

## PHOSGENE INTERMEDIATES

Product name	CAS#	Application
<b>CHLOROFORMATES</b>		
(-) (1R)-Menthyl chloroformate	14602-86-9	Pharma intermediate
1-Chloro-2-methylpropyl chloroformate	92600-11-8	Pharma intermediate
1-Chloroethyl chloroformate	50893-53-3	Ampiroxicam, Candesartan, Gabapentin
2,2,2-Trichloroethyl chloroformate	17341-93-4	Cabergoline, Naltrexone, Nalbuphine
2-Ethylhexyl chloroformate	24468-13-1	Pharma and specialty intermediate
4-Nitrobenzyl chloroformate	4457-32-3	Panipenem, Meropenem, Biapenem
4-Nitrophenyl chloroformate	7693-46-1	Ritonavir, Temozolomide, Efavirenz
Benzyl chloroformate (50% in toluene)	501-53-1	Pharma and agro intermediate
Benzyl chloroformate (95%)	501-53-1	Pharma and agro intermediate
Chloromethyl chloroformate	22128-62-7	Tenofovir, Ronidazole
Isobutyl chloroformate	543-27-1	Mosapride, Nelfinavir, Phenethicillin
n-Hexyl chloroformate	6092-54-2	Dabigatran
n-Pentyl chloroformate	638-41-5	Capecitabine
Phenyl chloroformate	1885-14-9	Pharma and agro intermediate
<b>OTHERS</b>		
N,N-Carbonylbis caprolactam (CBC)	19494-73-6	Specialty intermediate
1,1'-Carbonyl diimidazole (CDI)	530-62-1	Coupling reagent
Di-t-butyl dicarbonate (DIBOC)	24424-99-5	Protecting reagent
Hexaethyl guanidinium chloride (in brine)	69082-76-4	Specialty intermediate
N-Methyl piperazine carbamoyl chloride HCl	55112-42-0	Zopiclone, Eszopiclone, Suriclone
N,N'-Dicyclohexylcarbodiimide (DCC)	538-75-0	Reagent
Tetrabutyl urea (TBU)	4559-86-8	Solvent, Reagent
<b>UNDER DEVELOPMENT</b>		
Cetyl chloroformate	26272-90-2	Pharma and specialty intermediate
Hexamethylene diisocyanate	822-06-0	Specialty intermediate
Isophorone diisocyanate	4098-71-9	Specialty intermediate
sec-Butyl chloroformate	17462-58-7	Specialty intermediate
Tetramethyl urea	632-22-4	Solvent, Reagent
2-Ethylhexanoyl chloride	760-67-8	Specialty intermediate
Triphenylphosphine	603-35-0	Reagent

**NOTE:** Atul offers custom synthesis and contract manufacturing facilities for Phosgene related products.

**DISCLAIMER:** None of the products will be supplied to countries in which there could be a conflict with existing patents; however, the final responsibility lies exclusively with the buyer.

Product name

CAS#

Application

## AMINO ACID DERIVATIVES

Moc-L-Tert-Leucine	162537-11-3	Atazanavir, Pharma intermediate
Moc-L-Valine	74761-47-5	Daclatasvir, Ledipasvir
Boc-L-Proline	15761-39-4	Daclatasvir, Ravidasvir
(R)-2-Methyl-CBS-oxazaborolidine	112022-83-0	Ezetimibe, Trepstinil, Aprepitant
N-[(4-Nitrophenyl)-oxy]carbonyl-L-valine methyl ester	162537-10-2	Ritonavir, Cobicistat
CBZ-Valacyclovir	124832-31-1	Valacyclovir intermediate
Boc-L-Valine	13734-41-3	Valacyclovir, Valganciclovir
CBZ-L-Valine	1149-26-4	Valacyclovir, Valganciclovir
L-Valine methyl ester HCl	6306-52-1	Valsartan, Ritonavir, Cobicistat
N-[(2'-Cyanobiphenyl-4-yl)methyl]-(L)-valine methyl ester HCl	482577-59-3	Valsartan
(S)-1-(2-Chloroacetyl)pyrrolidine-2-carbonitrile	207557-35-5	Vildagliptin, Anagliptin

## CARBONATES

1-Chloroethyl cyclohexyl carbonate	99464-83-2	Cefotiam, Candesartan
1-Chloroethyl isopropyl carbonate	98298-66-9	Cefpodoxime
1-Chloroethyl-4-nitrophenyl carbonate	101623-69-2	Gabapentin
Bis-(4-Nitrophenyl) carbonate	5070-13-3	Ritonavir, Rivastigmine, Cobicistat
Chloromethyl isopropyl carbonate	35180-01-9	Tenofovir

## OTHERS

4-Hydroxymethyl-5-methyl-1,3-dioxolen-2-one	91526-18-0	Azilsartan
5-Hydroxymethyl thiazole	38585-74-9	Ritonavir, Cobicistat
2-(2-Aminothiazol-4-yl) acetic acid HCl	66659-20-9	Mirabegron
2-(4-Nitrophenyl) ethanamine HCl	29968-78-3	Mirabegron
tert-Butoxycarbonyl hydrazide (Boc-hydrazide)	870-46-2	Atazanavir, Anastrozole, Pharma intermediate
Thiophene-2-carboxaldehyde	98-03-3	Pharma intermediates
(2R)-2-[(4-Ethyl-2,3-dioxopiperazinyl) carbonylamino]-2-phenylacetic acid	63422-71-9	Piperacillin
4-Ethyl -2,3-dioxo piperazine (EDP)	59702-31-7	Piperacillin, Cefoperazone
(5-Thiazolyl)methyl-(4-nitrophenyl) carbonate	144163-97-3	Ritonavir, Cobicistat
1-[2-Amino-1-(4-methoxyphenyl)ethyl] cyclohexanol HCl	130198-05-9	Venlafaxine, Desvenlafaxine
1-[Cyano-(4-methoxyphenyl)methyl] cyclohexanol	93413-76-4	Venlafaxine, Desvenlafaxine

## UNDER DEVELOPMENT

D-(-)-4-Hydroxyphenyl glycine	22818-40-2	Amoxicillin, Cefodroxil, Cefproxil, Cefoperazone
2-[[4-(2-Pyridinyl)phenyl]methylene]-hydrazinecarboxylic acid-1,1-dimethylethyl ester	198904-84-6	Atazanavir
4,5,6,7-Tetrahydrothieno[3,2,c] pyridine hydrochloride	28783-41-7	Clopidogrel, Prasugrel
N-[2-Isopropylthiazol-4-ylmethyl(methyl)carbomoyl]-L-valine	154212-61-0	Ritonavir, Cobicistat
D-(-)-( $\alpha$ )-phenylglycine	875-74-1	Ampicillin, Cephalexin, Cephadrine, Velpatasvir
(2R)-2-[(4-Ethyl-2,3-dioxopiperazinyl)carbonylamino]-2-(4-hydroxyphenyl) acetic acid	62893-24-7	Cefoperazone