IDENTIFICATION OF **RUBBER**

ISO 4650:2005
GOST 28665-90

INTRODUCTION

Rubber is a material that is widely used in all kinds of human activity. Rubber properties are modified by addition of chemical substances and ingredients causing physical and chemical modifications. The ingredients modify rubber hardness, durability and impact strength; increase its resistance to wearing, oils, oxygen, solvents, heat, and cracking, which makes rubber more suitable for the use in various application areas.

The infrared spectroscopy methods provide identification of rubber and other polymers and their mixtures basing on examination of spectra of the polymers and their pyrolysis products and films cast from solutions, as every type of rubber has its unique spectral properties.

The obtained spectral data may be used for a variety of applications, including identifying unlabeled material, process control, raw material acceptance, etc.

EQUIPMENT AND REAGENTS USED FOR ANALYSIS

The following equipment and reagents are used for the analysis:

- Fourier-Transform IR spectrometer InfraLUM® FT-08 (with software);
- Cell or ATR accessory;
- Personal computer.

ADVANTAGES OF InfraLUM® FT-08 SPECTROMETERS

- Easy to operate
- High selectivity
- Spectrum scanning takes just one minute
- No sample pretreatment needed
- A wide range of accessories may be used for analysis

MEASUREMENT METHOD

In accordance with the method procedure, the sample is prepared from an extracted and dried rubber either as a pyrolysis product or a film deposited from solution by evaporation.

The sample deposited on a salt substrate is placed into a cell, and then infrared spectrum is recorded at wavelengths from 2.5 to 15 μm (4000–667 cm^{-1}) at 4 cm^{-1} resolution and scanning time of 60 s.

EXAMPLE OF ANALYSIS OF A REAL SAMPLE

Screenshot of the absorption spectrum of carboxy-polystyrene rubber registered with a resolution of 4 cm^{-1} and scanning time of 60 s.

The identification procedure of the analysed sample is automated due to the software capabilities of the library module and the use of specific libraries of rubber spectra.
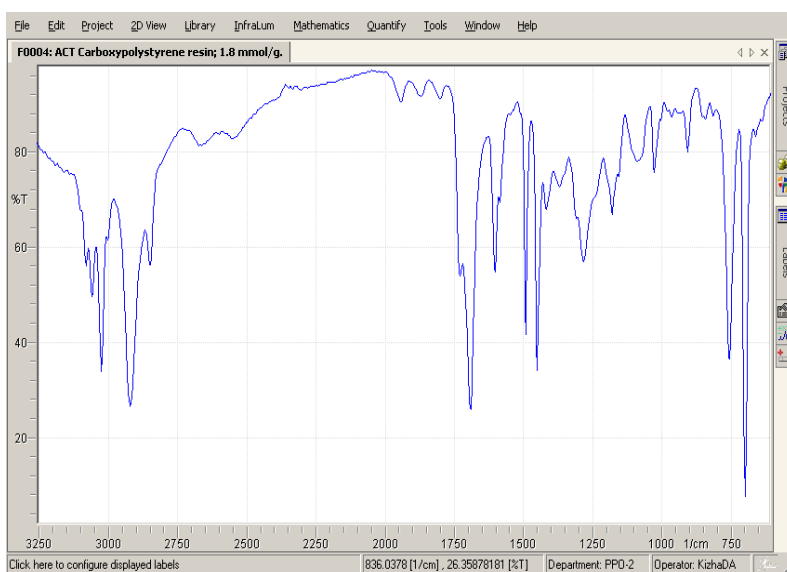
The information in this leaflet is supplemental.

To get more specific information on this method, please contact the developer of this application Lumex Ltd.

12AE10.01.09-1