



*Quick and Easy  
Lab sample prep  
for gcmsms and lcmsms  
multiresidue pesticide analysis*

# *QuE-Lab<sup>®</sup>*



# WHAT IS *QuE-Lab*<sup>®</sup>

QuE-Lab<sup>®</sup> is the new brand of Lab.Instruments<sup>®</sup> that identifies the “**QuEChERS Products**” made in Italy for the extraction and purification of analytes from a wide range of matrices.

QuEChERS stands for: **Quick – Easy – Cheap – Effective – Rugged and Safe.**

It's the acronym for a highly beneficial analytical approach that vastly simplifies the analysis of multiple pesticide residues in fruit, vegetables, cereals and processed products thereof.

The method, based on a work published in 2003 by the US Department of Agriculture - Eastern Regional Research Center - in Wyndmoor, PA (M. Anastassiades, S.J. Lehotay, D. Stajnbaher, F.J. Schenck), admirably replaces the old extraction methods drastically reducing the execution and the costs deriving from solvents, glassware and particular laboratory equipment. The methods EN 15662: 2018 and AOAC 2007.01, respectively approved by the European and American Food Regulatory Agencies, were added to the 2003 “**Original**” method.

Within a relatively short time after the publication of scientific work, QuEChERS has experienced a widespread adoption around the globe and is today probably the most used sample preparation approach in pesticide residue analysis worldwide.

The QuEChERS procedure entails a number of simple analytical steps and is thus fast, easy to perform and little susceptible to errors. QuEChERS provides high recoveries for a very broad scope of pesticides belonging to various chemical classes and the final extract, being solved in acetonitrile, gives full flexibility in the choice of the determinative analysis technique. The direct transfer of the treated sample to injection in liquid and gas chromatography is almost always possible.



## PROCEDURE INVOLVING TWO PHASES

### EXTRACTION (LLE)

The analytes are extracted from the matrix by the use of acetonitrile and different types of salts and buffers. After the partition liquid-liquid (LLE) it follows: shaking, centrifugation and collection of acetonitrile phase.

### DISPERSIVE SOLID PHASE (d-SPE)

Deriving from the first step, the organic phase (acetonitrile extract) comes in contact with other typical clean up sorbents: primary and secondary amine (PSA), graphitized carbon black (GCB) or C18EC with the purpose of removing sugars, lipids, sterols, organic acids, proteins, carotenoids, chlorophyll and other pigments in addition to the residual water by the use of magnesium sulfate. After that it follows shaking and centrifugation. The anhydrous acetonitrile phase is ready for analysis in GCMS / MS directly (LVI) or after exchange of solvent, while the injection LCMS / MS is ready after sample dilution with mobile phase.

## PRODUCTS WITH LOW WATER CONTENT

QuEChERS extraction is designed primarily for food products with a high water content but it also applies to dried foods by adding during comminution step. The weighted amount of water depending on the type of sample and is defined in the CEN Guidelines.

WEIGHT OF SAMPLE	FRUITS AND VEGETABLES	FRUITS AND VEGETABLES	CEREALS (wheat, corn, oats, barley, etc.)	NUTS (hazelnuts, almonds, pistachios, etc.)	HONEY	OLIVE OIL	SPICES (pepper, paprika, etc.)
WATER ADDED	WITH MORE THAN 80% OF WATER CONTENT	WITH WATER CONTENT BETWEEN 25% AND 80%					
	10 g	10 g	5 g	5 g	5 g	4 g	2 g
	none	X* g	10 g	7,5 g	10 g	6 g	10 g

\* X = 10 g - water amount in 10 g of sample. \*\* Water may be added during



# QuE-Lab<sup>®</sup> PRODUCTS

QuE-Lab is the most completed line on the market. It was realized with very high quality raw material and in every possible variant of packaging “Ready to Use” to satisfy every need of the operator (Falcon Tubes, self-standing tubes, 2 ml, 8 ml, 12 ml and 15 ml tubes , sachets, tubes with snap caps, etc.) with and without ceramic homogenizers. Tube caps, sachets, labels and the entire packaging uses some sort of color code to identify the method type (A.O.A.C. (gray), EN15662 (red), Original (white) and matrix (vegetable (green), fat matrice ( yellow), slightly pigmented (orange) and very pigmented (red)).



## WHY CHOOSE

QuE-Lab<sup>®</sup>

## PRODUCTS

The efficacy of the QuE-Lab dSPE clean-up improves the matching with mass spectra in the library

Constant recoveries in the 80 ÷ 120% range for most compounds in different matrices

Useful color coding for each type of QuE-Lab product for easy identification

Better chromatographic peak shape promotes more accurate quantification

QuE-Lab LLe and d-SPE compliant with A.O.A.C. 2007.01 -EN15662:2018 and the “ORIGINAL” method

Available in any type of primary packaging (Falcon tubes, 2-8-15 ml test tubes, sachets, etc.)

QuE-Lab optimized for matrices (eg soil, cannabis, etc.) and “custom made” are available.

## SAVE TIME&MONEY AND INCREASE PRODUCTIVITY

Thanks to QuE-Lab products, the laboratory can reduce the workload of workers, reduce the consumption of consumables and reduce the production of waste. The stirring phase can be optimized and replicated over time. Sample stirring time, frequency and amplitude of stirring excursion, different according to the matrices and analytes to be extracted, can be stored and replicated using intelligent mechanical stirrers (eg Agitax-Lab). AGITAX™-LAB system is the solution for the automation of the agitation in the extraction (LLE) and clean-up (d-SPE) phases. AGITAX™LAB automates the agitation of 50 ml Falcon tubes (LLe phase) and 15 ml or 2 ml tubes (d-SPE phase) by storing agitation programs according to the matrices and analytes so as to increase laboratory productivity and, above all, improve the reproducibility of recoveries.



## QUE-LAB PROCEDURES FOR ORIGINAL - AOAC AND EN15662 METHODS.

ORIGINAL <sup>(1)</sup>	AOAC 2007.01 <sup>(2)</sup>	EN 15662 <sup>(3)</sup>
<b>EXTRACTION (LLE)</b>		
Depending on the nature of the commodity, cut and/or grind until the homogenization is reached	Depending on the nature of the commodity, cut and/or grind until the homogenization is reached	Depending on the nature of the commodity, cut and/or grind until the homogenization is reached
Weigh 10 g of homogenized/hydrated(*) sample in a 50 ml centrifuge tube	Weigh 15 g of homogenized/hydrated(*) sample in a 50 ml centrifuge tube	Weigh 10 g of homogenized/hydrated(*) sample in a 50 ml centrifuge tube
Add 10 ml of ACN	Add 15 ml of 1% HOAc in ACN	Add 10 ml of ACN
Add ISTD	Add ISTD	Add ISTD
Shake	Shake	Shake
Add <i>QuE-Lab</i> <sup>®</sup> Cod. Q17B14H093 (4 g MgSO <sub>4</sub> + 1 g NaCl)	Add <i>QuE-Lab</i> <sup>®</sup> Cod. Q17B15E092 (6 g MgSO <sub>4</sub> + 1.5 g NaOAc)	Add <i>QuE-Lab</i> <sup>®</sup> Cod. Q17B14F091 (4 g MgSO <sub>4</sub> + 1 g NaCl + 1 g Na <sub>2</sub> Citrate • 2H <sub>2</sub> O + 0.5 g Na <sub>2</sub> HCitrate • 1.5H <sub>2</sub> O)
Shake vigorously for 1 min.	Shake vigorously for 1 min.	Shake vigorously for 1 min.
Centrifuge for 5 minutes at 5000 rpm	Centrifuge for 1 minute at >1500 rcf	Centrifuge for 5 minutes at >3000 g
<b>DISPERSIVE SPE CLEAN-UP</b>		
Transfer 1 ml aliquot of supernatant to a dispersive tube (2 ml), <i>QuE-Lab</i> <sup>®</sup> d-SPE, containing MgSO <sub>4</sub> + PSA (plus GCB to remove pigments and C18 to remove fatty compounds and n-polar interferences). Choose the right <i>QuE-Lab</i> <sup>®</sup> d-SPE Tube. (See next page)	Transfer 8 ml aliquot of supernatant to a dispersive tube (15 ml), <i>QuE-Lab</i> <sup>®</sup> d-SPE AOAC, containing MgSO <sub>4</sub> + PSA (plus GCB to remove pigments and C18 to remove fatty compounds and non-polar interferences). Choose the right <i>QuE-Lab</i> <sup>®</sup> d-SPE Tube. (See next page)	Transfer 6 ml aliquot of supernatant to a dispersive tube (15 ml), <i>QuE-Lab</i> <sup>®</sup> d-SPE EN 15662, containing MgSO <sub>4</sub> + PSA (plus GCB to remove pigments and C18 to remove fatty compounds and non-polar interferences). Choose the right <i>QuE-Lab</i> <sup>®</sup> d-SPE Tube. (See next page)
Shake for 1 min.	Shake 30 seconds	Shake for 30 seconds (when using GCB 2 minutes)
Centrifuge for 1 minute at 6000 rpm	Centrifuge for 1 minute at >1500 rcf	Centrifuge for 5 minutes at >3000 g
Transfer into vial. Analyze directly or acidify if necessary (LC-MS/MS) or protect with sorbitol and preserve with toluene (GC-MS/MS). Depending on the nature of the commodity and pesticides see detailed procedure.	Transfer into vial. Analyze directly or acidify if necessary (LC-MS/MS) or protect with sorbitol and preserve with toluene (GC-MS/MS). Depending on the nature of the commodity and pesticides see detailed procedure.	Transfer into vial. Analyze directly or acidify if necessary (LC-MS/MS) or protect with sorbitol and preserve with toluene (GC-MS/MS). Depending on the nature of the commodity and pesticides see detailed procedure.

**Bibliography:** <sup>(1)</sup> Fast and easy multiresidue method employing acetonitrile extraction/partitioning and "dispersive solid-phase extraction" for the determination of pesticide residues in produce. J. AOAC International 86 (2003) 412. M. Anastassiades, S.J. Lehotay, D. Stajnbauer, F.J. Schenck. <sup>(2)</sup> AOAC Official Method 2007.01 Pesticide Residues in Foods by Acetonitrile Extraction and Partitioning with Magnesium Sulfate. <sup>(3)</sup> EN 15662 May 2018. Foods of plant origin - Multimethod for the determination of pesticide residues using GC- and LC- based analysis following acetonitrile extraction/partitioning and clean-up by dispersive SPE. Modular QuEChERS-method<sup>®</sup> Dry commodities must be hydrated in order to improve the extraction.

For each type of matrix you can choose the most appropriate d-SPE with MgSO and PSA effectively remove polar organic acids, sugar, anthocyanine, lipid and sterols. Some fruits and vegetables (spinach, red peppers, carrots, etc.) with a high content of non-polar pigments such as a carotenoids, chlorophyll, etc. require QuE-Lab<sup>®</sup> d-SPE with graphitized carbon black (GCB) for the discoloration. The elimination of pigments is necessary to avoid accumulations in the liners of GC's injector.

PSA Primary and secondary amine	REMOVE sugar, fatty acids, organic acids, anthocyanine pigments	PSA is the base sorbent used for QuEChERS clean-up (dSPE tube) because remove substances that might act as instrumental interferences.
C18 Octadecyl	REMOVE lipids, non polar interferences	In addition to PSA, C18 removes lipids and non polar interferences.
GCB Graphitized carbon black	REMOVE pigments, sterols, non polar interference	GCB removes pigments that can degrade GCMS performance but EN15662 recommends less GCB because can have a negative effect on the recoveries of certain pesticides like: Chlorothalonil, Permethrin, Deltamethrin, Coumaphos, Thiabendazole, Quintozeno, etc.

Additional information useful to the analyst planning QuEChERS analysis may be found to the following website:  
[www.ec.europa.eu/food/plant/protection](http://www.ec.europa.eu/food/plant/protection) - [www.crl-pesticides.eu/docs/public](http://www.crl-pesticides.eu/docs/public) - [www.nal.usda.gov/fnic/food/foodcomp/search](http://www.nal.usda.gov/fnic/food/foodcomp/search) - [www.quechers.com](http://www.quechers.com) - [www.quelab.it](http://www.quelab.it)



## INNOVATIVE TECHNOLOGIES INCREASE QUE-LAB PRODUCTION CAPACITY

Thanks to new investments in the automation and digitalization of production processes, we are able to face an increasingly complex and crowded market, where, in addition to product quality, speed and flexibility are also essential. With Industry 4.0 investments we have increased competitiveness thanks to the digital transformation that allows us to optimize productivity by integrating innovative technologies into the production process. With the installations of Industry 4.0 machines in our process we have increased the production capacity of LLe EN15662: 2018 and A.O.A.C: 2007 products to over 50,000 sachets / day and that of Transfer Tubes and (15 ml) Falcon tubes for dSPE to over 30,000 per day.



## SPECIAL QUE-LAB'S ARE AVAILABLE FOR SPECIAL AND INNOVATIVE METHODS

Following the publication of new validated methods of analysis of pesticides, mycotoxins, vet drugs, etc. where there is an extraction and purification step based on a modified QuEChERS method, we manufacture the related QuEChERS to meet these validated procedures. Some examples are given here: Acrylamide in french fries and baked goods, mycotoxins in licorice and other matrices, pesticides in animal origin matrices, PHA in soil, pesticides in cannabis, etc. Together with the extraction and clean-up systems we provide Application Notes and CRM & RM of pesticides, mycotoxins and vet drugs.

### SPECIAL METHODS

<b>Acrylamide LLE Method:</b>		
4 g MgSO <sub>4</sub> , 0,5 g NaCl (sample=10g)	n.50 Transfer (12ml) Tubes + n.50 Falcon (50ml) Tubes	Q17B14L095
<b>Mycotoxins LLE Method:</b>		
4 g MgSO <sub>4</sub> , 1 g NaCl (for DON)	n.50 Transfer (12ml) Tubes + n.50 Falcon (50ml) Tubes	Q17B14H096
4 g MgSO <sub>4</sub> Anhydrous, 1 g Trisodium Citrate, 0,5 g Disodium Citrate, 1 g NaCl	n.50 Sachets with n.50 Falcon (50 ml) Tubes	Q19B14F091
<b>Mycotoxins d-SPE :</b>		
900 mg MgSO <sub>4</sub> , 300 mg PSA	n.50 Falcon Tubes (15 ml) Ready to use	Q2A22Z496
150 mg MgSO <sub>4</sub> , 50 mg PSA	n.250 Tubes (2 ml) Ready to use	Q10C21Z296
150 mg MgSO <sub>4</sub> , 50 mg PSA, 30 mg C18, 30 mg AL-N	n.250 Tubes (2 ml) Ready to use	Q10C21AI294
900 mg MgSO <sub>4</sub> , 150 mg PSA, 600 mg C18 and 150 mg Si	n.50 Falcon Tubes (15 ml) Ready to use	Q2A22AL314
<b>PHA Polycyclic Aromatic Hydrocarbons in SOIL LLE Method:</b>		
4 g MgSO <sub>4</sub> , 1 g NaCl	n.50 Transfer 12 ml Tubes + n.50 Falcon 50ml Tubes	Q17B14H0916
4 g MgSO <sub>4</sub> , 1 g NaCl	n.250 Transfer (12ml) Tubes	Q10A14H093
6 g MgSO <sub>4</sub> , 1,5 g NaCl (sample=15g)	n.250 Tubes (2 ml) Ready to use	Q17B14H0917
4 g MgSO <sub>4</sub> Anhydrous, 5 g NaHCO <sub>3</sub> , 1 g NaCl, 1 g Trisodium Citrate, 0,5 g Disodium Citrate.	n.50 Falcon Tubes (15 ml) Ready to use	Q2B18AG1644
<b>EMR-Lipidi LLE Method:</b>		
3 g NaCl, 1 g SCTD, 0,5 g SCTS	n.50 Transfer (12ml) Tubes + n.50 Falcon (50ml) Tubes	Q17B10Q0910
<b>EMR-Lipidi d-SPE Final Polish:</b>		
1600 mg MgSO <sub>4</sub> , 400 mg NaCl	n.50 Falcon Tubes (15 ml) Ready to use	Q2A210R0910
<b>EMR-Lipidi MgSO4 ADD:</b>		
500 mg MgSO <sub>4</sub> ,	n.50 Falcon Tubes (15 ml) Ready to use	Q2D29Z0910
<b>Cannabis LLE Method:</b>		
4 g MgSO <sub>4</sub> Anhydrous, 1 g Trisodium Citrate, 0,5 g Disodium Citrate, 1 g NaCl	n.50 Sachets with n.50 Falcon (50 ml) Tubes	Q19B14F091
<b>Cannabis d-SPE :</b>		
900 mg MgSO <sub>4</sub> , 150 mg PSA, 15 mg GCB	n.50 Falcon Tubes (15 ml) Ready to use	Q2A22Z331

The raw materials with which we produce QuE-Lab products are of the highest quality. The consumables are chosen with great care among those offered on the market by leading manufacturers. The tube caps seal perfectly and do not leak sample. At the same time they are free from phthalates, adipates, BAC12 and BAC14. They are perfectly labeled and packaged in cellophane boxes and then in cartons for transport by truck, ship or plane. Raw materials can be purchased in bulk using the codes indicated below.

### BULK PRODUCTS CONSUMABLE

PSA QuEChERS Bulk Adsorbents, Surface Area: 480 m <sup>2</sup> /g, Average Pore Size: 58 Å, Particle Shape: irregular	Cf. 100 g in LDPE Bottle 100 ml	QUE-PSA-100G
C18EC QuEChERS Bulk Adsorbents, Carbon content(%C): 19.8, Surface Area: 532 m <sup>2</sup> /g, Particle Shape: irregular	Cf. 100 g in LDPE Bottle 100 ml	QUE-C18EC-100G
GCB QuEChERS Bulk Adsorbents, Surface Area: 100 m <sup>2</sup> /g	Cf. 100 g in LDPE Bottle 100 ml	QUE-GCB-100G
C18 Silica Gel 60 Å, 230-400 mesh particle size, 40-63 µm particle size	Cf. 100 g in LDPE Bottle 100 ml	QUE-SIGEL-100G
Allumina Neutral QuEChERS Powder TWA : 10 mg/mc	Cf. 100 g in LDPE Bottle 100 ml	QUE-AL-N-100G
NaHCO <sub>3</sub> QuEChERS Powder	Cf. 100 g in LDPE Bottle 100 ml	QUE-NAHCO-100G
Ceramic Homogenizer for 2 ml tubes	Cf. 200 Pz.	QUE-990-01
Ceramic Homogenizer for 15 ml Falcon tubes	Cf. 100 Pz.	QUE-990-02
Ceramic Homogenizer for 50 ml Falcon tubes	Cf. 100 Pz.	QUE-990-03
Falcon (50 ml) Tubes (Phthalates&Adipates&BAC12&BAC14 FREE)	Cf. 300 Pz.	QUE-50ML-300PZ

## FRUITS

	EN/AOAC GENERAL	Fats and waxes EN/AOAC	EN/AOAC Pigment	High Pigment EN	Pigments and fats AOAC
Citrus Juices					
Grapefruit					
Lemon/Lime					
Orange					
Orange Peel					
Nectarine					
Tangerine					
Apple					
Apple, Dried					
Apple Sauce					
Apple Juice					
Pear					
Quince					
BlackBerry					
Blueberry					
Currant					
Elder					
Gooseberries, Red					
Red Grapes					
Green Grapes					
Raspberry					
Raisins					
Cranberry					
Strawberry					
Apricot					
Apricots, Dried					
Apricot Nectar					
Cherry					
Mirabelle					
Nectarines					
Peach					
Fishing, Dried					
Plum					
Dried Plum					
Pineapple					
Banana					
Avocado					
Olives					
Fig, Dried					
Melon					
Kiwi					
Mango					
Papaya					

## OTHER FOODS

Fish, Honey, Oil, Eggs					
Spices (Pepper, Paprika, etc.)					
Meat etc.					

\*Other Method

## VEGETABLES

	EN/AOAC GENERAL	Fats and waxes EN/AOAC	EN/AOAC Pigment	High Pigment EN
Beet				
Carrot				
Celeriac				
Horseradish				
Parsley Root				
Radish				
Salasify				
Potato				
Garlic				
Onion				
Shallot				
Leek				
Chive				
Eggplant				
Cucumber				
Green Pepper				
Red Bell Pepper				
Pumpkin				
Tomato				
Zucchini				
Broccoli				
Brussels Sprouts				
Cauliflower				
Chinese Cabbage				
Kale				
Kohlrabi				
Red Cabbage				
Savoy Cabbage				
Varieties of lettuce				
Endive				
Watercress				
Valerianella				
Cilantro				
Basil				
Parsley				
Argula				
Spinach				
Asparagus				
Celery				
Leek				
Rhubarb				
Artichoke				
Beans, Peas (fresh)				
Lentils, Beans (dry)				
Wheat, Corn, Rice				
Flour, etc.				
Coffee beans				
Tea leaves				
Soils				

## OTHER MATRIX





QUE-LAB KITS - EXTRACTION AND CLEAN-UP - EN 15662:2018 - A.O.A.C. 2007.01 - ORIGINAL

LLE Extraction EN15662:2018 Method - Composition:		Primary Packaging :	Product code:
4 g MgSO <sub>4</sub> Anhydrous, 1 g Trisodium Citrate, 0,5 g Disodium Citrate, 1 g NaCl		n.50 Sachets with n.50 Falcon (50 ml) Tubes	Q19B14F091
4 g MgSO <sub>4</sub> Anhydrous, 1 g Trisodium Citrate, 0,5 g Disodium Citrate, 1 g NaCl		n.50 Sachets with n.50 Falcon (50 ml) Tubes + Ceramic Homogeneizers	Q19B14F091CH
4 g MgSO <sub>4</sub> Anhydrous, 1 g Trisodium Citrate, 0,5 g Disodium Citrate, 1 g NaCl		n.50 Transfer 12ml Tubes + n.50 Falcon (50ml ) Tubes	Q17B14F091
4 g MgSO <sub>4</sub> Anhydrous, 1 g Trisodium Citrate, 0,5 g Disodium Citrate, 1 g NaCl		n.50 Falcon (50ml) Tubes Ready to Use	Q1814F091
4 g MgSO <sub>4</sub> Anhydrous, 1 g Trisodium Citrate, 0,5 g Disodium Citrate, 1 g NaCl		n.250 Transfer (12ml) Tubes	Q15014F091
4 g MgSO <sub>4</sub> Anhydrous, 1 g Trisodium Citrate, 0,5 g Disodium Citrate, 1 g NaCl		n.300 Sachets w/o Tubes	Q16E14F091
4 g MgSO <sub>4</sub> Anhydrous, 1 g Trisodium Citrate, 0,5 g Disodium Citrate, 1 g NaCl		n.300 Transfer Snaps Cap Tubes	Q31H14F091

LLE Extraction A.O.A.C. 2007,01 Method - Composition:		Primary Packaging :	Product code:
6 g MgSO <sub>4</sub> , 1,5 g NaAcetate		n.50 Sachets + n.50 Falcon (50 ml) Tubes	Q19B15E092
6 g MgSO <sub>4</sub> , 1,5 g NaAcetate		n.50 Sachets + n.50 Falcon (50 ml) Tubes + Ceramic Homogeneizer	Q19B15E092CH
6 g MgSO <sub>4</sub> , 1,5 g NaAcetate		n.50 Transfer (12ml) Tubes + n.50 Falcon (50ml) Tubes	Q17B15E092
6 g MgSO <sub>4</sub> , 1,5 g NaAcetate		n.250 Transfer (12ml) Tubes	Q15D15E092
6 g MgSO <sub>4</sub> , 1,5 g NaAcetate		n.300 Sachets w/o Tubes	Q16E15E092
6 g MgSO <sub>4</sub> , 1,5 g NaAcetate		n.300 Transfer Snaps Cap Tubes	Q31H15E092

LLE Extraction Original Method (Unbuffered) (sample = 10 g)		Primary Packaging :	Product code:
4 g MgSO <sub>4</sub> , 1,0 g NaCl (sample=10g)		n.50 Sachets + n.50 Falcon (50 ml) Tubes	Q19B14H093
4 g MgSO <sub>4</sub> , 1,0 g NaCl (sample=10g)		n.50 Sachets + n.50 Falcon (50 ml) Tubes + Ceramic Homogeneizer	Q19B14H093CH
4 g MgSO <sub>4</sub> , 1,0 g NaCl (sample=10g)		n.50 Transfer (8 ml) Tubes + n.50 Falcon (50ml) Tubes	Q17B14H093
4 g MgSO <sub>4</sub> , 1,0 g NaCl (sample=10g)		n.250 Transfer (8 ml) Tubes	Q1514H093
4 g MgSO <sub>4</sub> , 1,0 g NaCl (sample=10g)		n.300 Sachets w/o Tubes (sample=10g)	Q16E14H093
4 g MgSO <sub>4</sub> , 1,0 g NaCl (sample=10g)		n.300 Transfer Snaps Cap Tubes	Q31H14H093

LLE Extraction Original Method (Unbuffered) (sample = 15 g)		Primary Packaging :	Product code:
6 g MgSO <sub>4</sub> , 1,5 g NaCl (sample=15g)		n.50 Sachets + n.50 Falcon (50ml) Tubes	Q19B15I093
6 g MgSO <sub>4</sub> , 1,5 g NaCl (sample=15g)		n.50 Sachets + n.50 Falcon (50 ml) Tubes + Ceramic Homogeneizer	Q19B15I093CH
6 g MgSO <sub>4</sub> , 1,5 g NaCl (sample=15g)		n.50 Transfer (12ml) Tubes + n.50 Falcon (50ml) Tubes	Q17B15I093
6 g MgSO <sub>4</sub> , 1,5 g NaCl (sample=15g)		n.250 Transfer (12 ml) Tubes	Q15D15I093
6 g MgSO <sub>4</sub> , 1,5 g NaCl (sample=15g)		n.300 Sachets w/o Tubes (sample=15g)	Q16E15I093
6 g MgSO <sub>4</sub> , 1,5 g NaCl (sample=15g)		n.300 Transfer Snaps Cap Tubes	Q31H15I093

EN15662:2018 d-SPE Clean-up Method "Ready To Use" Prefilled Tubes (15 ml)		Primary Packaging :	Product code:
900 mg MgSO <sub>4</sub> , 150 mg PSA		n.50 Falcon Tubes (15 ml) Ready to use	Q2A222391
900 mg MgSO <sub>4</sub> , 150 mg PSA		n.50 Falcon Tubes (15 ml) Prefilled Tubes + Ceramic Homogeneizer	Q2A222391CH
900 mg MgSO <sub>4</sub> , 150 mg PSA, 150 mg C18EC		n.50 Falcon Tubes (15 ml) Ready to use	Q2A222391
900 mg MgSO <sub>4</sub> , 150 mg PSA, 150 mg C18EC		n.50 Falcon Tubes (15 ml) Prefilled Tubes + Ceramic Homogeneizers	Q2A222391CH
900 mg MgSO <sub>4</sub> , 150 mg PSA, 15 mg GCB		n.50 Falcon Tubes (15 ml) Ready to use	Q2A222331
900 mg MgSO <sub>4</sub> , 150 mg PSA, 15 mg GCB		n.50 Falcon Tubes (15 ml) Prefilled Tubes + Ceramic Homogeneizers	Q2A222331CH
900 mg MgSO <sub>4</sub> , 150 mg PSA, 45 mg GCB		n.50 Falcon Tubes (15 ml) Ready to use	Q2A222341
900 mg MgSO <sub>4</sub> , 150 mg PSA, 45 mg GCB		n.50 Falcon Tubes (15 ml) Prefilled Tubes + Ceramic Homogeneizers	Q2A222341CH
900 mg MgSO <sub>4</sub> , 150 mg C18		n.50 Falcon Tubes (15 ml) Prefilled Tubes	Q2A226094
900 mg MgSO <sub>4</sub> , 150 mg C18		n.50 Falcon Tubes (15 ml) Prefilled Tubes + Ceramic Homogeneizers	Q2A226094CH

EN15662:2018 d-SPE Clean-up Method "Ready To Use" Prefilled Tubes (2 ml)		Primary Packaging :	Product code:
150 mg MgSO <sub>4</sub> , 25 mg PSA		n.250 Tubes (2 ml) Ready to use	Q10C212191
150 mg MgSO <sub>4</sub> , 25 mg PSA		n.250 Tubes (2 ml) Ready to use + Ceramic Homogeneizers	Q10C212191CH
150 mg MgSO <sub>4</sub> , 25 mg PSA, 25 mg C18EC		n.250 Tubes (2 ml) Ready to use	Q10C21A191
150 mg MgSO <sub>4</sub> , 25 mg PSA, 25 mg C18EC		n.250 Tubes (2 ml) Ready to use + Ceramic Homogeneizers	Q10C21A191CH
150 mg MgSO <sub>4</sub> , 25 mg PSA, 2,5 mg GCB		n.250 Tubes (2 ml) Ready to use	Q10C21Z111
150 mg MgSO <sub>4</sub> , 25 mg PSA, 2,5 mg GCB		n.250 Tubes (2 ml) Ready to use + Ceramic Homogeneizers	Q10C21Z111CH
150 mg MgSO <sub>4</sub> , 25 mg PSA, 7,5 mg GCB		n.250 Tubes (2 ml) Ready to use	Q10C21Z121
150 mg MgSO <sub>4</sub> , 25 mg PSA, 7,5 mg GCB		n.250 Tubes (2 ml) Ready to use + Ceramic Homogeneizers	Q10C21Z121CH

A.O.A.C. 2007.01 d-SPE Clean-up Method "Ready To Use" Prefilled TUBES (15 ml)		Primary Packaging :	Product code:
1200 mg MgSO <sub>4</sub> , 400 mg PSA		n.50 Falcon Tubes (15 ml) Ready to use	Q2A232592
1200 mg MgSO <sub>4</sub> , 400 mg PSA		n.50 Falcon Tubes (15 ml) Prefilled Tubes + Ceramic Homogeneizers	Q2A232592CH
1200 mg MgSO <sub>4</sub> , 400 mg PSA, 400 mg C18EC		n.50 Falcon Tubes (15 ml) Ready to use	Q2A23D592
1200 mg MgSO <sub>4</sub> , 400 mg PSA, 400 mg C18EC		n.50 Falcon Tubes (15 ml) Prefilled Tubes + Ceramic Homogeneizers	Q2A23D592CH
1200 mg MgSO <sub>4</sub> , 400 mg PSA, 400 mg GCB		n.50 Falcon Tubes (15 ml) Ready to use	Q2A23Z582
1200 mg MgSO <sub>4</sub> , 400 mg PSA, 400 mg GCB		n.50 Falcon Tubes (15 ml) Prefilled Tubes + Ceramic Homogeneizers	Q2A23Z582CH
1200 mg MgSO <sub>4</sub> , 400 mg PSA, 400 mg C18EC, 45 mg GCB		n.50 Falcon Tubes (15 ml) Ready to use	Q2A23D542
1200 mg MgSO <sub>4</sub> , 400 mg PSA, 400 mg C18EC, 45 mg GCB		n.50 Falcon Tubes (15 ml) Prefilled Tubes + Ceramic Homogeneizers	Q2A23D542CH
1200 mg MgSO <sub>4</sub> , 400 mg PSA, 400 mg C18EC, 400 mg GCB		n.50 Falcon Tubes (15 ml) Ready to use	Q2A23D582
1200 mg MgSO <sub>4</sub> , 400 mg PSA, 400 mg C18EC, 400 mg GCB		n.50 Falcon Tubes (15 ml) Prefilled Tubes + Ceramic Homogeneizers	Q2A23D582CH

A.O.A.C. 2007.01 d-SPE Clean-up Method "Ready To Use" Prefilled TUBES (2 ml)		Primary Packaging :	Product code:
150 mg MgSO <sub>4</sub> , 50 mg PSA		n.250 Tubes (2 ml) Ready to use	Q10C212292
150 mg MgSO <sub>4</sub> , 50 mg PSA		n.250 Tubes (2 ml) Ready to use + Ceramic Homogeneizers	Q10C212292CH
150 mg MgSO <sub>4</sub> , 50 mg PSA, 50 mg C18EC		n.250 Tubes (2 ml) Ready to use	Q10C21B292
150 mg MgSO <sub>4</sub> , 50 mg PSA, 50 mg C18EC		n.250 Tubes (2 ml) Ready to use + Ceramic Homogeneizers	Q10C21B292CH
150 mg MgSO <sub>4</sub> , 50 mg PSA, 50 mg GCB		n.250 Tubes (2 ml) Ready to use	Q10C21Z252
150 mg MgSO <sub>4</sub> , 50 mg PSA, 50 mg GCB*		n.250 Tubes (2 ml) Ready to use + Ceramic Homogeneizers	Q10C21Z252CH
150 mg MgSO <sub>4</sub> , 50 mg PSA, 50 mg C18EC, 7,5 mg GCB		n.250 Tubes (2 ml) Ready to use	Q10C21B272
150 mg MgSO <sub>4</sub> , 50 mg PSA, 50 mg C18EC, 7,5 mg GCB		n.250 Tubes (2 ml) Ready to use + Ceramic Homogeneizers	Q10C21B272CH
150 mg MgSO <sub>4</sub> , 50 mg PSA, 50 mg C18EC, 50 mg GCB		n.250 Tubes (2 ml) Ready to use	Q10C21B252
150 mg MgSO <sub>4</sub> , 50 mg PSA, 50 mg C18EC, 50 mg GCB		n.250 Tubes (2 ml) Ready to use + Ceramic Homogeneizers	Q10C21B252CH

Other Clean-up Mixtures d-SPE "Ready To Use" Prefilled TUBES (2 ml):		Primary Packaging :	Product code:
150 mg MgSO <sub>4</sub> , 50 mg PSA		n.250 Tubes (2 ml) Ready to use	Q10C212294
225 mg MgSO <sub>4</sub> , 37,5 mg PSA		n.250 Tubes (2 ml) Ready to use	Q10C21821491
150 mg MgSO <sub>4</sub> , 25 mg C18EC		n.250 Tubes (2 ml) Ready to use	Q10C21M094
150 mg MgSO <sub>4</sub> , 150 mg PSA, 150 mg C18EC, 50 mg GCB		n.250 Tubes (2 ml) Ready to use	Q10C26N091

Other Clean-up Mixtures d-SPE "Ready To Use" Prefilled TUBES (4 ml):		Primary Packaging :	Product code:
300 mg MgSO <sub>4</sub> , 100 mg PSA, 100 mg C18EC, 15 mg GCB		n.250 Tubes (4 ml) Ready to use	Q10C27AC1334
300 mg MgSO <sub>4</sub> , 100 mg PSA, 100 mg C18EC, 15 mg GCB		n.250 Tubes (4 ml) Ready to use	Q2A20AC1394

Other Clean-up Mixtures d-SPE "Ready To Use" Prefilled TUBES (15 ml):		Primary Packaging :	Product code:
300 mg MgSO <sub>4</sub> , 100 mg PSA, 100 mg C18EC		n.50 Falcon Tubes (15 ml) Ready to use	Q2A27AC1394
900 mg MgSO <sub>4</sub> , 300 mg PSA, 150 mg C18EC		n.50 Falcon Tubes (15 ml) Ready to use	Q2A22G994
900 mg MgSO <sub>4</sub> , 400 mg PSA, 400 mg C18EC, 20 mg GCB		n.50 Falcon Tubes (15 ml) Ready to use	Q2A22D5114
900 mg MgSO <sub>4</sub> , 150 mg PSA, 300 mg C18EC, 15 mg GCB		n.50 Falcon Tubes (15 ml) Ready to use	Q2A22O334
900 mg MgSO <sub>4</sub> , 300 mg PSA, 300 mg C18EC, 45 mg GCB		n.50 Falcon Tubes (15 ml) Ready to use	Q2A22O447
100 mg GCB		n.50 Falcon Tubes (15 ml) Ready to use	Q9A20Z0101

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## ACCREDITATIONS AND CERTIFICATIONS

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UNI EN ISO 14001:2015  
ISO 17034:2016

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