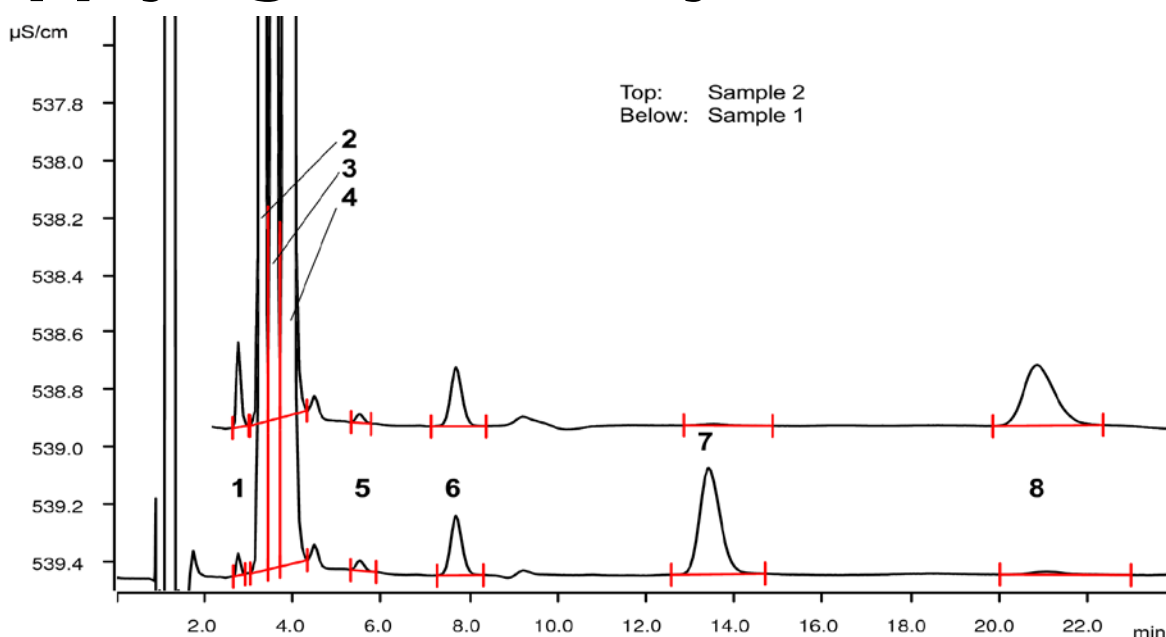


# Dicyclohexylamine (DCHA) and methyldicyclohexylamine (MDCHA) in cooling lubricant applying Inline Dialysis



Abrasive machining of e.g. metal parts requires a cooling lubricant. Their purpose besides cooling and lubrication is to inhibit corrosion. Amines are added to the emulsion to keep the pH high. In the actual application DCHA and MDCHA have to be analyzed besides other amine components and inorganic cations. To avoid oil contamination on the IC system Inline Dialysis is applied. The detection is performed by direct conductivity detection.

## Results

Cation	Sample 1		Sample 2	
	Conc. [mg/kg]	Recovery [%]	Conc. [mg/kg]	Recovery [%]
7 Dicyclohexylamine	1900	101	< 50	-
8 Methyldicyclohexylamine	< 50	-	1730	100

Other components are not quantified. See complete component list at the end of the document.

## Sample

Cooling lubricant emulsion

## Sample preparation

1 g of sample weighed in to 10 mL diluent and subsequently diluted 1:2 with ultrapure water. Injection applying Metrohm Inline Dialysis.

## Columns

Metrosep C 4 - 100/4.0	6.1050.410
Metrosep C 4 Guard/4.0	6.1050.500

## Solutions

Eluent	1.7 mmol/L nitric acid 0.7 mmol/L dipicolinic acid 15% acetone
Diluent	4 mmol/L nitric acid 10% acetone
Acceptor solution (Inline Dialysis)	2 mmol/L nitric acid 10% acetone

## Instrumentation

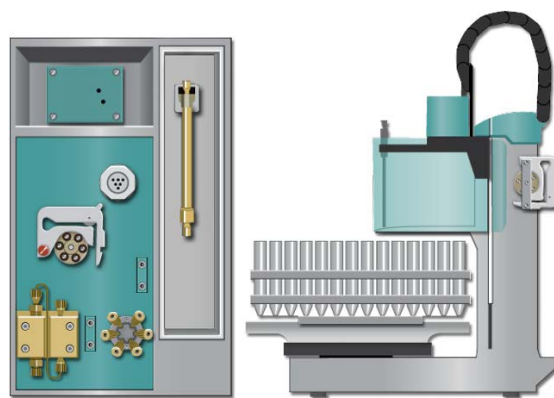
930 Compact IC Flex Oven/ChS/PP/Deg	2.930.2360
IC Conductivity Detector	2.850.0010
858 Professional Sample Processor	2.858.0020
IC equipment: Inline Dialysis	6.5330.100
Dialysis membrane (polyamide)	6.2714.030

## Analysis

Direct conductivity detection

## Parameters

Flow rate	0.9 mL/min
Injection volume	20 µL
P <sub>max</sub>	25 MPa
Recording time	24 min
Column temperature	30 °C
Dialysis duration	10 min



## Component list

1 Sodium	5 Calcium
2 Commercial primary amino alcohol	6 Commercial cationic surfactant
3 Diglycolamine	7 Dicyclohexylamine
4 Triethanolamine	8 Methyl-dicyclohexylamine