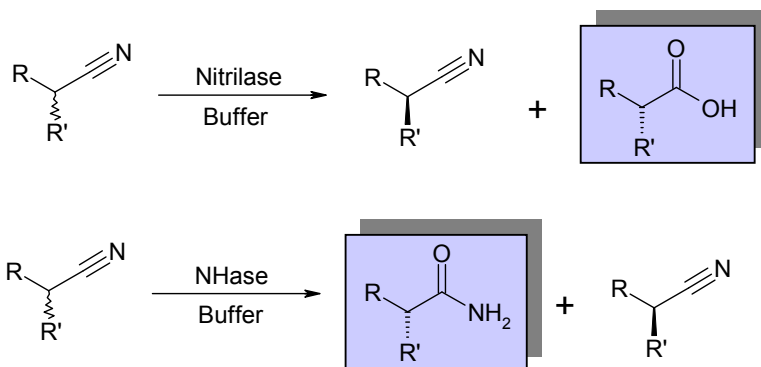


## Nitrile Manipulating Enzyme Screening Kit: NESK-1400

### Applications:

Nitrile manipulating biocatalysts include nitrile hydratases (NHases) and nitrilases. NHases can be used for the mild hydrolysis of nitriles to give the primary amide. If the substrate is a racemic compound, then like many other enzymes, NHases can effect bioresolution.

In contrast, nitrilases hydrolyse nitriles directly to the carboxylic acid, and if the substrate is racemic they also effect bioresolution. Given the harsh conditions that are often required to perform such a reaction chemically, a major benefit of nitrilases is their ability to perform nitrile hydrolysis in neutral buffer solutions at ambient temperature.



### Kit Description:

The kit contains 9 diverse pre-formulated Nitrile Hydratase (NHase) biocatalysts and 5 Nitrilase biocatalysts as dry powders, DMSO solvent and pre-prepared phosphate buffer ready for use.

### Contents:

NHases	9 vials lyophilised powder (50 mg each)
Nitrilases	5 vials lyophilised powder (50 mg each)
DMSO solvent	1 vial (5 mL)
0.1M KH <sub>2</sub> PO <sub>4</sub> buffer (pH 7.0)	1 bottle (200 mL)

A sufficient supply of all contents has been provided for 3 screens with each enzyme. Additional components are available for purchase from Almac.

### Storage:

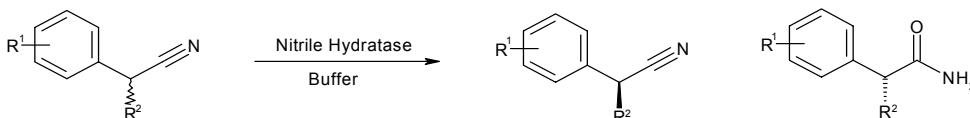
The Nitrile Manipulating enzyme screening kit should be stored at <4 °C to preserve activity.

## Enzyme Lists:

Nitrile Hydratase
NH101
NH201
NH301
NH401
NH501
NH601
NH701
NH801
NH901

Nitrilase
NIT101
NIT201
NIT301
NIT401
NIT501

## Typical Procedure - NHase hydrolysis of nitriles:



### Reagents:

A: 15 mg/mL solution of NHase in buffer.

B: 0.1M KH<sub>2</sub>PO<sub>4</sub> buffer (pH 7.0)

### Procedure:

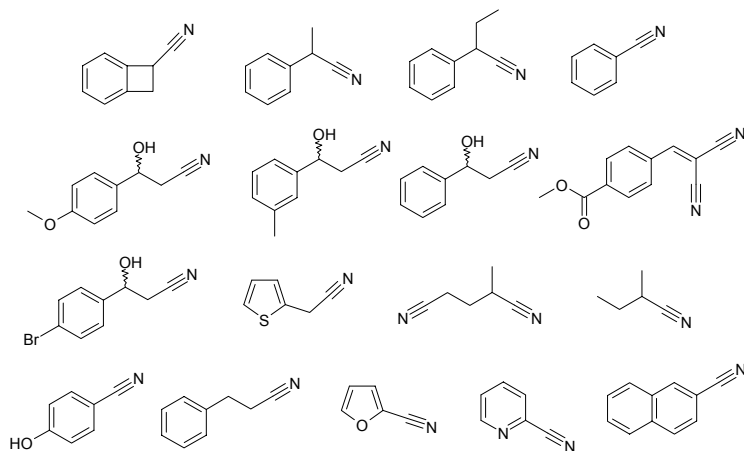
1. Into a flask/vial, add reagent A (1 mL).
2. Add a solution of ~20 mg substrate in organic solvent (50-150 μL, depending on solubility) such as DMSO or MTBE.
3. Add an additional 3-4 mL of buffer B.
4. Shake/stir at room temperature (or ideally 30 °C). Agitate overnight.
5. Extract product with an organic solvent (MTBE, EtOAc etc.).
6. Analyse sample by chiral GC/HPLC to determine conversion and product ee.

It is not advisable to keep stock solutions of enzymes, as these will degrade over time. Make each stock solution fresh on the day of use.

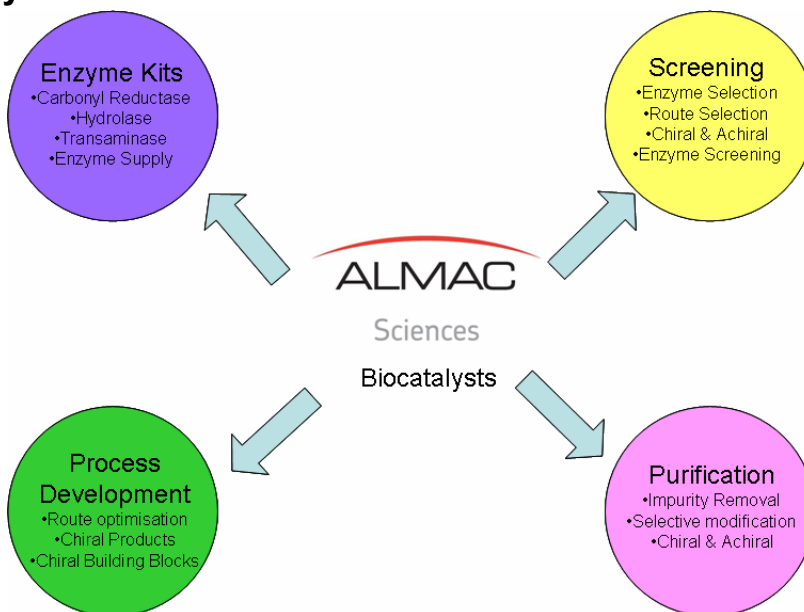
A sufficient supply of all contents has been provided for 3 screens with each enzyme. Additional components are available for purchase from Almac.

## Substrate Range:

A wide variety of structurally diverse nitrile compounds, including aliphatic & aromatic nitriles, hydroxy nitriles, dinitriles, thiophenyl nitriles, furan nitriles, and pyridine nitriles are substrates for these enzymes. A selection is shown below.



## Biocatalysis Services:



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