Quick Reference Guide

QuenchGone21™ Industrial Test Kit

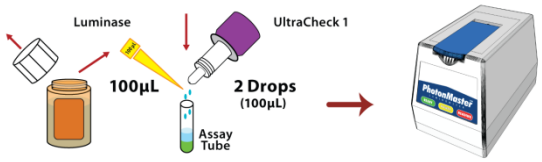
Product #: QG21I-50 / QG21It-100

NOTE: Please refer to Test Kit Instructions during first product use and for additional details including legal statements.

ISO 9001

Step 1 - UltraCheck™ 1 Calibration

Perform one UltraCheck 1 calibration per day or per each set of samples analyzed.



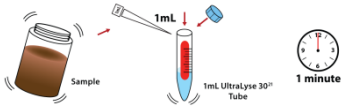
NOTE: If $RLU_{ATP1} \leq 5{,}000$ using a PhotonMaster or Lumitester C-110, rehydrate a new bottle of Luminase for maximum sensitivity.

Step 2 –Total ATP (tATP™) Analysis (1 per sample)

Included in QG21I™ and QG21It™ test kits.

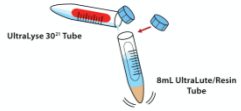
2.1 – EXTRACTION

Add sample to extract ATP.



2.2 – DILUTION

Dilute out interferences.



2.3 – ASSAY

Measure ATP concentration.

NOTE: If $RLU_{tATP} \leq 10$ using a PhotonMaster or Lumitester C-110, you are below the low- detection limit.

NOTE: If $RLU_{tATP} \leq 50$ using a PhotonMaster or Lumitester C-110, consider accounting for background (RLU_{bg}). See Test Kit Instructions for guidance.

Total ATP (tATP) Calculation:

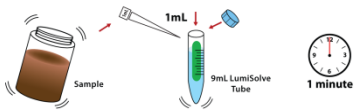
$$tATP\,(pg\ ATP/mL) = \frac{RLU_{tATP}}{RLU_{ATP1}} \times 10{,}000\,(pg\ ATP/mL)$$

Step 3 – Dissolved ATP (dATP™) Analysis (1 per sample)

Included in QG21I™ test kit only.

3.1 – DILUTION

Add sample to recover ATP.



3.2 – ASSAY

Measure ATP concentration.

NOTE: If $RLU_{dATP} \leq 10$ using a PhotonMaster or Lumitester C-110, you are below the low- detection limit.

NOTE: If $RLU_{dATP} \leq 50$ using a PhotonMaster or Lumitester C-110, consider accounting for background (RLU_{bg}). See Test Kit Instructions for guidance.

Dissolved ATP (dATP) Calculation:

$$dATP\,(pg\ ATP/mL) = \frac{RLU_{dATP}}{RLU_{ATP1}} \times 10{,}000\,(pg\ ATP/mL)$$

Calculations

NOTE: When using the QG21I tATP – only kit, skip final calculations and interpret tATP results as you would cATP results using the Interpretation Guidelines.

NOTE: If the results show for a given sample that dATP (ng/mL) > tATP (ng/mL), report cATP™ = 0 and BSI™ = 100%

Cellular ATP (cATP) Calculation:

$$cATP\left(\frac{ng\ ATP}{mL}\right) = tATP\left(\frac{ng\ ATP}{mL}\right) - dATP\left(\frac{ng\ ATP}{mL}\right)$$

Microbial Equivalent (ME/mL):

$$cATP\left(\frac{ME}{mL}\right) = cATP\,(pg\ ATP/mL) \times \frac{1\ ME}{0.001\ pg\ ATP}$$

NOTE: 1 ME (Microbial Equivalent) assumes 0.001 pg (1 fg) ATP per cell.

Biomass Stress Index (BSI) Calculation:

$$BSI\ (\%) = \frac{dATP\,(pg\ ATP/mL)}{tATP\,(pg\ ATP/mL)} \times 100\%$$

Interpretations Guidelines

Application	Good Control (pg cATP/mL)	Preventative Action (pg cATP/mL)	Corrective Action (pg cATP/mL)
Treated Process Water (Cooling, Bottom Water, Oilfield Non-Oxidizing Biocides or Non-Chemical Treatment	< 100	100 to 1,000	> 1,000
Papermaking Product Quality (Newsprint, Fine papers)	< 1,000	1,000 to 10,000	> 10,000
Papermaking Odor Control (Paperboard, Recycle Water)	< 10,000	10,000 to 100,000	> 100,000

For BSI (when applicable), it can generally be interpreted that good control is achieved at levels of 75% or above. Preventive action should be taken at levels between 50% and 75%, and corrective action should be taken at levels below 50%.

NOTE: Interpretation Guidelines provided for general guidance. For best results, establish your own baseline and control levels.

Date Modified: 5-Apr-13