

Abbreviations for names of rock-forming minerals

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Nearly 30 years have elapsed since Kretz (1983) provided the mineralogical community with a systematized list of abbreviations for rock-forming minerals and mineral components. Its logic and simplicity have led to broad acceptance among authors and editors who were eager to adopt a widely recognized set of mineral symbols to save space in text, tables, and figures.

Few of the nearly 5000 known mineral species occur in nature with a frequency sufficient to earn repeated mention in the geoscience literature and thus qualify for the designation “rock-forming mineral,” but a reasonable selection of the most common and useful rock-forming minerals likely numbers in the several hundreds. The original list by Kretz (1983) contained abbreviations for 193 of these.

We propose an expansion to the list initiated by Kretz (1983) (see next page). Modest expansions and revisions were made by Spear (1993), Holland and Powell (1998), the Mineralogical Association of Canada, and Siivola and Schmid (2007). Our revised list of abbreviations has 371 entries. Significant numbers of the new entries are the result of three decades of research in high- and ultrahigh-pressure metamorphic terrains, the explicit inclusion of Mg and Fe end-members of solid-solution series (as in the amphiboles), recent work on extraterrestrial samples, and the increased relevance to petrology of numerous accessory minerals.

The two systems of abbreviations currently most in use—Kretz (1983), including modifications; and Holland and Powell (1998)—differ in terms of style and concept. Kretz abbreviations are 2–3 letters and use uppercase first letters for minerals and lower case letters throughout for mineral components (e.g., the almandine component of garnet); the Holland and Powell system varies from 1–5 letters and uses lowercase throughout. The Kretz system provides abbreviations for selected intermediates in solid-solution mineral series. The Holland and Powell system is restricted to abbreviations for end-members for which there are available thermodynamic data that have been included in the Holland and Powell database. The two systems have the same abbreviations for some minerals (other than capitalization), but in many cases use different symbols for the same mineral, for example, “Crn” (Kretz) and “cor” (H&P).

The selection of minerals to include in a list of abbreviations is subjective, but we have tried to err on the side of being inclusive, listing some minerals for which the status is questionable according to the International Mineralogical Association. For example, we accommodate alternative choices such as titanite (Ttn) and sphene (Spn); hypersthene (Hyp), enstatite (En), and orthopyroxene (Opx); glaucophane (Gln), crossite (Crt), and

riebeckite (Rbk); and albite (Ab) and anorthite (An) as well as plagioclase (Pl), recognizing that some petrologists have uses for these mineral names. In addition, although our focus is on rock-forming minerals, some hypothetical and/or synthetic phases are included in our list, as well as an abbreviation for “liquid” (Liq). We have also included some abbreviations for mineral groups, e.g., aluminosilicates (Als, the Al_2SiO_5 polymorphs), and other descriptive terms (e.g., opaque minerals). The choice of abbreviations attempts as much as possible to make the identity of the mineral instantly obvious and unambiguous.

UPDATED LIST OF MINERAL ABBREVIATIONS

In this contribution, abbreviations from Kretz (with some modifications) and new abbreviations are listed (Table 1, next page). The following format was used for assigning abbreviations:

(1) The first letter is capitalized; the other letter(s) are lower case, with the exception of Phase A, abbreviated as PhA.

(2) The first letter of the abbreviation is the first letter of the mineral name; subsequent letters are selected from the mineral name.

(3) Most abbreviations consist of 2 or 3 letters, but a 4-letter abbreviation is used when the addition of F for ferro- or M for magnesio- resulted in ambiguity in the 3-letter version (e.g., Mear for magnesioicapholite).

(4) Mineral abbreviations were selected so as not to correspond to abbreviations for elements. Note that rule 4 was violated by a few of the original Kretz abbreviations (Mo for molybdenite; Ne for nepheline), so some original Kretz abbreviations have been changed to follow this rule. Others have been modified to avoid ambiguity with minerals added to the list.

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REFERENCES CITED

- Kretz, R. (1983) Symbols of rock-forming minerals. *American Mineralogist*, 68, 277–279.
- Holland, T.J.B. and Powell, R. (1998) An internally-consistent thermodynamic data set for phases of petrologic interest. *Journal of Metamorphic Geology*, 16, 309–343.
- Siivola, J. and Schmid, R. (2007) Recommendations by the IUGS Subcommission on the Systematics of Metamorphic Rocks: List of mineral abbreviations. Web version 01.02.07. (http://www.bgs.ac.uk/scmr/docs/papers/paper_12.pdf) IUGS Commission on the Systematics in Petrology.
- Spear, F.S. (1993) *Metamorphic Phase Equilibria and Pressure-Temperature-Time Paths*. Monograph 1, Mineralogical Society of America, Chantilly, Virginia.

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TABLE 1. Updated list of abbreviations

Symbol	Mineral Name	IMA status*	Symbol	Mineral Name	IMA status*	Symbol	Mineral Name	IMA status*
Acm	acmite	D	Chu	clinochumite	G	Ged	gedrite	Rd
Act	actinolite	A	Cpt	clinoptilolite	A	Gh	gehlenite	G
Adl	adularia	I	Cpx	clinopyroxene	GROUP	Gk	geikielite	G
Aeg	aegirine	A	Czo	clinozoisite	G	Gbs	gibbsite	A
Ak	åkermanite	G	Cln	clintonite	A	Gis	gismondine	A
Ab	albite	G	Coe	coesite	A	Glt	glauconite	GROUP
Afs	alkali feldspar	GROUP	Coh	cohenite	G	Gln	glaucophane	Rd
Aln	allanite	A	Crd	cordierite	G	Gme	gmelinite	A
Alm	almandine	G	Crr	corrensite	G	Gth	goethite	A
Als	aluminosilicate (Al ₂ SiO ₅ polymorphs)	GROUP	Crn	corundum	G	Gdd	grandierite	G
Alu	alunite	Rd	Cv	covellite	G	Gr	graphite	G
Amk	amakinite	Rd	Crs	cristobalite	G	Gre	greenalite	G
Ame	amesite	G	Crt	crossite	D	Grs	grossular	A
Amp	amphibole	GROUP	Crl	cryolite	G	Gru	grunerite	Rd
Anl	analcime (analcite)	A	Cbn	cubanite	G	Gp	gypsum	G
Ant	anatase	A	Cum	cunningtonite	Rd	Hl	halite	G
And	andalusite	G	Cpr	cuprite	G	Hrm	harmotome	A
Adr	andradite	G	Csp	cuspidine	G	Hst	hastingsite	Rd
Ang	anglesite	G	Dph	daphnite	not listed	Hsm	hausmannite	G
Anh	anhydrite	G	Dat	datolite	G	Hyn	häuyne	G
Ank	ankerite	G	Dbr	daubreelite	G	Hzl	heazlewoodite	G
Ann	annite	A	Dee	deerite	A	Hd	hedenbergite	A
An	anorthite	G	Dia	diamond	G	Hem	hematite	A
Ano	anorthoclase	I	Dsp	diaspore	G	Hc	hercynite	G
Ath	anthophyllite	Rd	Dck	dickite	G	Hul	heulandite	A
Atg	antigorite	Rn	Dg	digenite	A	Hbn	hibonite	G
Ap	apatite	GROUP	Di	diopside	A	Hbs	hibschite	Rn
Apo	apophyllite	GROUP	Dpt	diopside	G	Hgb	högbomite	D
Arg	aragonite	G	Dol	dolomite	G	Hol	hollandite	G
Arf	arfvedsonite	A	Drv	dravite	G	Hlm	holmquistite	Rd
Arm	armalcolite	Rd	Dum	dumortierite	G	Hbl	hornblende	GROUP
Apy	arsenopyrite	A	Eas	eastonite	Rd	Hw	howieite	A
Aug	augite	A	Ec	ecandrewsite	A	Hu	humite	G
Aw	awaruite	G	Eck	eckermannite	A	Hgr	hydrogrossular	GROUP
Ax	axinite	GROUP	Ed	edenite	A	Hyp	hypersthene	D
Bab	babingtonite	G	Elb	elbaite	G	Ill	illite	GROUP
Bdy	baddeleyite	G	Ell	ellenbergerite	A	Ilm	ilmenite	G
Brt	barite (baryte)	A	Eng	enargite	G	Ilv	ilvaite	G
Brs	barroisite	Rd	En	enstatite (ortho-)	A	Jd	jadeite	A
Bei	beidellite	G	Ep	epidote	GROUP	Jrs	jarosite	Rd
Brl	beryl	G	Eri	erionite	A	Jim	jimthompsonite	A
Bt	biotite	GROUP	Esk	eskolaite	G	Jhn	johannsenite	A
Bxb	bixbyite	G	Ess	esseneite	A	Krs	kaersutite	Rd
Bhm	böhmite (boehmite)	G	Eud	eudialite	A	Kls	kalsilite	G
Bn	bornite	A	Fas	fassaite	D	Kam	kamacite (α-FeNi)	D
Brk	brookite	G	Fa	fayalite	G	Kln	kaolinite	A
Brc	brucite	G	Fsp	feldspar	GROUP	Ktp	kataphorite	Rd
Bst	bustamite	G	Fac	ferro-actinolite	Rd	Kfs	K-feldspar	informal
Cal	calcite	G	Fath	ferro-anthophyllite	Rd	Khl	K-hollandite	H
Ccn	cancrinite	G	Fbrs	ferrobarroisite	A	Kir	kirschsteinite	G
Cnl	cannilloite	H	Fcar	ferrocapholite	A	Krn	kornepurine	G
Cb	carbonate mineral	GROUP	Fcel	ferroceladonite	A	Kos	kosmochlor	A
Car	carpholite	G	Fec	ferro-eckermannite	Rd	Kut	kutnohorite (kutnahorite)	G
Cst	cassiterite	G	Fed	ferro-edenite	Rd	Ky	kyanite	A
Cel	celadonite	A	Fgd	ferrogedrite	Rd	Lrn	larnite	G
Clt	celestine	A	Fgl	ferroglaucophane	Rd	Lmt	laumontite	A
Cls	celsian	G	Fkrs	ferrokaersutite	A	Lws	lawsonite	G
Cer	cerussite	G	Fny	ferroxyboite	H	Lzl	lazulite	A
Cbz	chabazite	A	Fprg	ferropargasite	Rd	Lzr	lazurite	G
Cct	chalcocite	G	Frct	ferrorichterite	A	Lpd	lepidolite	GROUP
Ccp	chalcopyrite	G	Fs	ferrosilite	Rn	Lct	leucite	G
Chm	chamosite	G	Fts	ferrotschermakite	Rd	Lm	limonite	not listed
Chs	chesterite	A	Fwn	ferrowinchite	Rd	Liq	liquid	G
Chl	chlorite	GROUP	Fi	fibrolite (fibrous sillimanite)	informal	Lz	lizardite	G
Cld	chloritoid	G	Fl	fluorite	G	Lo	löllingite (loellingite)	G
Chn	chondrodite	G	Fo	forsterite	G	Mgh	maghemite	G
Chr	chromite	G	Fos	foshagite	G	Marf	magnesian-arfvedsonite	Rd
Ccl	chrysocolla	A	Frk	franklinite	G	Mcar	magnesio-carpholite	A
Ctl	chrysotile	Rd	Ful	fullerite	N	Mfr	magnesioferrite	G
Cin	cinnabar	G	Ghn	gahnite	G	Mhs	magnesian-hastingsite	Rd
Cam	clinoamphibole	GROUP	Glx	galaxite	G	Mhb	magnesian-hornblende	Rd
Clc	clinochlore	G	Gn	galena	G	Mkt	magnesian-kataphorite	Rd
Cen	clinoenstatite	A	Grt	garnet	GROUP			
Cfs	clinoferrosilite	A						

Symbol	Mineral Name	IMA status*	Symbol	Mineral Name	IMA status*	Symbol	Mineral Name	IMA status*
Mrbk	magnesioriebeckite	Rd	Pgt	pigeonite	A	Tae	taenite (γ -Fe, Ni)	G
Msdg	magnesiosadanagite	Rd	Pl	plagioclase	GROUP	Tlc	talc	G
Mst	magnesioatauroilite	A	Prh	prehnite	G	Trm	taramite	Rd
Mtm	magnesiotaramite	Rn	Prm	prismatine	Rd	Tnt	tennantite	G
Mws	magnesioiwustite	not listed	Psb	pseudobrookite	Rd	Tnr	tenorite	A
Mgs	magnesite	A	Pmp	pumpellyite-(Al)	A	Tep	tephroite	G
Mag	magnetite	G	Py	pyrite	G	Ttr	tetrahedrite	A
Maj	majorite	A	Pcl	pyrochlore	A	Thm	thomsonite	A
Mlc	malachite	G	Prp	pyrope	G	Thr	thorite	G
Mng	manganosite	G	Pph	pyrophanite	G	Tly	tilleyite	G
Mrc	marcasite	G	Prl	pyrophyllite	G	Ttn	titanite (sphene)	A
Mrg	margarite	A	Pxf	pyroxferroite	A	Tpz	topaz	G
Mar	marialite	G	Pxm	pyroxmangite	G	Tur	tourmaline	GROUP
Mei	meionite	G	Po	pyrrhotite	G	Tr	tremolite	Rd
Mill	melillite	GROUP				Trd	tridymite	G
Mw	merwinite	G	Qnd	qandilite	A	Tro	troilite	G
Mes	mesolite	A	Qz	quartz	A	Ts	tschermakite	Rd
Mc	microcline	G						
Mlr	millerite	G	Rnk	rankinite	G	Usp	ulvöspinel	G
Mns	minnesotaite	G	Rlg	realgar	G	Urn	uraninite	G
Mog	moganite	A	Rds	rhodochrosite	A	Uv	uvarovite	A
Mol	molybdenite	G	Rdn	rhodonite	A			
Mnz	monazite	A	Rct	richterite	A	Vtr	vaterite	A
Mtc	monticellite	G	Rbk	riebeckite	Rd	Vrm	vermiculite	G
Mnt	montmorillonite	G	Rwd	ringwoodite	A	Ves	vesuvianite	A
Mor	mordenite	A	Rdr	roedderite	A			
Mul	mullite	G	Rsm	rossmanite	A			
Ms	muscovite	A	Rt	rutile	G	Wds	wadsleyite	A
						Wag	wagnerite	Rd
Ntr	natrolite	A	Sdg	sadanagaite	Rd	Wrk	wairakite	A
Nph	nepheline	G	Sa	sanidine	G	Wav	wavellite	A
Nrb	norbergite	G	Sap	saponite	G	Wht	whitlockite	G
Nsn	nosean	G	Spr	sapphirine	G	Wlm	willmenite	G
Nyb	nyböite	Rd	Scp	scapolite	GROUP	Wnc	winchite	Rd
			Sch	scheelite	G	Wth	witherite	G
Ol	olivine	GROUP	Srl	schorl	G	Wo	wollastonite	A
Omp	omphacite	A	Scb	schreibersite	G	Wur	wurtzite	G
Opl	opal	G	Sep	sepiolite	G	Wus	wüstite	G
Opq	opaque mineral	informal	Ser	sericite	D			
Orp	orpiment	G	Srp	serpentine	GROUP	Xtm	xenotime	A
Oam	orthoamphibole	GROUP	Sd	siderite	G	Xon	xonotlite	G
Or	orthoclase	A	Sil	sillimanite	G			
Oen	orthoenstatite	D	Sme	smectite	GROUP	Yug	yugawaralite	A
Opx	orthopyroxene	GROUP	Sdl	sodalite	G			
Osm	osumilite	G	Sps	spessartine	A	Zeo	zeolite	GROUP
			Sp	sphalerite	A	Znw	zinnwaldite	GROUP
Plg	palygorskite	G	Spn	sphene (titanite)	D	Zrn	zircon	G
Pg	paragonite	A	Spl	spinel	G	Zo	zoisite	G
Prg	pargasite	Rd	Spd	spodumene	A			
Pct	pectolite	G	Spu	spurrite	G			
Pn	pentlandite	G	St	staurolite	G			
Per	periclase	G	Stv	stevensite	Q			
Prv	perovskite	G	Stb	stilbite	A			
Ptl	petalite	G	Stp	stilpnomelane	A			
PhA	phase A	not listed	Sti	stishovite	A			
Ph	phengite	G	Str	strontianite	G			
Php	phillipsite	A	Sud	sudowite	Rd			
Phl	phlogopite	A	Syl	sylvite	G			
Pmt	piemontite	A						

* International Mineralogical Association (IMA) abbreviations: A = Approved; D = Discredited; G = Grandfathered (generally regarded as valid mineral name); GROUP = Name designates a group of mineral species; H = hypothetical (e.g., synthetic); I = intermediate in a solid-solution series; Q = questionable; Rd = Redefinition approved by IMA Commission on New Minerals, Nomenclature and Classification (CNMNC); Rn = Renamed with approval of the CNMNC.