



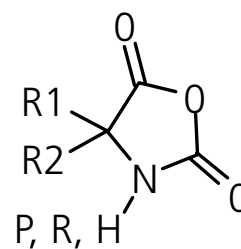
# NCA: N-CarboxyAnhydride

For synthetic uses in fine chemical industry

**N-Carboxyanhydride of  $\alpha$ -aminoacids** are either monomers for Ring Opening Polymerization (ROP) or building blocks for aminoacid coupling with nucleophiles (see references p2).

ISOICHEM guarantees **high standard purity NCA** with suitable packaging, logistic and a technical support to its customers **from gram to tons quantities**.

The reactivity of NCA's requires careful follow-up of the given recommendation for packaging, storage and handling.



Oxazolidine 2,5-dione

## ISOICHEM's NCA: Stability and Storage

Temperature: For long storage, most of them must be kept at  $-20^{\circ}\text{C} \pm 5^{\circ}\text{C}$

Atmosphere: Free of any moisture, under nitrogen

Shelf life: (detailed data available on request)

- Long time storage:  $-20^{\circ}\text{C} \pm 5^{\circ}\text{C} > 18$  months
- Short time storage:  $0$  to  $+5^{\circ}\text{C}$ : from few days to few weeks depending on the NCA

**WARNING:** The chemical quality of NCAs is a key factor of the stability. Isochem delivers suitable and consistent quality of NCA. Any contamination by moisture or chemicals especially nucleophile species initiates polymerization.

## ISOICHEM's NCA: Handling

- 1- Allow the package to warm up to room temperature before opening. (approximate time: 1 h for grams, 5 h for kilograms and 15 h for 10-40 kilograms)
- 2- Open and handle under strict nitrogen atmosphere
- 3- One shot use of the full packaged quantity is highly recommended. In case of partial use, the package should be re-sealed under nitrogen and properly and stored back at  $-20^{\circ}\text{C}$  as soon as possible. Repeating such operations significantly reduces the shelf life.

"THE KEY SOLUTION PROVIDER"



## ISOICHEM's NCA Packaging

### Small quantity (<500g)

Double bag: PE and PE/aluminium coated sealed bag.



### Medium quantity (500g to 200 kg)

### Large quantity (>200 kg)

Double bag:  
PE and PE/aluminium coated bags or two PE bags  
HDPE Drum:  
Maximum load per drum  
40 kg



## ISOICHEM's NCA Transportation

| Quantity | Road | Sea | Air <sup>(*)</sup> |
|----------|------|-----|--------------------|
| Small    | 1    | /   | 1                  |
| Medium   | 2    | /   | 2                  |
| Large    | 3    | 3   | /                  |

(\*) maximum shipment in one cargo aircraft 300 Kg

### 1- Frigipack

Short time transportation (< 48h): Bag and dry ice in Frigipack  
Long time transportation (> 48h): Bags and dry ice<sup>(\*\*)</sup> in insulated box



### 2 - Insulated Box

Drum and dry ice<sup>(\*\*)</sup> loaded in insulated box with pallet handling. Includes temperature monitoring set<sup>(\*\*\*)</sup>



### 3 - Reefer container

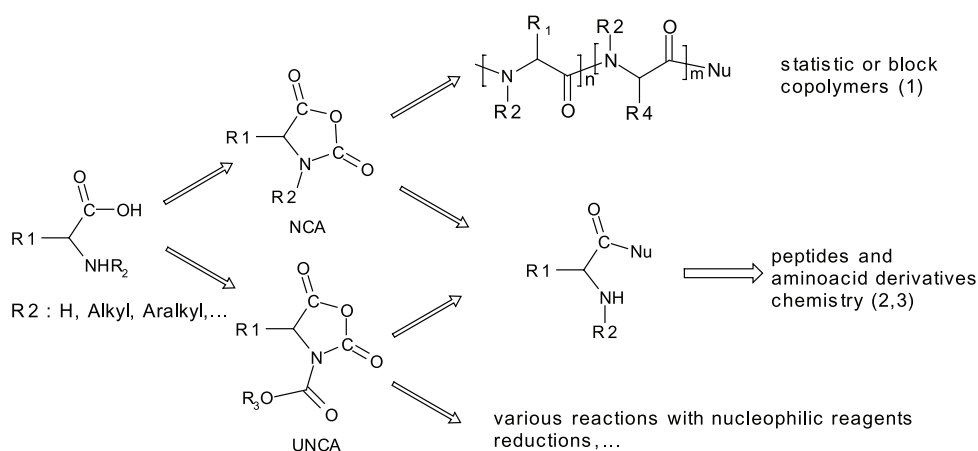
Drum with pallet handling in reefer container. Includes temperature monitoring set<sup>(\*\*\*)</sup>



(\*\*) load of 2 Kg of dry ice per Kg of NCA ensures -20°C temperature over more than 5 days  
(\*\*\*) temperature monitoring to be sent back to ISOICHEM after delivery



## Application of NCA's



(1) R. Kricheldorf, *Angew. Chem. Int. Ed.*, 2006, 45, 5752-5784 ; Example: Glatimarer acetate, Drug of the future 1995, 20(2), 139-141

(2) H. R. Kricheldorf, *Makromol. Chem.* 1977, 178, 905 ; W. D. Fuller Pat. Bioresearch US 5028693; W. D. Fuller, *J. Am. Chem. Soc.* 1990, 112, 7414; Example: Synthesis of valgancyclovir: Syntex Inc US 6040446

(3) Examples: Synthesis of Saquinavir and Nelfinavir intermediate EP1104755; Synthesis of Iprovalicarb W02002/06034; Synthesis of Perindopril EP1362864

### Contact ISOICHEM

Xavier Jeanjean: Tel.: +33(1) 64 99 05 50 / Fax: +33 (0)1 64 99 05 69  
email: x.jeanjean@fr.isochem.eu  
32, rue Lavoisier - 91710 Vert-Le-Petit FRANCE