

Field Sediment Card

Sediment characteristics are an important element in understanding marine and estuarine environments. There are thus a wide range of people (perhaps you!) who regularly use measurements of sediments to help them in their work.

There are many high-quality laboratory-based sediment measurement techniques, and interpreting the results can be very complex and generally requires expert advice. However, in the field this is seldom accessible. This field sediment card is designed to be a ready reference for descriptions of marine and estuarine sediments.

The Card Itself

This waterproof card can hang around your neck in the field, and help you quickly and reliably assess the general nature of marine and estuarine sediments.

Although not essential, a good quality hand lens is a valuable addition to your field kit.

For the characteristics outlined herein, simply place the field sediment card against your sediments and make a visual comparison. For the textural characteristics, you only need to write down one or two letters (those underlined on the card), and a single number for the colour.

Grain Size

Grain size relates strongly to the source(s) of the grains, the mode of their transport and the degree of vertical mixing of the sediment body (e.g. through bioturbation).

Size describes the general length of the grains and, on this card, is shown using the Wentworth size classification (Wentworth 1922).

There is a numerical reminder of the sizes of the BOULDERS, COBBLES, PEBBLES AND GRANULES, but the visual scale is for SAND sized particles.

Typically, the modal (most common) size is recorded.

For grains finer than sand, as a rule of thumb, if you can't see the grains but can feel them on your teeth, they are SILTS, and finer than that they are CLAY.

Obviously, choose your sediments carefully – not all are clean enough to put in your mouth!



Grain Sorting

Grain sorting can tell you something about the sediment source, and/or the primary mechanism of transport of the particles (e.g. water or wind), and also something about the likely porosity and permeability of the bulk sediment.

Sorting describes how different- (poorly sorted) or similarly-sized (well sorted) the particles are in a sample.

Grain Roundness

Grain roundness is influenced by sediment source, the duration of transport and particle composition. Generally, the more angular the sediment the closer to source it is likely to be and/or the more resistant the particles are to erosion.

Roundness describes how rounded or angular the corners of the grains are. Note also that roundness is not the same as grain shape (see over) – a long thin grain can still be rounded!

About Oceanica

BMT Oceanica Pty Ltd provide specialist consultancy services for marine, coastal and estuarine environmental issues.

Our highly-qualified staff have industry leading skills in the areas of: coastal processes; water and sediment quality; oceanography; marine ecology; engineering; environmental impact assessment, audit and compliance; and biostatistics and experimental design.

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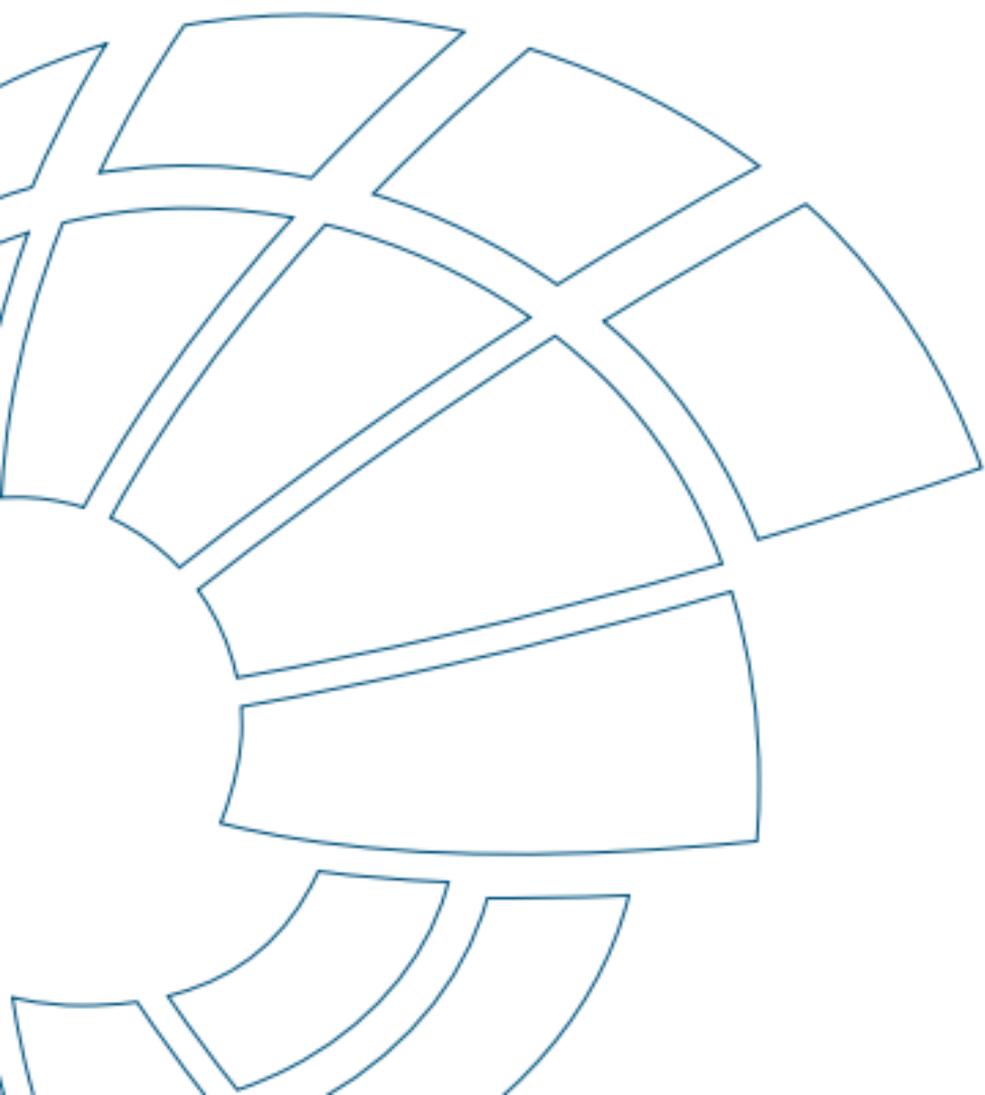
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Grain Shape

Grain shape is controlled strongly by the source. For example, some organisms produce elongate grains, many minerals can have favoured crystal shapes and some rock types tend to produce particular shaped grains when they break down.

Of course, these shapes can then be modified during sediment transport. Shape describes how like a prism or a disc the grains appear (as seen in two dimensions).

Sediment Colour

Sediment colour can be influenced by composition, sediment oxidation state, sorting and other parameters. Colour typically refers to the bulk sediment, but sometimes it is also useful to describe individual grains or prominent grain types.

Using a colour scale is useful in comparing sediments from different places and helps clarity of communication. The 20 colours on the card represent the most common sediment colours we have observed across a range of projects in Western Australia.

References

Sediment colour is best measured immediately on collection while the sediment is still wet. Hold the card next to your sediment and assess which colour best matches the overall sediment colour.

The equivalent Munsell colour of the 20 colours on the card are presented here. The card has a 9cm ruler on it to act as a size and photographic scale.

Further, the colour grid (at the top) and black and white bars (bottom) each measure 0.5cm across.

If sediments are part of your work, we hope you find this card useful; we do in our work!

Sediment Colour Chart

No.	Munsell Colour	Notation	Description
1		7.5YR 7/4	Pink
2		5YR 6/3	Light reddish brown
3		7.5YR 6/4	Light brown
4		5YR 6/4	Light reddish brown
5		7.5YR 5/3	Brown
6		10R 3/6	Dark red
7		2.5Y 8/2	Pale yellow
8		7.5YR 7/2	Pinkish grey
9		5Y 7/1	Light grey
10		10YR 5/1	Grey

No.	Munsell Colour	Notation	Description
11		5YR 6/6	Reddish yellow
12		2.5YR 4/8	Red
13		5YR 5/4	Reddish brown
14		2.5Y 5/1	Grey
15		5Y 5/2	Olive grey
16		Gley 2 3/10G	V. dark greenish grey
17		2.5Y 8/1	White
18		10 YR 7/1	Light grey
19		Gley 1 4/N	Dark grey
20		Gley 1 2.5/N	Black

Munsell Soil Colour Charts (2000)
Munsell Colour Corporation.

Wentworth, C. K. (1922)
A scale of grade and class
terms for clastic sediments,
Journal of Geology, Vol. 30,
377-392

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