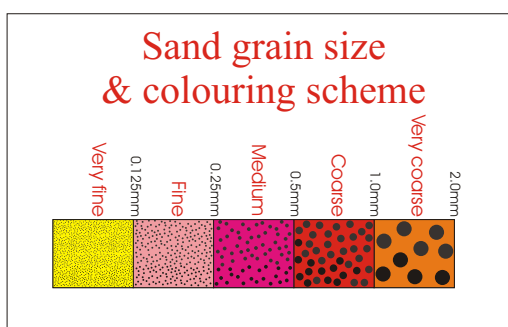


2.2. The sedimentary log

The Udden-Wentworth grain size classification scheme

- For clastic sediments.
- A log scale
- Grain size is depicted in Phi units.
 - Unfortunately uses negative numbers

Millimeters (mm)	Micrometers (µm)	Phi (φ)	Wentworth size class	Rock type	
4096		-12.0	Boulder	Conglomerate/ Breccia	
256		-8.0	Cobble		
64		-6.0	Pebble		
4		-2.0	Granule		
2.00		-1.0	Very coarse sand	Sandstone	
1.00		0.0	Coarse sand		
1/2	500	1.0	Medium sand		
1/4	250	2.0	Fine sand		
1/8	125	3.0	Very fine sand		
1/16	63	4.0	Coarse silt	Siltstone	
1/32	31	5.0	Medium silt		
1/64	15.6	6.0	Fine silt		
1/128	7.8	7.0	Very fine silt		
1/256	3.9	8.0	Clay	Mud	Claystone
0.00006	0.06	14.0			



Grain size is measured with a ruler or a grain size chart. Shale vs sand particles can be established through experience from rubbing the core or scratching the core with a hardness tester. Shales can be easily distinguished by their axial planar cleavage or smooth core breaks. Shales tend to be grey to black and sands yellow in colour. However, while colour can be used as a guide, it is always important to check.

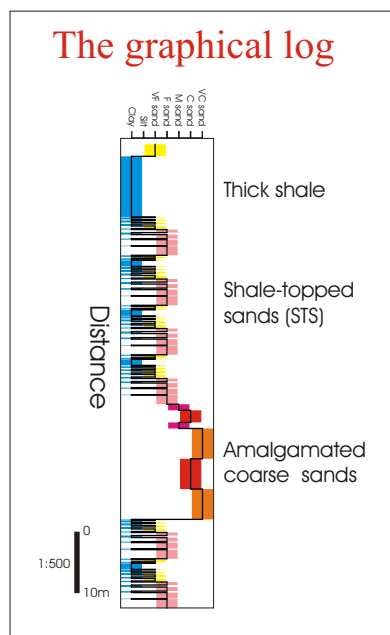
IMPORTANT

It is not possible to determine the difference between claystone and siltstone in core. Thin section need to be cut. Claystones in turbidites are actually very rare and most of the lithologies traditionally recorded as “shales”, are actually siltstones when viewed in thin section.

WARNING

Traditionally, grain size is over-estimated in central Victoria. However, in coarse grained sands, it is possible to underestimate grain size as a result of the core cutting process. When cutting core, grains are rarely cut to expose the centre of the grain. When cut to one side, the grain appears smaller than it really is. As a result, coarse sandstones will commonly appear to be poorly sorted and the coarser larger sectional areas need to be considered the most representative.

The graphical log



Sedimentary logging plots grain size vs bed thickness. Grain size is measured in millimeters and assigned the appropriate phi code (Table 2). However, there are two cases where this process is not adhered to:

1. Lutites can be separately by facies types that approximately represent differing shale types. The facies are only worthy of separating if exceeding 50cm in thickness, otherwise should be logged as massive siltstone.
2. Non-sediments need to be logged separately. Some of these zones will be recorded in more detail in other logging descriptions. The non-sediments are to be recorded where they obscure 10cm or more of core. Non-sediments include quartz, dyke, fault zones, core loss etc.

To assist to distinguish zones of dominant lithologies, colours are added to depict the grain size.