

Proposal for ALCHEMICAL SYMBOL FOR Symbols in Unicode

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This proposal envisions the creation and organization of a code block devoted to alchemical symbols. Some alchemical symbols have already been included in existing blocks, especially the Miscellaneous Symbols block (u2600). (See Table 1. Existing Coverage of Alchemy in Unicode.) The idea of organizing a block for alchemical symbols holds clear benefits for historians, chemists, philologists, literary scholars, and their professional colleagues; for a large community interested in alternative knowledge and New Age disciplines; for writers and artists, e.g. in the fantasy genre, developing creative works that deal with themes and history of alchemy; and, potentially, another large community working in computer gaming, graphics, and fonts.

Alchemical symbols were first used by Greek, Syriac, and Egyptian writers around the fifth or sixth century C.E. and were adopted and proliferated by medieval Arabic and European writers. European alchemists, natural philosophers, chemists, and apothecaries developed and used several parallel systems of symbols while retaining many symbols created by Greek, Syriac, and medieval Arabic writers. Alchemical works published in what is best described as a textbook tradition in the seventeenth and eighteenth centuries routinely included tables of symbols that probably served to spread their use. They were made obsolete in learned discourse as alchemy gave way to a chemistry based on controlled experiment and precise measurement, and their mnemonic functions were supplanted by the development of modern chemical nomenclature. Nevertheless, alchemical symbols continue to be used extensively today in scholarly literature, in creative works, in New Age texts, and in the gaming and graphics industries.

The NSF- and NEH-funded Chymistry of Isaac Newton Project at Indiana University, with the help of the Chemical Heritage Foundation in Philadelphia, gathered a collection of seventeenth and eighteenth century synoptic tables as an initial step toward developing a Unicode proposal for alchemical symbols. Examples of those textbook tables are shown in Figure 1, *Explanation of the Chymical Characters* from Nicaise Le Fèvre, *A compleat body of chymistry*, London, 1670, and Figure 2, Basil Valentine, *The Last Will and Testament of Basil Valentine*, 1671. There are many others.

The modern study of the history of alchemy and alchemical symbols was put on a solid footing in the 1880s and 1890s by Marcelin Berthelot in several works but especially *La Chimie au Moyen Âge* (1895). Berthelot listed symbols from the Greek, Syriac and Arabic writers and discussed their transmission. In 1928, Fritz Lüdy-Tenger published *Alchemistische und chemische Zeichen*, an inventory of alchemical and pharmaceutical symbols and variants that included 3695 symbols in 128 tables (see Figure 3 for a sample

table). This inventory was organized morphologically but did not include a cross index or a detailed account of the sources of the symbols. Surprisingly, perhaps, the inventory is not exhaustive. We have encountered a number of symbols in early modern writers that are not present in Lüdy-Tenger's tables. Wolfgang Schneider's *Lexicon alchemistisch-pharmazeutischer Symbole* (1962) covered much the same material as Lüdy-Tenger but organized it semantically and supplemented the lists of symbols with a lexicon and synonymy.

Font resources

Newton made extensive use of these symbols in his own alchemical manuscripts and the Chymistry of Isaac Newton Project has created and expanded an Open Type font, named *Newton*, with all of the symbols he used to support the online delivery of the alchemical manuscripts through the Indiana University Digital Library Program.

It would require a considerable amount of scholarship and research to identify and organize the entire Lüdy-Tenger and Schneider inventories and such work is certainly outside the scope of the design of the Chymistry of Isaac Newton Project. Nevertheless, project staff members have created another Open Type font, named *LuedyTenger* that includes all 3695 symbols in the Lüdy-Tenger inventory. (Note that font names are limited to printable ASCII characters 33-126 so we followed the usual convention for rendering German umlauts in English when we named the font.) We hope these font resources that will enable other interested colleagues and projects to pursue further research and publication.

Basic Strategy

Our basic strategy is to concentrate first on a core group of symbols that were recognized and organized into tables by European writers working in the alchemical textbook tradition approximately 1620–1720. It seems reasonable to expect that future projects, publishers, and authors would want to expand the alchemy Unicode block as scholarship progresses beyond current frontiers in this area. However, the core group of symbols represented in our proposal includes all symbols found in the vast majority of the western alchemical tradition and the alchemical works of major figures such as Newton, Boyle, and Paracelsus.

The early modern alchemical textbook writers were already aware of some of the history of their literature. They recognized the ancient connections made between the planets and naturally occurring ores and metals and carried forward Aristotelian associations with the four elements and vegetative and putrefying processes. Their synoptic symbol tables included most of the Arabic, Syriac, and Greek symbols and further noted the existence and currency of many alternate symbols and variants for the same substances and processes.

Table 1, appended below, lists thirty-six alchemical symbols already present in Unicode. Our Table 2 lists a further 118 symbols that together with those in Table 1 comprise a

core group of symbols usually included in the synoptic tables of the textbook tradition and we propose to begin discussion of a possible Unicode Alchemical Symbols block with these 154 symbols.

Possible Future Expansions of the Alchemical Block

The Greek, Syriac, and Arabic alchemical writers composed their texts in non-Latin scripts and used the alchemical symbols in ways that reflect those writing systems. Berthelot tells us, for example, that the Syriac authors carried over the Greek symbols but wrote them horizontally rather than vertically. Our group and collaborators are certainly equipped to assess the use of alchemical symbols in Latin scripts but expanding this preliminary proposal to cover classical and Arabic alchemy would require discussions with friends and colleagues working directly with those traditions. Furthermore, the Unicode Consortium already has standards for Greek, Syriac, and Arabic scripts, and any expansions of the proposed alchemical block to include the earliest texts of the tradition would probably also need to take those standards into account in an integral way.

We have also chosen to limit the coverage of this proposal to 1720. After the groundbreaking work of Boyle, Newton, and their contemporaries at the end of the seventeenth century, “chymical” authors like Geoffroy and Gellert began to reflect on possible underlying affinities and relations between the substances they were investigating experimentally. By 1720, these new chymical authors began to attempt to modify the received set of alchemical symbols to reflect their new ideas and theories. Their elaborate graphical solutions were both ingenious and prolific but ultimately proved to be idiosyncratic and were abandoned as experimental chemistry progressed. Extension of the proposed Unicode alchemical block to include these graphical elaborations will require the use of combining characters and much careful attention to the details of their respective theories. That work is beyond the scope of what we can contribute without effective collaboration from colleagues interested in those particular developments.

Newton’s Own Modified Alchemical Symbols

Authors working after Paracelsus and before Geoffroy tended to use alchemical symbols primarily as simple substitutes for the written words they stood for. It is common in Latin alchemical texts of this period to find the symbols being declined grammatically, e.g. δ^{ii} , *antimonii*. Some symbols, like those for mercury sublimate, $\text{☿}_{\text{—}}$, $\text{☿}_{\text{~}}$, $\text{☿}_{\text{~}}^{\text{~}}$, and $\text{☿}_{\text{~}}^{\text{~}}^{\text{~}}$, appear to be composed from the separate symbols for mercury and sublimation but this kind of composition is rare before 1720. After 1720, the chymical authors did begin to extensively modify the received symbols in systematic ways to suggest affinities and new taxonomies as they themselves explained. It has to be conceded, however, that at this time there are few clear ideas about the original semiosis of these symbols or about the continual creation of new symbols between 500 C.E. and 1720 while the alchemical tradition was still productive.

In some notebooks dating from about the 1680s, however, Newton notably did modify a number of basic alchemical symbols to distinguish between purified substances and their ores, and between purified substances and their sublimes. Our project has so far identified twenty characters that Newton modified in this way, almost all of them in his laboratory notebooks, which are presently drawing the attention of historians of science.

Newton's basic practice was to adjoin a small 'o' to the received alchemical symbol to connote the ore of the substance, as in σ^o . To connote the sublimate, he adjoined a small four-bar (or eight-spoked) asterisk, '✱', as in $\sigma^{\text{✱}}$. The eight-spoked asterisk was a common symbol for sal-ammoniac, likely suggesting the volatility required for the formation of sublimes in retorts. It is interesting to note that when Newton wrote a symbol for sal-ammoniac itself, he always used an inline three-bar sextilis, '✱', another common symbol for sal-ammoniac, rather than the four-bar form he usually used in his sublimate symbols.

We have included sixteen of Newton's twenty ore and sublimate symbols in Table 2. (The other four of twenty symbols may be regarded as minor variants.)

Brief Discussion of Conventions Observed in Tables 1 and 2

Names of the proposed Unicode characters are usually given in English while Latin equivalents are handled as aliases (= lixivium). Alchemical terms in English, however, often are precisely their Latin equivalents and have entered English directly as a result. Obvious examples are aquafortis and aqua regia. We consulted the Oxford English Dictionary whenever we faced this problem: Where the OED uses the Latin term as the lemma/headword, we have retained the Latin as the character name. Where the OED has an English term as the lemma/headword, we have named the character accordingly, with a Latin alias, where appropriate. Such practice will correspond to the terminology generally used by scholars, writing in English, when referring to these alchemical substances, processes, etc.

Tables 1 and 2 are constructed to adhere to Unicode Code Chart formats. Table 1 lists symbols already present in Unicode but we added explanations (=) we would like to see added to the existing code points. Those are marked in bold.

We have organized the symbols in Table 2 into categories for Substances, Processes, Apparatuses, Time, and Measures, following a suggestion by Andreas Stötzner of the Deutsche Industrie Norm group which participates in ISO. We have added a further level of organization within the category of Substances for the purposes of this proposal. We start first with the traditional symbols for *Aristotle's elements*: fire, air, water, and earth, and quintessence. Then we add the symbols for *Important solvents*—aquafortis, aqua regia, aqua vitae, and vinegar—which were basic to refining. Next come symbols for *Sulfur and mercury*, and then symbols for *Salts, vitriols, and niters*, which were so important to Paracelsus. After that we list, in turn, the symbols for the common metals: *Gold; Silver; Copper; Lead; Tin*; and *Antimony and regulus*. Finally we have added a catch-all list of symbols for *Other substances* that includes minerals, organic materials, principles, and *deckname*.

Appendix:
Record of the Most Important Changes between the
October, 2008, Submission and the January, 2009, Submission

We have made a number of changes to our previous version of the alchemy proposal based on our teleconference discussions with the Unicode Technical Committee (UTC) on November 3, 2008. The following bulleted list attempts to cover the main points:

- Removed four of the twenty symbols listed in “Table 3. Newton’s Ore and Sublimate Symbols” after reviewing all cases in the Newton manuscripts at the suggestion of the UTC. The four removed symbols appear to be variants or alternate glyphs rather than semantically distinct symbols. Their removal further alleviates the need for composite characters.
- Removed “Table 3. Newton’s Ore and Sublimation Symbols” from the proposal and all remaining ore and sublimate characters have been moved into “Table 2. Preliminary Unicode Alchemical Symbol Table” because there is no longer any need to treat them separately as composite characters.
- Introduced a second layer of categorization in the *Substances* section of Table 2 (Fresh query: Is this additional layer of hierarchy supported by Unicode’s documentation practices or should *Substances* be replaced by these twelve headings?):
 - (1) Symbols for Aristotelian elements;
 - (2) Symbols for Important solvents;
 - (3) Symbols for Sulfur and Mercury;
 - (4) Symbols for Salt, Vitriol, and Niter;
 - (5) Symbols for Gold;
 - (6) Symbols for Silver;
 - (7) Symbols for Iron, Iron Ore, and Derivatives;
 - (8) Symbols for Copper, Copper Ore, and Derivatives;
 - (9) Symbols for Tin and Tin Ore;
 - (10) Symbols for Lead and Lead Ore;
 - (11) Symbols for Antimony, Antimony Ore and Derivatives and Regulus;
 - (12) Symbols for Other Substances.
- Prefixed the phrase “ALCHEMICAL SYMBOL FOR” to all symbols in Table 2 at the suggestion of the UTC.
- Moved semantically distinct symbols out of “Table 1. Existing Coverage...” and moved them into Table 2 as follows.
 - XX02 ALCHEMICAL SYMBOL FOR FIRE distinguished from U+25B3 WHITE UP-POINTING TRIANGLE
 - XX04 ALCHEMICAL SYMBOL FOR WATER distinguished from U+25BD WHITE DOWN-POINTING TRIANGLE
 - XX0A ALCHEMICAL SYMBOL FOR VINEGAR distinguished from U+002B PLUS
 - XX15 ALCHEMICAL SYMBOL FOR SALT distinguished from U+2296 CIRCLED MINUS

- XXI6 ALCHEMICAL SYMBOL FOR NITER distinguished from U+29B6 CIRCLED VERTICAL BAR
- ☿ (Oct. XX59 SUBLIMATE) moved from Table 2 to Table 1 where it is identified as U+260A ASCENDING NODE with an added identification of “=alchemical symbol for sublimate.” The October reference to arsenic has been dropped on review of alchemical textbook tables.
- ☿ (Oct. XX57 SUBLIMATE OF SALT OF COPPER 2) Removed from proposal, based on reexamination of Add. Ms. 3975 by project staff.
- ☿ (Oct. XX59 SUBLIMATE) moved from Table 2 to Table 1 where it is identified as U+260A ASCENDING NODE with an added identification of “=alchemical symbol for sublimate.” The October reference to arsenic has been dropped on review of alchemical textbook tables.
- ☿ (Oct. XX5E PURIFY) moved from Table 2 to Table 1 where it is identified as U+260B DESCENDING NODE with an added identification of “=alchemical symbol for purify,” and a cross-reference to a distinct symbol also commonly used for ‘purify’, “→ XX65 ☿ ALCHEMICAL SYMBOL FOR PURIFY.”
- ⊕ (Oct. XX06 CIRCLED CROSS) has been re-identified as XX56 ALCHEMICAL SYMBOL FOR VERDIGREASE. We added the identification “=early astronomical symbol for earth,” and a cross-reference to U+2295 CIRCLED PLUS. In Table 1, we add a cross-reference to XX56 at both U+2641 EARTH and U+2295 CIRCLED PLUS.
- ☿ (Oct. XX40 ARSENIC 2) removed altogether as a close variant of XX3C ALCHEMICAL SYMBOL FOR ARSENIC.
- ♂ (Oct. XX23 CROCUS OF IRON) moved from Table 2 to Table 1 where it is identified as U+26A6 MALE WITH STROKE/TRANSGENDERED SEXUALITY with an added identification of “=alchemical symbol for iron or crocus of iron.”
- Added to Table 2 the common symbols XX1B ALCHEMICAL SYMBOL FOR GOLD and XX1C ALCHEMICAL SYMBOL FOR SILVER.
- CADUCEUS: Added cross-reference to U+2625.

Explanation of the Chymical Characters

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Steele iron or Mars	♂	celestial signe	♂
Loadstone	⊙	Cancer	♂
Ayre	△	another	69
Lymbeck	XX	Ashes	⊕
Allom	○ □	Pot Ashes	⊕
Amalgama	###	Calx	⊕
Antimony	◇ ♀	Quick lime	♀
Aquarius a signe of the zodiack	≈	Cinnabar or Vermillion	⊕
Silver or Luna	⊙	Waxe	⊕
Quicksilver or Mercury	♀	Crucible	⊕
Aries another celestial signe	♂	Calcinated copper as ustū or crocus veneris	♂
Arsenick	⊙	Note of Distillation	♀
Balneum	B	Water	≈
Balneum		Aqua fortis	▽
Maris	MB	aqua Regalis	VR
Vaporous		Spirit	—
Bath	VB	SP.	—
Libra another celestial signe	≈	Spirit of Wyn	◇
Borax	⊕	Tinne or Jupiter	♂
Bricks	■	Powder of Bricks	■
capricornus another		Fire	△

Gumme	♂	Crocus	♂
Howe	⊕	martis	♂
Oyle	⊕	Sagittari. a celestial sign	♂
Day	♂	Soap	◇
Gemini a celestial signe	II	Scorpi. a celestial sign	♂
Leo another signe	♂	Salt alkali	⊕
Stratū sup Stratū or lay upon lay	SSS	Armoniac Salt	⊕
Marcaffite	♂	Com'on Salt	⊕
Precipitate of Quickfil	♂	Salgemme	⊕
Sublimate	♂	Brinsto or sulph	♂
Moneth	⊕	Black sulphur	♂
Niter or Salt peter	⊕	Philosophers sulphur	♂
Night	♂	To sublimate	⊕
Gold or Sol	⊕	Talc	⊕
Auripigmentū	⊕	Tartar	♂
Lead or Saturne	♂	Taur. a celestial signe	♂
Pisces a celestial signe	♂	Earth	⊕
Powder	♂	Caput Mortuū	♂
To precipitate	♂	Tuty	♂
To purify	⊕	Glaße	♂
Quintessency	⊕	Vert de grace, or flower of Copper	♂
Realgar	♂	Vinegar	⊕
Retorte	♂	Distilled Vinegar	⊕
Sand	♂	Vitriol	⊕
		Urine	⊕

Figure 1. *Explanation of the Chymical Characters* from Nicaise Le Febvre, *A compleat body of chymistry*, London, 1670.

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











	Bolus communis		Sal commune
	Aurum, Philosophus		Calx
	Cucurbita		Lapides
	Calx metallorum		Sulfur
	Lignum		Cerussa
	Autumnus		Antimonium, Calx viva, Argentum vivum, Cuprum, Color roseus.
	Alumen		Antimonium, Color roseus
	Calx ovorum putaminum		Arsenicum album
	Calx		Antimonium spagyr. praep., Argentum vivum
	Crucibulus		Argentum vivum
	Sal petrae, Aphronitrum, Flos parietis, Faex nitri, Nitrum Graecorum, Nitrum stolidum.		Calx
	Acetum		Amalgama
	Retorta		Filtrare
	Vitriolum Romanum		Aqua Mercurii
	Marcasita		Filtrare

Figure 3. Table 38 from Lüdy-Tenger's inventory of alchemical symbols.














Table 1. Existing Coverage of ALCHEMICAL SYMBOL FOR in Unicode











Unicode	Symbol	Description
2295	⊕	CIRCLED PLUS = early astronomical symbol for earth → XX65 ⊕ alchemical symbol for verdigrease
0292	Ʒ	EZH = dram
2108	↻	SCRUPLE
2114	℔	LB BAR SIGN = pound
211E	℞	RECIPE
2125	℥	OUNCE
231B	⌚	HOURGLASS = alchemical symbol for hour
25A1	◻	WHITE SQUARE = alchemical symbol for salt
2609	☉	SUN = alchemical symbol for gold
260A	♁	ASCENDING NODE = alchemical symbol for sublimate
260B	♂	DESCENDING NODE = alchemical symbol for purify → XX65 ♀ alchemical symbol for purify
260C	♂	CONJUNCTION = alchemical symbol for day
263D	☾	FIRST QUARTER MOON = alchemical symbol for silver
263E	☾	LAST QUARTER MOON = alchemical symbol for silver
263F	☿	MERCURY = alchemical symbol for quicksilver, argentum vivum
2640	♀	FEMALE SIGN = Venus = alchemical symbol for copper
2641	♁	EARTH = alchemical symbol for antimony → 2295 ⊕ circled plus → XX65 ⊕ alchemical symbol for verdigrease
2642	♂	MALE SIGN

Unicode	Symbol	Description
		= Mars
		= alchemical symbol for iron
2643	♃	JUPITER
		= alchemical symbol for tin
2644	♄	SATURN
		= alchemical symbol for lead
2646	♅	NEPTUNE
		= alchemical symbol for bismuth/tin glass
2648	♈	ARIES
2649	♉	TAURUS
264A	♊	GEMINI
264B	♋	CANCER
264C	♌	LEO
264D	♍	VIRGO
264E	♎	LIBRA
264F	♏	SCORPIO
2650	♐	SAGITTARIUS
2651	♑	CAPRICORN
2652	♒	AQUARIUS
2653	♓	PISCES
26A6	♂♂	MALE WITH STROKE SIGN = transgendered sexuality = alchemical symbol for iron or crocus of iron
26A8	♂⬆	VERTICAL MALE WITH STROKE SIGN = ferrous iron sulfate (alchemy and older chemistry) = alchemical symbol for iron
26A9	♂➡	HORIZONTAL MALE WITH STROKE SIGN = magnesium (alchemy and older chemistry) = alchemical symbol for iron
26B9	♁	SEXTILE = alchemical symbol for sal-ammoniac → 002A * asterisk → XX3B ⚗ sal-ammoniac

Table 2. Preliminary Unicode Alchemical Symbol Table

Unicode	Symbol	Description
Substances		
<i>Symbols for Aristotelian elements</i>		
XX00	Ⓔ	ALCHEMICAL SYMBOL FOR QUINTESSENCE
XX01	△	ALCHEMICAL SYMBOL FOR AIR
XX02	△	ALCHEMICAL SYMBOL FOR FIRE → 25B3 △ white up-pointing triangle
XX03	▽	ALCHEMICAL SYMBOL FOR EARTH → 2641 ♂ earth (alchemical symbol for antimony)
XX04	▽	ALCHEMICAL SYMBOL FOR WATER → 25BD ▽ white down-pointing triangle
<i>Symbols for important solvents</i>		
XX05	∇	ALCHEMICAL SYMBOL FOR AQUAFORTIS
XX06	℞	ALCHEMICAL SYMBOL FOR AQUA REGIA
XX07	℞	ALCHEMICAL SYMBOL FOR AQUA REGIA 2 = balneum arenae (sand bath), lapis armenus (Armenian stone)
XX08	∇ ^s	ALCHEMICAL SYMBOL FOR AQUA-VITAE = spiritus vini
XX09	℥	ALCHEMICAL SYMBOL FOR AQUA-VITAE 2
XX0A	⊕	ALCHEMICAL SYMBOL FOR VINEGAR = crucible; acid; distill; atrament; vitriol; red sulfur; borax; wine; alkali salt; mercurius vivus, quick silver → 002b + plus
XX0B	⊕	ALCHEMICAL SYMBOL FOR VINEGAR 2 = distilled vinegar
XX0C	⋈	ALCHEMICAL SYMBOL FOR VINEGAR 3
<i>Symbols for sulfur and mercury</i>		
XX0D	⚡	ALCHEMICAL SYMBOL FOR SULFUR = brimstone
XX0E	⚡	ALCHEMICAL SYMBOL FOR PHILOSOPHER'S SULFUR
XX0F	⚡	ALCHEMICAL SYMBOL FOR BLACK SULFUR = sulphur nigra, dye






















Unicode	Symbol	Description
XX10		ALCHEMICAL SYMBOL FOR MERCURY SUBLIMATE → 263F ☿ mercury → XX61 ⚗ sublimation
XX11		ALCHEMICAL SYMBOL FOR MERCURY SUBLIMATE 2 → 263F ☿ mercury → XX61 ⚗ sublimation
XX12		ALCHEMICAL SYMBOL FOR MERCURY SUBLIMATE 3 → 263F ☿ mercury → XX61 ⚗ sublimation
XX13		ALCHEMICAL SYMBOL FOR MERCURY SUBLIMATE 4 → 263F ☿ mercury → XX61 ⚗ sublimation
XX14		ALCHEMICAL SYMBOL FOR CINNABAR
<i>Symbols for salt, vitriol, and niter</i>		
XX15		ALCHEMICAL SYMBOL FOR SALT → 2581 □ white square (alchemical symbol for salt) → 2296 circled minus
XX16		ALCHEMICAL SYMBOL FOR NITER → 29B6 circled vertical bar
XX17		ALCHEMICAL SYMBOL FOR VITRIOL
XX18		ALCHEMICAL SYMBOL FOR VITRIOL 2
XX19		ALCHEMICAL SYMBOL FOR ROCK SALT = sal gemmae
XX1A		ALCHEMICAL SYMBOL FOR ROCK SALT 2
<i>Symbols for gold</i>		
XX1B		ALCHEMICAL SYMBOL FOR GOLD → 2609 ☼ Sun (alchemical symbol for gold)
<i>Symbols for silver</i>		
XX1C		ALCHEMICAL SYMBOL FOR SILVER → 263d ☾ first quarter moon (alchemical symbol for silver) → 263e ☾ last quarter moon (alchemical symbol for silver)














Unicode	Symbol	Description
<i>Symbols for iron, iron ore and derivatives</i>		
XX1D		ALCHEMICAL SYMBOL FOR IRON ORE → 2642 ♂ male symbol (Mars, alchemical symbol for iron)
XX1E		ALCHEMICAL SYMBOL FOR IRON ORE 2 → 2642 ♂ male symbol (Mars, alchemical symbol for iron)
XX1F		ALCHEMICAL SYMBOL FOR CROCUS OF IRON = crocus martis, red or yellow calcined powder of iron
XX20		ALCHEMICAL SYMBOL FOR REGULUS OF IRON = regulus martis, scoria from refining stibnite/antimony with iron
<i>Symbols for copper, copper ore and derivatives</i>		
XX21		ALCHEMICAL SYMBOL FOR COPPER ORE → 2640 ♀ female symbol (Venus, alchemical symbol for copper)
XX22		ALCHEMICAL SYMBOL FOR IRON-COPPER ORE → 2640 ♀ female symbol (Venus, alchemical symbol for copper) → 2642 ♂ male symbol (Mars, alchemical symbol for iron)
XX23		→ 26A5 male and female symbol SUBLIMATE OF COPPER → 2640 ♀ female symbol (Venus, alchemical symbol for copper)
XX24		→ XX3B ☿ alchemical symbol for sal-ammoniac ALCHEMICAL SYMBOL FOR CROCUS OF COPPER = crocus veneris, aes ustum → 2640 ♀ female symbol (Venus, alchemical symbol for copper)
XX25		ALCHEMICAL SYMBOL FOR CROCUS OF COPPER 2
XX26		ALCHEMICAL SYMBOL FOR COPPER ANTIMONIATE = crocus of copper, crocus veneris, lapis haematites → 2640 ♀ female symbol (Venus, alchemical symbol for copper) → 2295 ♂ earth (alchemical symbol for antimony)

Unicode	Symbol	Description
XX27	♄	ALCHEMICAL SYMBOL FOR SALT OF COPPER ANTIMONIATE → 2640 ♀ female symbol (Venus, alchemical symbol for copper) → 2295 ♂ earth (alchemical symbol for antimony) → XX15 ⊖ alchemical symbol for salt
XX28	♄	ALCHEMICAL SYMBOL FOR SUBLIMATE OF SALT OF COPPER → 2640 ♀ female symbol (Venus, alchemical symbol for copper) → XX15 ⊖ alchemical symbol for salt
XX29	⊕	→ XX3B ☿ alchemical symbol for sal-ammoniac ALCHEMICAL SYMBOL FOR VERDIGREASE = aes viride, copper subacetate = early astronomical symbol for earth
XX2A	♄	<i>Symbols for tin and tin ore</i> ALCHEMICAL SYMBOL FOR TIN ORE → 2643 ♃ Jupiter (alchemical symbol for tin)
XX2B	♄	<i>Symbols for lead and lead ore</i> ALCHEMICAL SYMBOL FOR LEAD ORE → 2644 ♄ Saturn (alchemical symbol for lead)
XX2C	♄	<i>Symbols for antimony, antimony ore and derivatives; regulus</i> ANTIMONY ORE = stibnite → 2295 ♂ earth (alchemical symbol for antimony)
XX2D	♄	SUBLIMATE OF ANTIMONY → 2295 ♂ earth (alchemical symbol for antimony)
XX2E	♄	→ XX3B ☿ alchemical symbol for sal-ammoniac ALCHEMICAL SYMBOL FOR SALT OF ANTIMONY = cinnabar → 2295 ♂ earth (alchemical symbol for antimony) → XX15 ⊖ alchemical symbol for salt

Unicode	Symbol	Description
XX2F		ALCHEMICAL SYMBOL FOR SUBLIMATE OF SALT OF ANTIMONY → 2295 ♂ earth (alchemical symbol for antimony) → XX15 ⊖ alchemical symbol for salt
XX30		→ XX3B ✕ alchemical symbol for sal-ammoniac ALCHEMICAL SYMBOL FOR SUBLIMATE OF SALT OF ANTIMONY 2 → 2295 ♂ earth (alchemical symbol for antimony) → XX15 ⊖ alchemical symbol for salt
XX31		ALCHEMICAL SYMBOL FOR VINEGAR OF ANTIMONY → 2295 ♂ earth (alchemical symbol for antimony) → XX3B ✕ alchemical symbol for sal-ammoniac
XX32		ALCHEMICAL SYMBOL FOR REGULUS OF ANTIMONY = antimony metal
XX33		ALCHEMICAL SYMBOL FOR REGULUS OF ANTIMONY 2 → 2295 ♂ earth (alchemical symbol for antimony)
XX34		ALCHEMICAL SYMBOL FOR REGULUS
XX35		ALCHEMICAL SYMBOL FOR REGULUS 2
XX36		ALCHEMICAL SYMBOL FOR REGULUS 3
XX37		ALCHEMICAL SYMBOL FOR REGULUS 4
<i>Symbols for other substances</i>		
XX38		ALCHEMICAL SYMBOL FOR ALKALI = sal alkali
XX39		ALCHEMICAL SYMBOL FOR ALKALI 2
XX3A		ALCHEMICAL SYMBOL FOR MARCASITE = iron pyrite, iron sulfide
XX3B		ALCHEMICAL SYMBOL FOR SAL-AMMONIAC = ammonium chloride → 002A * asterisk → 26b9 ✱ sextile (alchemical symbol for sal-ammoniac) → 2733 ✱ eight-spoked asterisk (dingbats)
XX3C		ALCHEMICAL SYMBOL FOR ARSENIC
XX3D		ALCHEMICAL SYMBOL FOR REALGAR = arsenic sulfide

Unicode	Symbol	Description
XX3E		ALCHEMICAL SYMBOL FOR REALGAR 2 = arsenic sulfide
XX3F		ALCHEMICAL SYMBOL FOR AURIPIGMENT = orpiment = arsenic trisulfide
XX40		ALCHEMICAL SYMBOL FOR BISMUTH ORE = tinglass → 2646 Neptune (alchemical symbol for bismuth)
XX41		ALCHEMICAL SYMBOL FOR TARTAR = impure potassium tartrate
XX42		ALCHEMICAL SYMBOL FOR TARTAR 2 = impure potassium tartrate
XX43		ALCHEMICAL SYMBOL FOR QUICK LIME = calx viva = calcium oxide
XX44		ALCHEMICAL SYMBOL FOR BORAX
XX45		ALCHEMICAL SYMBOL FOR BORAX 2
XX46		ALCHEMICAL SYMBOL FOR BORAX 3
XX47		ALCHEMICAL SYMBOL FOR ALUM
XX48		ALCHEMICAL SYMBOL FOR OIL
XX49		ALCHEMICAL SYMBOL FOR SPIRIT
XX4A		ALCHEMICAL SYMBOL FOR TINCTURE
XX4B		ALCHEMICAL SYMBOL FOR GUM
XX4C		ALCHEMICAL SYMBOL FOR WAX = cera
XX4D		ALCHEMICAL SYMBOL FOR POWDER = pulvis
XX4E		ALCHEMICAL SYMBOL FOR CALX = calcinare = oxide residue, calcium oxide
XX4F		ALCHEMICAL SYMBOL FOR TUTTY = tutia, crude zinc oxide sublimate = aes viride
XX50		ALCHEMICAL SYMBOL FOR CAPUT MORTUUM = worthless residue of sublimation or distillation
XX51		ALCHEMICAL SYMBOL FOR SCEPTER OF JOVE
XX52		ALCHEMICAL SYMBOL FOR CADUCEUS → 2624 caduceus
XX53		ALCHEMICAL SYMBOL FOR TRIDENT
XX54		ALCHEMICAL SYMBOL FOR STARRED TRIDENT

Unicode	Symbol	Description
XX55		ALCHEMICAL SYMBOL FOR LOADSTONE = magnes
XX56		ALCHEMICAL SYMBOL FOR SOAP → 25CA lozenge
XX57		ALCHEMICAL SYMBOL FOR URINE → 22A1 squared dot operator
XX58		ALCHEMICAL SYMBOL FOR HORSE DUNG = fīmus equinus
XX59		ALCHEMICAL SYMBOL FOR ASHES = cineres
XX5A		ALCHEMICAL SYMBOL FOR POT ASHES = cineres clavellati, alumen
XX5B		ALCHEMICAL SYMBOL FOR BRICK
XX5C		ALCHEMICAL SYMBOL FOR POWDERED BRICK = later cibratus, farina laterum
XX5D		ALCHEMICAL SYMBOL FOR AMALGAM
XX5E		ALCHEMICAL SYMBOL FOR STRATUM SUPER STRATUM
XX5F		ALCHEMICAL SYMBOL FOR STRATUM SUPER STRATUM 2
Processes		
XX60		ALCHEMICAL SYMBOL FOR SUBLIMATION → 260A Ω ascending node (alchemical symbol for sublimate)
XX61		ALCHEMICAL SYMBOL FOR PRECIPITATE
XX62		ALCHEMICAL SYMBOL FOR DISTILL = sublimate
XX63		ALCHEMICAL SYMBOL FOR DISSOLVE
XX64		ALCHEMICAL SYMBOL FOR DISSOLVE 2 = water, aqua
XX65		ALCHEMICAL SYMBOL FOR PURIFY → 260B ∪ descending node (alchemical symbol for purify)
XX66		ALCHEMICAL SYMBOL FOR PUTRIFACTION
Apparatuses		
XX67		ALCHEMICAL SYMBOL FOR CRUCIBLE = tigellum → XX0A alchemical symbol for vinegar, crucible
XX68		ALCHEMICAL SYMBOL FOR CRUCIBLE 2
XX69		ALCHEMICAL SYMBOL FOR CRUCIBLE 3

Unicode	Symbol	Description
XX6A		ALCHEMICAL SYMBOL FOR CRUCIBLE 4
XX6B		ALCHEMICAL SYMBOL FOR CRUCIBLE 5
XX6C		ALCHEMICAL SYMBOL FOR ALEMBIC
XX6D		ALCHEMICAL SYMBOL FOR BATH OF MARY = balneum mariae
XX6E		ALCHEMICAL SYMBOL FOR BATH OF VAPORS = balneum vaporis
XX6F		ALCHEMICAL SYMBOL FOR RETORT
XX70		ALCHEMICAL SYMBOL FOR RETORT 2
Time		
XX71		ALCHEMICAL SYMBOL FOR HOUR → 231B ⌘ hourglass (alchemical symbol for hour)
XX72		ALCHEMICAL SYMBOL FOR NIGHT
XX73		ALCHEMICAL SYMBOL FOR DAY-NIGHT
XX74		ALCHEMICAL SYMBOL FOR MONTH = mensis → 22A0 squared times
Measures		
XX75		ALCHEMICAL SYMBOL FOR HALF DRAM = drachma semis
XX76		ALCHEMICAL SYMBOL FOR HALF OUNCE = uncia semis

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