



Vaccine Analysis

Anton Paar develops and provides solutions for vaccine development, formulation, and quality control, including the analysis of active agents, excipients, and final product formulations.



The Safest Way: Solutions for R&D and Quality Control of Vaccines

Vaccines are one of modern medicine's great success stories, from smallpox to SARS-CoV-2. They must be carefully developed and equally thoroughly analyzed at every step of the formulation and production process.

VACCINE SAFETY, COMPLIANCE, AND DOSAGE CONSISTENCY

- ✓ Identification, purity, and concentration checks of vaccines components
- ✓ Key parameters for R&D, production, quality control, and batch release
- ✓ Turbidity as indicator for contamination

Instruments used: density meter, refractometer, polarimeter, turbidity meter, multiparameter measurement combinations

VACCINE STABILITY

- ✓ Vaccine particle size and surface charge
- ✓ Characterization of vaccine-adjuvant complexes
- ✓ Influence of variable environment conditions on product stability
- ✓ Protein aggregation and effect on liquid properties

Instruments used: particle size analyzer (DLS & ELS), rolling-ball viscometer

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INJECTABILITY

- ✓ Viscosity formulation ensuring ease of injection
- ✓ Effects of shear forces on vaccine behavior, properties, and stability

Instruments used: rolling-ball viscometer, rotational viscometer, rheometer, density meter

MRNA/LIPOSOME-BASED VACCINES

- ✓ Integrity and aggregation behavior of lipid nanoparticles
- ✓ Formation and stability analysis of liposomes
- ✓ Studying the internal structure of liposome systems

Instruments used: rolling-ball viscometer, particle size analyzer (DLS & ELS), SAXS analyzer

DATA INTEGRITY FOLLOWING ALCOA+ PRINCIPLES

- ✓ Software for data integrity and management
- ✓ Remote data access, review, and compliant electronic signature
- ✓ Complete audit trail of measurements and metadata

Instruments used: AP Connect lab execution software – Pharma edition