Formulate with a clear vision.

Eastman plasticizer analytical capabilities

Switching to a new plasticizer can be a challenge. That's why brands and formulators rely on our experienced technical support staff to address emerging market demands and regulatory requirements. Eastman plasticizers offer a broad range of analytical capabilities to help you maintain or improve performance. In addition to the plasticizer and PVC-specific techniques listed here, customers have access to classical wet methods (pH measurement, acid/base titrations, Karl-Fischer moisture analysis) and standard spectroscopic methods, such as NMR and IR.

Thermal methods

Differential scanning calorimetry (DSC)—Gives insight into the degree of fusion. In similar samples, it can determine if one sample is fused more/less than another.

Dynamic mechanical analysis (DMA)—Useful for the study of viscoelastic behavior of polymers as a function of temperature

Thermogravimetric analysis (TGA)—Useful for assessing physical and chemical properties of materials as a function of increasing temperature

Compositional analysis

Ash—Gravimetric determination of inorganic content after removal of organic components by thermal destruction

Evolved gas analysis/mass spectrometry—Useful for comparing chlorine content. It has been used to identify situations where excessive PVC degradation has occurred.

Gas chromatography/mass spectrometry—Allows identification and quantification of specific molecules. Coupled with extraction, it is used to identify components of a formulation.

Liquid-solid extraction—Allows separation of most, if not all, components of a given formulation. Enables identification of plasticizers and other organic additives by other techniques. Useful for determining the presence of ESO, filler, and some stabilizers. It is an adaptation of ASTM D8133 and D7823.

Pyrolysis-gas chromatography/mass spectrometry—Determination of identity/chemical composition of polymers

Scanning electron microscopy/electron dispersive spectroscopy—Allows for high magnification analysis of defects in PVC substrates. EDS can identify metals, chlorine, and other atoms.

Rheology

Brookfield viscosity—Standard rotational viscometry

Parallel-plate rheometry—Viscosity vs. shear rate/temperature, fusion temperature, gel point

Severs extrusion rheometry—Higher shear regime testing of plastisol viscosity

Torque rheometry—Fusion temperature, gel point, dry time

Mechanical and physical properties

ASTM D4060—Standard test method for resistance of transparent plastics to surface abrasion

ASTM D1912—Standard test method for cold-crack resistance and brittleness of upholstery leather

ASTM D3291—Standard practice for compatibility of plasticizers in poly(vinyl chloride) plastics under compression

ASTM D412—Standard test method for vulcanized rubber and thermoplastic elastomers—tension

ASTM D4329—Standard practice for accelerated aging measurements in fluorescent ultraviolet (UV) lamp apparatus exposure of plastics

ASTM D5185—Standard test method for multielement determination of used and unused lubricating oils and base oils by inductively coupled plasma atomic emission spectrometry (ICP-AES)

ASTM D624—Standard test method for tear strength of conventional vulcanized rubber and thermoplastic elastomers

EPA Method 24—Determination of volatile matter content, water content, density, volume solids, and weight solids of surface coatings

VDA 278—Thermal desorption analysis of organic emissions for the characterization of nonmetallic materials for automobiles

For more information, visit EastmanPlasticizers.com.

EASTMAN

The results of **insight**™

Eastman Corporate Headquarters
P.O. Box 431
Kingsport, TN 37662-5280 U.S.A.

U.S.A. and Canada, 800-EASTMAN (800-327-8626)
Other Locations, +(1) 423-229-2000

www.eastman.com/locations

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