Research Grade

RAININ
Pipetting 360°

CERTIFICATE
OF QUALITY

Rainin Research Grade pipette tips are certified to be free of RNase, DNase, DNA, Pyrogens and ATP based on the testing specifications listed below.

Contaminants tested	Testing Detection Level
RNase	≤ 5 x 10^{-7} Kunitz units/µL
DNase	≤ 5 x 10^{-5} Kunitz units/µL
DNA	< 20 pg human DNA
Endotoxin (e.g., pyrogen)	≤ 0.01 EU/mL
ATP	< 3 x 10^{-12} mg/µL

CERTIFIED BY **ECHO YANG**
Quality Manager

Testing Procedures

RNase testing protocol
Products were rinsed in DNase-, RNase-free 0.1 µm filtered distilled water, then product extracts were exposed to an RNA standard in a fixed volume of buffer. The RNA standard was incubated at 37°C for 1 hour. RNA fluorescence was measured using an RNA fluorescent dye and evaluated for degradation.

DNase testing protocol
Products were rinsed in DNase-, RNase-free 0.1 µm filtered distilled water, then product extracts were exposed to an DNA standard in a fixed volume of buffer. The DNA standard was incubated at 37°C for 1 hour. DNA fluorescence was measured using an DNA fluorescent dye and evaluated for degradation.

DNA testing protocol
Quantitative PCR (qPCR) was used in the following fashion: A BioRad CFX96 system was used to detect amplification in 20 µL reaction volumes containing negative controls, positive controls, varying concentrations of stock DNA (human or bacterial) and tip eluate. Final primer concentration is 200-300 nM. Both human and bacterial primer sets for conserved sequences were used, and are as follows:

Human primers: Forward: 5′-TGAATGGGAGAAGGCAGAAG
Reverse: 5′-TATCCACCGGGTGTTTTCTC

Bacterial primers: Forward: 5′-CAAGGCTAAATACTCCTGAC
Reverse: 5′-CACTCCCCTCGCCGGGGTTC

Endotoxin testing protocol
Products are extracted in endotoxin-free LAL reagent water for 1 hour, then product extracts are tested by kinetic assay. The test is performed by adding LAL to the negative control, Control Standard Endotoxin, positive control and product extracts. After a fixed incubation period, the reaction mixture is measured. The sensitivity of the kinetic assay is 0.001 EU/mL.

ATP tested by the following protocol
ATP is tested by measuring the difference between baseline and product-rinsed luminescence of an ATP standard solution containing 10^{-11} moles of ATP. Perturbations in light emission of a product-rinsed ATP standard solution are evaluated to determine the presence or absence of ATP.

Sterilized product
Rainin Research Grade tip products labeled as "sterilized" are irradiated by e-beam radiation (SAL=10^{-6}). The dosage level has been predetermined by bioburden testing.

Limitation of Liability
Mettler-Toledo Rainin, LLC's entire liability with respect to this product is limited to the price of the product. In no event shall Mettler-Toledo Rainin, LLC, its agents or its employees be liable for direct, indirect, special, consequential or incidental damages arising out of the use of, or inability to use, this product or arising out of any defect in the product, even if Mettler-Toledo Rainin has advised of the possibility of such damages. BioRad is a trademark of BioRad Laboratories, Inc. Rainin is a registered trademark of Mettler-Toledo Rainin, LLC.

METTLER TOLEDO