SHIMADZU

Excellence in Science

Screening System for Phthalate Esters

Py-Screener

Py-Screener

Sample Preparation Data Processing

Analysis Maintenance

Making the Difficult Simple

The Py-Screener™ system is designed to screen for phthalate esters in polymers. The use of phthalate esters in toys and food packaging is currently restricted. Moving forward, they are expected to be regulated as restricted substances under the Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS (II) Directive) in Europe. The pyrolyzer GC/MS (Py-GC/MS) is used to selectively detect and quantify phthalate esters thermally extracted from samples. This screening system consists of a sampling toolkit, special standards, and special software and can be easily operated even by novices.

Easy to Operate Even for Novices
## Organics Solvents Are Not Required for Sample Preparation.

Analytical standards and test samples can be prepared without using organic solvents. To prepare a sample, just use the cutter to remove a portion from the test material, place it in the sample cup, and weigh it. Sample preparation videos provide support so that even novices can easily prepare samples.
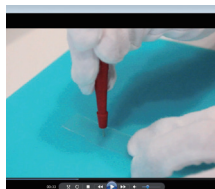
Preparation of a Phthalate
Ester Standard
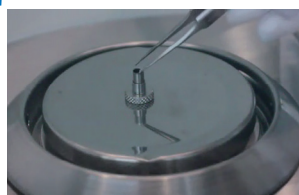
Weighing Using an Electronic Balance
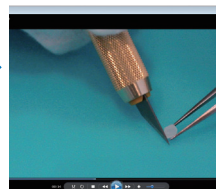
Preparation of a Test Sample

Analytical
Balances
AP Series

Shimadzu balances
product lineup

All Required Items Are Available.
Special Standards for Phthalate Esters
Toolkit Required for Sample Preparation

The standards of phthalate esters for sensitivity confirmation, quantitation, and blank tests can be prepared simply by punching out a portion of a standard material using the micro puncher. A toolkit used for preparing samples has been created with Frontier Laboratories Ltd.
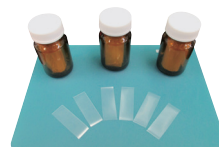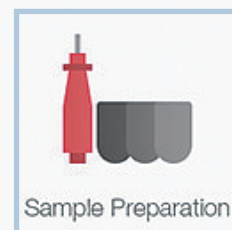
Standards
Containing Phthalate
Esters for Py-GC/MS

Sampling Toolkit

⊕ SHIMADZU
Py-Screener

Sample Preparation
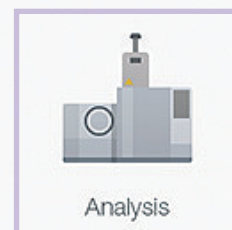
Analysis

Easy to Operate Using Special Software

Using customized software, operations are easy, even for novices. To automatically start continuous analyses, just place the prepared standards and test samples in the autosampler, and enter the number of samples, the sample names, and their weights. Phthalate ester inspections compliant with the IEC62321-8 international analysis standard, the industry standard for RoHS inspections, can be performed easily by anyone. Shimadzu offers both a simultaneous inspection method for phthalate esters and brominated flame retardants, which supports inspections for a wide range of regulated compounds, and a special high-speed inspection method for phthalate esters, which significantly reduces the inspection time.

|	Vial#	Sample Name	Sample Amt.
1	1	Blank_Cup	0.5
2	2	Phthalate_STD_Blank	0.51
3	3	Phthalate_STD_100	0.51
4	4	Phthalate_STD_1000	0.51
5	5	ERM-EC591	0.51
6	6	Test_Sample	0.51
7	7	Test_Sample	0.51
8	8	Test_Sample	0.51
9	9	Test_Sample	0.51
10	10	Test_Sample	0.51

Easy to Operate Even for Novices

Tabular Display of Concentrations and Criteria Clarifies the Results.

The concentrations of target components detected in continuous measurements are displayed in a table and color-coded using criteria based on concentration ranges. The results for continuously measured test samples can be checked at a glance. Also, the system is equipped with accuracy control functions in order to ensure the reliability of blank concentrations, instrument sensitivity, and other data, so even novices can feel confident that they are reporting reliable measurement results.
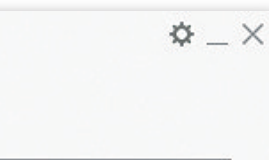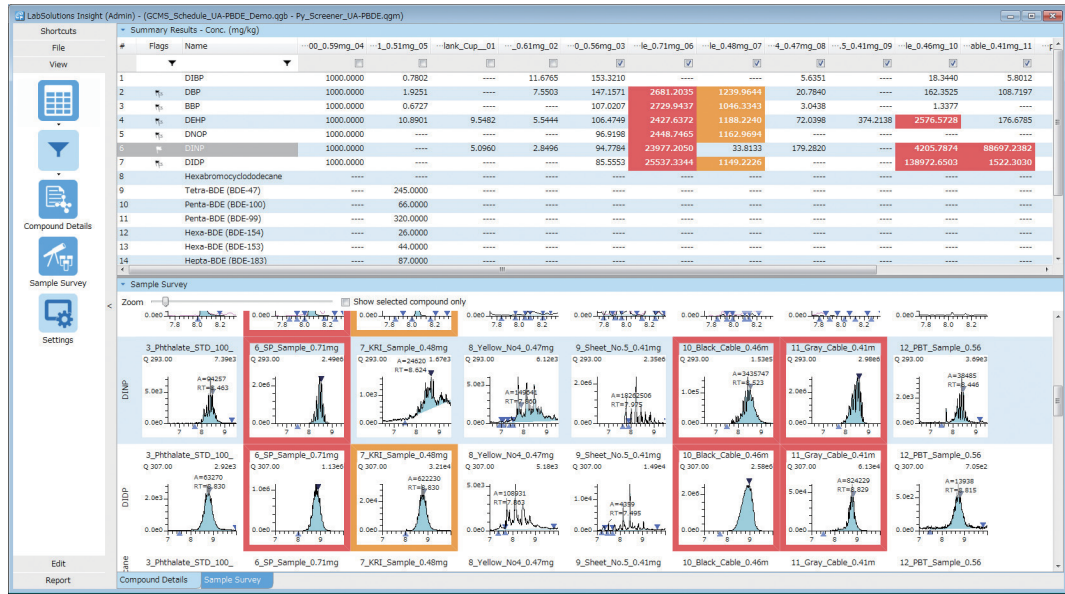

Data Processing

Maintenance

Py-Screener Software

The special software displayed on the monitor helps you navigate the required procedures.
Even novices can operate the system using the software.

Ample Maintenance Support

Maintenance Navigation Supports Long-Term Operation with Periodic Replacement Kits

Using the Maintenance Navigator, the procedures appropriate for pyrolyzer and GC-MS maintenance can be performed easily and confidently. Procedures for locating and resolving leaks are included, and kits with common replacement parts simplify maintenance and troubleshooting procedures.
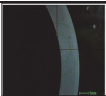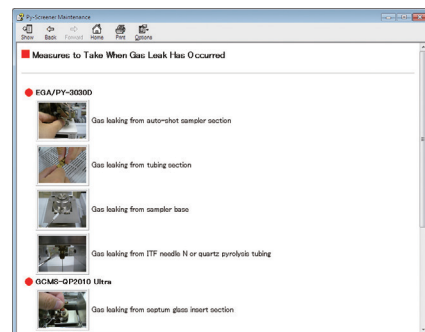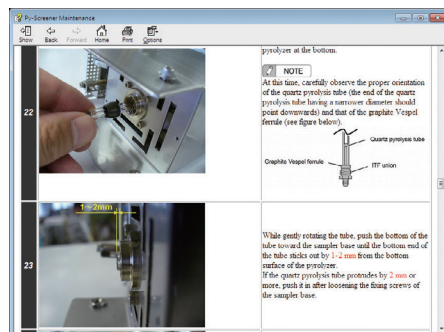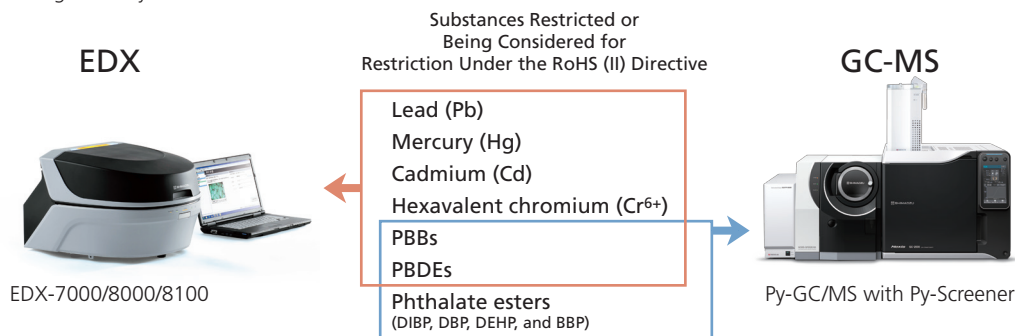

Maintenance Navigator Windows

A Total Solution Proposed by Shimadzu for the RoHS (II) Directive

This system can be applied to polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs), two types of brominated flame retardants already regulated under the RoHS (II) Directive.

In addition to this system, Shimadzu provides an Energy Dispersive X-ray (EDX) fluorescence spectrometer for inorganic compound screening and various other analytical systems for accurate quantitation. These systems provide a total solution for everything from screening to the accurate quantitation of substances already regulated under the RoHS (II) Directive, and substances for which regulation is anticipated. It is possible to create a report by integrating the inspection data obtained by EDX and GCMS, and since Shimadzu offers RoHS-compatible instruments, a comprehensive management system can be constructed.

EDX

Substances Restricted or Being Considered for Restriction Under the RoHS (II) Directive

GC-MS

Lead (Pb)
Mercury (Hg)
Cadmium (Cd)
Hexavalent chromium (Cr^{6+})
PBBs
PBDEs
Phthalate esters
(DIBP, DBP, DEHP, and BBP)

EDX-7000/8000/8100

Py-GC/MS with Py-Screener

EDX + GCMS Summary Report

EDX

	Result	Judgement
Date	2018/7/6	
Sample Name	PVC Ring	
Comment	Material Check 10mm	
Cd	ND	OK
Cr	ND	OK
Hg	ND	OK
Pb	2910.8	NG
Br	ND	OK

GCMS

	Result	Judgement
Date	2018/7/19 22:09	
Sample Name	PVC	
Comment		
DIBP	1.14449	OK
DBP	2.99665	OK
BBP	0.13659	OK
DEHP	9.20041	OK
DNOP	0.16339	OK
DINP		
DIDP		

Total Judgement

Judgement	NG
Comment	

Reports can be created by integrating the inspection data obtained by EDX and GCMS.

A comprehensive management system can be constructed by using Shimadzu's RoHS-compatible instruments.

Applicable Systems and Software

GC-MS : GCMS-QP2020 NX, GCMS-QP2020, GCMS-QP2010 Ultra
Pyrolyzer : EGA/PY-3030D multi-shot pyrolyzer
Autosampler : AS-1020E auto-shot sampler
GC/MS Workstation : GCMSsolution™ (Ver.4.30 or later, ver.4.50 or later for GCMS-QP2020 NX) + LabSolutions Insight™
Py Workstation : EGA-PY3030 program (Ver. 1.54 or later)

Caution
1. Note that there are no guarantees regarding the accuracy of the information contained in the method files, or the usefulness of the information obtained from the results of their use.
2. In order to accurately identify the registered substances, perform the measurements using the system conditions in the method files contained in the product.

Py-Screener, GCMS-QP, GCMSsolution and LabSolutions Insight are trademarks of Shimadzu Corporation.

SHIMADZU

Shimadzu Corporation

www.shimadzu.com/an/