Triphosgene

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PROPERTIES
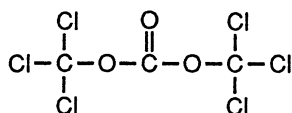
Appearance .... white crystalline solid

F.W. 296.75

b.p. .... 203-206°V

m.p. .... 81-83°C

Solubility .... alcohol, benzene, ether, hexane, tetrahydrofuran; decomposes in hot water, reacts slowly with cold water

APPLICATION

Phosgene has long been of tremendous importance to organic chemists for a wide variety of synthetic applications (e.g., chloroformylation, carbonylation, chlorination, and dehydration). However, because of its highly toxic nature, phosgene gas is difficult to handle safely in the laboratory.

Triphosgene [bis(trichloromethyl) carbonate, **1**] is a stable, crystalline solid which has proved to be a useful substitute for phosgene.[1] It is safer and more convenient to handle, transport and store. Exact amounts may be weighed easily and used to perform desired chemical transformations. Reaction requires only one-third equivalent of triphosgene in most cases.[1-3]

Below are examples of some reactions employing triphosgent.[1]
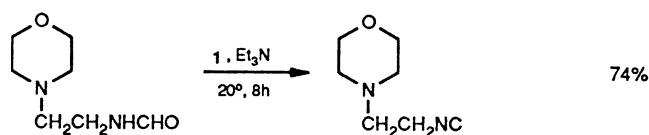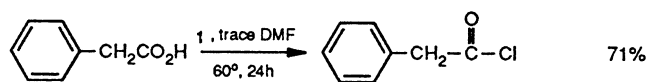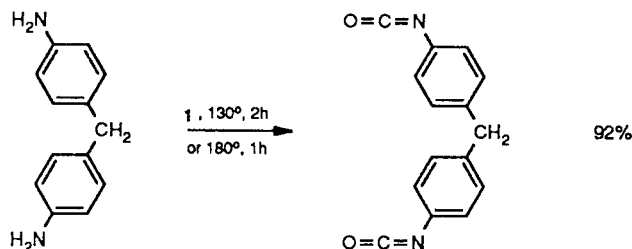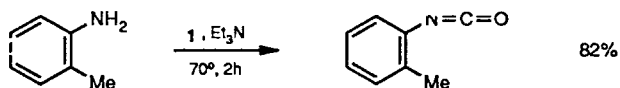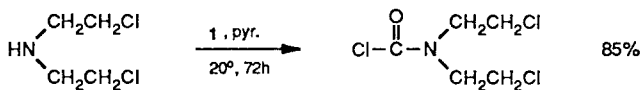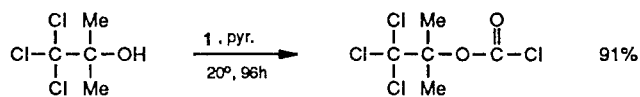
Recently, triphosgene has been shown to react with several α-amino acids to give the corresponding N-carboxyanhydrides in good yields.[3]
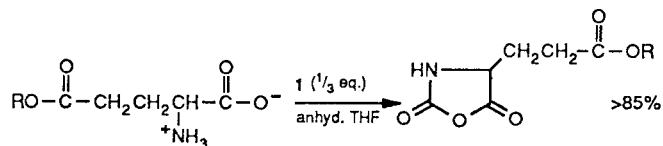
TOXICITY, HANDLING AND STORAGE

Triphosgene is severely irritating to the eyes and skin. Avoid contact and inhalation. Use adequate personal protection. Handle only in a chemical fume hood. Keep tightly closed. Store in a cool, dry place.

REFERENCES

1• Eckert, Hl; Forster, B. *Angew. Chem.* **1987**, *99*, 922 (*Angew. Chem., Int. Ed. Engl.* **1987**, *26*, 894).

2• Eckert, H. Ger. Offen. DE 3 440 141, 1986; *Chem. Abstr.* **1987**, *106*, 4294d.

3• Daly, W.H.; Poché D. *Tetrahedron Lett.* **1988**, *29*, in press.

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