

12. Standards & Reagents



TEST KITS

Use GIBNIK Test Solutions to perform the quality checking of your HRGC, HPLC or MS systems.

HRGC System Test Solutions

Description	Item n°	Package	Analytes	Concentration	Matrix
HRGC FID Detector MDL Standard	KNK-FID-STD	1x1 mL ampule	n-pentadecane n-tetradecane n-hexadecane n-tridecane	30.0 µg/mL 3.0 µg/mL 30.0 µg/mL 3.0 µg/mL	Isooctane
HRGC FPD Detector MDL Standard	KNK-FPD-STD	1x1 mL ampule	Dodecanethiol Tributyl phosphate	10.0 µg/mL 10.0 µg/mL	Isooctane
HRGC TCD Detector MDL Standard	KNK-TCD-STD	1x1 mL ampule	n-pentadecane n-tetradecane n-hexadecane	0,002 % (w/w) 0,002 % (w/w) 0,002 % (w/w)	Hexane
HRGC ECD Detector MDL Standard	KNK-ECD-STD	1x1 mL ampule	Gamma-BHC Aldrin	0,0002 µg/mL 0,0002 µg/mL	Isooctane
HRGC MS Detector MDL Standard	KNK-GMS-STD	1x1 mL ampule	Decafluorotriphenylphosphine Endrin 4,4'-DDT	2000.0 µg/mL 2000.0 µg/mL 2000.0 µg/mL	Acetone

HPLC System Test Solutions

Description	Item n°	Package	Analytes	Concentration	Matrix
Absorbance Detector 10mm - Cell Performance Qualification - (PQ) Solution	KNK-LCUV-STD1	1x10 mL ampule	Erbium perchlorate	10.0 g/L	HPLC grade water
UV-Visible Absorbance - Detector Wavelength Accuracy - Calibration Solution	KNK-LCUV-STD2	1x10 mL ampule	Acetone Acetophenone Propiophenone Butyrophenone	3170.0 mg/L 10.28 mg/L 10.09 mg/L 10.21 mg/L	Methanol / water (60:40 V/V)
Absorbance Detector - Linearity Calibration Kit	KNK-LCUV-STD3	Ampule 1 Ampule 2 Ampule 3 Ampule 4 Ampule 5 Ampule 6 Ampule 7	Methanol Propyl paraben Propyl paraben Propyl paraben Propyl paraben Propyl paraben Propyl paraben	100% 5.00 mg/L 10.00 mg/L 15.00 mg/L 20.00 mg/L 25.00 mg/L 30.00 mg/L	Methanol Methanol Methanol Methanol Methanol Methanol
UV Absorbance Detector - Wavelength Accuracy - Calibration Solution	KNK-LCUV-STD4	1x10 mL ampule	Uracil	15.0 mg/L	Methanol
Fluorescence Detector - OQ Solution	KNK-LCFL-STD	1x1 mL ampule	Quinine sulfate Dihydrate	99 %	Phosphoric Acid 85% by Weight (specific gravity 1.7)
Refractive Index Detector - OQ Solution	KNK-LCRI-STD	1x10 mL ampule	Caffeine	2.0 g/L	Water / Methanol (9:1 v/v)
Electrochemical Detector - PQ Solution	KNK-LCEC-STD	1x1 mL ampule	Acetaminophen (4-acetamidophenol)	1.0 µg	Water / Methanol (9:1 V/V)
Conductivity Detector - OQ/PQ Test Solutions Kit	KNK-LCCD-STD	1x1 mL ampule 1x1 mL ampule	Potassium chloride Potassium bromide Sodium chloride	0.07455mg/mL 1.489 mg/mL 0.8425 mg/mL	18-megohm ASTM Type I Reagent Water 18-megohm ASTM Type I Reagent Water
Evaporative Light Scattering - Detector Test Solution	KNK-LCLS-STD	1x1 mL ampule	Acetaminophen	250 mg/L	10% HPLC Grade Methanol / 90% ASTM Type I Water (V/V)

MS System Test Solutions

Description	Item n°	Package	Analytes	Concentration	Matrix
MS Chemical Test Kit	KNK-LMS-STD1	Vial 1	Daidzein	250 µg/L	Acetonitrile/Water 30/70
		Vial 2	Reserpine	2 ng/µL	Acetonitrile/Water 50/50
			PPG 1000	25 ng/µL	(4mM Ammonium Acetate)
			Triacetyl-B-cyclodextrin	50 ng/µL	
		Vial 3	Sodium Iodide	2 µg/µL	IPA/Water 50/50
	Cesium Iodide	50 ng/µL			
Vial 4	Daidzein	1 mg/L	Acetonitrile/Water 30/70		
Vial 5	Formic Acid	ACS Reagent Grade(96 %)			
MS 10ml Solution, 1mg/L Daidzein	KNK-LMS-STD2	1x1 mL ampule	Daidzein	1 mg/L	Acetonitrile/Water 30/70
MS 10ml Solution, Formic Acid	KNK-LMS-STD3	1x1 mL ampule	Formic Acid	ACS Reagent Grade (96 %)	
MS Leucine Enkephalin Test Solution Kit	KNK-LMS-STD4	Ampule 1	Leucine enkephalin	2 ng/µL	Acetonitrile/Water (1:1) V/V
		Ampule 2	Acetic acid	1 %	Acetonitrile/Water (1:1) V/V
MS Detector OQ/PQ Solution	KNK-LMS-STD5	Ampule	Daidzein	10.0 mg/mL	Acetonitrile/Water 30/70
Integrity System Standard - Caffeine	KNK-LMS-STD6	Vial	Caffeine	10.0 mg/L	Methanol /Water (1:1)
Integrity System Standard - Alkylphenones	KNK-LMS-STD7	Vial	Acetone	2373.0 mg/L	Methanol
			Decanophenone	40.0 mg/L	
			Dodecanophenone	60.2 mg/L	
			Octadecanophenone	40.1 mg/L	



Test Solutions

GC DERIVATIZATION REAGENTS

Derivatization

Derivatization is the process of chemically modifying a compound to produce a new compound which has properties that are suitable for analysis using a GC. Derivatization is a useful tool allowing the use of GC and GC/MS to be done on samples that would otherwise not be possible in various areas of chemistry such as medical, forensic, and environmental. Derivatization process can increase sample volatility, increase detectability, increase stability, improve selectivity or improve chromatographic efficiency.

GIBNIK Robokrom Autosampler allows automatic derivatization of your sample previous GC injection with complete control of all parameters (temperature, time, agitation,...).

Main types of derivatization:

A. Silylation

Silylation is the most widely used derivatization procedure. Silylation produces silyl derivatives which are more volatile, less stable, and more thermally stable. Silylation replaces active hydrogens with a TMS (trimethylsilyl group) and enables the GC-MS analysis of many compounds.

General Reaction Mechanism: Derivatization mechanism for Alcohols, Amides, Amines, Steroids, and carboxylic acids.

B. Acylation

Acylation reduces the polarity of amino, hydroxyl, and thiol groups and adds halogenated functionalities for ECD. In comparison to silylating reagents, the acylating reagents target highly polar, multifunctional compounds, such as carbohydrates and amino acids.

Acylation converts these compounds with active hydrogens into esters, thioesters, and amides. They are formed with acyl anhydride, acyl halide, and activated acyl amide reagents. The anhydrides and acyl halide reagents form acid by-products, which must be removed before GC analysis. Acylations are normally carried out in pyridine, tetrahydrofuran or another solvent capable of accepting the acid by-product.

The presence of a carbonyl group next to the halogenated carbons enhances the electron capture detector. Acyl derivatives tend to direct the fragmentation patterns of compounds in MS applications, and so provide helpful information on the structure of these materials.

C. Alkylation and Esterification

Alkylation reduces molecular polarity by replacing active hydrogens with an alkyl group. These reagents are used to modify compounds with acidic hydrogens, such as carboxylic acids and phenols. These reagents make esters, ethers, alkyl amines and alkyl amides. Reagents containing fluorinated benzoyl groups can be used for ECD.

It is generally used to convert organic acids into esters (esterification). Alkyl esters have excellent stability and can be isolated and stored for long periods of time.



Derivatization reagent 20 x 1 mL



Derivatization reagent 1 x 10 mL

STANDARD & REAGENTS

Mechanism	Description	Name	Item n°	Package	
Sylation Reagents	n-Methyl-trimethylsilyltrifluoroacetamide	MSTFA	355587.0922T 355587.1905T	20 x 1 mL 1 x 10 mL	
	Bis(trimethylsilyl)acetamide	BSA	355788.0922T 355788.1905T	20 x 1 mL 1 x 10 mL	
	Bis(trimethylsilyl)trifluoroacetamide	BSTFA	355588.0922T 355588.1905T	20 x 1 mL 1 x 10 mL	
	Hexamethyldisilazane	HDMS	355599.0922T 355599.1905T 355599.1606T	20 x 1 mL 1 x 10 mL 1 x 25 mL	
	Trimethylchlorosilane	TMCS	352776.0922T 352779.1905T 352779.0207T	20 x 1 mL 1 x 10 mL 1 x 50 mL	
	Trimethylsilylimidazole	TMSI	352616.0922T 352616.1905T	20 x 1 mL 1 x 10 mL	
	931 – Pyridine-HDMS-TMCS	Pyr-HDMS-TMCS (9:3:1)	355650.0922T 355650.1905T	20 x 1 mL 1 x 10 mL	
	Acylation Reagents	Trifluoroacetic Anhydride	TFAA	353316.0922T 353316.1905T	20 x 1 mL 1 x 10 mL
		Heptafluorobutyric Anhydride	HFBA	355584.0922T 355584.1905T	20 x 1 mL 1 x 10 mL
		Acetic Anhydride	AA	131147.0922T 131147.1905T 131147.1611T	20 x 1 mL 1 x 10 mL 1 x 1000 mL
		Pentafluoropropionic Anhydride	PFPA	355790.0922T 355790.1905T	20 x 1 mL 1 x 10 mL
		Esterification Reagents	BF ₃ in Methanol		15A734.0922T 15A734.1905T 15A734.1608T
GC Derivatization Solvents	Pyridine		Pyr	481457.1611T	1 x 1000 mL
	DMF – N,N-Dimethylformamide		DMF	481785.1611T	1 x 1000 mL