987-77-5

## 其它保护剂

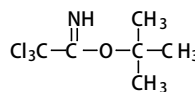
### Other Protecting Reagents

A1853 1g 5g



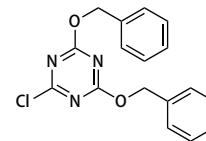
2-Acetyldimedone  
CAS RN: 1755-15-3

B1496 5mL 25mL



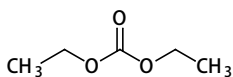
tert-Butyl 2,2,2-Trichloroacetimidate  
CAS RN: 98946-18-0

B4587 200mg 1g



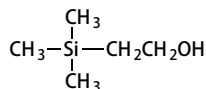
DBT-Cl  
CAS RN: 851030-18-7

C0041 25g 500g



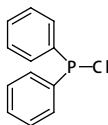
Diethyl Carbonate  
CAS RN: 105-58-8

T1441 5mL 25mL



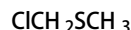
2-(Trimethylsilyl)ethanol  
CAS RN: 2916-68-9

C0597 25g 100g 500g



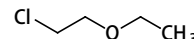
Chlorodiphenylphosphine  
CAS RN: 1079-66-9

C0608 25g 100g



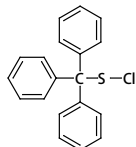
Chloromethyl Methyl Sulfide  
CAS RN: 2373-51-5

C1172 25mL 500mL



2-Chloroethyl Ethyl Ether  
CAS RN: 628-34-2

T1237 10g



Tritylsulfonyl Chloride  
CAS RN: 24165-03-5



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