



## Acid Sulphate Soils – Acronyms.

Acronym	Explanation
AASS	Actual acid sulphate soil/ An ASS that has been disturbed and oxygenated and where some or all of the sulphides originally present have been oxidised. Resulting in a pH of <4.
Actual Acidity	A component of existing acidity. The soluble and exchangeable acidity already present in the soil that can be mobilised and discharged following a rainfall event and arising as a consequence of previous oxidation of sulphides.  NOTE: It does not include the less soluble acidity (i.e. retained acidity) held in hydroxyl-sulphate minerals such as jarosite.
ANC	Acid Neutralising Capacity. Measurement of a soil's ability to neutralize of buffer added acid. Conventionally expressed as equivalent % <b>CaCO<sub>3</sub></b> .
ANC <sub>E</sub>	Excess acid Neutralising Capacity. SPOCAS HCl - titration to pH 4 minus titratable acidity to pH 6.5 (converted to equivalent % CaCO <sub>3</sub> ). Calculated as: <b>a- ANC<sub>E</sub> (mol H<sup>+</sup> /t) / 199.8.</b>
a-ANC <sub>E</sub>	Excess Acid Neutralising Capacity expressed in acid neutralising units. SPOCAS HCl-titration to pH 4 minus titratable acidity to pH 6.5 ( <b>Unit: mol H<sup>+</sup> / t</b> ).
ASS	Acid sulphate soil. A complex group of predominately low-lying coastal soils and sediments that contain iron sulphides and/or their oxidation products.
Ca <sub>A</sub>	'Reacted' calcium. Calcium made soluble by the acid generated from hydrogen peroxide digestion. Calculated as: <b>(Ca<sub>P</sub> - Ca<sub>KCl</sub>) (Unit: %Ca).</b>
a- Ca <sub>A</sub>	'Reacted' calcium expressed in equivalent acid neutralising units. Calculated as: <b>Ca<sub>A</sub> (%) x 499 (Unit: mol H<sup>+</sup> / t).</b>
Ca <sub>HCl</sub>	Hydrochloric acid extractable calcium. Calcium extracted in 4 M HCl (1:40, soil: solution for 16 h) ( <b>Unit: %Ca</b> ).
Ca <sub>KCl</sub>	Potassium chloride extractable calcium. Calcium soluble in 1 M potassium chloride, after TAA titration ( <b>Unit: mol H<sup>+</sup> / t</b> ).
Ca <sub>NAS</sub>	Net acid soluble in calcium. Calculated as <b>(Ca<sub>HCl</sub> - Ca<sub>KCl</sub>) (Unit: %Ca).</b>
a-Ca <sub>NAS</sub>	Net acid soluble calcium expressed in equivalent acid neutralising units. Calculated as <b>Ca<sub>NAS</sub> (%) x 499. (Unit: mol H<sup>+</sup> / t).</b>  NOTE: Assumption is that all calcium in carbonate, oxide or hydroxide forms.
Ca <sub>p</sub>	Peroxide calcium. Calcium extracted in 1 M potassium chloride and determined following hydrogen peroxide digestion and TPA titration.

CRS	A commonly used acronym referring to chromium reducible sulphur. The analytical method is symbolised by $S_{cr}$ .
Existing acidity	The acidity already present in acid sulphate soils, usually as a result of oxidation of sulphides, but that can also be from organic material or acidic cations. It can be further subdivided into actual and retained acidity as: <b>Existing Acidity = Actual Acidity + Retained Acidity.</b>
Fineness factor	A factor applied to the acid neutralising capacity result in the acid base account to allow for the poor reactivity of coarser carbonate or other acid neutralising material.
$Mg_A$	'Reacted' magnesium. Magnesium solubilised by acid generated from hydrogen peroxide digestion and calculated as <b>(<math>Mg_P - Mg_{KCl}</math>). (Unit: %Mg).</b>
$a-Mg_A$	'Reacted' magnesium expressed in equivalent acid neutralising units. Calculated as <b><math>Mg_A</math> (%) x 822.6. (Unit: mol H<sup>+</sup> / t).</b>  NOTE: Assumption is that all magnesium is carbonate, oxide of hydroxide forms.
$Mg_{KCl}$	Potassium chloride extractable as magnesium. Magnesium soluble in 1 M potassium chloride (after TAA titration) <b>(Unit: %Mg).</b>
$Mg_{NAS}$	Net acid soluble magnesium. Calculated as: <b>(<math>Mg_{HCl} - Mg_{KCl}</math>) (Unit: %Mg)</b>
$a-Mg_{NAS}$	Net acid soluble magnesium. Expressed in equivalent acid neutralizing units. Magnesium acidity equivalent in $Mg_{NAS}$ . Calculated as: <b><math>Mg_{NAS}</math> (%) x 822.6. (Unit: mol H<sup>+</sup> / t).</b>  NOTE: Assumption is that all magnesium is carbonate, oxide of hydroxide forms.
$Mg_P$	Peroxide magnesium. Magnesium extracted in 1 M potassium chloride and determined following hydrogen peroxide digestion and TPA titration <b>(Unit: %Mg).</b>
Monosulphides	Highly reactive iron sulphide minerals found in ASS that have the approximate formula 'FeS'.
Net acidity	A result obtained when the values for various components of potential and existing soil acidity and acid neutralising capacity are substituted into the Acid Base Accounting equation. Calculated as: <b>Net Acidity = Potential Sulphidic Acidity + Existing Acidity – (Acid Neutralising Capacity/Fineness Factor).</b>
PASS	Potential acid sulphate soil. An ASS that has not been disturbed, remaining in a reduced state with the sulphides they contain un-oxidised, typically having a near-neutral or slightly alkaline pH.
$pH_{KCl}$	Potassium chloride suspension pH. pH in a 1:40 (W/V) suspension of soil in a solution of 1 M potassium chloride.
$pH_{Ox}$	Peroxide oxidised suspension pH. pH in a suspension of soil after initial hydrogen peroxide digestion.
Potential sulphidic acidity	The acidity in ASS that is released if the sulfide minerals they contain (e.g. pyrite) are fully oxidised.  Note: It can be estimated by titration (i.e. TSA) if no acid neutralising material is present, or calculated from SPOS or SCR results.
Retained acidity	The 'less available' fraction of the existing acidity (not measured by the TAA) that may be released slowly into the environment by hydrolysis of relatively insoluble sulphate salts (such as jarosite, natrojarosite, and other similarly low solubility iron and aluminum hydroxyl-sulfate minerals).

$S_{CR}$	Chromium reducible sulphur. Sulphide measured by iodometric titration after acidic chromos chloride reduction ( <b>Unit: %S</b> ).
$\alpha\text{-}S_{CR}$	Chromium reducible sulfur expressed in acid equivalent units. Sulphur acidity equivalent in $S_{CR}$ . Calculated as: <b><math>S_{CR} (\%) \times 623.7</math> (Unit: mol H<sup>+</sup> /t).</b>  NOTE: The assumption is that each mole of chromium reducible sulphur releases 2 moles of acidity.
$S_{HCl}$	Hydrochloric acid extractable sulphur. The sulphur extracted in 4 M hydrochloric acid (1:40, soil: solution for 16 h) ( <b>Unit: %S</b> ).
$S_{KCl}$	Potassium chloride extractable sulphur. Sulphur extracted in 1 M potassium chloride (after TAA titration) ( <b>Unit: %S</b> ).
$S_{NAS}$	Net acid soluble sulphur. Calculated as ( $S_{HCl} - S_{KCl}$ ) ( <b>Unit: %S</b> ).
$\alpha\text{-}S_{NAS}$	Net acid soluble sulphur expressed in acid equivalent units. Estimate of acidity produced on hydrolysis of jarositic and other similarly low solubility hydroxyl sulfate minerals. Calculated as: <b><math>S_{NAS} (\%) \times 0.75 \times 623.7</math> (Unit: mol H<sup>+</sup> /t).</b>  NOTE: The assumption is that one mole of sulphur (eg in jarosite) produces 1.5 moles of acidity.
$S_{OX}$	Oxidisable sulphur. Broad term encompassing sulphur compounds that oxidise to produce acid ( <b>Unit: %S</b> ).
$S_P$	Peroxide sulphur. Sulphur extracted in 1 M potassium chloride and determined following hydrogen peroxide digestion and TPA titration ( <b>Unit: %S</b> ).
SPOCAS	Acronym for Suspension Peroxide Oxidation Combined Acidity and Sulphur method.
$S_{POS}$	Peroxide oxidisable sulphur. Sulphur oxidised by peroxide digestion is calculated as: <b>(<math>S_P - S_{KCl}</math>) (Unit: %S)</b>
$\alpha\text{-}S_{POS}$	Peroxide oxidisable sulfur expressed in acid equivalent units. Calculated as: <b><math>S_{POS} (\%) \times 623.7</math> (Unit: mol H<sup>+</sup>/t).</b>  NOTE: The assumption is that each mole of peroxide oxidisable sulphur releases 2 moles of acidity.
$S_{RAS}$	Residual acid soluble sulphur. Sulphur extracted in 4 M HCl (1:40, soil: solution for 16 h) from washed soil residue used for peroxide digested TPA and $S_P$ determination as part of SPOCAS ( <b>Unit: %S</b> ).
$\alpha\text{-}S_{RAS}$	Sulphur acidity equivalent in SRAS. Estimate of acidity produced on hydrolysis of jarositic and other 'insoluble' hydroxy-sulphates, calculated as: <b><math>SRAS (\%) \times 0.75 \times 623.7</math></b>  NOTE: The assumption is that one mole of sulphur (e. in jarosite) produces 1.5 moles of acidity.
TAA	Titratable Actual Acidity. Acidity titration to pH 6.5 with standardised NaOH on 1:40, suspension in 1 M potassium chloride ( <b>Unit: mol H<sup>+</sup> /t</b> ).
TPA	Titratable Peroxide Acidity. Acidity titration to pH 6.5 with standardised NaOH on 1: 40, suspension in 1 M potassium chloride after hydrogen peroxide digestion ( <b>Unit: mol H<sup>+</sup>/t</b> ).
TSA	Titratable sulfidic acidity. Calculated as: <b>(TPA – TAA). (Unit: mol H<sup>+</sup>/t).</b>

\* Referenced from *Australian Standards*