

EDX-FTIR Contaminant Finder/Material Inspector

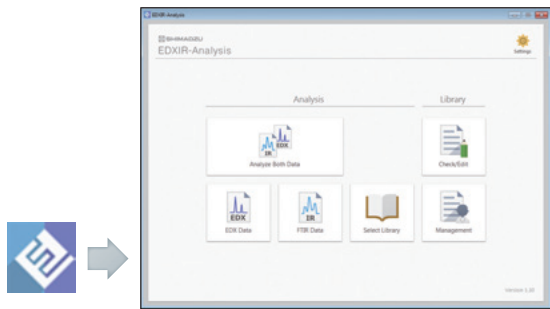
EDXIR-Analysis



EDXIR-Analysis software is specially designed to perform qualitative analysis using data acquired by an energy dispersive X-ray (EDX) fluorescence spectrometer and a Fourier transform infrared spectrophotometer (FTIR).

This software is used to perform an integrated analysis of data from FTIR, which is excellent at the identification and qualification of organic compounds, and from EDX, which is excellent at the elementary analysis of metals, inorganic compounds and other content. It then pursues identification results and the degree of matching. It can also be used to perform EDX or FTIR data analysis on its own.

The library used for data analysis (containing 485 data as standard) is original to Shimadzu, and was created through cooperation with water supply agencies and food manufacturers. Additional data can be registered to the library, as can image files and document files in PDF format. It is also effective for the linked storage of various types of data as electronic files.



■ Integrated Analysis of Contaminant Data and Data Comparisons for Confirmation Tests

To perform qualitative analysis automatically, simply click "Analyze Both Data" and select the EDX/FTIR data*1. This heightens the efficiency of data analysis and provides strong support for contaminant analysis.

In addition to a list of hits, the integrated data analysis results show EDX profiles and FTIR spectra found as hits from the library. If the user wishes to browse the respective data analysis results, they can be checked by clicking "Single".

In addition, with the data comparison function, which calculates the degree of matching between the actual measured data and the data registered in the library, the software can be used for countermeasures against "silent change"*2 and for other confirmation tests. Clicking the "Print" button prints the results in a fixed format and also saves them in Word format*3.

*1: Using the EDX profile, data are classified as inorganic, organic, and mixture. Integrated data analysis is performed by applying priority levels to each classification. (Patent pending)

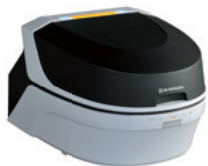
*2: A term used in Japan to indicate changes to materials by suppliers without the knowledge of the manufacturers.

*3: Microsoft Word must first be installed.

The examples here show an integrated analysis of black rubber contaminant data acquired and a data comparison for a polyvinyl chloride (PVC) examination object and the standard product.

From the integrated data analysis results, it is evident that the black rubber contaminant is acrylonitrile-butadiene rubber (NBR), which contains calcium carbonate and zinc stearate.

In addition, from the data comparison, the degree of matching between the PVC examination object and the standard product is 0.8506. Lead (Pb) and acrylic were detected from the EDX and FTIR data, which were not detected in the standard product. Accordingly, it is surmised that the examination object contains components different to those in the standard product.



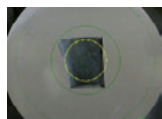
EDX Data



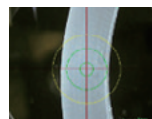
FTIR Data



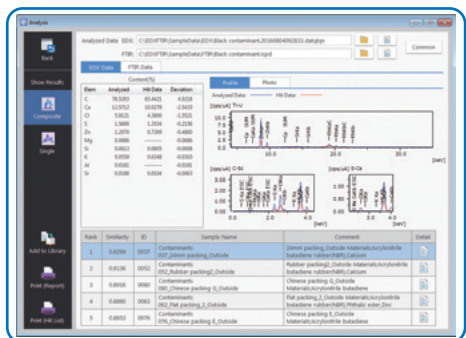
Loading the Acquired Data



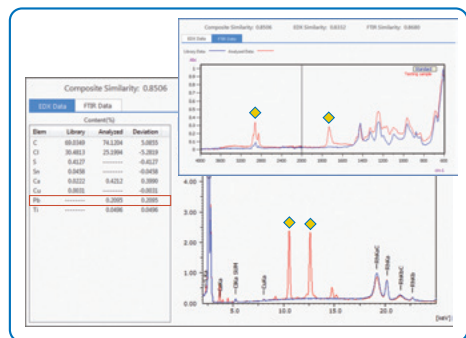
Integrated Data Analysis



Data Comparison



Integrated Data Analysis Results for a Black Rubber Contaminant

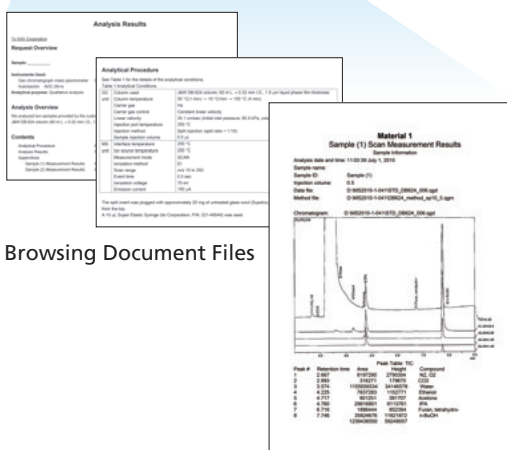
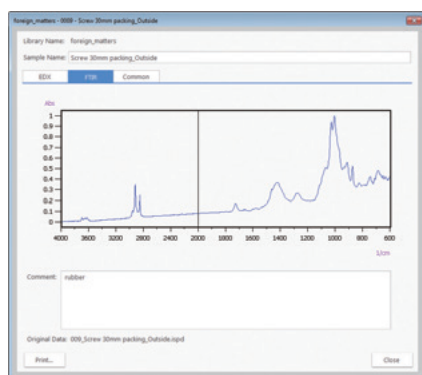
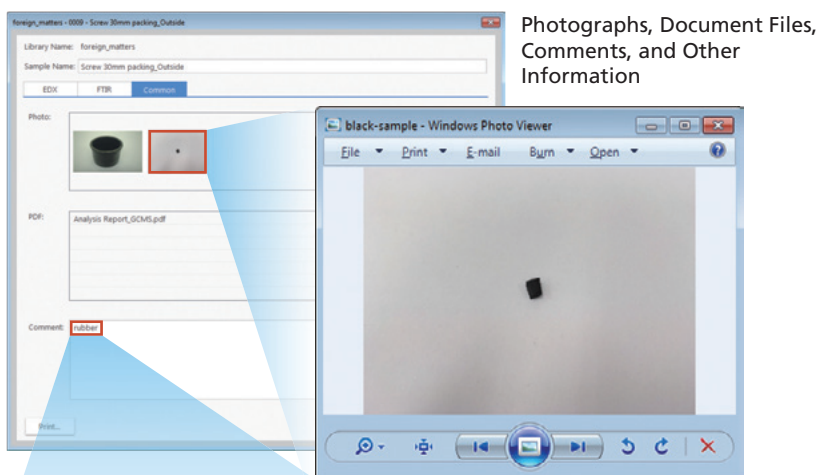
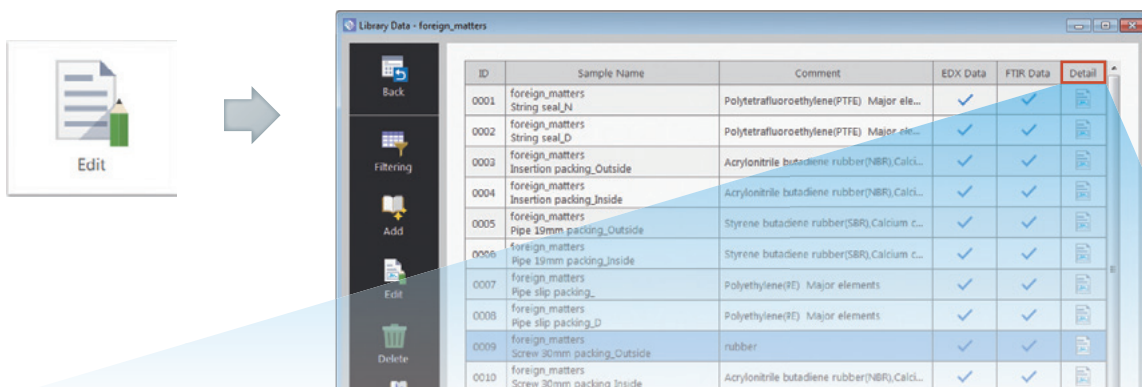


Data Comparison Results for a PVC Examination Object and the Standard Product

Data Browsing and the Registration, Editing, Deletion of Data, Images, Document Files

By clicking "Edit" and selecting an existing library, the data, images and documents registered in the selected library can be browsed. Data can be newly registered, edited and deleted. A new library can also be created.

In addition, if data for a sample were acquired by instruments other than EDX and FTIR instruments (such as a chromatograph, mass spectrometer, or surface observation system), it can be converted into PDF format and then registered, enabling linked storage to the EDX/FTIR data.



All Data Is Linked and Stored

■ Main Specifications

EDXIR-Analysis Software

Item	Conditions
Applicable Models	EDX: EDX-7000/8000 FTIR: Instruments that can be controlled by LabSolutions IR/IRsolution/AIMsolution
Operating System (OS)	Microsoft Windows 7 Professional 32/64-bit Microsoft Windows 10 Professional 64-bit
Profiles and Spectral Data Files That Can Be Loaded	EDX profiles (*.datqlqn) LabSolutions IR data files (*.ispd) IRsolution data files (*.smf) AIMsolution data files (*.apit) JCAMP data files (*.DX, *.JDX)
Other Files That Can Be Loaded	Bitmap files (*.bmp) PNG files (*.png) JPEG files (*.jpg) PDF files (*.pdf)
Number of Libraries That Can Be Created	Up to 100 libraries
Number of Libraries That Can Be Used in Searches	Up to 64 libraries
Number of Data That Can Be Registered in a Library	Up to 2,000 data

■ Example of the Data Contained in a Library

Name	Comment
Water Supply Related Contaminants	Pipe slip packing Pipe slip packing. Materials; Polyethylene(PE), Major elements; below 1%, Color; Black, Shape; Resin/Ring, Hardness; Hard, Metallic luster; No, Technique; ATR(Ge).
	Sealing tape Sealing tape. Materials; Polytetrafluoroethylene(PTFE), Major elements; F, Color; White, Shape; Film, Hardness; Soft, Metallic luster; No, Technique; ATR(Ge).
	Coating of inner wall_1 Coating of inner wall_1. Materials; Polystyrene(PS), Acrylic resin, Major elements; Cl, Color; Brown, Shape; Fragment, Hardness; Soft, Metallic luster; No, Technique; ATR(Ge).
	Mold Mold. Materials; Protein, Silicate, Major elements; below 1%, Color; Brown, Shape; Mold, Hardness; Soft, Metallic luster; No, Technique; ATR(Ge).
	Coating in pump_white Coating in pump_white. Materials; Polyamide(Nylon11), Titanium dioxide(TiO2), Major elements; Ti, Na, Color; White, Shape; Scraping, Hardness; Brittle, Metallic luster; No, Technique; ATR(Ge).
Food Related Contaminants	Piece of plant material Piece of plant material. Materials; Plant epidermis(Cellulose), Vegetable fat (Triacylglycerol), Major elements; Cl, Na, Color; Brown, Shape; Cluster, Hardness; Soft, Metallic luster; No, Technique; ATR(Ge).
	White hair White hair. Materials; Human hair(Protein), Major elements; S, Color; White, Shape; Fiber, Hardness; Soft, Metallic luster; No, Technique; ATR(Ge).
	Nail Nail. Materials; Nail (Keratin), Major elements; S, Color; White, Shape; Fragment, Hardness; Hard, Metallic luster; No, Technique; ATR(Ge).
	Bone particle_brown Bone particle_brown. Materials; Bone particle (Calcium phosphate, Protein), Major elements; Ca, P, Mg, Color; Brown, Shape; Stick, Hardness; Hard, Metallic luster; No, Technique; ATR(Ge).
	Staplor1 Staplor1. Materials; Zinc stearate (Surface contaminant), Major elements; Fe, P, Color; Black, Shape; Stick, Hardness; Hard, Metallic luster; Yes, Technique; ATR(Ge).
	Glass fragment Glass fragment. Materials; Glass (SiO2), Major elements; Pb, Si, K, Na, Zn, Color; Transparency, Shape; Cluster, Hardness; Hard, Metallic luster; No, Technique; ATR(Ge).
	Stainless steel_1 Stainless steel_1. Materials; Metal, Major elements; Fe, Cr, Ni, Mn, Color; Silver, Shape; Metal, Hardness; Hard, Metallic luster; Yes, Technique; ATR(Ge).



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