


ROCK TYPES:
Weathering Product & Transported / Superficial Deposits (prefix L...)

LAL	Alluvium	LST	Silt
LCO	Colluvium	LSD	Sand
LSO	Soil	LGR	Gravel
LSCR	Scree	LSCO	Conglomerate
LLO	Loess	LGO	Gossan
LCY	Clay (produced by weathering or by alteration, include interp. of parent lithology in Rock 2)	LGYP	Gypsum / gypsiferous sediment (associated with salt lake systems)
LFE	Ferricrete (arid / desert environments <i>NOT</i> laterite)	LSIC	Silcrete (arid / desert environments)
LAT	Lateritic duricrust (general)	LCC	Calcrete (arid / desert environments)

Sediments (prefix S...)

S	Sediment (undifferentiated)	SOC	Coal - "organic" sediments
SB	Black shale / carbonaceous (graphitic) sediments	SLC	Carbonate (undifferentiated or "dirty limestones")
SU	Mudstones (general - includes slate & shale)	SLD	Dolomite - if "dirty" add descriptor (eg: sandy, silty...)
ST	Siltstone (general)	SLL	Limestone - if "dirty" add descriptor (eg: sandy, silty...)
SD	Sandstones / quartz-rich sediments	SLM	Marl
SQZ	Quartzite (metamorphic)	SEV	Evaporites - gypsiferous
SA	Arenites (general)	SC	Conglomerates (general)
SAF	Arkosic arenites (>50% feldspathic / lithic fragments & 0-15% silty / clayey matrix)	SCM	Monomict / oligomict conglomerates
SAL	Lithic arenites (>50% rock / lithic fragments & 0-15% silty / clayey matrix)	SCP	Polymict conglomerates
SGW	Greywacke (15-75% silty / clayey matrix)	SFE	Ferruginous sediments - <i>not</i> BIF
SMF	Mass flow / debris flow		

Cherts (prefix C...)

C	Chert (undifferentiated)	CJ	Jaspilitic chert
CB	Barite-bearing cherts (eg: in VHMS systems)	CL	White and grey / black banded cherts
CIF	BIF: Banded Iron Formation	CM	Cherts - massive

Felsic Volcanics (prefix F...)

F	Felsic volcanic (undifferentiated)	FD	Rhyodacite
FR	Rhyolite (plutonic equivalent: granite)	FT	Trachyte (plutonic equivalent: syenite)
FVA	Felsic pyroclastic or volcanoclastic: ash / fine tuff (grain size <0.1mm)	FVG	Felsic pyroclastic or volcanoclastic agglomerate / breccia / lapilli tuff (grain size >4mm)
FVT	Felsic pyroclastic or volcanoclastic: tuff / sandstone (grain size 0.1-4mm)	FVB	Felsic pyroclastic or volcanoclastic: bomb breccia / agglomerate (grain size >32mm)

Intermediate Volcanics (prefix A...)

A	Intermediate volcanics (undifferentiated)		
AA	Andesite (plutonic equivalent: diorite)	AB	Basaltic-andesite
AT	Latite / Trachy-andesite (plutonic equivalent: monzonite)	AD	Dacite (plutonic equivalent: granodiorite)
AVA	Intermediate pyroclastic or volcanoclastic: ash / fine tuff (grain size <0.1mm)	AVG	Intermediate pyroclastic or volcanoclastic agglomerate / breccia / lapilli tuff (grain size >4mm)
AVB	Intermediate pyroclastic or volcanoclastic: bomb breccia / agglomerate (grain size >32mm)	AVT	Intermediate pyroclastic or volcanoclastic: tuff / sandstone (grain size 0.1-4mm)

ROCK TYPES (cont'd):
Mafic Volcanics (prefix B...)

B	Mafic volcanics (undifferentiated)		
BA	Andesitic-basalt	BT	Basalt
BP	Plagioclase-phyric basalt	BB	Amphibole-phyric basalt
BK	Komatiitic basalt / High-Mg basalt (generally in Archaean terranes)	BOP	Picrite (olivine-basalt)
BVA	Mafic pyroclastic or volcanoclastic: ash / fine tuff (grain size <0.1mm)	BVG	Mafic pyroclastic or volcanoclastic agglomerate / breccia / lapilli tuff (grain size >4mm)
BVT	Mafic pyroclastic or volcanoclastic: tuff / sandstone (grain size 0.1-4mm)	BVB	Mafic pyroclastic or volcanoclastic: bomb breccia / agglomerate (grain size >32mm)

Komatiites (prefix K...)

K	Komatiite / ultramafic volcanics (undiff.)	KS	Komatiite, spinifex textured
KAC	Komatiite, adcumulate	KMC	Komatiite, mesocumulate
KOC	Komatiite, orthocumulate		

Granitoids / Felsic-Intermediate Intrusions (prefix G...)

G	Granitoid (undifferentiated)	GMZ	Monzonite (<5% quartz / "quartz-poor" granite - volcanic equivalent: latite / trachy-andesite)
GDI	Diorite (<5% quartz / plagioclase rich - volcanic equivalent: andesite)	GMZQ	Quartz-Monzonite (5%-20% quartz / "quartz-poor" granite - volcanic equivalent: latite / trachy-andesite)
GDIQ	Quartz-Diorite (5%-20% quartz / plagioclase rich - volcanic equivalent: andesite)	GQ	Quartz-rich granitoid (>60% quartz)
GGD	Granodiorite (volcanic equivalent: dacite)	GSY	Syenite (volcanic equivalent: trachyte)
GGR	Granite (volcanic equivalent: rhyolite)	GTO	Tonalite (>20% quartz / plagioclase-rich)
GK	Alkali-feldspar granite ("pink" granite)		

Minor Porphyry / "Other" Intrusives (prefix P...)

PF	Felsic intrusive (undifferentiated)	PI	Intermediate porphyry (undiff.)
PFF	Felsic porphyry, feldspar dominant / feldspar-phyric	PIA	Andesitic porphyry (keratophyre) <i>NOT</i> andesite lava
PFQ	Felsic porphyry, quartz dominant / quartz-phyric	PID	Dacitic porphyry (quartz keratophyre) <i>NOT</i> dacite lava
PAP	Aplite	PL	Lamprophyre (undifferentiated)
PEG	Pegmatite	PLA	Lamprophyre, amphibole dominant
PGF	Pegmatite, feldspar-rich	PLB	Lamprophyre, phlogopite / biotite dominant
PGQ	Pegmatite, quartz-rich	PLX	Lamprophyre, pyroxene dominant
PCB	Carbonatite	PK	Kimberlite (undifferentiated)

Mafic Intrusives (prefix D...)

D	Mafic intrusives (undifferentiated)		
DD	Dolerite	DDQ	Quartz dolerite
DG	Gabbro (<i>NO</i> olivine, <10% opx)	DHB	Hornblendite (>50% hornblende)
DGL	Leucogabbro (plag >>olivine & pyx)	DN	Norite (opx bearing, <10% cpx)
DGM	Melagabbro (olivine & pyx >>plag)	DNL	Leuconorite (plag >>olivine & pyx)
DGN	Gabbronorite (cpx & opx bearing)	DNM	Melanorite (olivine & pyx >>plag)
DGNL	Leucogabbronorite (plag >>olivine & pyx)	DNO	Olivine Norite (olivine & opx bearing <i>NO</i> cpx)
DGNM	Melagabbbronorite (olivine & pyx >>plag)	DAN	Anorthosite (>90% plag, <10% olivine & pyx)
DGNO	Olivine Gabbronorite (olivine, cpx & opx bearing)	DT	Troctolite (olivine & plag <i>NEARING</i> <i>NO</i> pyroxene)
DGO	Olivine gabbro (olivine bearing <i>NO</i> cpx)	DTL	Leucotroctolite (plag >>olivine & pyx)
DGQ	Quartz gabbro	DTM	Melatroctolite (olivine & pyx >>plag)

ROCK TYPES (cont'd):

Ultramafic Rocks (prefix U...)			
U	Ultramafic (undifferentiated)	US	Serpentinised ultramafic (primary texture destroyed)
UPX	Pyroxenite (>50% pyroxene, <40%olivine,NO plagioclase)	USC	Serpentinite, chlorite dominated
UCPX	Clinopyroxenite (<40% olivine, cpx present,NO opx & NO plagioclase)	USM	Serpentinite, tremolite dominated
UOPX	Orthopyroxenite (<40% olivine, opx present,NO cpx & NO plagioclase)	UST	Serpentinite, talc dominated
UWB	Websterite (opx & cpx, NO olivine & NO plagioclase)	UDU	Dunite (>90% olivine,NO plagioclase)
UWBO	Olivine Websterite (opx & cpx, olivine present & NO plagioclase)	UPD	Peridotite; undiff (40-90% olivine,NO plagioclase)
ULZ	Lherzolite (>40% olivine, both opx & cpx present,NO plagioclase)	UHZ	Harzburgite (>40% olivine, opx present,NO cpx & NO plagioclase)
UWL	Wehrlite (>40% olivine, cpx present,NO opx & NO plagioclase)		

High-Grade Metamorphic / Gneissic Rocks (prefix M...)			
MA	Amphibolite (undifferentiated)	MMB	Marble
MAC	Amphibolite, actinolite dominated	MMG	Migmatite / migmatitic gneiss
MAN	Amphibolite, anthophyllite dominated	MPE	Pelite (f.g. - c.g. aluminosilicate m' mic minerals). Use Key Mineral fields
MBMG	Banded magnetic / magnetite gneiss (eg: after Archaean BIF)	MPH	Phyllite (f.g. micaceous rock).NOTE: schist codes may be more appropriate.
MBDG	Banded gneiss	MPP	Psephite (original conglomerate)
MCH	Charnockite	MPS	Psammite (original sandstone)
MCS	Calc-silicate gneiss	MPX	Amphibolite, pyroxene dominated (high-grade)
MEC	Eclogite	MQF	Quartzofeldspathic gneiss / felsic gneiss
MGN	Gneiss (undifferentiated)	MSZ	Schist, use Key Mineral fields
MGR	Granulite	MTR	Amphibolite, tremolite dominated
MHB	Amphibolite, hornblende dominated	MUGN	Ultramafic gneiss
MITG	Intermediate gneiss	MXC	Clinopyroxene-plagioclase rocks (high-grade)
MLT	L-tectonite (use Key Mineral fields)	MXO	Orthopyroxene-plagioclase rocks (high-grade)
MMAG	Mafic gneiss		

Mylonites / Cataclasites			
MCTC	Cataclasite (undifferentiated), use Key Mineral Fields	MYL	Mylonite (undifferentiated), use Key Mineral Fields

MASSIVE SULPHIDES (>50% / >20cm of core)		SEMI-MASSIVE SULPHIDES (>20% / >20cm of core)	
Use KEY MINERAL FIELDS for additional / subordinate sulphide species		Use KEY MINERAL FIELDS for additional / subordinate sulphide species and lithic clast types in breccias	
\$\$	Massive Sulphides, undifferentiated	\$S	Semi-massive sulphides, undifferentiated
\$AS	Arsenopyrite-rich massive sulphide	\$SAS	Arsenopyrite-rich semi-massive sulphide
\$BO	Bornite-rich massive sulphide	\$SBO	Bornite-rich semi-massive sulphide
\$CH	Chalcocite-rich massive sulphide	\$SCH	Chalcocite-rich semi-massive sulphide
\$CP	Chalcopyrite-rich massive sulphide	\$SCP	Chalcopyrite-rich semi-massive sulphide
\$CR	Chromite / Chromitite (ie: PGE)	\$SCR	Semi-massive Chromite / Chromitite
\$GA	Galena-rich massive sulphide	\$SGA	Galena-rich semi-massive sulphide
\$ML	Millerite-rich massive sulphide	\$SML	Millerite-rich semi-massive sulphide
\$PN	Pentlandite-rich massive sulphide	\$SPN	Pentlandite-rich semi-massive sulphide
\$PO	Pyrrhotite-rich massive sulphide	\$SPO	Pyrrhotite-rich semi-massive sulphide
\$PY	Pyrite-rich massive sulphide	\$SPY	Pyrite-rich semi-massive sulphide
\$SP	Sphalerite-rich massive sulphide	\$SSP	Sphalerite-rich semi-massive sulphide

ROCK TYPES (cont'd):

Breccias (prefix X...)			
Use TEXTURE CODES to describe clasts (composition, shape etc...)			
X	Breccia (undifferentiated)	XHY	Hydrothermal breccia (must have clear evidence of vein phases), use Key Mineral fields to describe important vein mineral phases.
XHE	Hematite-rich breccia (IOCG systems), use Key Mineral fields to describe other important minerals or clast types	XMT	Magnetite-rich breccia (IOCG systems), also use Key Mineral fields to describe other important minerals
XIN	Intrusive breccia (near margins of intrusion), use texture codes to describe clasts, use Rock 2 to describe composition of intrusive unit.	XVO	Eruptive volcanic breccia (eg: on margins of breccia pipe / diatreme)

Iron Ore Mineralisation (prefix I...)			
ICI	pisolitic channel iron deposit	IMH	massive hematite (eg: total replacement of BIF in BID systems)
IDI	dedrital iron deposit	IMM	massive magnetite (eg: total replacement of BIF)
IMG	massive goethite, undiff (eg: total replacement of BIF in BID systems)	ISMG	semi-massive goethite, undiff (eg: partial replacement of BIF in BID systems)
IMGO	massive goethite, ochrous (soft, friable ores in BID systems)	ISMH	semi-massive hematite (eg: partial replacement of BIF in BID systems)
IMGV	massive goethite, vitreous / siliceous (hard, non-friable ores in BID systems)	ISMM	semi-massive magnetite (eg: partial replacement of BIF)

Other			
STOPE	Void / stope	NS	No sample / core loss
TAZ	Total alteration zone - not possible to determine original rock type: used as a <i>LAST RESORT</i> , must always indicate "best guess" as to the original rock type	FLT	Fault - only to be used in <i>EXTREMELY</i> broken ground with near complete destruction of rock mass (eg: fault gouge): used as a <i>LAST RESORT</i> only if the mylonite / cataclastic codes are not applicable
QZV	Quartz vein (use Key Minerals to describe important minerals other than quartz).	VN	Vein, not quartz-rich (use Key Minerals to describe vein minerals & see vein description)

ROCK TEXTURES:

General Terms / Textures			
CLY	clayey (eg: as a descriptor in weathered / altered rocks)	BX	breccia / brecciated (structural, hydrothermal or volcanic - clasts should be angular)
SLT	silty (eg: as a descriptor for a dirty limestone)	IND	indurated / "hardpanised" (for surficial materials)
SND	sandy (eg: as a descriptor for a dirty limestone)	JNT	jointed (only for strongly joint fractured rocks)
QZ	quartzose / quartz-rich (as in sediment)	FR	fractured
GRV	gravel / gravelly (eg: as a descriptor for colluvium)	MLD	milled, for clasts in volcanic breccias (gas-streaming) or effusive veins (often associated with vein sediment)
PIS	pisolite / pisolitic	SPT	spotted
GOE	goethite / goethitic (eg: for oxidised rocks)	WD	wood / organic clasts or fragments
HEM	hematite / hematitic (eg: for oxidised rocks)	BND	banded (can be used in volcanic, metamorphic or sedimentary rocks - see also vein codes)
MT	magnetic / magnetite	BDD	bedded (can be used in volcanic, metamorphic or sedimentary rocks - see also vein codes)
GPH	graphitic (as in graphitic slate - higher grade than carbonaceous shale)	BOT	botryoidal / mammillated
CLC	calcareous (eg: in calcareous siltstones / shales)	BXW	boxworked
MSV	massive	HOM	homogeneous

ROCK TEXTURES (cont'd):
Grain Size Terms

VFG	very fine grained < 0.1mm (sediment)	PBL	pebbles / pebbly (sediment: 8-32mm)
FGR	fine grained <1mm (sediment & igneous)	CBL	cobbles / cobbly (sediment: 32-256mm)
MGR	medium grained (igneous: 1-5mm / sediment: 1-2mm)	BLD	boulder (sediment: >256mm)
CGR	coarse grained (igneous: 5-30mm / sediment: 2-4mm)	EQG	equigranular or granoblastic
VCG	very coarse grained (igneous: >30mm / sediment: 4-8mm)	SER	seriate (range in grain sizes)
MXT	megacrystic (eg: K-Spar megacrystic granite)	PEG	pegmatite / pegmatitic

Grain / Clast Morphology Terms / Textures

EUH	euhedral grains	RND	rounded clasts / grains / crystal fragments
SBH	subhedral grains	SRN	subrounded / grains / crystal fragments
ANH	anhedral grains	SAG	subangular clasts / grains / crystal fragments
		ANG	angular clasts / grains / crystal fragments

Sedimentary Terms / Textures

LAM	laminated (for sediments and possibly large veins - see vein codes)	CBN	carbonaceous (as in carbonaceous / black shale NOT calcareous or graphitic)
FLG	flaggy	IJD	injection dykes / flame structures (sedimentary)
PHL	phyllitic (weakly metamorphosed shale)	RUC	rip up clasts
FSF	fossiliferous	ERS	erosional scours
PSO	poorly sorted (sedimentary / volcanic rocks / volcanic breccias)	MSU	matrix supported (sedimentary / volcanic rocks / volcanic breccias)
WSO	well sorted (sedimentary / volcanic rocks / volcanic breccias)	CSU	clast supported (sedimentary / volcanic rocks)

Bedding Terms / Textures

BTN	bedded - thinly (<1cm)	BFF	fine grained beds >> coarse grained beds (relative abundance of interbedded sediments: eg - sandstone and shale)
BMO	bedded - moderately (1cm? to 30cm)	BFC	fine grained beds > coarse grained beds (relative abundance of interbedded sediments: eg - sandstone and shale)
BTK	bedded - thickly (>30cm)	BFE	fine grained beds = coarse grained beds (relative abundance of interbedded sediments: eg - sandstone and shale)
BPM	bedded - poorly defined to massive (>1m) bedding	BCF	coarse grained beds > fine grained beds (relative abundance of interbedded sediments: eg - sandstone and shale)
ITB	interbedded	BCC	coarse grained beds >> fine grained beds (relative abundance of interbedded sediments: eg - sandstone and shale)
XBD	cross bedded (including trough and ripple cross bedding)	BGR	bedding - graded bedding

Volcano-Sedimentary Terms / Textures

AP	accretionary lapilli	LC	lithic / lithic clasts
ASH	ash / ash-rich (in matrix)	MM	monomict (conglomerates / volcanic sediments / volcanic breccias)
BIM	bimodal (generally grainsize for sediments - can be for composition of volcanic clasts)	PM	polymict (conglomerates / volcanic sediments / volcanic breccias)
XTR	crystal-rich / crystal fragments		

ROCK TEXTURES (cont'd):

Volcanic Terms / Textures			
PH	phyric: for lavas with phenocrysts (use porphyritic / porphyroblastic for igneous / metamorphic rocks)	SX	spinifex textured; undifferentiated (specific to komatiites, may also occur at quench / contact zones)
APH	aphanitic (glassy lavas)	SXC	coarse spinifex
FB	flow banded	SXF	fine spinifex
PLW	pillowed (for lavas)	SXM	medium spinifex
HYA	hyaloclastite / hyaloclastitic	SXR	randomly oriented spinifex grains
PP	peperite / peperitic (lava intruding wet, unconsolidated sediments)	SXS	sheaf / book spinifex grains
SPH	spherulitic	SXO	olivine spinifex
PBD	pebble dykes	SXP	pyroxene spinifex
VS	vesicular, amygdaloidal (in lavas)		
WLD	welded (for use in pumiceous tuffs / volcanoclastic rocks / ignimbrites): MUST have evidence of compaction or flowage	SXB	sheeted pyroxene spinifex ("stringy beef" texture)
PUM	pumiceous / pumice / scoria fragments		

Igneous / Metamorphic Terms / Textures			
ACL	acicular / needle-like minerals (not bladed / spinifex textured)	AC	cumulate textured: adcumulate (generally in ultramafic rock or layered intrusions)
ATO	atoll textured grains (eg: quenched olivine crystals)	MC	cumulate textured: mesocumulate (generally in ultramafic rocks or layered intrusions)
AUG	augen textured	OC	cumulate textured: orthocumulate (generally in ultramafic rocks or layered intrusions)
INT	intruded / intercalated	LEU	leucocratic (<35% ferro-magnesian / dark minerals)
HF	hornfels / hornfelsesd	MES	mesocratic (35-65% ferro-magnesian / dark minerals)
SCC	saccharoidal / sugary (mainly for metamorphic rocks)	MEL	melanocratic (>65% ferro-magnesian / dark minerals)
GN	gneissose	PMM	melanosome (partial melt texture)
GRP	graphic textured (as in granites & pegmatites)	PML	leucosome (partial melt texture)
SKL	skeletal grains	MIA	miarolitic cavities
SOP	sub-ophitic	MIG	migmatitic
HRS	harrisitic grains, distinct from acicular grain (eg: harrisitic olivine in komatiite)	MYR	myrmektite
HPR	hopper grains (olivine mineral texture)	OPH	ophitic (distinct in some dolerites)
HYP	hypidiomorphic	PK	poikilitic
IDO	idiomorphic	PO	porphyritic (generally for intrusive rocks) / porphyroblastic (metamorphic rocks)
VRT	varitextured	BOU	boudinaged
LAY	layered (for igneous rocks only, use bedding terms for sediments)	PTG	ptygmatic (as in ptygmatically veined gneiss)

Breccia Clast (compositions / lithotypes)			
X\$	breccia clast; sulphidic (undiff)	XI	breccia clast; intermediate (undiff)
XS	breccia clast; sediment (undiff)	XIV	breccia clast; intermediate volcanic
XSU	breccia clast; fine grained sediment (shale, slate, mudstone, siltstone etc...)	XM	breccia clast; mafic (undiff)
XSD	breccia clast; medium grained sediment (arkose, sandstone etc...)	XMV	breccia clast; mafic volcanic
XSC	breccia clast; coarse grained sediment	XDD	breccia clast; doleritic
XCB	breccia clast; carbonate / limestone	XDG	breccia clast; gabbroic
XC	breccia clast; chert / BIF	XDA	breccia clast; anorthositic
XF	breccia clast; felsic (undiff)	XDT	breccia clast; troctolitic
XFV	breccia clast; felsic volcanic	XU	breccia clast; ultramafic (undiff)
XGR	breccia clast; granitic	XPX	breccia clast; pyroxenitic
XDI	breccia clast; dioritic	XPD	breccia clast; peridotitic

ROCK TEXTURES (cont'd):
Sulphide Textural Terms

Note: Use ORE MINERAL FIELDS to describe habits of important / ore minerals

NT	net-textured sulphides	STR	stringer sulphides
NTR	reverse net-textured sulphide		

Structural Terms / Textures

DH	downhole facing direction (younging direction)	FO	fold / folded (undifferentiated style)
UH	uphole facing direction (younging direction)	FM	fold: M-fold (looking up-hole)
CLV	cleavage	FS	fold: S-fold (looking up-hole): use ONLY in oriented drill core or if cleavage relationships can be determined
FOL	foliated (tightly spaced cleavage to weakly sheared)	FZ	fold: Z-fold (looking up-hole): use ONLY in oriented drill core or if cleavage relationships can be determined
SZ	strongly schistose	CRN	crenulated
MYL	mylonitic - strongly sheared	LIN	lineated (as in L- and L-S tectonites)
STY	stylolite / stylolitic		

MINERAL SPECIES:
Metal / Ore / Sulphide Minerals

CU	Native copper	ILM	Ilmenite
AU	Native gold	LOE	Loellingite
AG	Native silver	MAL	Malachite
ELT	Electrum	MAR	Marcasite
PT	Platinum	ML	Millerite
PD	Palladium	MO	Molybdenite
ALL	Allanite	MNZ	Monazite
AN	Antimony	NIC	Niccolite / Nickeline (NiAs)
AGT	Argentite	ORP	Orpiment
AS	Arsenopyrite	PN	Pentlandite
AZR	Azurite	PBL	Pitchblende
BI	Bismuthanite / Bismuth	PY	Pyrite
BO	Bornite	PO	Pyrrhotite
CAS	Cassiterite (tin)	SCH	Scheelite
CER	Cerussite (Pb Carbonate)	SP	Sphalerite
CH	Chalcocite	STB	Stibnite
CP	Chalcopyrite	SXX	Sulphide: unknown
CR	Chromite	S	Sulphur
CRY	Chrysocolla	TA	Tantalite
CNB	Cinnabar	TEL	Telluride (undifferentiated)
CBT	Cobaltite	TNN	Tennantite
CV	Covellite	TET	Tetrahedrite
CUB	Cubanite (Cu sulphide)	TBN	Torbenite (Cu-U Phosphate)
CUP	Cuprite	TRL	Troilite (FeS in meteorites)
DMD	Diamond	URN	Uranite
DSP	Diaspore (assoc with bauxite)	VIO	Violarite (Ni ₂ FeS ₄)
ENR	Enargite	WO	Wolframite
GA	Galena	WLL	Willemite (ZnSiO ₂)
GNT	Garnierite (Ni laterites)	WUR	Wurtzite
GDF	Gersdorffite (Ni(Pt)AsS)	ZIN	Zincite (ruby zinc)
GBB	Gibbsite (bauxite mineral)	ZRC	Zircon

Carbonate Minerals

CB	Carbonate (undifferentiated)	DLM	Carbonate - Dolomite
ANK	Carbonate - Ankerite	MGN	Carbonate - Magnesite
CT	Carbonate - Calcite	SD	Carbonate - Siderite
ARG	Aragonite	RDC	Rhodocrosite (Mn-carbonate)
HZC	Hydrozincite	SMT	Smithsonite (Zn carbonate)

MINERAL SPECIES (cont'd):

Silicate Minerals			
AXN	Axinite	ALB	Feldspar - Albite
BRL	Beryl	AMZ	Feldspar - Amazonite (Pb - bearing)
BST	Bustamite	ANO	Feldspar - Anorthite
FLR	Flourite	LAB	Feldspar - Labradorite
EPD	Epidote	MCR	Feldspar - Microcline
CLZ	Clinozoisite (epidote mineral)	OLG	Feldspar - Oligoclase
PDM	Piedmontite / Piemontite (red-brown epidote)	ORT	Feldspar - Orthoclase
SPN	Sphene / Titanite	PLG	Feldspar - Plagioclase
TPZ	Topaz	KFS	Feldspar - Potassium-feldspar (undiff)
TML	Tourmaline (undifferentiated)	SAN	Feldspar - Sanidine
AMP	Amphibole (undifferentiated)	FLD	Feldspar (undifferentiated)
ACT	Amphibole - Actinolite	PRX	Pyroxene (undifferentiated)
ANT	Amphibole - Anthophyllite	AUG	Pyroxene - Augite / Aegerine
CUM	Amphibole - Cummingtonite	BRZ	Pyroxene - Bronzite (opx)
GRN	Amphibole - Grunerite	CPX	Pyroxene - Clinopyroxene (undiff)
HMQ	Amphibole - Holmquistite (K-bearing)	DIO	Pyroxene - Diopside (cpx)
HBL	Amphibole - Hornblende	ENS	Pyroxene - Enstatite (opx)
TRM	Amphibole - Tremolite	HEN	Pyroxene - Hendenbergite (cpx: Fe-rich end member to Diopside)
ATG	Asbestos - Antigorite	HYP	Pyroxene - Hypersthene (opx)
ACR	Asbestos - Chrysotile	OMP	Pyroxene - Omphacite (cpx)
ASB	Asbestos (undifferentiated)	OPX	Pyroxene - Orthopyroxene (undiff)
QZ	Quartz (use for mesothermal grains)	SPO	Pyroxene - Spodumene (Li-bearing cpx)
QZS	Quartz: (sub)chalcedonic silica (amorphous) - common in epithermal veins	RHD	Rhodonite (pyroxenoid)
AMT	Quartz: Amethyst	OLV	Olivine (undifferentiated)
QZB	Quartz: blue quartz (BH type)	FAY	Olivine - Fayalite
QZM	Quartz: microcrystalline	FOR	Olivine - Forsterite
SI	Silica / Silicified (use for alteration instead of quartz)	ZEO	Zeolite (undifferentiated)
LAZ	Feldspathoid - Lazurite	LAU	Zeolite - Laumontite
LEU	Feldspathoid - Leucite	NAT	Zeolite - Natrolite
NPH	Feldspathoid - Nepheline	PRE	Zeolite - Prehnite
SOD	Feldspathoid - Sodalite	PUM	Zeolite - Pumpellyite
		SLB	Zeolite - Stilbite

Metamorphic Minerals			
AND	Andalusite	GAR	Garnet (undifferentiated)
SLM	Sillimanite	ALM	Garnet - Almandine
KYA	Kyanite	ADR	Garnet - Andradite
COR	Cordierite	GGR	Garnet - Grossular
STR	Staurolite	PYP	Garnet - Pyrope
GHN	Gahnite (Zn-spinel)	SPS	Garnet - Spessertine / Spessarite
SCA	Scapolite (Ca-rich m'mic rocks / alt'n of plagioclase)	GLP	Glaucofane
SPL	Spinel	JAD	Jadeite (Hi-P pyroxene)
WLS	Wollastonite (Ca-pyroxenoid)	SPP	Sapphirine (Hi-P m'mic)
CRS	Cristobalite (Hi-T quartz)		

Epithermal / Porphyry Minerals			
ADU	Adularia	KAO	Kaolinite
ALU	Alunite	MTM	Montmorillonite
DIK	Dickite	PYR	Pyrophyllite
ILT	Illite	SMC	Smectite
CLY	Clay (undifferentiated: illite / dickite / kaolinite / smectite.....)		

Oxide Minerals			
OX	Oxides (undifferentiated)	MGH	Maghemite
GOE	Goethite / Limonite	MNO	Manganese Oxide
HEM	Haematite	MKT	Mushketovite (magnetite psuedomorph on hematite)
SPC	Specularite / Specular Hematite	PRL	Pyrolusite (MnO2)
MT	Magnetite	RUT	Rutile / Leucoxene

MINERAL SPECIES (cont'd):
Phyllosilicate Minerals

SER	Sericite / Phengite	GLC	Glauconite
MV	Muscovite	GPH	Graphite
BT	Biotite	LEP	Lepidolite
PHG	Phlogopite	PRG	Paragonite
BRU	Brucite (Mg(OH) ₂)	PRV	Perovskite
CHL	Chlorite	SRP	Serpentine
TLC	Talc	STC	Stichtite (Mg-Cr muscovite, bright purple in serpentinite)
FU	Fuchsite (Cr muscovite)	STL	Stilpnomelane

Sulphate / Phosphate / Other Minerals

ANH	Anhydrite	GYP	Gypsum
APA	Apatite	HAL	Halite / Salt
BAR	Barite	JAR	Jarosite
CRN	Corundum	SUL	Sulphates (undifferentiated)

VEINS & STRUCTURE:
Vein Type Codes

BL	Bladed (epithermal veins)	PT	Ptygmatic veins
BN	Banded (eg: by mineral composition)	SH	Sheeted (numerous thin veins with similar orientation)
BX	Hydrothermal breccia	ST	Stringer veins
CB	Comb-textured ("sparry / dog-tooth")	SW	Stock-work (numerous veins with 2-3 dominant orientations)
CD	Chalcedonic	SY	Stylolitic veins
CF	Colloform (eg: fine rhythmic banding in epithermal veins)	TG	Tension gashes / en-echelon veins
LA	Laminated veins	VL	Veinlets - very thin, minor veins
MA	Massive vein (ie: massive quartz vein)	VU	Vuggy / drusy (open space)
PG	Pegmatitic / Pegmatite (granitic "veins")		

Degree of Shearing

% Breaks	Definition
0	Unfoliated and undeformed rock
10	Very weak or incipient foliation; no associated mineral growth or recrystallisation (may be mistaken for flow banding) stylolites, spaced cleavages
20	Weak foliation; continuous or slaty cleavages and other primary flattening deformation involving mineral alignment
30	Moderate foliation; poorly developed metamorphic segregation
40	Strong foliation; development of segregation banding. Micaceous minerals dominant to sub-dominant; pervasive foliation, original rock type discernible
50	Schistosity; moderate to strong segregation banding; some primary structures preserved; most textures destroyed in volcanic rocks preserved in sediments and phaneritic rocks
60	Schistosity; strong mineral segregation into compositional laminae
70	Schistosity; strong foliation with slickensiding and mineral growth on s-surfaces, broken rock.
>80	Mylonite / cataclastite

VEINS & STRUCTURE (cont'd):

Structure Types Max of 1 descriptor per feature / structure measured.			
S0	Bedding / Geological Contact	L	Lineation: undifferentiated
S1	1st Fabric / Cleavage (if structural relationships known accurately)	LM	Mineral lineation
S2	2nd Fabric / Cleavage (if structural relationships known accurately)	L1	Lineation related to 1st fabric / cleavage
S3	3rd Fabric / Cleavage (if structural relationships known accurately)	L2	Lineation related to 2nd fabric / cleavage
S4	4th Fabric / Cleavage (if structural relationships known accurately)	L3	Lineation related to 3rd fabric / cleavage
SA	Fabric / Cleavage - Axial Plane to fold (if structural relationships not accurately known)	L4	Lineation related to 4th fabric / cleavage
SE	Early Fabric / Cleavage - based on observed relationships/timing (if structural relationships not accurately known)	FA	Fold axis / fold hinge: undifferentiated
SL	Late Fabric / Cleavage - based on observed relationships/timing (if structural relationships not accurately known)	F1	Fold axis: 1st deformation event
SZ	Shear	F2	Fold axis: 2nd deformation event
SZDS	Shear with dip-slip movement sense (unable to determine if Reverse or Normal Shear)	F3	Fold axis: 3rd deformation event
SZDX	Shear with dextral movement sense (as determined by kinematic indicators)	F4	Fold axis: 4th deformation event
SZNM	Normal Shear (as determined by kinematic indicators)	FL	Foliation (default fabric/foliation if structural relationships are not known)
SZRV	Reverse Shear (as determined by kinematic indicators)	FT	Fault (undifferentiated)
SZSS	Shear with strike-slip movement sense (unable to determine if Sinistral or Dextral movement)	FTDS	Fault with dip-slip movement sense (unable to determine if Reverse or Normal Fault)
SZSX	Shear with sinistral movement sense (as determined by kinematic indicators)	FTDX	Fault with dextral movement sense (as determined by kinematic indicators)
BD	Banding - in metamorphic rocks: NOT bedding	FTNM	Normal Fault (as determined by kinematic indicators)
BX	Breccia	FTRV	Reverse Fault (as determined by kinematic indicators)
IC	Geological Contact - Intrusive	FTSS	Fault with strike-slip movement sense (unable to determine if Sinistral or Dextral movement)
JN	Joint	FTSX	Fault with sinistral movement sense (as determined by kinematic indicators)
VN	Vein - undifferentiated (put composition in Vein Type & Vein Minerals columns)		

ALTERATION:

Alteration Intensity Guidelines:	
Breaks (%)	Definition
0	No alteration
10	Weak alteration
30	Moderate alteration
50	Strong alteration, replacement of mineralogy, fabric preserved
80	Intense alteration, near-total replacement of original fabric and mineralogy

ALTERATION (cont'd):
Nature / character / setting of ALTERATION (not composition)

Fracture / plumbing network that allows fluid access to the rock-mass

Maximum of 1 descriptor to be used. Use dominant/main descriptor.

prefix U:

UNDIFFERENTIATED / UNIDENTIFIED plumbing - ONLY for use when unable to confidently identify plumbing system for the alteration (eg: in large-scale High-sulphidation epithermal systems)

UP	Pervasive overprint without shearing	UC	Preferential replacement of clast in fragmental / clastic rock.
UI	Irregular or patchy alteration	UB	Preferential replacement of bedding in fragmental / clastic rock.
UX	Preferential replacement of matrix in fragmental / clastic rock.	UM	Preferential replacement of specific mineral species within rock-mass (distinct from pervasive alteration)

prefix S:

SHEARING / FOLIATION acting as plumbing / pathway for alteration fluids (eg: in orogenic deposits)

SP	Pervasive within zone of shearing	SC	Preferential replacement of clast in fragmental / clastic rock - <i>ONLY</i> if still identifiable as clasts (eg: relict pebbles or cobbles are recognisable)
SI	Irregular or patchy alteration within shear	SB	Preferential replacement of bedding in fragmental / clastic rock - <i>ONLY</i> if bedding is preserved and recognisable
SX	Preferential replacement of matrix in fragmental / clastic rock - <i>ONLY</i> if still identifiable as matrix (eg: relict pebbles or cobbles are recognisable)	SM	Preferential replacement of specific mineral species within rock-mass (distinct from pervasive alteration)

prefix V:

Selvage to VEIN / VEIN-SET that is the likely feature that acted as plumbing / pathway for alteration fluids

VP	Pervasive alteration centred on the vein / vein-set	VC	Preferential replacement of clast in fragmental / clastic rock
VI	Irregular or patchy alteration adjacent to the vein / vein-set	VB	Preferential replacement of bedding in fragmental / clastic rock - can produce the classic "telegraph" or "christmas-tree" alteration patterns at the local and/or deposit scale
VX	Preferential replacement of matrix in fragmental / clastic rock	VM	Preferential replacement of specific mineral species within rock-mass (distinct from pervasive alteration)

prefix W:

Alteration associated with a STOCKWORK set of veins that is the likely feature that acted as plumbing / pathway for alteration fluids

WP	Pervasive alteration centred on the vein stockwork	WC	Preferential replacement of clast in fragmental / clastic rock
WI	Irregular or patchy alteration adjacent to the vein stockwork	WB	Preferential replacement of bedding in fragmental / clastic rock
WX	Preferential replacement of matrix in fragmental / clastic rock	WM	Preferential replacement of specific mineral species within rock-mass (distinct from pervasive alteration)

prefix X:
HYDROTHERMAL BRECCIAS

X	Alteration associated hydrothermal / vein breccias (for alteration intensity >30% only) <i>NOTE</i> - different ambient conditions related to brecciation (eg: P & T) can produce modified alteration products from the same ore fluid
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ORE MINERAL HABITS:

Ore Mineral Habits			
AC	Acicular	IC	Intercumulus
AG	Mineral aggregates	IN	Inclusions
AM	Amorphous	IT	Interstitial
BC	Breccia clast	IR	Irregular
BD	Bedded (distinct from replacement of bedding)	MA	Massive
BL	Blebbly	NT	Net-textured
BM	Breccia matrix	PK	Poikilitic
BN	Banded (distinct from replacement of bedding)	PV	Pervasive
BO	Botryoidal / mammillated	RA	Radiating
BX	Brecciated	RB	Preferential replacement of bedding (sediment / volcaniclastic)
CF	Colloform	RC	Preferential replacement of clasts (sediment / volcaniclastic)
CO	Concretion(s)	RM	Preferential mineral replacement
CV	Cleavage plane / foliation (along / aligned)	RN	Reverse net-textured
DN	Dendritic	RX	Preferential replacement of matrix (sediment / volcaniclastic)
DS	Disseminated	SM	Semi-massive
FB	Framboydal	ST	Stringer
FL	Flame-textured	TL	Telegraph
HD	Heavy disseminated	VN	Internal to vein
HY	Hydrothermal breccia infill (part of)	VS	Vein selvage

REGOLITH & WEATHERING:

Regolith & Weathering Guidelines	
Code	Description
TPD	Transported or superficial deposits: Material that has undergone significant transportation from source (eg: loess, gravels or colluvium). <i>NOT</i> scree.
SOIL	Residual soil: Derived from basement / bedrock material
LAT	Lateritic residuum: Duricrust and lateritic gravels; complete replacement of primary and secondary fabric (rare in China). NOTE: Silcrete and ferricretes are often transported and not residual landform features.
USAP	Upper saprolite: Lack of primary rock fabric; clay dominated; leached or secondary cemented.
REDOX	Redox front: Strong Fe-rich zone between upper and lower saprolite denoting base of leaching of upper saprolite. Usually strongly goethitic (yellow) if acidic or occasionally hematitic (red) if alkaline. Generally <5m thick. <i>Not always present / identifiable</i>
LSAP	Lower saprolite: Clay mineral dominated; <70% secondary oxides; primary fabric preserved; sulphides absent or replaced; may preserve rock colour.
SAPRK	Saprock: <20% secondary oxides; fine detail in fabric preserved; sulphides weathered; preserved felsic minerals
FRESH	Fresh rock: Fresh sulphides and silicates.

PERCENTAGE RANGES:

To be used for: Mineral%, Shearing, Alteration Intensity, Vein%, Ore Mineral% & Sample Recovery

0, 0.5 (trace), 1, 2, 3, 5, 7, 10 (only 5% increments after 10%), 15, 20, 25, 30, 35.....85, 90, 95, 100

GEOTECHNICAL LOGGING CODES:
ROCK STRENGTH

Code	DEFINITION & DESCRIPTION
VW	VERY WEAK: Crumbles, can scratch with finger-nail, cut & peel with knife (eg: Clay)
W	WEAK: Can scratch with iron nail, can cut but not peel with knife (eg: Gypsum)
M	MEDIUM: Scratch with nail with difficulty, scratch with knife hammer 2-3 mm dent multiple blows to break
S	STRONG: Difficult to scratch with a knife, hammer makes small dent (>1-2 mm), multiple blows to break
VS	VERY STRONG: Hammer causes superficial damage (eg: Silicified rhyolite & BIF)

NUMBER OF FRACTURE SETS (NFS)

Any whole number equal or greater than 0 (no decimals).

FRACTURE ROUGHNESS

-	No Fractures		
PR	Planar rough	PP	Planar polished
PS	Planar smooth	PK	Planar slickensided
SR	Stepped rough	SP	Stepped polished
SS	Stepped smooth	SK	Stepped slickensided
UR	Undulating rough	UP	Undulating polished
US	Undulating smooth	UK	Undulating slickensided

FRACTURE ANGLE TYPE CATEGORIES


