

RoHS E-NEWSLETTER

FOR THE WELL-BEING OF MANKIND & THE EARTH

Volume I / Issue I

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Perfomax Analytical, promoter & marketer of the range of Spectrometers from world renowned, M/s Shimadzu Corporation, Japan, wishes to thank all our customers for their trust & great support during our successful promotion of Shimadzu products since 2007.

With our experience in marketing Shimadzu instruments, we have succeeded in generating & expanding the market for Shimadzu's range of Spectrometers for various applications. We are proud to inform that for their EDXRF Spectrometer range, we have the maximum number of installations in India to comply with RoHS directive.

In last 3 years, we not only have installed maximum units but have also educated our customers for complying of in-demand EU Directives—WEEE, RoHS & ELV. To continue our efforts in this direction, we have decided RoHS as main topic in our first Newsletter. We hope, you will find it informative and useful.

We will be publishing such Newsletter periodically covering topics like, latest developments in instrumentation field, testing solutions to meet new demands, case studies, customers feedback etc. We hope our this initiative will help us reaching more closer to all of you.



Mr. Sanghvi of Polyblend presenting their efforts in complying RoHS at Pune Seminar



Active Participations at RoHS Seminar in Pune

Perfomax - Activities in the field of RoHS

We, Perfomax Analytical are actively sharing Shimadzu's expertise in our market through seminars, exhibitions, articles, advertisements, demonstrations and trainings.

Some of our recent activities are RoHS know-how seminar in Pune which was jointly organized with MCCIA, Pune and we had invited Mr. Chaudhari from Shimadzu, Singapore and Mr. Chari from Shimadzu, Delhi as speakers. The

event was well attended by local industries.

We had organized in-house RoHS seminars for Tata Motors, Videocon Industries, Pidilite Industries and Indian Institute of Packaging.

We participated in Automotive and Polymer exhibitions and demonstrated the instrument to comply RoHS directive.

We help customers in choosing the right instrument for their application by analyzing their samples at Shimadzu's state-of-the-art customer support centre in Mumbai.

A workshop on RoHS is planned on 25th September at Shimadzu's lab in Mumbai. The interested participants can write to us.



Mr. Chaudhari of Shimadzu, Singapore presenting RoHS in Pune seminar



RoHS training to the vendors of Videocon





Introduction of EU Directives: WEEE, RoHS, ELV



The European Union introduced WEEE, RoHS & ELV Directives with aim to reduce the use of hazardous substances in products which in turn minimize their adverse effect on human being and environment.

For example, products which are frequently used by human being, if contain hazardous elements, there are high risks of diseases like Cancer, Brain Fever, Kidney Failure etc. Similarly the hazardous elements can affect the environment after the products are disposed off.

As per the recent article in Times of India, the electronic waste (PC, Mobiles, appliances etc.) generated in Mumbai alone was over 11 Tonnes in year 2009. This doesn't include the waste generated by other products viz. Plastics & Automobiles. From this one can imagine the importance and immediate need to

control the use of hazardous substances in the products.

The EU took the first initiative and introduced these Directives:

- **WEEE:** Waste Electrical & Electronic Equipment. This promotes the reuse, recycling & recovery of waste from electrical & electronic equipment.

- **RoHS:** Restriction on use of Hazardous substances. This helps reducing the use of heavy elements by replacing with alternate nonhazardous chemicals.

- **ELV:** End-of-life Vehicle. This prevents generation of waste from automobile and promotes the reduction of waste through reuse or recycling of automobile and related parts.

The hazardous elements identified are **Cadmium (Cd), Lead (Pb), Mercury (Hg), Hexavalent Chromium (Cr6+), Bromine (PBB, PBDE).**

The maximum permissible limit for Cadmium is 0.01% (100ppm) while for others it is 0.1% (1000ppm).

These directives are also helping manufacturers by offering various options to replace the use of hazardous substances. At the same time, some of

the products are exempted from these regulations due to nonavailability of the alternate materials.

Today, China, Korea, Japan, California, Canada, Mexico, Argentina have followed EU and ensure the compliance. In fact, regulations defined by China and Korea are even more stringent than EU.

While exporting products to any of the above countries directly/indirectly, it is must to ensure that the products are complying with these directives, failing which, the exporter is liable to huge penalty and pay for cost towards disposing of the materials.

Considering the penalties involved and the loss of business during the interim period which the exporter has to suffer, all manufacturers/ exporters are seriously following these directives by using RoHS compliant raw materials and testing the same from initial to final stage of the production.

One of the recent examples is rejection of a huge order of toys from Mattel, China, when it was exported to USA, as it contained high amount of the Lead (Pb).

There are more directives in line, REACH, EN71 etc. applicable to different industries.

Testing Procedures for the Compliance

Considering the level of liabilities and amount of penalties in case the products exported fails the RoHS criteria, it has become important for the manufacturers to take extra precautions through testing of incoming materials, ingredients & final products either through commercial laboratory or by setting-up in-house testing facilities.

There are two techniques for the analysis —Screening & Precise. The screening is done by using EDXRF

followed by FTIR (if required) while Precise analysis is done by using AAS/ICP, GC-MS & UV Spectrophotometer.

The Precise technique needs lengthy sample preparation and skilled manpower. So, in general, manufacturing industries prefer doing easy, quick and almost sample preparation-free Screening analysis by procuring instrument like EDXRF for their Laboratory. They define a gray zone area, typically +/- 15% of the permissible limit, as pass & fail criteria.



- Below 15% : Passed
- Above 15% : Failed
- Within 15% Band - Rechecked by using precise techniques at commercial labs.

This works out faster and cheaper for the industries and at the same time they are assured that their products are totally free from hazardous substances.



EDXRF Preferred Tool for the Compliance

Energy Dispersive X-ray Spectrometer (EDXRF) is the most popular & preferred instrument in industries to test all Hazardous Elements as per Directives—WEEE, RoHS, ELV, En71.

Following are some of the advantages of this instrument:

- **Flexibility:** Solid, Powder, Liquid & Thin-film samples can be tested without sample preparation.
- **Convenience:** Analysis of all the elements within 100 seconds. It is a non-destructive technique and therefore samples are not damaged physically.
- **Capability:** High Xray Power of 50W, range of filters and high resolution Si (Li) detector ensure detection limits as low as 2ppm.
- **Easiness:** Sample Shape, Size, Form....no issue at all.
- **Attachments:** CCD Camera and Collimators are incorporated for precise spot analysis as small as 1mm. This is useful for testing of non-uniform or small sized samples.
- **Traceability:** The machine is calibrated by using Certified Reference Materials and Reference Materials for different type of samples ex. PVC, PE, Copper, Aluminium, Solder, Toys, Zinc, Ferrous etc. Meaning the results produced by EDXRF are accepted by third party agencies like ISO, NABL etc.
- **Reporting:** The analysis reports are printed in presentable reporting format with sample photo on the top. The analysis is highlighted with comments "OK", "NG" or "ND".

Added features:

- EDXRF can be used to analyse other elements as well from Aluminium(13) to Uranium(92) of the periodic table. During the analysis of hazardous elements, other elements present in the samples are also analysed and displayed within 100 seconds.



Table-Top
EDXRF
Spectrometer

- The software includes feature like, standardless analysis. So, even in case of non-availability of Standard Samples/known samples, the machine can identify the elements present and their approximate concentrations.
- It can measure multiple coating thickness as well as analysis of each coating accurately. One of the usefulness of this function is for determining the Chromium concentration in the coating because the EU directive limits the Chromium concentration in the coating.

Types of EDXRF:

Above all features belong to Table-top EDXRF machine while low cost handheld EDXRF machines are also available. Primarily it is meant for alloy identification in scrap. However, it is now also used for RoHS analysis. The main drawback of handheld EDXRF machine is poor resolution because of which its detection limits are quite high and hence it becomes difficult to judge pass/fail especially for samples which are near to the permissible limits. Also, many of the features of Table-top machines cannot be incorporated in handheld machine.

Usability: wide range of application notes are available for analysis of variety of materials by using EDXRF Spectrometer.

Some of the tips of selecting the best EDXRF:

- 1) Xay Power
- 2) Detector Resolution
- 3) CCD Camera & Collimator
- 4) Detection limits
- 5) List of calibrations
- 6) Standardless Calibration
- 7) Ease of operation
- 8) Suppliers experience
- 9) List of references.

Interesting Facts about Shimadzu EDXRF

We are proud to announce that we have installed the highest number of installations of 50W EDXRF Spectrometers in India. The interesting part is that our EDXRF are being successfully used for testing of variety of applications which makes Shimadzu model EDX-720 & EDX-GP....really versatile!!!

Some of the applications are—RoHS, Ornaments, Ceramics, Packaging Films, Ink, Toys, Plastics, Environment, Lead & Zinc Powders, Bentonite & Bauxite, Rare-Earth materials, Ferro

Alloys, Aluminium Master Alloys, Automobile, Forensic, Electrical & Electronics, Zips, Commercial Lab etc.

The list of users include, Maruti Suzuki, Tata Motors, Sterlite, Jindal, Minex Metallurgical, Videocon, Samsung, Denso, IIP, Polyblend, Elca Lab, Jyoti Ceramics, Pidilite, Hero Honda, Panasonic etc.

The specifications and features are all top-of-the-lines and there is no compromise.

EDX-GP : The Easiest Tool for RoHS analysis

The system has unique feature of automatic recognition of type of sample and then analyzing it with the most suitable calibration. So, user has to just put the sample and press "start". Rest all is done by the machine. Please contact us for the live demonstration.



Optical Emission Spectrometer (OES)



X-ray Radiography System



Energy Dispersive X-ray Spectrometer (EDXRF)



Material Characterization Systems - ESCA, AFM, XRD

Case Study

Polyblend Color Concentrate

We express our sincere thanks to Mr. Viren Sanghvi-Director of M/s Polyblend Color Concentrate for his interesting presentation during our RoHS seminar at Pune.

Polyblend with a vision "To become THE finest global plastic company", is the first manufacturer of plastics in India to have exclusive manufacturing & testing setup in Daman, Gujarat for Heavy Metal Free (HMF) products.

We had requested Mr. Sanghvi to share their various initiatives to comply with RoHS.

Some of the highlights:

- A separate production facility "GREEN AREA" with machines dedicated for RoHS compliant products
- Vendors are approved after confirming their raw materials against specific standards.
- All incoming raw materials are verified by using Shimadzu EDXRF
- Quick online inspection at every stage...again by Shimadzu EDXRF
- Special Green bags for storage with RoHS compliant mark

- Dedicated storage place to store raw materials and final products to avoid contaminations
- Periodical training to workers
- Workers are allocated dress with Green Stripes
- Educational display boards in "GREENAREA"
- A dedicated green color job cards
- Exclusive report format for RoHS compliant products

Today, they are manufacturing & exporting more than 70 different shades of plastic raw materials which conform to WEEE, RoHS, ELV, EN71-Part III & Halogenfree directives.

We sincerely appreciate Polyblend's initiatives in this field which ensures the best quality and environment friendly GREEN products. We are proud that our EDXRF is used in their exclusive facility.



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