

SILTY LOAM OVER RED MOTTLED CLAY

General Description: *Hard silty loam with a bleached and gravelly subsurface layer, overlying a red and brown mottled clay with variable gravel and stone seams*

Landform: Gently sloping alluvial fans.

Substrate: Clayey outwash sediments with gravel seams.

Vegetation: Eucalyptus woodland.



Type Site: Site No.: CH149

1:50,000 sheet:	6627-3 (Willunga)	Hundred:	Willunga
Annual rainfall:	600 mm	Sampling date:	17/01/05
Landform:	Midslope of a gently inclined alluvial fan, 3% slope		
Surface:	Hard setting with no stones		

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-10	Dark reddish brown hard massive silty loam. Gradual to:
10-25	Pink (bleached) very hard heavy silty loam with 2-10% siltstone gravel to 20 mm. Clear to:
25-40	Dark reddish brown and dark brown mottled very hard light medium clay with strong medium angular blocky structure. Clear to:
40-80	Red, reddish brown and brown mottled hard medium clay with strong fine polyhedral structure, manganese coatings on aggregate faces and 2-10% siltstone gravel to 20 mm. Gradual to:
80-125	Red, yellowish brown and brown mottled firm light clay with weak subangular blocky structure, manganese coatings on aggregate faces and 20-50% siltstone fragments to 60 mm. Gradual to:
125-160	Brown and dark brown mottled firm light clay with weak subangular blocky structure and 50% siltstone fragments to 60 mm.



Classification: Eutrophic, Mottled-Subnatric, Red Sodosol; medium, non-gravelly, silty / clayey, very deep

Summary of Properties

Drainage: Well drained. Water perches on the clayey subsoil, but rarely for more than a few days following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderately high, as indicated by the exchangeable cation data. The clay content of the surface (about 25%) is sufficiently high to maintain good reserves of nutrients. Concentrations of all tested elements at the sampling site are high.

pH: Neutral to slightly acidic throughout.

Rooting depth: 160 cm in sampling pit, but few roots below 80 cm.

Barriers to root growth:

Physical: The massive bleached subsurface layer and the hard clayey subsoil restrict root growth to some extent and prevent even distribution patterns.

Chemical: Marginally high salinity / chloride and sodicity from 80 cm affect root growth of grape vines.

Water holding capacity: (Estimates for potential root zone of grape vines)

Total available: 140 mm

Readily available: 60 mm

Seedling emergence: Fair due to the hard setting, sealing surface.

Workability: Fair. Silty loam surfaces tend to shatter if worked too dry, and puddle if worked too wet.

Erosion Potential

Water: Moderately low.

Wind: Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO ₄ -S mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
												Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-10	6.9	6.2	0	0.255	1.69	2.52	156	642	102	45.3	1.2	29.5	298	265	23.8	15.5	10.9	2.29	0.71	1.61	4.6
10-25	6.6	5.8	0	0.149	1.14	1.45	90	431	51	31.8	0.9	14.9	214	221	11.9	11.5	8.65	1.39	0.49	0.94	4.3
25-40	6.6	5.8	0	0.127	1.33	0.68	5	280	61	45.3	0.8	4.24	70	16.9	0.67	11.2	7.38	2.49	0.82	0.52	7.3
40-80	6.3	5.8	0	0.298	2.66	0.44	3	261	160	127	0.7	3.04	44	44.8	0.40	10.7	5.52	3.51	1.18	0.51	11.0
85-125	6.4	6.0	0	0.562	4.20	0.28	3	264	405	150	0.7	2.23	38	55.1	0.32	11.7	4.24	5.30	1.56	0.58	13.4
125-160	6.5	6.1	0	0.485	4.69	0.19	2	338	405	87.6	0.6	1.32	71	64.1	0.39	9.6	3.12	4.72	1.31	0.48	13.6

Note: Sum of cations, in a neutral to alkaline soil, approximates the CEC (cation exchange capacity), a measure of the soil's capacity to store and release major nutrient elements.

ESP (exchangeable sodium percentage) is derived by dividing the exchangeable sodium value by the CEC, in this case estimated by the sum of cations.