

# Australian Standard<sup>®</sup>

AS 4969.9—2008

## Analysis of acid sulfate soil—Dried samples— Methods of test

### Method 9: Calculation of titratable sulfidic acidity (TSA)

#### PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand for Committee EV-009, Sampling and Analysis of Soil and Biota, Working Group EV-009-02-01, Analysis of Acid Sulfate Soil.

The objective of this Standard is to provide a method to calculate titratable sulfidic acidity (*TSA*) in acid sulfate soil using the results obtained from the determination of *TAA* and *TPA*.

#### METHOD

##### 1 SCOPE

This Standard specifies a method for the calculation of titratable sulfidic acidity (*TSA*) in acid sulfate soil (*ASS*) using the results obtained from the determination of *TAA* (AS 4969.2) and *TPA* (AS 4969.3).

##### 2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
4969	Analysis of acid sulfate soil—Dried samples—Methods of test
4969.0	Part 0: Introduction and definitions, symbols and acronyms
4969.2	Method 2: Determination of $pH_{KCl}$ and titratable actual acidity ( <i>TAA</i> )
4969.3	Method 3: Determination of peroxide pH ( $pH_{OX}$ ), titratable peroxide acidity ( <i>TPA</i> ) and excess acid neutralizing capacity ( $ANC_E$ )

##### 3 DEFINITIONS

For the purpose of this Standard the terms and definitions used in AS 4969.0 apply.

#### 4 PRINCIPLE

Titrateable sulfidic acidity is calculated as the difference between the titrateable acidity measured in a 1 M KCl 1:40 soil solution suspension following oxidation with 30% hydrogen peroxide (*TPA*) (AS 4969.3) and the titrateable acidity measured in a 1 M KCl 1:40 soil solution (*TAA*) (AS 4969.2).

#### 5 CALCULATION

Calculate the titrateable sulfidic acidity (*TSA*) in units of mol H<sup>+</sup>/tonne on an oven-dry weight basis according to the equation below:

$$TSA = TPA - TAA$$

NOTE: Where *TPA* is zero and *TAA* is positive, *TSA* should be reported as zero.

#### 6 TEST REPORT

The test report shall contain at least the following information:

- (a) Sample identification as submitted to the laboratory.
- (b) Where *TSA* > 0, the result of the *TSA* calculation is reported to the nearest 1 mol H<sup>+</sup>/tonne on an oven-dry weight basis.
- (c) Where *TPA* = 0 and *TAA* > 0, *TSA* is reported as zero.
- (d) Reference to this Standard, i.e. AS 4969.9.
- (e) Where *TPA* is less than *TAA*, *TSA* shall be reported as zero, e.g. *TPA* = 0 and *TAA* > 0, *TSA* is reported as zero.

The test report may also include an estimation of measurement of uncertainty.