

# Resorbable Polymers

From bones to blood vessels, bioabsorbable (resorbable) polymers offer significant advantages to medical science and patients alike. They hydrolyze and are absorbed by the body. Stringent testing is required to ensure patient safety.

## Wet Chemistry

Dilute Solution Viscosity

- Intrinsic
- Inherent

Titrations

- Carboxylic Acid End Group
- Hydroxyl End Group
- Karl Fischer

**Examples of resorbable materials we have tested:**

**Drug Delivery Systems**

**Plates**

**Regenerative Medicine Devices**

**Screws**

**Stents**

**Sutures**

**Tissue Scaffolds**

## Spectroscopy

Scanning Electron Microscopy with Energy

Dispersive Spectroscopy (SEM-EDS)

Fourier Transform Infrared Spectroscopy (FTIR)

Inductively Coupled Plasma with Optical Emission Spectrometry (ICP-OES)

- Heavy Metals
- Tin

Nuclear Magnetic Resonance Spectroscopy (NMR)

- Carbon
- Proton

UV-Visible Spectroscopy (UV-VIS)

X-Ray Fluorescence Spectroscopy (XRF)

**We are also able to develop and validate customized methods.**

## Physical

Aging/Degradation

Density

*in Vitro* Aging

Mechanical Testing

Shelf Life/Stability

## Chromatography

Degradant Analysis

Extractables and Leachables

Gas Chromatography with Mass Spectrometry (GC-MS) or with Flame Ionization Detection (GC-FID)

- Residual Monomer
- Residual Solvent

Gel Permeation Chromatography (GPC) - Size Exclusion Chromatography (SEC)

- Absolute Molecular Weight
- Relative Molecular Weight

Liquid Chromatography with Mass Spectrometry (LC-MS)

**cGMP audit reporting is available for most methods.**

## Thermal

Sulfated Ash

Differential Scanning Calorimetry (DSC)

- $T_g$
- $T_m$

• Crystallinity

Thermogravimetric Analysis (TGA)

**We have a variety of characterization and release testing methods in place for a variety of resorbable polymers and copolymers.**