

Fourier Transform Infrared Spectroscopy in Forensic Tape Examinations



WHAT IS AN AAFS STANDARD FACTSHEET?

The AAFS produces clear, concise, and easy-to-understand factsheets to summarize the contents of technical and professional forensic science standards on the OSAC Registry. They are not intended to provide an interpretation for any portion of a published standard.

WHAT IS THE PURPOSE OF THIS STANDARD?

Infrared spectroscopy is a method for determining the chemical characterization of materials. This can be applied to the forensic analysis of pressure sensitive tapes to determine the major organic and inorganic components.

This guide provides basic recommendations and information about the use of an infrared spectrometer and various associated accessories for the identification and comparison of pressure-sensitive tapes.

This guide emphasizes sampling techniques for the analysis of pressure sensitive tapes to provide data useful for classification, comparison and interpretation.

WHY IS THIS STANDARD IMPORTANT? WHAT ARE ITS BENEFITS?

This guide discusses the various configurations for infrared spectral data collection and considerations for selecting a setup based on the samples to be analyze

This guide provides a systematic approach to the molecular characterization of tapes by infrared spectroscopy.

This guide comments on the limits of infrared spectral interpretation and considerations for comparing infrared spectra in a forensic context. In such instances, spectra are evaluated for the presence of meaningful differences.



HOW IS THIS STANDARD USED, AND WHAT ARE THE KEY ELEMENTS?

This guide provides guidance for applying infrared spectroscopy in the analysis of tape backings and adhesives for forensic purposes.

This guide is written with the assumption that the analyst has a basic knowledge of the theory of infrared spectroscopy and is proficient with its use.

Recommendations for selecting an instrument configuration dependent upon sample size and basic advantages afforded by different setups are presented in this guide.

Tape components can contain backing, adhesive, release coating and fiber reinforcement. Infrared spectroscopy data can be used in the classification of tape components. It may be required or desirable to use additional analytical techniques in the analytical scheme (see [ANSI/ASTM E3260-21](#)).

A multitude of references concerning the use of infrared spectroscopy as well as spectral interpretation and comparison for pressure sensitive tapes are provided in the bibliography of this standard.

