



Extractables and Leachables Testing

Chemical characterization is the first step in the workflow used to establish the biological safety of medical devices, as required by ISO 10993.

Many compounds are intentionally added during the manufacture of a device, including colorants, plasticizers, impact modifiers, and processing aids. Others may be picked up inadvertently during processing or result from a degradation reaction during sterilization or storage.

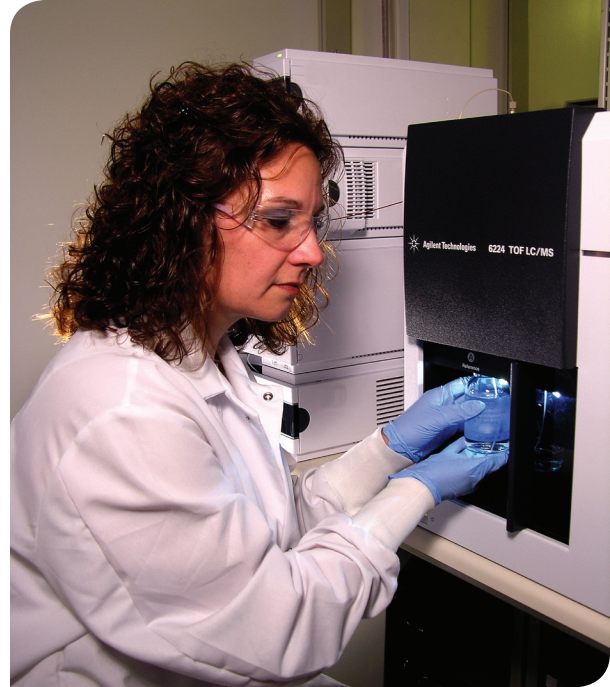
Extractables and Leachables (E&L) testing is performed to determine what chemical compounds are in your medical device, that could raise potential toxicity concerns.

Eurofins Medical Device Testing has 30 years of experience in chemical characterization of medical devices, with 50 scientists making up our E&L team. Our state-of-the-art laboratories are equipped with over 500 HPLCs and GCs to accurately identify what compounds may leach from your product during use. Our team of experts will help guide you through the selection of appropriate solvents and extraction conditions when designing a test protocol.

Choose Eurofins Medical Device Testing to help you:

- Determine the most relevant testing conditions for your product and write your protocol
- Execute your study within a GMP/GLP/ISO 17025 compliant quality system
- Identify extractable compounds using our proprietary spectral database of over 1,500 non-volatile compounds
- Assess the toxicological risk of identified compounds according to ISO 10993-17 and provide a report that is ready for regulatory submission

Important phases in your product development



lifecycle that may require E&L assessments include:

- Developing new product design concepts
- Performing verification testing for your design history file
- Changing raw material suppliers
- Implementing design or manufacturing process changes

Testing Available

Our extractables studies can be designed per guidances such as ISO 10993 Part 18, USP <1663> and <1664>, as well as FDA/CDRH, EMEA and PQRI documents.

- Validation in compliance with ISO 10993-18
- Extraction Techniques:
 - Reflux
 - Soxhlet
 - Sonication
 - Incubation in controlled temperature conditions
 - Agitation in controlled temperature conditions



Testing Available (cont.)

- Analysis Techniques:
 - Fingerprinting by GC-FID/MS
 - Semi-quantitative screening for both volatile and semi-volatile organic compounds by GC/MS and GC/MS Headspace
 - Semi-quantitative screening for non-volatile organic compounds by LC/MS
 - Quantitative analysis for metals by ICP/OES or ICP/MS
 - Gravimetric determination of extractables
 - TOC
 - pH
 - Conductivity
- Method establishment for novel extraction matrices
- Toxicological risk assessment

Instrumentation

- Agilent LC/MS TOF and QTOF
- Agilent/Waters HPLC/UHPLC – including UV/Vis, RI, Fluorescence, ELSD, CAD, and Conductivity detectors
- Agilent GC/MS – both headspace and direct injection sample introduction
- Agilent GC/FID/TCD – both headspace and direct injection sample introduction
- Agilent ICP/MS and ICP/OES
- Thermo Scientific iCAP ICP-OES
- Perkin Elmer ICP-OES
- Bruker Avance 3 (500 MHz) Liquid NMR
- Bruker Avance 3 (400 MHz) Liquid NMR