



Analytical Services

Rubber Consultants provides an analytical testing service for all aspects of the rubber, plastic and polymer industries. Analysis is one of the major tools for successful problem solving and trouble shooting, especially when conducted by experts with the experience to interpret the results. The techniques can also be applied to the determination of trace chemicals to ensure safety and environmental standards are met. The laboratories of Rubber Consultants analytical facilities are fully equipped with a wide range of instruments and fully experienced staff.

Rubber Consultants can help if you have an unacceptable reject rate during manufacture or inexplicable failures during service. We can help if the competition is making better or cheaper products than you are, if you want certification of compliance with legislative controls or analytical data to show compliance or if you can think of a problem that you would rather be without.

Rubber Consultants' analytical services are used extensively by polymer suppliers, suppliers of processing chemicals and various fillers, producers of all types of elastomeric products, users of elastomeric products and the pharmaceutical industry.

Main Areas of Expertise

- Formulation analysis
- Specification certification
- Compliance with health and safety legislation
- Surface morphology and defects
- Contamination investigation
- Polymer blend analysis
- Latex enquiries
- Raw rubber analysis
- Pharmaceutical analysis

Instrumental Techniques Available

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| • Spectroscopy | FTIR, FTIR-ATR, P-IR, UV, NMR |
| • Chromatography | GC-FID, GC-MS, GC-NPD, GC-TEA, TLC, HPLC, GPC, IC, LC-MS, GC-HID |
| • Thermal analysis | TGA, TGIR, DSC |
| • Microscopy | light, SEM, STEM, TEM, AFM |
| • Elemental | SEM- EDX, ICP |

Pharmaceutical Analyses

Speciality Pharma analyses in line with GMP (Good Manufacturing Practice) include:

- Method validation
- Leachables testing
- Extractables from rubber and plastic components
- Nitrosamines to CEN, FDA and BgVV / Bfr Standards
- PNA (or PAH) testing
- ACN monomer testing
- Formaldehyde (HCHO) analysis

Typical Areas of Work

- Reject testing; analysis of blooms or general surface analysis for defects
- Confirming that a product meets a purchasing specification
- Explaining why a product has failed in service - failure analysis, root cause analysis
- Assessing the impact of environmental legislation on a product including, if required, compliance testing and certification of compliance with a requirement or Standard
- Method development for regulatory bodies - method validation and validation report.

Analytical Services

The following is a list of typical areas of application in which we have experience:

Latex:

- Polymer identification, polymer blend identification
- Particle size and particle distribution
- Trace metal levels
- Residual processing chemicals
- Adventitious contamination - particulate or chemical
- Nitrosamines and nitrosatable amines to BgVV / BfR requirements
- Extractable protein by modified Lowry to ASTM or CEN Standards

Raw Rubber:

- Specification analyses
- Bale wrapping polymer identification, thickness and melting profile (virgin or reclaimed)
- Polymer identification, qualitative/quantitative blend analysis

Differentiation between:

- Natural and synthetic polyisoprene
- Natural rubber/epoxidised natural rubber blends and homopolymers of various epoxide levels
- High and low vinyl styrene butadiene copolymers (SBR)
- Low styrene SBR and blends of SBR with polybutadiene (BR)
- Block copolymers and random copolymers (SBS vs SBR)

Thermoplastics (as above, and in addition):

- Filler loading, qualitative and quantitative identification
- Carbon black type and loading
- Plasticiser testing - loading and identification

Vulcanisates (or compounded rubbers as appropriate, as above, and in addition):

- Homogeneity of mixing on the macro and micro scale
- Curing ingredients (or residues) - identification and quantification
- Sulphur levels
- Recoverable protective agents - identification and quantification
- Nitrosamines (CEN, BgVV and FDA) and nitrosatable amines (CEN, BgVV)
- Crosslink densities in individual components of blends
- Wax characterisation in terms of paraffin profile
- Guidance on legislation affecting rubber compounding and manufacture, for example in nitrosamine testing and latex protein content

Most methods are accredited by UKAS (United Kingdom Accreditation Service).

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