

Old German mineral names

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In German mineralogy books we are guaranteed to come across names such as *Zinkblende*, *Fahlerz*, *Flußspat*, *Glaskopf*, etc. In older works you will find *Buttermilcherz*, *Grauspießglanz* and more such terms that are far from the contemporary mineral nomenclature accepted by the International Mineralogical Association. Where do those names come from?

The development of mining in the early Middle Ages led to the creation of numerous names for ores, minerals and gangue in Germany. Terms such as *Glimmer* or *Glanz*, which derive from miner's jargon, denote groups of ores with a specific appearance or typical characteristics. Many of the names are very graphic (e.g., *Eisenstein*, *Glaskopf*) and therefore ideal for use within the miner's scene. Minerals with a low metal content, minerals that were unusable or that adversely affected further ore processing, were given mock names such as *Blende*, *Kobolt*, *Nickel*, *Wolfram* and *Mißpickel*. We should not forget that the miners were not paid by the hour, but by the amount of usable ore they brought to the surface. Everything unusable had to be chipped away as well and hence those swear names. Among gangue, we then encounter names such as *Spat*, *Wacke* (a kind of sandstone), *Gneiss*, etc. Some names are related to the application of the mineral in industry, such as *Flußspat*, which was used as a flux.

Due to the progress in the still rudimentary chemical analysis techniques, the discovery of new elements and the resulting increase in new mineral species, many new mineral names were created in the course of the 17th and 18th centuries. The need to structure the mineralogical nomenclature was also recognized. Abraham Gottlob Werner (1749-1817), who taught mineralogy at the Bergakademie in Freiberg, used the German mineral names from miner's jargon in his mineral system. Names such as *Quarz*, *Hornstein*, *Feuerstein*, *Glimmer*, *Schörl* were adopted by him unchanged, but he also combined old names by adding metal or color designations such as *Brauneisenstein*, *Quecksilber-Lebererz*, *Spießglansocker*, etc. Because Werner was an authority within mineralogy, he actually saved a series of old German names from extinction.

To understand some of those designations, we also need to know the German names of the chemical elements. It is simple that silver is called *Silber* in German and tin *Zinn*. But *Sauerstoff* for oxygen, *Wasserstoff* for hydrogen and *Quecksilber* for mercury, which can also be called *Merkur*, and *Blei* for lead, are less well known. Bismuth used to be called *Wismut* in German, sulfur is *Schwefel* and iron is *Eisen*.

The old German mineral names that are still in use today usually consist of combinations of an (old) mineral name such as *Fahlerz*, *Glanz*, *Blende*, *Spat*, *Ocker*, *Kies*, *Glimmer*, *Glas*, etc. and the name of a chemical element (which is present as the main component in the mineral). Whether these names still have a right to exist is another question that will not be discussed here. Those names are still used and knowledge of this terminology is necessary when consulting (older) German mineralogy books.

In the text below I want to give an overview of the main typical German mineral names, their derivatives and their origin (as far as can still be traced). The tables show the German names in alphabetical order on the left and the name we use for them in English on the right. Sometimes an old German name is used for more than one mineral and in that case all possible minerals are listed in the right column. For example, the name *Eisenschwärze* is used for both hematite and graphite. Incidentally, it will also be noticed that for some minerals several older names exist. For example, *Antimonfahlerz*, *Kupferantimonfahlerz*, *Kupferfahlerz* and *Spießglanzfahlerz* are all names for tetrahedrite.

Fahlerz

The name *Fahlerz* is derived from its gray to iron black color and comes from miner's jargon. These include sulfide minerals with different chemical compositions, but very similar in appearance. The best known *Fahlerze* are tennantite $(\text{Cu,Fe})_{12}\text{As}_4\text{S}_{13}$ and tetrahedrite $(\text{Cu,Fe})_{12}\text{Sb}_4\text{S}_{13}$, known as *Arsenfahlerz* and *Antimonfahlerz* respectively. The main *Fahlerzen*, depending on the composition, are:

<i>Antimonarsenfahlerz</i>	tennantite – tetrahedrite solid solution series
<i>Antimonfahlerz</i>	tetrahedrite
<i>Arsenfahlerz</i>	tennantite
<i>Bleifahlerz</i>	bourbonite
<i>Kupferantimonfahlerz</i>	tetrahedrite
<i>Kupferarsenfahlerz</i>	tennantite
<i>Kupferfahlerz</i>	tetrahedrite
<i>Kupfersilberantimonfahlerz</i>	freibergite
<i>Merkurfahlerz</i>	mercury bearing tetrahedrite
<i>Nickelfahlerz</i>	mixture of tetrahedrite and nickel minerals
<i>Quecksilberfahlerz</i>	mercury bearing tetrahedrite
<i>Silberbleifahlerz</i>	tetrahedrite
<i>Silberfahlerz</i>	silver bearing tetrahedrite
<i>Spießglanzfahlerz</i>	tetrahedrite
<i>Wismutfahlerz</i>	tennantite
<i>Zinkfahlerz</i>	zinc bearing tennantite
<i>Zinnfahlerz</i>	tennantite

6) Fahlerz ist ein schwarzgraues, festes Silbererz, welches aus Silber, Kupfer, Arsenik, Schwefel und Eisen besteht. Ich verstehe hier diejenige Art von Fahlerzten, die in etliche Marck Gehalt an Silber kommen, denn sonst werden wir unter denen Kupfererzten noch eine Art Fahlerz antreffen, die aber kaum in 6. oder 8 Loth Gehalt kommt. Hierunter gehören die Arten des Schwarzerztes, Braunerztes, 2c. ja selbst die sogenannten Kornähren von Franckenberg, und die dabey brechenden Stangengraupen, ja auch das fliegenfittige Silbererz des Wallerius, welches nichts als ein grauer Schiefer mit Abdrücken von Blättern, welche mit dergleichen Erz durchflossen, und mit zarten bunten Kupferlasurn angeflogen sind.

Lehman about Fahlerz in his "Entwurf einer Mineralogie" (1760)

Glanz

The additive *glanz* is used for (ore) minerals that show a strong metallic luster. The most famous example is *Bleiglanz*, which is still used as a synonym for galena in Germany. In the 16th century, this mineral was even called *Glanz* for short. Because galena often contains silver, *Glanz* was sometimes an important silver ore.

In addition to *Bleiglanz*, there are a whole series of minerals where in German the suffix *glanz* applies. Not surprising because sulfides, which were often used as ores, often show a metallic luster.

Within the *Glanze* there are also some minerals with the name *Spießglanz* or with this term in combination with the name of a chemical element. *Spießglanz* meant both native antimony and antimonite (stibnite). The term may be derived from the spiked prismatic crystals of stibnite (an antimony sulfide). All *Spießglanze* incidentally have antimony (Sb) in their chemical formula.

<i>Antimon-Arsenicknickelglanz</i>	ullmannite
<i>Antimonbleiglanz</i>	bournonite
<i>Antimonglanz</i>	stibnite
<i>Antimonglanzerz</i>	heteromorphite
<i>Antimonkupferglanz</i>	bournonite
<i>Antimonnickelglanz</i>	ullmannite
<i>Antimonnickelkobaltglanz</i>	willyamite
<i>Antimonsilberglanz</i>	stephanite
<i>Arsenglanz</i>	arsenolamprite
<i>Arsenicknickelglanz</i>	gersdorffite
<i>Arsenikspiessglanz</i>	allemontite
<i>Arsen-Nickelglanz</i>	gersdorffite
<i>Arsenspießglanz</i>	stibarsen
<i>Baritomglanz</i>	freieslebenite
<i>Blei-Antimonglanz</i>	zinckenite
<i>Blei-Antimonspießglanze</i>	name for sulphosalts like jamesonite and boulangerite
<i>Blei-Arsenglanz</i>	sartorite
<i>Blei-Arsenspießglanze</i>	name for different sulphosalts like sartorite and jordanite
<i>Bleiglanz</i>	galena
<i>Blei-Silberspießglanze</i>	name for different sulphosalts like freieslebenite
<i>Bleispießglanz</i>	bournonite
<i>Blei-Wismutglanz</i>	galenobismutite
<i>Blei-Wismutspießglanze</i>	name for different sulphosalts galenobismutite and cosalite
<i>Eisen-Antimonglanz</i>	berthierite
<i>Eisenglanz</i>	hematite (specularite)
<i>Eugenglanz</i>	polybasite
<i>Eutomglanz</i>	molybdenite
<i>Gelbspießglanzerz</i>	valentinite
<i>Glanz</i>	galena
<i>Grauspießglanz</i>	antimonite

<i>Grauspießglanzerz</i>	jamesonite
<i>Kobaltglanz</i>	cobaltite
<i>Kupfer-Antimonglanz</i>	chalcocite
<i>Kupferglanz</i>	chalcocite
<i>Kupfer-Silberglanz</i>	stromeyerite
<i>Manganglanz</i>	alabandite
<i>Melanglanz</i>	stephanite
<i>Merkurglanz</i>	metacinnabar
<i>Molybdänglanz</i>	molybdenite
<i>Nickel-Antimonglanz</i>	ullmannite
<i>Nickel-Arsenglanz</i>	gersdorffite
<i>Nickelglanz</i>	gersdorffite, ullmannite
<i>Nickelspießglanzerz</i>	ullmannite
<i>Nickelwismutglanz</i>	a mixture of linnaeite and bismuthinite
<i>Querspießglanz</i>	jamesonite
<i>Rotspießglanz</i>	kermesite
<i>Rotspießglanzerz</i>	kermesite
<i>Schriftglanz</i>	sylvanite
<i>Schuppenglanz</i>	franckeite
<i>Schwarzsilberglanz</i>	stephanite
<i>Schwarzspießglanzerz</i>	stephanite
<i>Schwefelspießglanz</i>	stibnite
<i>Selenbleiwismutglanz</i>	weibullite
<i>Selensilberglanz</i>	naumannite
<i>Selenwismutglanz</i>	guanajuatite
<i>Silber-Antimonglanz</i>	myargyrite
<i>Silberglanz</i>	argentite
<i>Silber-Kupferglanz</i>	stromeyerite
<i>Silberspießglanz</i>	dyskrasite
<i>Silber-Wismutglanz</i>	schapbachite
<i>Spießglanz</i>	stibnite or native antimony
<i>Spießglanzbleierz</i>	bournonite, boulangerite and other minerals
<i>Spießglanzblende</i>	kermesite
<i>Spießglanzfahlerz</i>	tetrahedrite
<i>Spießglanzocker</i>	cervantite
<i>Spießglanzsilber</i>	dyskrasite
<i>Sprödglanzerz</i>	stephanite
<i>Stahlantimonglanz</i>	jamesonite
<i>Tellurglanz</i>	nagyagite
<i>Weißspießglanzerz</i>	valentinite
<i>Wismutglanz</i>	bismuthinite

Besides the combinations with *glanz* at the end of the name, there are also a number of mineral names that start with *Glanz*:

<i>Glanzarsenikkies</i>	löllingite, arsenopyrite
<i>Glanzarsenkies</i>	löllingite, arsenopyrite
<i>Glanzbraunstein</i>	hausmannite
<i>Glanzblende</i>	alabandite
<i>Glanzeisen</i>	schreibersite, cohenite
<i>Glanzeisenerz</i>	hematite
<i>Glanzeisenstein</i>	hematite
<i>Glanzerz</i>	argentite
<i>Glanzkies</i>	löllingite, arsenopyrite
<i>Glanzkobalt</i>	cobaltite
<i>Glanzkobaltkies</i>	cobaltite
<i>Glanzmanganerz</i>	manganite
<i>Glanzspat</i>	sillimanite

Blende

Blende is the old name for sphalerite. Sphalerite (ZnS) has only been an important zinc ore since the 18th century, but before then it was worthless. So until then it was a *Blender* (from the verb "*blenden*" meaning "to blind"); a blinder that, due to its semi-metallic shiny appearance and its high density, gave the miner the false hope that he had found something of value.

When the Swedish chemist Brandt recognized the mineral as zinc ore in 1743, the original name had lost its meaning. Nevertheless, the name remained in use, but usually in the variant *Zinkblende*. From then on, the name *Zinkblende* was the model for a whole series of new names in which the term *blende* then referred to minerals with a semi-metallic luster and a low hardness. It is also interesting to know that the name sphalerite is derived from σφαλερος, the Greek word for "misleading".

<i>Antimonbleibblende</i>	boulangerite
<i>Antimonbleikupferblende</i>	bournonite
<i>Antimonblende</i>	kermesite
<i>Antimonkupferbleibblende</i>	bournonite
<i>Antimonsilberblende</i>	pyrargyrite
<i>Arsenblende</i>	auripigment
<i>Arseniksilberblende</i>	proustite
<i>Arsen-Silberblende</i>	proustite
<i>Blende</i>	sphalerite
<i>Braunsteinblende</i>	alabandite
<i>Cadmiumblende</i>	greenockite
<i>Feuerblende</i>	pyrostilpnite

<i>Glanzblende</i>	alabandite
<i>Kobaltblende</i>	jaipurite
<i>Kupferblende</i>	tennantite
<i>Manganblende</i>	alabandite
<i>Merkurblende</i>	cinnabar
<i>Nickelblende</i>	millerite
<i>Pechblende</i>	uraninite
<i>Purpurbende</i>	kermesite
<i>Quecksilberblende</i>	calomel
<i>Rubinblende</i>	varietal of sphalerite
<i>Samtblende</i>	varietal of goethite
<i>Schalenblende</i>	wurtzite, sphalerite
<i>Spießglanzblende</i>	kermesite
<i>Strahlblende</i>	sphalerite
<i>Schwarze Blende</i>	alabandite
<i>Wismutblende</i>	eulytine
<i>Zinkblende</i>	sphalerite

Ocker

Ocker, from the Greek *ὄχρα*, has been used since ancient times to indicate a yellow to brown earthy dye consisting of a mixture of iron hydroxide, clay, sand, etc. We also use the term *ocher* or *ochre* in English. Later the term was also used for other minerals, yellow or not, with an earthy consistency.

<i>Antimonocker</i>	stibiconite
<i>Cadmiumocker</i>	greenockite
<i>Eisenocker</i>	earthy iron ores
<i>Kobaltocker</i>	asbolane
<i>Manganocker</i>	to be compared with wad
<i>Molybdänocker</i>	molybdite
<i>Nickelocker</i>	annabergite
<i>Spießglanzocker</i>	cervantite
<i>Spießglasocker</i>	alteration product of stibnite
<i>Uranocker</i>	uranopilite
<i>Vanadinocker</i>	shcherbinaite
<i>Vitriolocker</i>	hydrous iron(III)sulphate
<i>Wasserbleiocker</i>	molybdite, ferrimolybdite
<i>Wismutocker</i>	alteration product of native bismuth
<i>Wolframocker</i>	tungstite

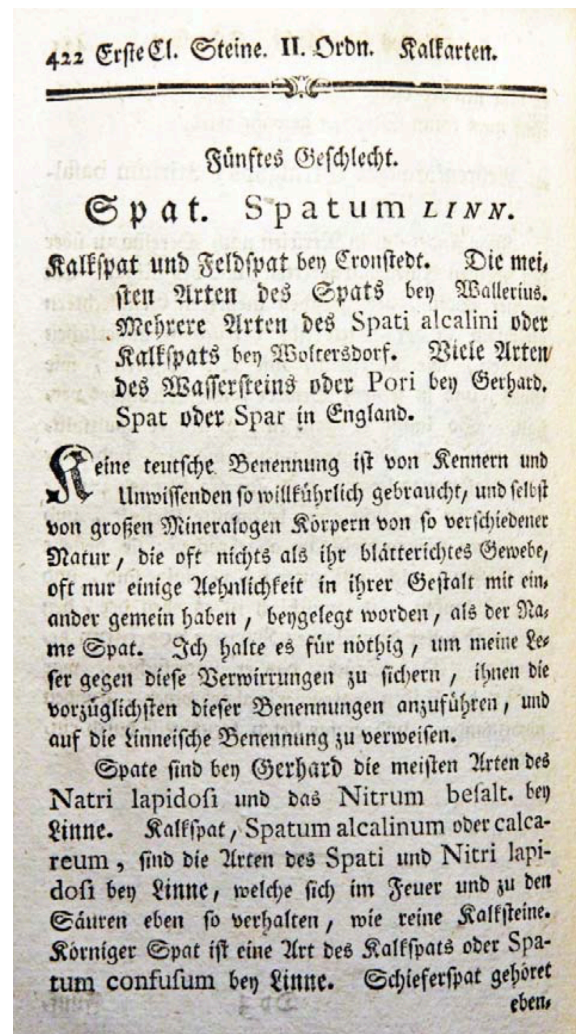
Spat

The mention *Spat* was already used in the 12th century to indicate stones that have a leafy structure or that are easily split. Miners therefore did not use this name for ore minerals, but rather for naming cleavable (gangue) rocks and minerals.

In the course of the 18th century, the term was mainly used to imply minerals with a rhombohedral cleavage, or with a leafy structure, the cleavage surfaces of which are lustrous [Cronstedt in the German translation "*Cronstedts Versuch einer Mineralogie*" by Brünnich, 1770, p. 19]. The problem was that the minerals in question were not chemically related and to avoid confusion between the various types of cleavable minerals, the term *spat* was prefixed to specify the mineral in question. That the terminology was indeed confusing is confirmed by this text written by Gmelin in 1777 [*Natursystem des Mineralreichs*, Vol. 1, p. 422] "*Keine deutsche Benennung ist von Kennern und Unwissenden so willkürlich gebraucht, und selbst von großen Mineralogen Körpern von so verschiedener Natur, die oft nichts als ihr blätterichtes Gewebe, oft nur einige Aehnlichkeit in ihrer Gestalt mit einander gemein haben, beygelegt worden, als der Name Spat*".

[No other German name has been used so arbitrarily by experts and the ignorant, and even by great mineralogists for bodies of such different nature, which often have nothing in common except their leafy tissue, or often only a few similarities in their shape, than the name *Spat*].

In the current German mineral names, the term *spat* denotes non-metallic shiny minerals with perfect cleavage such as: *Kalkspat* [calcite], *Schwerspat* [baryte], *Feldspat* [feldspar], *Flußspat* [fluorite].



Gmelin on *Spat* in Linnaeus' German translation "*Systema Naturae*" (1777)

<i>Antimonbleispat</i>	bindheimite
<i>Antimonspat</i>	valentinite
<i>Arsenikbleispath</i>	mimetesite
<i>Bitterspat</i>	magnesite
<i>Blauspat</i>	lazulite
<i>Bleispat, grüner</i>	pyromorphite
<i>Bleispat, roter</i>	crocoite
<i>Bleispat, weißer</i>	cerussite
<i>Braunspat</i>	dolomite, ankerite, siderite
<i>Cadmiumspat</i>	otavite
<i>Dolomitspat</i>	dolomite
<i>Eisenspat</i>	siderite
<i>Flußspat</i>	fluorite
<i>Gelbspat</i>	magnesite
<i>Gipsspat</i>	gypsum
<i>Glanzspat</i>	sillimanite
<i>Glasspat</i>	fluorite
<i>Glinzerspat</i>	gypsum
<i>Hartspat</i>	andalusite
<i>Himbeerspat</i>	rhodochrosite
<i>Kalkspat</i>	calcite
<i>Kalktalkspat</i>	dolomite
<i>Kobaltspat</i>	sphaerocobaltite
<i>Kupfer-Bleispat</i>	linarite
<i>Manganspat</i>	rhodochrosite
<i>Merkurspat</i>	calomel
<i>Porzellanspat</i>	altered scapolite
<i>Quecksilberspat</i>	calomel
<i>Rautenspat</i>	dolomite
<i>Rhombenspat</i>	dolomite
<i>Rosenspat</i>	rhodochrosite
<i>Rotspat</i>	rhodonite or rhodochrosite
<i>Scheelspat</i>	scheelite
<i>Schieferspat</i>	bladelike calcite
<i>Schillerspat</i>	lizardite
<i>Schwerbleispat</i>	plattnerite
<i>Schwerspat</i>	barite
<i>Selenbleispat</i>	a mixture of selenides
<i>Silberspat</i>	chlorargyrite
<i>Stangenspat</i>	barite
<i>Stinkspat</i>	fluorite (radioactive, colored dark violet)
<i>Talkspat</i>	magnesite

<i>Tungspat</i>	barite
<i>Uranspat</i>	uranospathite
<i>Vitriolbleispat</i>	anglesite
<i>Wismutspat</i>	bismutite
<i>Würfelspat</i>	anhydrite
<i>Zinkspat</i>	smithsonite
<i>Zinnspat</i>	cassiterite

Kies

Kies is a term mainly used for sulfide minerals and in particular for *Schwefelkies* (pyrite). The name already appears in the miner's jargon of the 16th century, but its origin is unknown. It is thought that the name comes from the property of pyrite, like pebble (*Kieselstein*), to give sparks when struck with a steel hammer, but no evidence has been found for this explanation. Later the term *Kies* was used for minerals with a metallic luster and a rather high hardness.

<i>Antimonnickelkies</i>	ullmannite
<i>Arsenikkies</i>	arsenopyrite, löllingite
<i>Arsenkies</i>	arsenopyrite
<i>Arsen-Kobaltkies</i>	skutterudite
<i>Arsen-Nickelkies</i>	chloanthite
<i>Braunsteinkies</i>	alabandite
<i>Buntkupferkies</i>	bornite
<i>Eisenkies</i>	pyrite
<i>Eisen-Kobaltkies</i>	safflorite
<i>Gelbeisenkies</i>	pyrite
<i>Gelbnickelkies</i>	millerite
<i>Giftkies</i>	native arsenic
<i>Glanzarsenikkies</i>	löllingite, arsenopyrite
<i>Glanzarsenkies</i>	löllingite, arsenopyrite
<i>Glanzkies</i>	löllingite, arsenopyrite
<i>Glanzkobaltkies</i>	cobaltite
<i>Graueisenkies</i>	marcasite
<i>Graukies</i>	arsenopyrite
<i>Graunickelkies</i>	gersdorffite
<i>Grünkies</i>	pyrite
<i>Kammkies</i>	varietal of marcasite
<i>Kobaltkies</i>	linnaeite, jaipurite
<i>Kupferkies</i>	chalcopyrite
<i>Leberkies</i>	botryoidal marcasite
<i>Magnetkies</i>	pyrrhotite
<i>Mangankies</i>	hauerite

<i>Molybdänkies</i>	molybdenite
<i>Nickelantimonkies</i>	ullmannite
<i>Nickelarsenkies</i>	gersdorffite
<i>Nickeleisenkies</i>	violarite
<i>Nickelkies</i>	millerite
<i>Nierenkies</i>	botryoidal chalcopyrite
<i>Rotnickelkies</i>	nikkelite
<i>Schwefelkies</i>	pyrite
<i>Silberkies</i>	used for various silver minerals such as sternbergite, argyropyrite, argentopyrite etc.
<i>Speerkies</i>	marcasite
<i>Strahlkies</i>	marcasite, pyrite
<i>Tesseralkies</i>	skutterudite
<i>Vitriolkies</i>	pyrite
<i>Wasserkies</i>	marcasite
<i>Weicheisenkies</i>	marcasite
<i>Weißbleierz</i>	cerussite
<i>Weißnickelkies</i>	chloanthite
<i>Wodankies</i>	gersdorffite
<i>Zinnkies</i>	stannite

Glimmer

The German *glimmern* means to shine. People are therefore inclined to look for the origin of this term in the shine that minerals we call *Glimmer* exhibit. But from older sources it seems that the term can be compared to *blende*; miner's jargon for a mineral with a decent shine, but containing no valuable metals. Still later, *Glimmer* became synonymous with mica and some mica-like minerals.

<i>Bariumranglimmer</i>	uranocircite
<i>Bleiglimmer</i>	cerussite
<i>Eisenglimmer</i>	lepidomelane
<i>Grüner Glimmer</i>	torbernite
<i>Kalkglimmer</i>	margarite
<i>Kalkuranglimmer</i>	autunite
<i>Kupferglimmer</i>	chalcophyllite
<i>Kupferuranglimmer</i>	torbernite
<i>Lithiumglimmer</i>	lepidolite
<i>Melanglimmer</i>	stilpnomelane, cronstedtite etc.
<i>Rubinglimmer</i>	lepidocrocite
<i>Wasserglimmer</i>	clinochlore

Glas

The minerals that have the term *glas* in their name would be expected to be transparent or have a glassy appearance. For a number of them this is indeed the case, but there are quite a few exceptions such as *Grauspießglaserz* (stibnite), *Kupferglaserz* (chalcocite), etc.

<i>Arsenglas, gelbes</i>	orpiment
<i>Bleiglas</i>	anglesite
<i>Eisenglas</i>	fayalite
<i>Frauenglas</i>	gypsum
<i>Glaserz</i>	argentite
<i>Glasspat</i>	fluorite
<i>Grauspießglaserz</i>	stibnite
<i>Kupferglas</i>	cuprite
<i>Kupferglaserz</i>	chalcocite
<i>Rotkupferglas</i>	cuprite
<i>Rotspiesglaserz</i>	kermesite
<i>Schilfglaserz</i>	freieslebenite
<i>Silberglaserz</i>	argentite, acanthite
<i>Spießglas</i>	stibnite
<i>Spießglaserz</i>	stibnite, kermesite
<i>Spießglasfedererz</i>	boulangerite
<i>Spießglassocker</i>	alteration product of stibnite
<i>Spießglassilber</i>	dyskrasite
<i>Sprödglasserz</i>	stephanite
<i>Weissspiesglaserz</i>	valentinite
<i>Zinkglas</i>	hemimorphite

Following on from *glas*, there is also the name *Glaskopf*. By *Glaskopf* we mean botryoidal aggregates with a smooth surface that usually consist of hematite. Sometimes a distinction is made between *Roter Glaskopf* (hematite), *Brauner Glaskopf* (goethite) and *Schwarzer Glaskopf* (pyrolusite).

Salz

Salz, *salt*, *sel*, *sal*, these are words that go far back in our history and whose origins may be untraceable. We know salt primarily as kitchen salt (NaCl, sodium chloride, mineral name halite). The concept of salt was further expanded in alchemy and later in the natural sciences and a number of old German mineral names contain the word *Salz*.

<i>Bergsalz</i>	halite
<i>Bittersalz</i>	epsomite
<i>Braunsalz</i>	an iron(III)sulphate
<i>Federsalz</i>	halotrichite
<i>Glaubersalz</i>	mirabilite
<i>Mauersalz</i>	nitrocalcite
<i>Phosphorsalz</i>	stercorite
<i>Salzkupfererz</i>	atacamite
<i>Steinsalz</i>	halite
<i>Wundersalz</i>	mirabilite

Vitriol

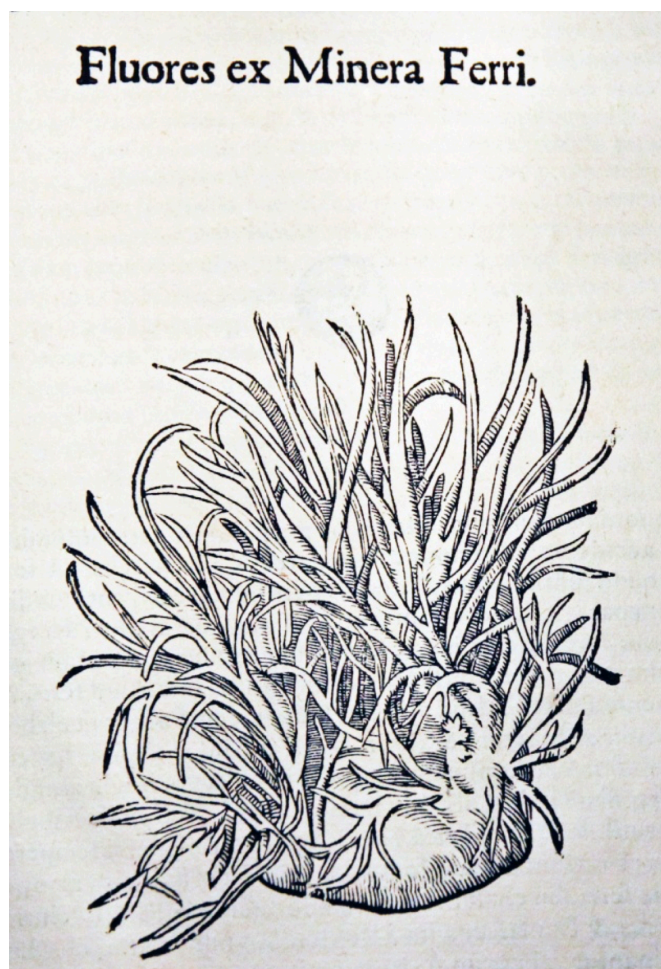
The minerals with *vitriol* in the name are all sulfates of metals (such as iron, copper, nickel, etc.). Gmelin writes in 1778 [*Natursystem des Mineralreichs*, Vol. 2, p. 300] "*Alle diese Vitriole haben nämlich eine metallische Erde, bald von Eisen, bald von Zink, bald Kupfer, oft zwey zugleich, zuweilen alle drey in sich; diese ist mit Wasser vereinigt, und vollkommen in einer Säure aufgelöst*". [All these vitriols have a metallic earth, sometimes iron, sometimes zinc, sometimes copper, often two at the same time, sometimes all three; this is combined with water, and dissolves completely in an acid]. *Vitriol* comes from Medieval Latin, *vitreolum* (*vitrum* = glass; *vitreus* = made of glass), because the sulfates involved have a glassy appearance. *Vitriol* occurs both as a suffix and as a prefix. In English we know vitriol as an outdated trivial name for sulfuric acid. We also know the, also obsolete, trivial names blue vitriol (copper sulfate), green vitriol (iron sulfate) and white vitriol (zinc sulfate).

<i>Bleivitriol</i>	anglesite
<i>Eisenvitriol</i>	melanterite
<i>Kobaltvitriol</i>	bieberite
<i>Kupferbleivitriol</i>	linarite
<i>Kupfereisenvitriol</i>	copper bearing melanterite
<i>Kupfervitriol</i>	chalcantinite
<i>Nickelvitriol</i>	morenosite
<i>Uranvitriol</i>	johannite
<i>Vitriolbleierz</i>	anglesite
<i>Vitriolbleispat</i>	anglesite
<i>Vitriolgelb</i>	jarosite
<i>Vitriolkies</i>	pyrite
<i>Vitriolocker</i>	iron(III)sulphate
<i>Zinkvitriol</i>	goslarite

Blüte

Blüte is German for blossom or bloom. Therefore, coral-shaped aragonite was called *Eisenblüten* or *Eisenblumen* by the miners. For the other minerals with *blüte* as a suffix, the name may come from *ausbluhung*; a term we know as efflorescence. By efflorescence we understand the formation of (often hair-shaped) crystals (of a secondary mineral) on the surface of a mineral. We also know this in buildings where saltpeter crystallises on the surface of bricks or masonry.

<i>Antimonblüte</i>	valentinite
<i>Bleiblüte</i>	mimetite
<i>Eisenblüte</i>	(iron bearing) aragonite
<i>Kobaltblüte</i>	erythrite
<i>Kupferblüte</i>	cuprite
<i>Messingblüte</i>	aurichalcite
<i>Nickelblüte</i>	annabergite
<i>Wismutblüte</i>	bismite
<i>Zinkblüte</i>	hydrozincite



Depiction of *Eisenblüte* in Aldrovandus "*Musaeum Metallicum*" (1648)

Gültigerz

The suffixes *-gültigerz*, or *-güldenerz* and *-giltigerz* immediately make us think of gold (gulden, gilt, gold). Yet not one of the various *-gültigerzen* has to do with gold because they are all silver ores. Apparently this name meant that it was a precious ore. For example, Ercker writes in 1580 [*Beschreibung aller fürnemisten mineralischen Ertzt und Bergwercksarten...* sheet 3] about *Weißgültigerz*: "*weiszgüldigerz, nicht dasz es goldt helt, sondern dasz es wirdig und gut ist*". [white gold ore, not that it is golden, but that it is worthy and good] i.e. a *gültigerz* is valuable ore.

<i>Graugültigerz</i>	freibergite
<i>Rotgültigerz, dunkles</i>	pyrargyrite
<i>Rotgültigerz, helles</i>	proustite
<i>Rotgültigerz, lichtet</i>	proustite
<i>Schwarzgültigerz</i>	stephanite
<i>Weißgültigerz</i>	term used in Freiberg for a mixture of different silver ores
<i>Weißgültigerz, dunkles</i>	freibergite

Horn

The German word *Horn* means the same as in English and minerals with this term in their name have a color that resembles that of a horn or, more accurately, the color of a horn soaked in fat.

<i>Bleihornerz</i>	phosgenite
<i>Hornbleierz</i>	phosgenite and/or mendipite
<i>Hornerz</i>	chlorargyrite
<i>Hornsilber</i>	chlorargyrite
<i>Kupfer-Hornerz</i>	atacamite
<i>Merkurhornerz</i>	calomel
<i>Quecksilber-Hornerz</i>	calomel
<i>Silberhornerz</i>	chlorargyrite

Erz

Many German mineral names end in *erz*; *Erz* = ore. We have already encountered several and those that have not yet been listed are summarized in the following table. The term *erz* can be found in Middle High German *arze* and *erze* which in turn descends from Old High German *aruz*, but where these words come from I have not been able to find with certainty in the literature or on the internet. It is believed that they could be derived from the Sumerian *urud* or *urudu*, meaning copper.

<i>Blauerz</i>	siderite
<i>Braunbleierz</i>	pyromorphite
<i>Braunbleierz</i>	pyromorphite
<i>Braunkupfererz</i>	cuprite
<i>Braunmanganerz</i>	manganite
<i>Braunmenakerz</i>	titanite
<i>Braunsteinerz</i>	rhodochrosite
<i>Buntbleierz</i>	pyromorphite
<i>Eisenpecherz</i>	various iron-containing minerals such as goethite, stilpnomelane and triplite
<i>Federerz</i>	heteromorphite
<i>Flockenerz</i>	mimetite
<i>Gänsekötigerz</i>	an iron arsenate (also known by its obsolete name ganomatite)
<i>Gelbantimonerz</i>	cervantite
<i>Gelbbleierz</i>	wulfenite
<i>Gelberz</i>	krennerite
<i>Gelbkupfererz</i>	chalcopyrite
<i>Gelbmenakerz</i>	titanite
<i>Grauantimonerz</i>	stibnite
<i>Grauerz</i>	galena
<i>Graukupfererz</i>	tetrahedrite
<i>Graumanganerz</i>	manganite, pyrolusite
<i>Grünbleierz</i>	pyromorphite
<i>Grünerz</i>	chrysocolla
<i>Grünmanganerz</i>	altered rhodonite
<i>Hartmanganerz</i>	psilomelane
<i>Kobaltbleierz</i>	clausthalite
<i>Kobalt-Manganerz</i>	asbolane
<i>Kupferfedererz</i>	chalcotrichite
<i>Kupfer-Manganerz</i>	lampadite
<i>Kupferpecherz</i>	chrysocolla
<i>Mangankupfererz</i>	crednerite
<i>Menakerz</i>	titanite
<i>Molybdänbleierz</i>	wulfenite
<i>Pecherz</i>	uraninite
<i>Quecksilber-Fahlerz</i>	tetrahedrite
<i>Ringelerz</i>	galena
<i>Rotantimonerz</i>	kermesite
<i>Rotbleierz</i>	crocoite
<i>Rotbraunsteinerz</i>	rhodonite
<i>Roterz</i>	hematite

<i>Rotkupfererz</i>	cuprite
<i>Samterz</i>	cyanotrichite
<i>Scharfmanganerz</i>	hausmannite
<i>Schrifterz</i>	sylvanite
<i>Schwarzbleierz</i>	cerussite
<i>Schwarzbraunsteinerz</i>	psilomelane, hausmannite
<i>Schwarzerz</i>	tetrahedrite, stephanite, alabandite
<i>Schwarzkupfererz</i>	tenorite
<i>Schwarzmanganerz</i>	psilomelane, hausmannite
<i>Schwerbleierz</i>	plattnerite
<i>Stängelerz</i>	galena
<i>Uranpecherz</i>	uraninite
<i>Weichmanganerz</i>	wad
<i>Weißbleierz</i>	cerussite
<i>Weißerz</i>	arsenopyrite, marcasite
<i>Weißkupfererz</i>	cubanite
<i>Wismutbleierz</i>	schapbachite
<i>Würfelerz</i>	pharmacosiderite
<i>Zink-Manganerz</i>	chalcophanite

Miscellaneous

In addition to the terms already discussed, there are also a number of names that cannot be easily classified in one group or another. Here are some of those names that are still used regularly.

<i>Antimonzinner</i>	kermesite
<i>Arsenikblomma</i>	arsenolite
<i>Arsenikschwärze</i>	native arsenic
<i>Arsenit</i>	arsenolite
<i>Arseno-Siderit</i>	löllingite
<i>Bitterkalk</i>	dolomite
<i>Blei-Apatit</i>	pyromorphite
<i>Blei-Arsen-Apatit</i>	mimetite
<i>Bleiazur</i>	linarite
<i>Bleigelb</i>	wulfenite
<i>Bleigummi</i>	plumbogummite
<i>Bleilasur</i>	linarite
<i>Bleischimmer</i>	jamesonite
<i>Bleischwärze</i>	cerussite, graphite
<i>Bleischweif</i>	layered fine grained galena
<i>Bleiweiß</i>	cerussite

<i>Buttermilchsilber</i>	chlorargyrite
<i>Chlorsilber</i>	chlorargyrite
<i>Eisenapatit</i>	triplite
<i>Eisen-Arsenik</i>	löllingite
<i>Eisenblau</i>	vivianite, lazulite
<i>Eisenkalk</i>	siderite
<i>Eisenschwärze</i>	hematite, graphite
<i>Eisen-Speiskobalt</i>	safflorite
<i>Flintkalk</i>	dolomite
<i>Gänsekötigsilber</i>	mixture of clay, asbolane and chlorargyrite
<i>Grausilber</i>	mixture of acanthite, dolomite and silver
<i>Kobaltblau</i>	lavendulane
<i>Kobaltschwärze</i>	asbolane
<i>Kupferblau</i>	azurite
<i>Kupferbraun</i>	impure cuprite
<i>Kupfergrün</i>	chrysocolla
<i>Kupferrot</i>	cuprite
<i>Kupferschwärze</i>	tenorite, but also manganese-copper-hydroxides
<i>Lockensilber</i>	native silver in wirelike aggregates
<i>Manganschwärze</i>	wad
<i>Molybdänsilber</i>	pilsenite
<i>Nasturan</i>	uraninite
<i>Nickelgrün</i>	annabergite
<i>Rauchkalk</i>	dolomite
<i>Rauhkalk</i>	dolomite
<i>Rauschgelb</i>	oripiment
<i>Rauschrot</i>	realgar
<i>Scherbenkobalt</i>	native arsenic
<i>Schiefergrün</i>	chrysocolla
<i>Schlackenkobalt</i>	safflorite
<i>Schreibblei</i>	molybdenite
<i>Schwefelsilber</i>	acanthite
<i>Selenbleisilber</i>	naumannite
<i>Selensilber</i>	naumannite
<i>Silberschwärze</i>	earthy acanthite
<i>Speiskobalt</i>	skutterudite
<i>Stängelkobalt</i>	chloanthite
<i>Uran-Kalk</i>	autunite
<i>Wasserbleisilber</i>	mixture of pilsenite and hessite

There are of course many more of these older mineral names scattered in German literature, but it was impossible to mention them all here. Those who come across older German mineral names that do not appear in the tables can consult, among others, the publications of Haditsch and Maus (1974) and those of Bayliss (2000). Furthermore, the mineralogical tables of Strunz and Nickel (2001) are also a good source for the conversion of old mineral names.

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