

LOAM OVER FRIABLE BROWN CLAY ON ROCK

General Description: *Hard loam grading to a bleached gravelly clay loam over a well structured yellowish brown to yellowish red clay grading to weathering shaly rock*

Landform: Rolling to steep low hills and hills.

Substrate: Soft kaolinized yellow siltstone

Vegetation: Eucalyptus obliqua (messmate stringybark) forest.



Type Site: Site No.: CH156B

1:50,000 sheet: 6628-2 (Onkaparinga) Hundred: Onkaparinga

Annual rainfall: 950 mm Sampling date: 13/11/06

Landform: Mid slope depression of rolling low hills, 20% slope.

Surface: Hard setting with 2-10% siltstone fragments.

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-10	Dark brown friable loam with weak granular structure and 2-10% siltstone fragments. Clear to:
10-20	Dark brown firm massive loam with 10-20% siltstone and 2-10% quartzite fragments. Clear to:
20-40	Reddish yellow (pink dry) hard massive clay loam with 20-30% siltstone and 2-10% quartzite fragments. Abrupt to:
40-70	Red and yellowish red firm medium clay with strong medium polyhedral structure and 10-20% soft siltstone fragments. Diffuse to:
70-100	Red firm light clay with strong medium polyhedral structure and 50% soft siltstone fragments. Diffuse to:
100-140	Light yellowish brown, strong brown and red firm light clay with moderate polyhedral structure and 80% soft siltstone. Clear to:
140-150	Weathering siltstone.



Classification: Bleached, Mesotrophic, Red Chromosol; thick, slightly gravelly, loamy / clayey, deep

Summary of Properties

Drainage: Moderately well drained. The soil is unlikely to remain wet for more than a week or so following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderately low, as indicated by the exchangeable cation data. Cation leaching associated with acidification has caused significant loss of nutrient retention capacity. Concentrations of P, Cu, Zn and S are low. Manganese levels are marginal.

pH: Acidic at the surface, neutral with depth.

Rooting depth: 140 cm in sampling pit, but few roots below 100 cm.

Barriers to root growth:

Physical: No apparent barriers above the basement rock, although this is still soft enough for root growth to at least 150 cm.

Chemical: There are no apparent chemical barriers, although an unusually high ratio of magnesium to other cations at depth, may have implications for some crops.

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

Total available: 125 mm

Readily available: 60 mm

Seedling emergence: Fair to good, depending on friability of surface soil.

Workability: Hard surface tends to shatter if worked too dry, and puddle if worked too wet.

Erosion Potential

Water: Moderately high to high.

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	React Fe 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	5.8	4.9	0	0.057	0.50	3.70	5	209	32	3.8	0.5	1523	1.89	223	10.8	1.83	6.9	4.64	1.62	0.11	0.51	1.6
10-20	5.6	4.8	0	0.028	0.13	2.44	5	120	8	2.6	0.5	1580	1.42	188	4.16	0.62	4.4	2.91	1.04	0.12	0.28	2.8
20-40	5.6	4.3	0	0.016	0.13	0.52	2	76	4	2.2	0.4	732	0.07	49	2.00	0.08	2.0	1.22	0.53	0.08	0.19	na
40-70	5.8	4.7	0	0.024	0.15	0.57	3	75	12	4.9	0.8	726	1.25	62	4.21	0.58	6.6	3.53	2.64	0.21	0.23	3.2
70-100	5.9	4.9	0	0.021	0.08	0.20	1	87	9	15.5	0.6	643	0.21	21	0.21	0.09	8.5	2.01	6.02	0.19	0.24	2.2
100-140	6.0	5.0	0	0.021	0.13	0.15	1	135	17	12.8	0.7	620	0.07	24	0.30	0.12	13.0	2.51	10.0	0.22	0.3	1.7
140-150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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.