# Method 12 - Essential and Non-Essential Water

**Sample Weight: 2.5 g**

## Summary

Essential water is determined by drying the sample for 1 hour at 105±5°C to remove H2O (hydroscopic water). Then the sample is heated at 950°C by using a tube furnace. The H2O+ expelled from the sample is absorbed by magnesium perchlorate. The gain in weight of the perchlorate is used to calculate the amount of combined water in the sample.

Non-essential water is determined by drying the sample for 2 hours at 105 ±5°C. From the loss in weight, non-essential water, in percent, is calculated.

## Method 12 Reporting Limits

|  |  |  |
| --- | --- | --- |
| Element | Concentration (low) | Concentration (high) |
| H2O+ | 0.1% | 20% |
| H2O- | 0.1% | 10% |

## Analytical Performance

Data will be deemed acceptable if recovery of Essential and Non-Essential water is ±15% at five times the LOD and the calculated percent RSD of duplicate samples is no greater than 15%.