NQAC
Nestlé Quality Assurance Center
Dublin

Technical Datasheet

Analysis Name: Dioxins by GC-MS/MS

Method Number: NQA-54.0012

Scope of Application: The method has been validated for oil, fat, infant formula, milk powder, skimmed milk powder and liquid milk/formula.

Description: This analytical method for polychlorinated dibenzo-p-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs) and polychlorinated biphenyls (PCBs) in food uses microwave assisted extraction to isolate the fat/oil from the sample, followed by additional acid/base silica clean-up to remove interferences. Quantitative analysis of the extract occurs by gas chromatography / tandem mass spectrometry. The result is reported in both the fat portion and the total product. This result will be the same in both fields for pure fat/oil products. Samples that are less than 2% fat will only be reported as the total in product.

Sample Weight Required: 300g

Method Reference: The method is based on the EPA 1613, revision B and Afnor Norm EN 1948-1/2/3/4

Analytical Platform: GC-MS-MS

Special Information: Because the fat percentage of the product is required to calculate the "on-fat" test result for non-fat sample submissions, the customer will need to provide the fat value from an ISO 17025 accredited laboratory (COA) or request fat determination testing on the sample from NQAC Dublin. If the COA is not provided and a fat test not requested, an appropriate test for fat will be added at customer expense.

It is strongly recommended that samples be submitted in glass containers covered in foil or original finished product. If unavailable, samples will be analyzed, however please know there is a risk of elevated levels.

Measurement and reporting of Dioxins are evaluated with a toxicity equivalency quotient (TEQ) that evaluates the toxicity of the mixture of compounds. To facilitate this, each congener is assigned a toxicity equivalency factor (TEF) which is the ratio of estimated toxicity for a particular congener to the toxicity of the most toxic compound: 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD).

The lower bound reported represents the lowest possible value based on the amount detected- this includes any values detected and non-detected compounds are considered as zero. The upper bound represents the highest possible amount accounting for any potentially present compounds below the quantitation limits of the method - this includes all detected values and the sum of each LOQ value for non-detected compounds.

Analyte Reported	Alias	Unit of Measure
Total Dioxin/Furan TEQ (Lower Bound)	PCDDs/PCDFs	pg/g TEQ
Total Dioxin/Furan TEQ (Upper Bound)	PCDDs/PCDFs	pg/g TEQ
Total Dioxin/Furan TEQ (Lower Bound On Fat)	PCDDs/PCDFs	pg/g TEQ
Total Dioxin/Furan TEQ (Upper Bound On Fat)	PCDDs/PCDFs	pg/g TEQ
Total TEQ (Lower Bound)	Dioxin-like PCBs	pg/g TEQ
Total TEQ (Upper Bound)	Dioxin-like PCBs	pg/g TEQ
Total TEQ (Lower Bound On Fat)	Dioxin-like PCBs	pg/g TEQ
Total TEQ (Upper Bound On Fat)	Dioxin-like PCBs	pg/g TEQ
Total PCB (Lower Bound)	PCBs	ng/g
Total PCB (Upper Bound)	PCBs	ng/g
Total PCB (Lower Bound On Fat)	PCBs	ng/g
Total PCB (Upper Bound On Fat)	PCBs	ng/g

Compounds included in the calculated totals reported:

Total Dioxin/Furan TEQ	Total TEQ	Total PCB
2,3,7,8–TCDD	2,3,7,8–TCDD	PCB 28 2,4,4’-TrCB
1,2,3,7,8–PeCDD	1,2,3,7,8–PeCDD	PCB 52 2,2’,5,5’-TCB
1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-HxCDD	PCB 101 2,2’,4,5,5’-PeCB
1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-HxCDD	PCB 138 2,2’,3,4,4’,5’-HxCB
1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-HxCDD	PCB 153 2,2’,4,4’,5,5’-HxCB
1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-HpCDD	PCB 180 2,2’,3,4,4’,5,5’-HpCB
OCDD	OCDD	
2,3,7,8-TCDF	2,3,7,8-TCDF	
1,2,3,7,8-PeCDF	1,2,3,7,8-PeCDF	
2,3,4,7,8-PeCDF	2,3,4,7,8-PeCDF	
1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-HxCDF	
1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-HxCDF	
2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	
1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-HxCDF	
1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-HpCDF	
1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-HpCDF	
OCDF	OCDF	
	PCB 77 3,3’,4,4’-TCB	
	PCB 81 3,4,4’,5-TCB	
	PCB 126 3,3’,4,4’,5-PeCB	
	PCB 169 3,3’,4,4’,5,5’-HxCB	
	PCB 105 2,3,3’,4,4’-PeCB	
	PCB 114 2,3,4,4’,5-PeCB	
	PCB 118 2,3’,4,4’,5-PeCB	
	PCB 123 2’,3,4,4’,5-PeCB	
	PCB 156 2,3,3’,4,4’,5-HxCB	
	PCB 157 2,3,3’,4,4’,5’-HxCB	
	PCB 167 2,3’,4,4’,5,5’-HxCB	
	PCB 189 2,3,3’,4,4’,5,5’-HpCB	