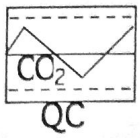

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Certificate of Analysis

Titration acid for alkalinity measurements

(BATCH A10 – Bottled July 21, 2017)

This material consists of an aqueous solution of hydrochloric acid (~0.1 mol kg^{-1}) in a sodium chloride background (~0.6 mol kg^{-1}).

Analysis Results

The procedures used for these analyses are detailed overleaf.

Hydrochloric acid concentration 0.100 215 ± 0.000 006 mol kg^{-1} (8; 4)

The precision given here is the standard deviation of the analyses of this batch of acid. Figures in parentheses are the number of analyses made (total number of analyses; number of separate bottles analyzed).

The overall uncertainty (expressed as a standard deviation) is believed to be less than 0.000 020, *i.e.* a relative uncertainty of about 0.02%.

The density of this acid was measured at 4 temperatures (15, 20, 25, 30 °C) and the results fit to the expression:

$$\frac{\rho}{\mathrm{g\ cm^{-3}}} = 1.02\,882 - 1.067\times10^{-4}(t/°C) - 4.10\times10^{-6}(t/°C)^2$$

At 22 °C, the density is thus 1.02449 g cm^{-3}. The uncertainty in this density is believed to be less than 1 part in 10,000.

STORAGE: The bottles should be stored out of direct sunlight, and preferably at or below room temperature (25 °C). They should not be allowed to freeze!

Andrew Dickson

Andrew G. Dickson
September 28, 2017