

REFERENCE LIST FOR DESCRIBING CUTTINGS AND CORES OF SEDIMENTS AND SEDIMENTARY ROCKS IN NEBRASKA

1 Indicate **PRIMARY LITHOLOGY**
Go to 1a, 1b, or 1c.

1b. Carbonate sedimentary rocks

NAME	% DOLOMITE
limestone	0-10
dolomitic limestone	10-50
calcitic dolomite	50-90
dolomite (dolostone)	90-100

mudstone	mud supported carbonates with <10% grains
wackestone	mud supported carbonates with >10% grains
packstone	grain supported carbonates with interstitial mud
grainstone	grain supported, mud-free carbonates
boundstone	components bound together during deposition
crystalline	depositional texture not recognizable

1c. Other sediments and sed. rocks that may be encountered in Nebraska

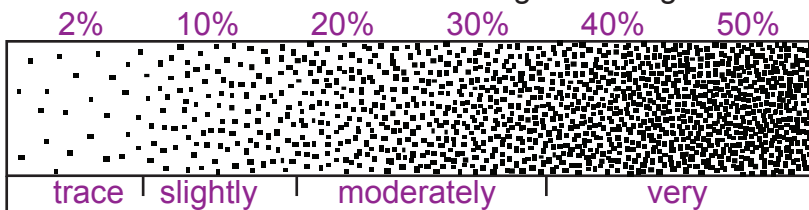
peat	dk. brown to black organic sediment <i>in Quaternary sediments</i>
coal	lignite and bituminous, rare <i>in Pennsylvanian, Permian, & Cretaceous rocks</i>
chert	hard, nodular to bedded siliceous sedimentary rock <i>in Permian & older rocks</i>
gypsum	soft, hydrated calcium sulfate <i>in some deeply buried pre-Cenozoic rocks</i>
volcanic ash	weakly cohesive pyroclastic material <i>in Paleogene, Neogene, & Quaternary sediments</i>
bentonite	volcanic ash altered to lt. gray to white, plastic, smectitic clay <i>thin beds in Cretaceous (Graneros Sh. through Pierre Sh.)</i>
till	unsorted/poorly sorted glacial sedimentary clay & silt with sand & coarser sediment -- <i>in Pleistocene</i>

2 Indicate **SECONDARY LITHOLOGY** (use same terms as in 1 above) and **ABUNDANCE**

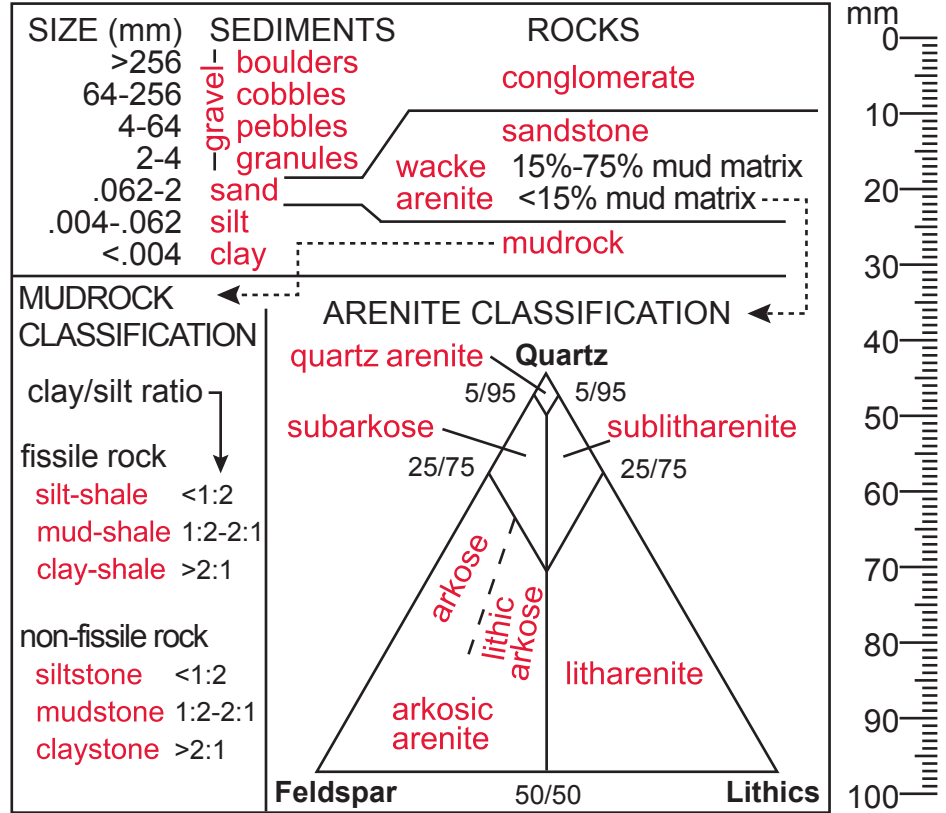
2a. Estimate the abundance of clay by extruding a ribbon of wet kneaded sample between thumb and index finger:

RIBBON LENGTH	% CLAY	ABUNDANCE
<1"	<27	clayey
1"-2.5"	27-40	very clayey

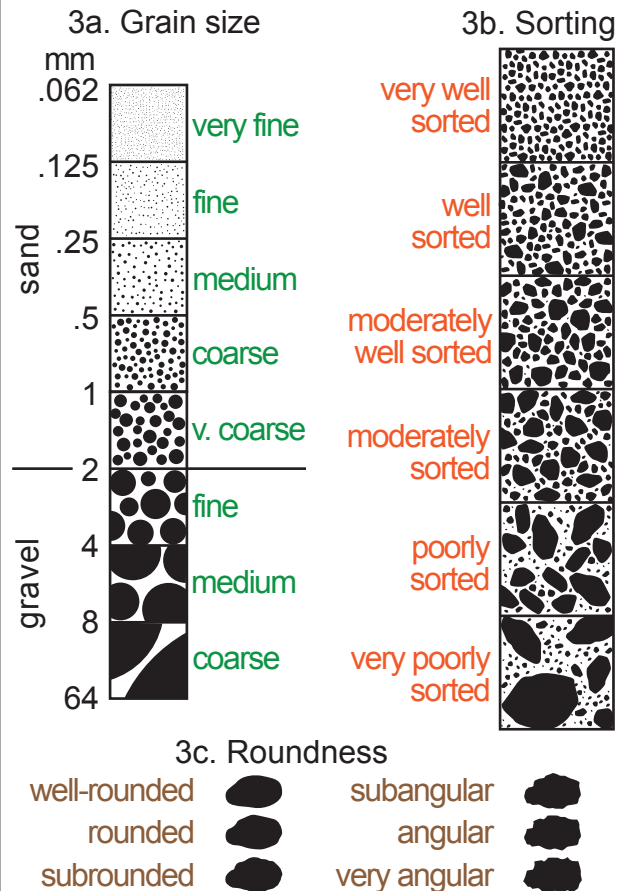
2b. Estimate the abundance of visible grains using this chart:



1a. Clastic sediments and sedimentary rocks



3 Indicate **GRAIN SIZE**, **SORTING**, and **ROUNDNESS** for sands/sandstones and gravels/conglomerates



4 Indicate **COLOR** using standardized soil color charts (use colors below for field estimation only)



5 Indicate **COMPOSITION** of grains visible to naked eye or under low mag. ($\leq 20\times$)

5a. Clastic sediments and sedimentary rocks

Quartz	Lithic Grains	Accessory Minerals
Feldspars	chert	mica
K-feldspar	sandstone	magnetite
orthoclase	shale/mudrock	zircon
microcline	limestone	garnet
plagioclase	metamorphic: gneiss, quartzite, schist,	Biogenic Grains
albite	greenstone, etc.	shells
anorthite	volcanic	bones
	plutonic: granite, anorthosite, etc.	rootlets
		plants
		pellets

5b. Carbonate sed. rocks

Skeletal Grains	
algal oncolites	echinoderms
bivalves	forams
brachiopods	fusulinids
bryozoans	gastropods
crinoids	ostracods
corals	sponges
diatoms	trilobites
Non-skeletal Grains	
ooids	peloids
intraclasts	pellets

6 Indicate **CALCIUM CARBONATE CONTENT** based on effervescence in dilute HCl

Description	CaCO ₃ %	Reaction
non-calcareous	~ <0.1	no bubbles
very slightly calcareous	~ 0.5	few bubbles
slightly calcareous	~ 1-2	many bubbles
calcareous	~ 5	thin foam
very calcareous	~ >10	thick foam

NB: Calcite reacts readily with dilute HCl. Dolomite rock reacts only after it is ground to a powder; fine particles of dolomite in soil or sediment may react slowly without grinding.

7 Indicate **DIAGENETIC FEATURES** (post-depositional features)

7a. Redoximorphic features (redox concentrations)

Mottles, stains, nodules, & concretions:
 Fe oxide/hydrous oxide -- red to yellow
 Mn oxides -- black or metallic black

7b. Authigenic minerals (as crystals, grains, nodules, or concretions)

calcite, iron oxides/hydrous oxides, manganese oxide, opal, pyrite, glauconite, siderite, etc.

7c. Cementation

Degree of Cementation

weakly cemented
 moderately cemented
 strongly cemented

indurated

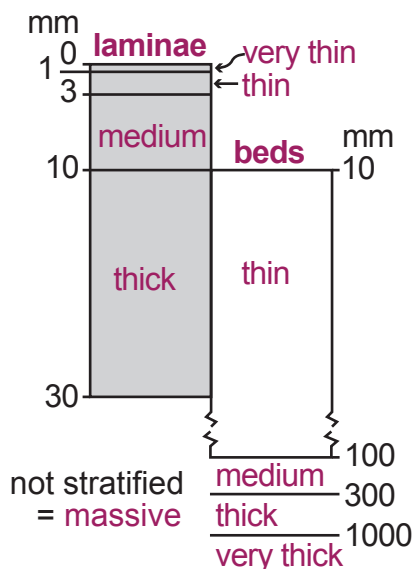
Cementing Agents

calcite, silica (opal), iron oxides/hydrous oxides, gypsum, authigenic clay, manganese oxides

Sample Breaks Under:

finger pressure
 moderate hand pressure
 foot pressure or weak hammer blow
 strong hammer blow

8 Indicate **SEDIMENTARY STRUCTURES** (cores only)



9 Indicate **POROSITY** (cores only)

Describe type if possible:

Primary Porosity

intergranular = between grains
 framework, fenestral, &
 geopetal -- only in carbonates

Secondary Porosity

intercrystalline moldic
 vuggy/vugular cavernous
 fracture piping & conduit

Cite as: Reference list for describing cuttings and cores of sediments and sedimentary rocks in Nebraska

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