



NQAC

Nestlé Quality Assurance Center  
Dublin

# Technical Datasheet

**Analysis Name:** Ethylene Oxide (Total) by GC-MS/MS

**Method Number:** LI-00.058

**Scope of Application:** High and low water content samples, thickeners.

Type	Water content	Example
High water content samples	> 20 %	Ice cream, sauce, fresh vegetables
Low water content samples	< 20 %	Spices, dried herbs, dried vegetables, cereals, inorganic salts, food supplements
Thickeners	-	Guar gum, locust gum, pectin

**Description:** Due to its high volatility (boiling point ca. 10 °C), Ethylene oxide (ETO) is converted to 2-chloroethanol (2-CE) by an acidic heat treatment. Then, 2-CE is extracted via a QuEChERS-based procedure and the resulting acetonitrile supernatant is cleaned by dispersive Solid Phase Extraction (d-SPE). After centrifugation, the extract is analyzed via GC-MS/MS. Quantification is performed by isotope dilution, using d4-chloroethanol (d4-2-CE) as internal standard (ISTD). Final result is expressed as ETO equivalent (in mg of ETO per kg of sample) as the sum of free ETO and 2-CE available in the sample.

**Sample Weight Required:** 100g

**Analytical Platform:** GC-MS/MS

**Special Information:** Strongly recommended that samples are submitted frozen.

Matrix	Analyte Reported	Alias	Unit of Measure	Limit of Quantification	Reproducibility
High-water content	Ethylene Oxide (total)	ETO	mg/kg	0.01mg/kg	25%
Low water content	Ethylene Oxide (total)	ETO	mg/kg	0.025mg/kg	25%
Thickeners	Ethylene Oxide (total)	ETO	mg/kg	0.05mg/kg	25%