

Universal Multiple-Octet Coded Character Set  
International Organization for Standardization  
Internationale Standardisierungs-Organisation  
Organisation Internationale de Normalisation  
Διεθνής Οργανισμός Τυποποίησης  
Международная организация по стандартизации

Doc Type: Working Group Document

## Title: Proposal to encode 7 historic alchemical symbols

Source: Uwe Mayer, Siegmund Probst, David Rabouin, Elisabeth Rinner,  
Andreas Stötzner, Achim Trunk, Charlotte Wahl

Version: finalized

Status: forward to Script Ad Hoc / WG2

Action: for expert review and encoding pipeline

Date: September 3, 2024

Requester's reference: LUCP L-2432

### 1. Background

Our proposal for encoding of 228 historic scientific characters ([N5277 / L-24-02n](#)), forwarded on February 19, 2024, has been discussed at the WG2-#71 meeting (June 10–14, 2024) in Prague. The discussion led to the idea to forward the several character groups separately, in order to ease the approval process. Hence we intend to submit these character sets in a number of new proposals, of which this document is the 1st.

The background of this proposal is the collaboration of two European institutions: the Leibniz-Archiv: Forschungsstelle der Leibniz-Edition (a department of the Gottfried Wilhelm Leibniz Bibliothek (Hanover, Germany), supervised by the Göttingen Academy of Science and Humanities in Lower Saxony; and the *Philiumm* research group of CNRS (UMR 7219, laboratoire SPHERE) / Université de Paris VII (France), in the *Philiumm* Project (2021–2026), funded by the European Research Council (N° ADG-101020985). The characters proposed appear in the works of Gottfried Wilhelm Leibniz (1646–1716) and his contemporaries.

For more general information about the *Philiumm* project and our research work, please see the doc. N5277.








### 2. Alchemical symbols

We propose the addition of seven alchemical symbol characters to the UCS. Some of them relate to existing alchemical/astrological symbols in their shape and meaning, however, in any case a sufficient distinction can be testified. Since there is not enough slots left in the Alchemical Symbol's block 1F700, we propose a new code chart "Alchemical Symbols Extension" which ought to be big enough to accomodate even more possible future additions, since the field of alchemical notation is rather extensive and complex.

Five of the characters represent a semantic content for which no character is encoded so far. Two characters are seen to bear the same meaning as existing characters basically, therefor the descriptive names contain "-2", according to the established principle in the 1F700 block, where several symbols with congruent meaning are encoded separately on basis of eminent glyph variety (examples are 1F706/1F707, 1F70A/1F70B/1F70C and 1F716/1F717).



### 3. Characters

If this proposal gets accepted, the following new characters will exist:

	ALCHEMICAL SYMBOL FOR OIL BOILED
	ALCHEMICAL SYMBOL FOR MOON-JUPITER
	ALCHEMICAL SYMBOL FOR TARTAR-SALT
	ALCHEMICAL SYMBOL ENCLOSED SUN
	ALCHEMICAL SYMBOL ENCLOSED MOON
	ALCHEMICAL SYMBOL FOR HORA-2
	ALCHEMICAL SYMBOL FOR RETORT-2

The following already encoded characters are related to:

 ALCHEMICAL SYMBOL FOR HORA-2:

1F76E  ALCHEMICAL SYMBOL FOR HOUR  
→ 231B  hourglass

 ALCHEMICAL SYMBOL FOR RETORT-2:

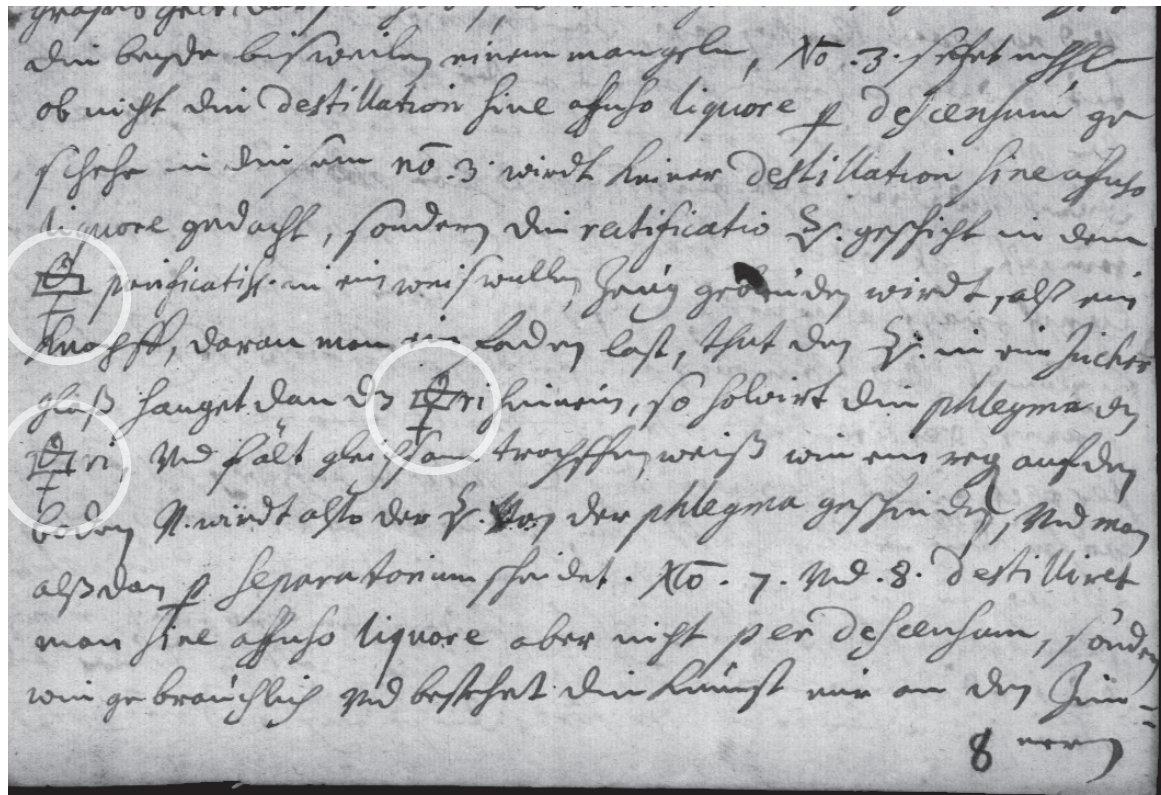
1F76D  ALCHEMICAL SYMBOL FOR RETORT  
→ 2697  alembic

## 4. Figures and explanations

m. h. H. ob nicht die destillation sine affuso liquore per descensum geschehe in diesem n° 3  
 wirdt keiner destillation sine affuso liquore gedacht, sondern die rectificatio ♀ geschicht  
 in dem ♀ purificatiss. in ein weiswullen zeug gebunden wirdt, alß ein knopff, daran man ein  
 faden last, thut den ♀ in ein Zuckerglaß hanget dan daß ♀<sup>ri</sup> hinein, so solviret die phlegma  
 5 daß ♀<sup>ri</sup>, vnd fällt gleichsam tropffenweiß wie ein regen auf den boden v. wirdt also der  
 ♀ von der phlegma geschieden, vnd man alßdan per Separatorium scheidet. N° 7 vnd  
 8 destilliret man sine affuso liquore aber nicht per descensum, sondern wie gebräuchlich  
 vnd bestehet die kunst nur an den Zinnern, kupffern, vnd gläsern gefäßen, ist sehr curios  
 nützlich vnd leicht. N° 9 Menstruum Willisii ist nicht spiritus Zwelfferi ♀<sup>ris</sup> welcher von  
 10 dem soluto nicht totaliter kan geschieden werden, sondern es ist sal ♀<sup>ri</sup> purificatiss. wie  
 Willis in tractatu de fermentatione dessen operation klärlich mit dem ♀<sup>re</sup> entdecket, aber  
 daß ♀<sup>ri</sup> verschweiget. N° 10 Lilium Paracelsi verum wirdt allein aus ☉, oder auch mit Zu-  
 setzung anderer metallen alß ☉ so ist es universal, oder mit ♀, ♂, ♄, etc. so ist eß particular  
 vnd gewissen membris vnd krankheit appropriet, gemacht, habe eß auch gemacht aber  
 15 doch ohne den Alkaest, das aber Coagulum Victrioli hier lilium Paracelsi genandt, ge-

♀ ALCHEMICAL SYMBOL FOR TARTAR-SALT

LAA III-2 p. 512 – Volume 2 of LAA series III is currently not available in digitized form.



♀ ALCHEMICAL SYMBOL FOR TARTAR-SALT

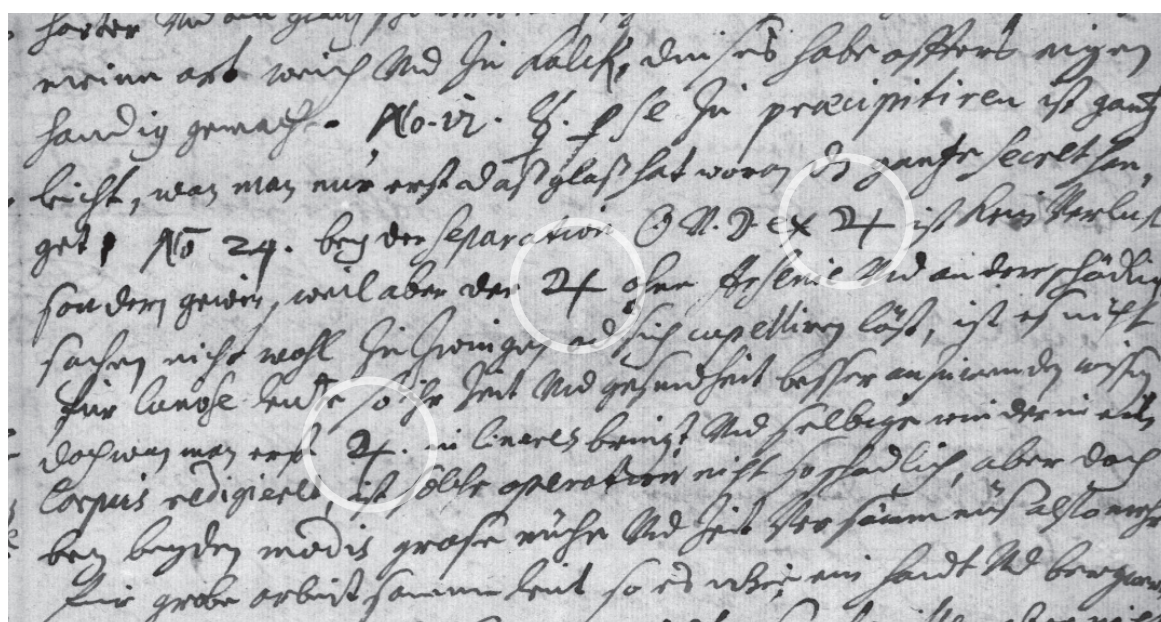
The corresponding part of the original MS (a letter from J. H. Kornmann for Leibniz, 1678).

Source: [LBr 496 fol. 3v](#)



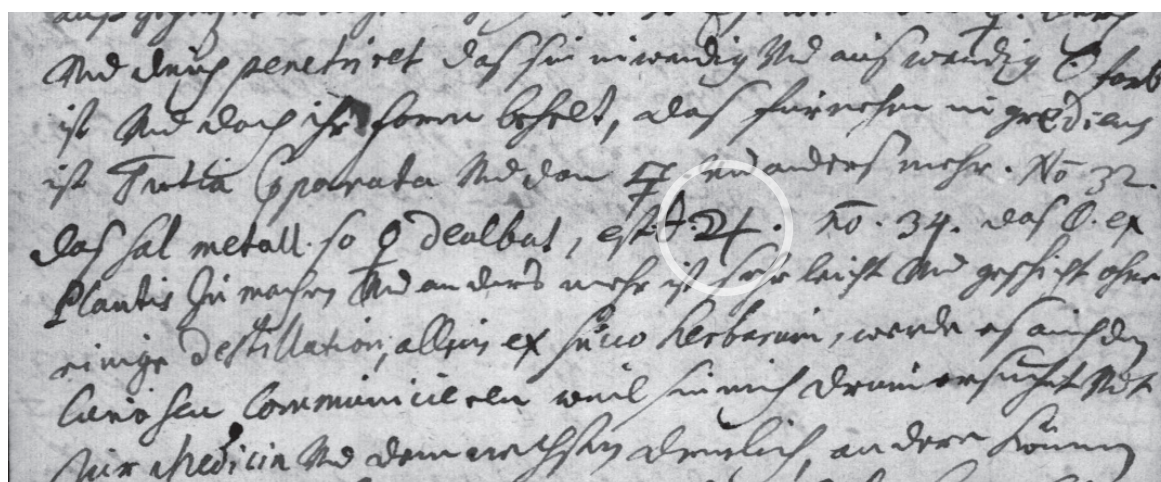
ohne diese Massa aber auf gemeine art weich vnd zu Kalck, dieses habe offters eigenhandig gemacht. N° 12. ☿ per se zu praecipitiren ist gantz leicht, wan man nur erst daß glaß hat  
 15 woran daß gantze secret haüget. N° 24 bey der separation ☉ v. ☽ ex ♃ ist kein verlust  
 sondern gewin, weil aber der ♃ ohne Arsenic vnd andere schädliche sachen nicht wohl zu  
 zwingen oder sich capelliren läst ist es nicht für Curiose leute so ihr zeit vnd gesundheit  
 besser anzuwenden wissen, doch wan man erst ♃ in cineres bringt vnd selbige wieder in  
 ein Corpus redigieret, ist solche operation nicht so schädlich, aber doch bey beyden modis  
 20 grose rüche vnd zeitversäumnüß also mehr für grobe arbeitsamme leut so es wie ein handt

♃ ALCHEMICAL SYMBOL FOR MOON-JUPITER denotes *silver-bearing tin* in this text.  
 LAA III-2 p. 514



♃ ALCHEMICAL SYMBOL FOR MOON-JUPITER

The corresponding part of the above sample, from the original MS (a letter from J. H. Kornmann for Leibniz, 1678). Source: [LBr 496 fol. 5r](#)



Another example from the same text. Source: [LBr 496 fol. 3v](#)



Con l'occasione del rammollire del ferro, comunicherò à V.S. Ill. una cosa assai curiosa comunicata al S<sup>r</sup> Bodenhausem d'un Signore Curioso che si è dimandato Francesco Miniti. intorno all'Ammollir il |:vetro:| ℞ latte di Capra, aceto forte, ☉ di uliva, Aloë Epatico, ☉ laurino, orina di ragazzi ana. Fà bollire in un vaso invetriato nuovo il |:vetro:|, lascialo nell'infusione caldo in detto mestruo per 1 notte e la mattina opera. Si è fatta la prova in Parma d'uno chiamato Ottici con una Medaglia del Papa e dell'Imperatore in un |:vetro:| verde e riuscì pulitissimo, che poi rassoda come prima.

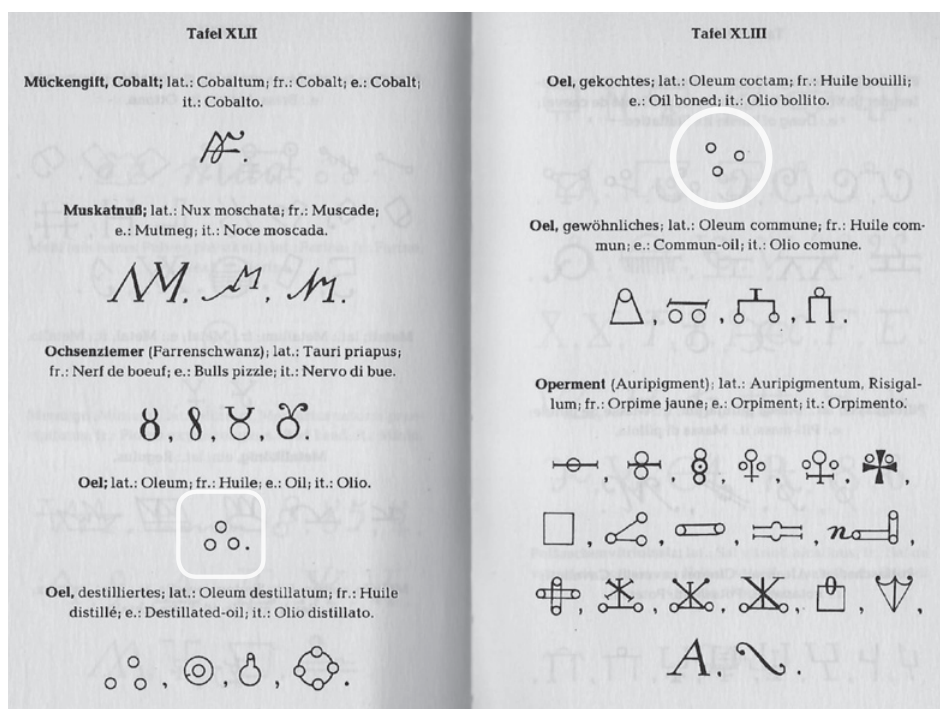
☉ ALCHEMICAL SYMBOL FOR OIL BOILED. Graphically based on the glyph of the common oil symbol, which gets rotated 180 degrees. As “boiled oil” it bears a different meaning than the ordinary oil symbol and both characters do occur alongside each other here. LAA III-8 p. 248

Con l'occasione del rammollire del ferro, comunicherò à V.S. Ill. una cosa assai curiosa comunicata al S<sup>r</sup> Bodenhausem d'un Signore Curioso che si è dimandato Francesco Miniti. intorno all'Ammollir il V<sup>h</sup> ℞ latte di Capra, aceto forte, ☉ di uliva, Aloë Epatico ☉ laurino, orina di ragazzi ana. Fà bollire in un vaso invetriato nuovo il V<sup>h</sup>, lascialo nell'infusione caldo in detto mestruo per 1 notte e la mattina opera. Si è fatta la prova in Parma d'uno chiamato Ottici con una Medaglia del Papa e dell'Imperatore. in un V<sup>h</sup> verde e riuscì pulitissimo, che poi rassoda come prima non si può capire.

☉ ALCHEMICAL SYMBOL FOR OIL BOILED.

The corresponding part of the original MS source, a letter from M. G. Block for Leibniz, 1699.

Source: LBr 75 fol. 30v.



☉ ALCHEMICAL SYMBOL FOR OIL BOILED (on the right) opposite the common symbol for (simple) oil (on the left), as documented in Geßmann's book on alchemical symbols.



Nunc conferendo aequationes ☐ et ☉ tuto licebit invenire ipsas n.e.m. ac proinde omnes evolvere collatitias ad ultimam usque. Et primum ex terminis secundis fiet:

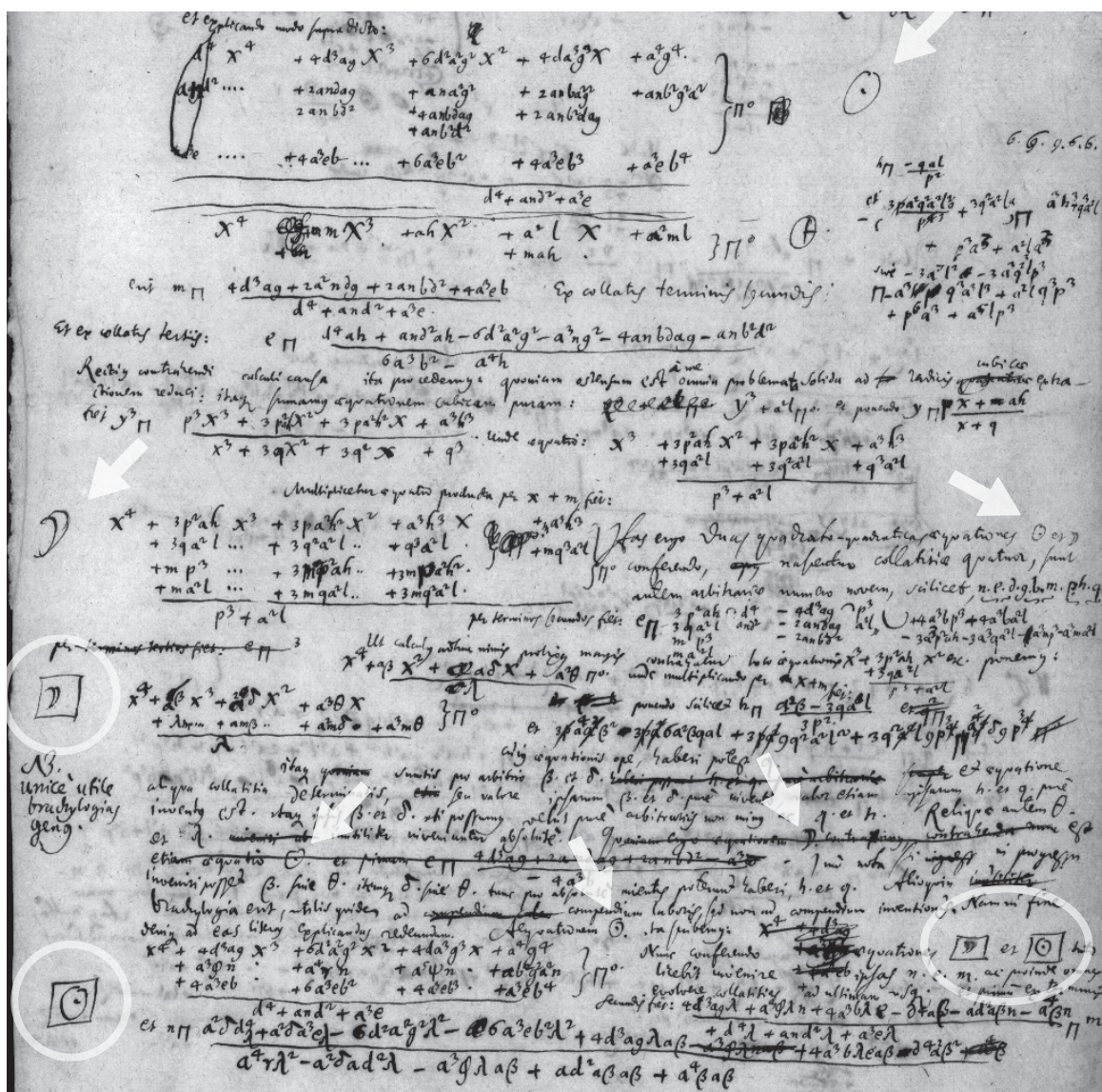
$$\frac{4d^3ag\lambda + a^3\varphi\lambda n + 4a^3b\lambda e - d^4a\beta - ad^2a\beta n - [a^3e\beta]n}{+d^4\lambda + and^2\lambda + a^3e\lambda} \cap m. \quad \text{et}$$

☉ ALCHEMICAL SYMBOL ENCLOSED SUN, originally denotes *foliated gold*;

☐ ALCHEMICAL SYMBOL ENCLOSED MOON, originally denotes *foliated silver*.

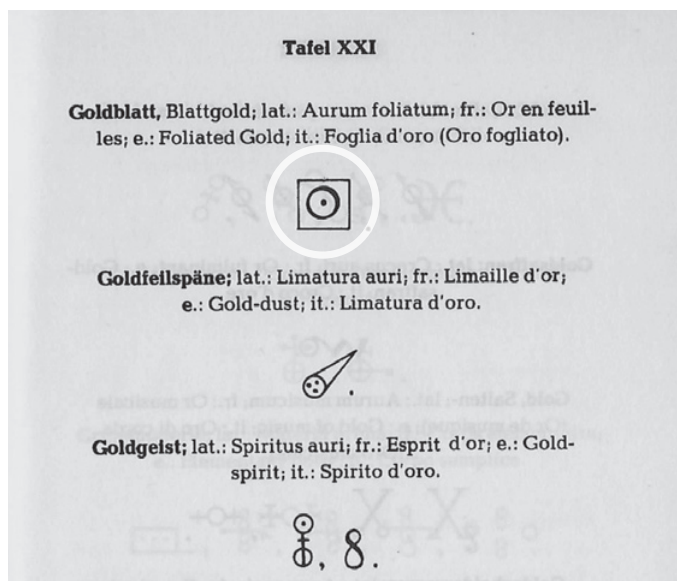
This example shows a 'borrowed' usage of the two alchemical symbols in a mathematical script.

It was not uncommon in those days to take certain symbols from another background and use them in a different context and with a different meaning. In this case the meaning is just that of reference marks; the symbols are, however, clearly belonging to the alchemical notation system by their origin. LAA VII-2 p. 420 – Volume 2 of LAA series VII is currently not available in digitized form.

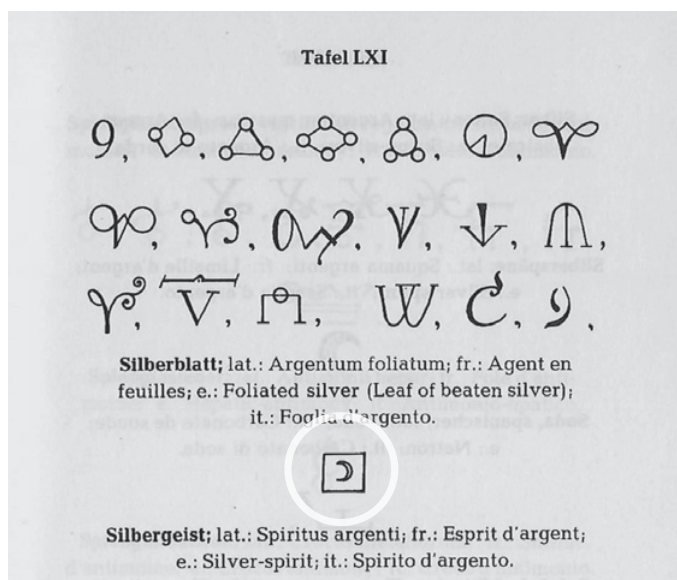


☉ ALCHEMICAL SYMBOL ENCLOSED SUN and ☐ ALCHEMICAL SYMBOL ENCLOSED MOON as they appear alongside the ordinary sun and moon (gold/silver) symbols (→) in the corresponding MS. source: LH 35 14 1 fol. 230v





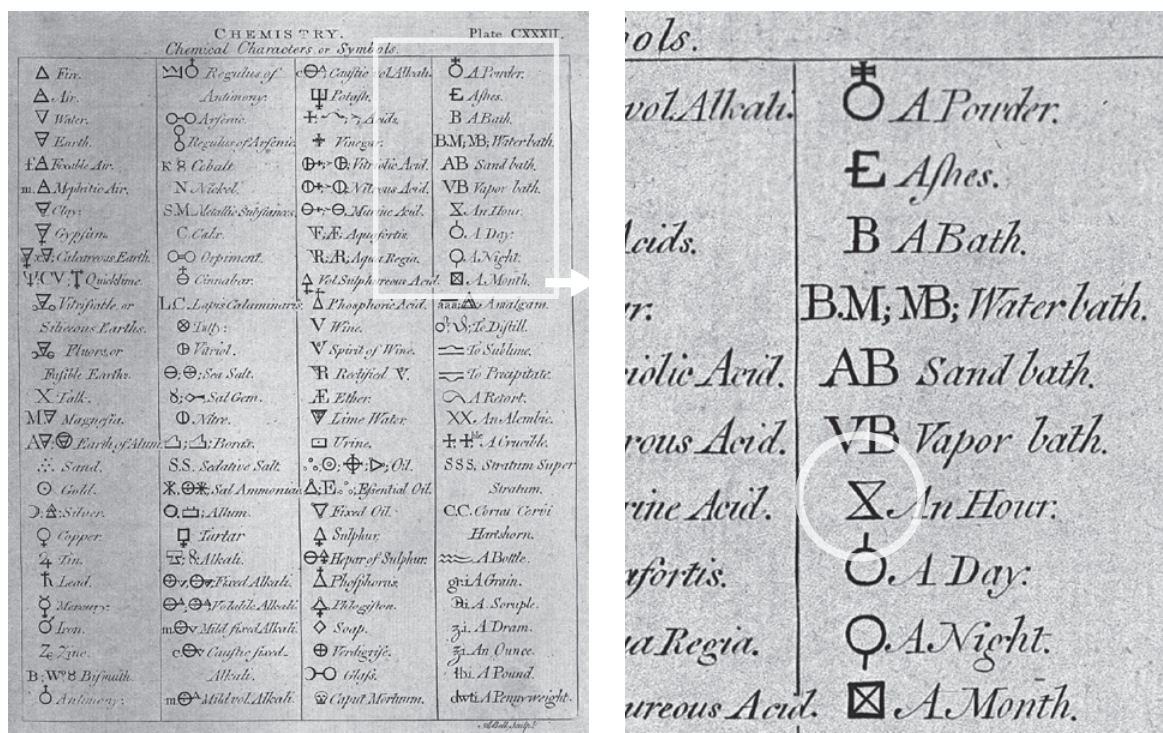
☉ ALCHEMICAL SYMBOL  
ENCLOSED SUN,  
☽ ALCHEMICAL SYMBOL  
ENCLOSED MOON,  
here shown in their original alchemical  
context; from Geßmann's concise book  
on alchemical symbols (1964).



☉ ALCHEMICAL SYMBOL  
ENCLOSED SUN,  
from Ernesti 1733.

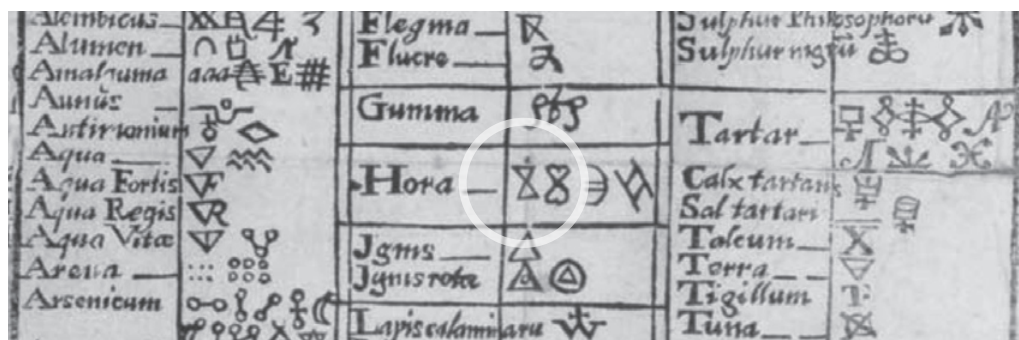
Medicinische Zeichen.		43
Medicinische und Apotheker-Zeichen.		
☉	Aurum, Gold.	g. d. Destilliren.
☉	Aurum foliatum, Blätteleins-Gold.	☼ Dies, Tag.
☉	Aurum limatum, gefeilt Gold.	☼ Digeriren.
☉	Aurum potabile, trinkbar Gold.	☼ Drachma, Quintlein.
B.	Balneum, Bad.	☼ Ess. Essentia, Essenz.
MB.	Balneum Mariae, f. Maris.	☼ Faeces vini, Weinhefen.
VB.	Balneum vaporis, f. Roris.	☼ Farina, Meel.
☼	Borax, Borras.	☼ Farinalaterum, Ziegel-Meel.
☼	Caementiren.	☼ Ferrum, Eisen.
☼	Calciniren.	☼ Filtrare, durchseigen.
C.	Calx, Kalch.	☼ Fluere, fließen.
☼	Calx viva, ungelöschter Kalch.	☼ Fuligo, Ruß.
☼	Camphora, Campher.	☼ Fumus, Rauch.

The char.  $\Sigma$  ALCHEMICAL SYMBOL FOR HORA-2 appears in historical sources frequently in its most usual, straight X-like shape, either singularly or at first position, when a variety of glyphs is presented. Because of the considerable shape difference to the encoded 1F76E (which also occurs in some of the samples), the latter is not suitable to represent ‘the simple/basic hora sign’.



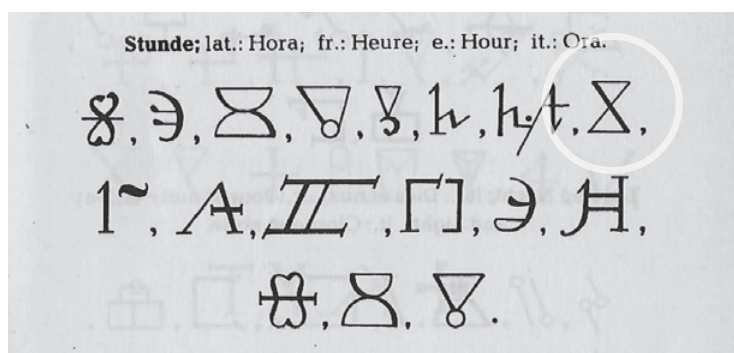
$\Sigma$  ALCHEMICAL SYMBOL FOR HORA-2, in an engraving of Andrew Bell (1726–1809). The straight hora symbol is listed here as the sole form.

Source: Welcome collection (<https://wellcomecollection.org/works/s5vs9bfr>)



$\Sigma$  ALCHEMICAL SYMBOL FOR HORA-2 in a part from a 1671 copperplate; showing the straight variant at 1st position. Basil Valentine: The Last Will and Testament of Basil Valentine.

Source: Newton N3584 Alchemy Unicode Proposal – March 31 2009.pdf )



From Geßmann's book (1964)



[illegible]

☉ re. Schmelzen ☉ io, Sch  
 ☹ Zurückbleibsel. Todtes  
 aaa Amalgama  
 ☒ Monat  
 ☿ Tag ♀ Nacht, ☿ Nacht,  
 ♂ Stunde ☿ Woche  
 lb. med Pfund =  $372 = 396 \Rightarrow 26$   
 3; = 3 viij =  $\Rightarrow$  xxiv = gr. 480.  
 1 lb. Handelsgew: Pfund = 32 L  
 1 Loth: 4 Quantg.  $276 \frac{1}{2}$  qß = 214,757  
 1. Gran 1,2875 qß; 1 qß 0,7767 G.

⌘ ALCHEMICAL SYMBOL FOR HORA-2,  
table from Karl Gottfried Hagen, *Grundriß der  
Experimentalchemie* (1786); after Schneider 1964.

Gutta, guttae. *G. g. g<sup>th</sup>* - - - Ein Tropfen; Tropfen.

H.

Haematites, siehe  
Lapis haematites.  
Herba. *H, AB* - - - Ein Kraut.

Hermetice sigillatum. *H. S.* - - - Hermetisch sigillirt, zugeschnitten.

Hora. *Σ, 1<sup>o</sup>, A, II, Γ, Δ, H, Σ, Σ* Eine Stunde.

Hiems. *Τ, Ω* - - - Der Winter.

Hydrargyrum, siehe

⌘ ALCHEMICAL SYMBOL  
FOR HORA-2, in: Medicinisch-  
Chymisches und Alchemistisch-  
es Oraculum (Ulm 1755); after  
Schneider 1964.

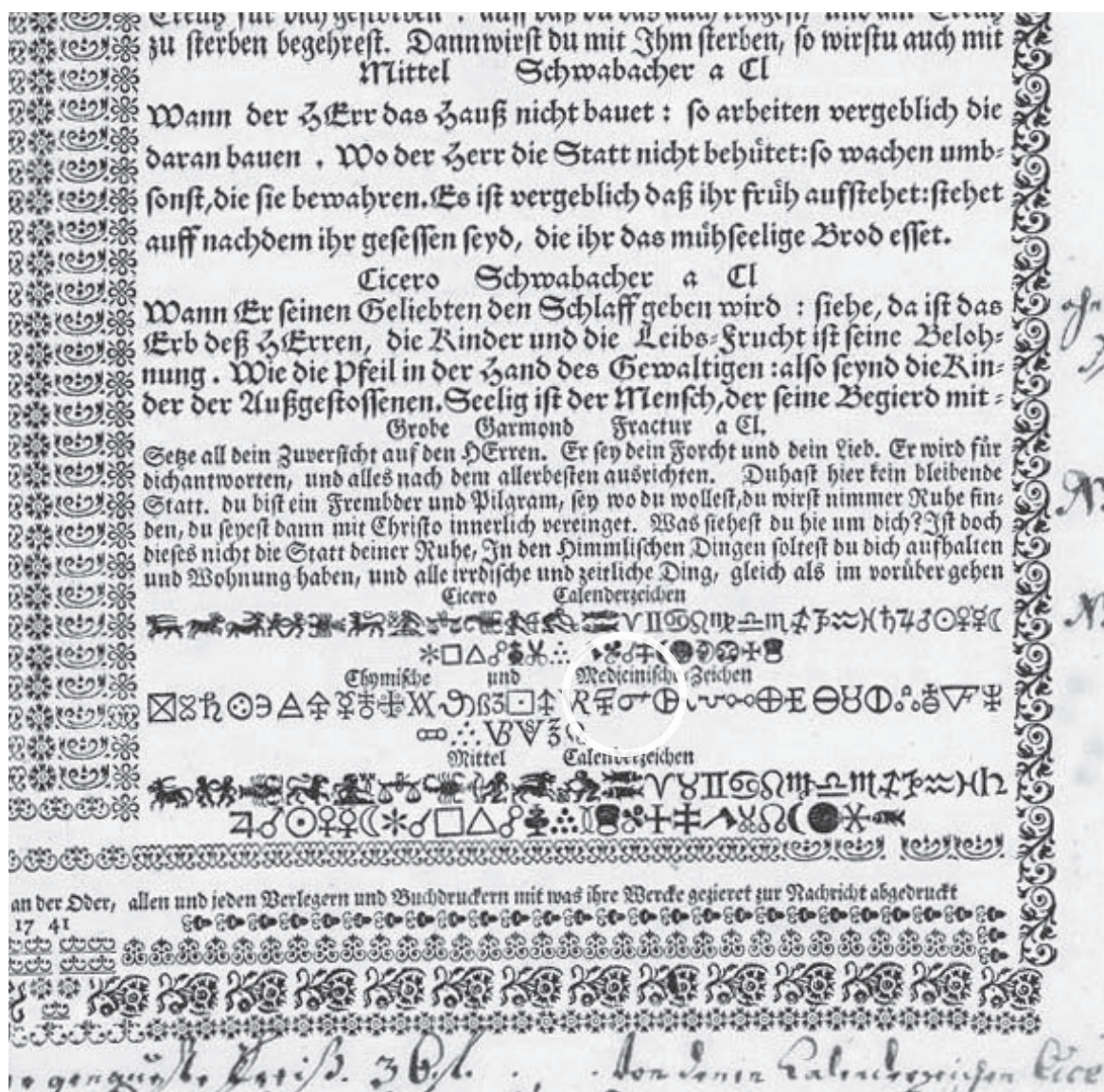
B.	Balneum, Bad.	En.	Enientia, Eientz.
MB.	Balneum Mariae, f. Maris.	Æ	Faeces vini, Weinhefen.
Vb.	Balneum vaporis, f. Roris.	⊙	Farina, Meel.
	Borax, Borras.		Farina laterum, Ziegel-Meel.
z	Caementiren.	♂	Ferrum, Eisen.
☿	Calciniren.	33	Filtrare, durchseigen.
C.	Calx, Kalch.	≡	Fluere, fließen.
♀	Calx viva, ungelöschter Kalch.	⚡	Fuligo, Ruß.
⚞	yr. Camphora, Campher.	♀	Fumus, Rauch.
♋	Cancer, Krebs, Sign. coel.	♊	Gemini, Zwilling, Sign. coel.
☉	Caput mortuum, Todtenkopff.	gr.	Gran.  Gummi,
♄	Caper, Steinbock, Sign. coel.	G.g.	Gutta, ein Tröpflein.
⊕	Cera, Wachs.	⌘	Hora, Stund.
‡	Cerussa, Bleyweiß.	Δ	Ignis, Feuer.
♂	Chalybs, Stahl.	ΔR	Ignis reverberans, reverberir Feuer

⌘ ALCHEMICAL SYMBOL FOR HORA-2 in sole position,  
from Ernesti 1733.









☿ ALCHEMICAL SYMBOL FOR RETORT-2

From a printer's specimen, by Philipp Glaser, Frankfurt/O., 1741.

Source: [Universitätsbibliothek Frankfurt/M.](#)

## 5. Unicode Character Properties

```
xe01;ALCHEMICAL SYMBOL FOR OIL BOILED;So;0;ON;;;;;N;;;;;
xe02;ALCHEMICAL SYMBOL FOR MOON-JUPITER;So;0;ON;;;;;N;;;;;
xe03;ALCHEMICAL SYMBOL FOR TARTAR-SALT;So;0;ON;;;;;N;;;;;
xe04;ALCHEMICAL SYMBOL ENCLOSED SUN;So;0;ON;;;;;N;;;;;
xe05;ALCHEMICAL SYMBOL ENCLOSED MOON;So;0;ON;;;;;N;;;;;
xe06;ALCHEMICAL SYMBOL FOR HORA-2;So;0;ON;;;;;N;;;;;
xe07;ALCHEMICAL SYMBOL FOR RETORT-2;So;0;ON;;;;;N;;;;;
```

“x” stands for *unspecified codespace*. “e” refers to our internal characters classification, see N5277.

## 6. Bibliography

LAA – refers to: Leibniz, Gottfried Wilhelm: Sämtliche Schriften und Briefe. (‘Leibniz-Akademie-Ausgabe’, many volumes)

LBr – refers to: Leibniz’s original correspondence papers, GWLB Hanover

LH – refers to: Leibniz’s original manuscripts, GWLB Hanover

[Ernesti, J. H. G.], Die wol-eingerichtete Buchdruckerey. Nürnberg, J. A. Endter Erben 1733 (Reprint: Radebeul 1940)

Geßmann, G. W.: Die Geheimsymbole der Alchymie, Arzneikunde und Astrologie des Mittelalters. Ulm 1964

Schneider, Wolfgang: Lexikon alchemistisch-pharmazeutischer Symbole. Weinheim/Bergstr. 1962



**ISO/IEC JTC 1/SC 2/WG 2  
PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS  
FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646<sup>1</sup>**

**Please fill all the sections A, B and C below.**

Please read Principles and Procedures Document (P & P) from <http://std.dkuug.dk/JTC1/SC2/WG2/docs/principles.html> for guidelines and details before filling this form.

Please ensure you are using the latest Form from <http://std.dkuug.dk/JTC1/SC2/WG2/docs/summaryform.html>.

See also <http://std.dkuug.dk/JTC1/SC2/WG2/docs/roadmaps.html> for latest *Roadmaps*.

**A. Administrative**

1. Title:	Proposal to add historic scientific characters to the UCS		
2. Requester's name:	Uwe Mayer, Siegmund Probst, David Rabouin, Elisabeth Rinner, Andreas Stötzner, Achim Trunk, Charlotte Wahl		
3. Requester type (Member body/Liaison/Individual contribution):	Individual (work group)		
4. Submission date:	2024-09-03		
5. Requester's reference (if applicable):	LUCPL-2432		
6. Choose one of the following:			
This is a complete proposal:			Yes
(or) More information will be provided later:			

**B. Technical – General**

1. Choose one of the following:			
a. This proposal is for a new script (set of characters):			No
Proposed name of script:			
b. The proposal is for addition of character(s) to an existing block:			Yes
Name of the existing block:	Alchemical Symbols [Extension]		
2. Number of characters in proposal:			7
3. Proposed category (select one from below - see section 2.2 of P&P document):			
A-Contemporary	B.1-Specialized (small collection)	Yes	B.2-Specialized (large collection)
C-Major extinct	D-Attested extinct		E-Minor extinct
F-Archaic Hieroglyphic or Ideographic			G-Obscure or questionable usage symbols
4. Is a repertoire including character names provided?			Yes
a. If YES, are the names in accordance with the "character naming guidelines" in Annex L of P&P document?			Yes
b. Are the character shapes attached in a legible form suitable for review?			Yes
5. Fonts related:			
a. Who will provide the appropriate computerized font to the Project Editor of 10646 for publishing the standard?	Andreas Stötzner		
b. Identify the party granting a license for use of the font by the editors (include address, e-mail, ftp-site, etc.):	Andreas Stötzner Gestaltung, Klaufügelweg 21, 88400 Biberach/R., Germany, as@signographie.de		
6. References:			
a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided?			Yes
b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached?			Yes
7. Special encoding issues:			
Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transliteration etc. (if yes please enclose information)?			No

**8. Additional Information:**

Submitters are invited to provide any additional information about Properties of the proposed Character(s) or Script that will assist in correct understanding of and correct linguistic processing of the proposed character(s) or script. Examples of such properties are: Casing information, Numeric information, Currency information, Display behaviour information such as line breaks, widths etc., Combining behaviour, Spacing behaviour, Directional behaviour, Default Collation behaviour, relevance in Mark Up contexts, Compatibility equivalence and other Unicode normalization related information. See the Unicode standard at <http://www.unicode.org> for such information on other scripts. Also see Unicode Character Database ( <http://www.unicode.org/reports/tr44/> ) and associated Unicode Technical Reports for information needed for consideration by the Unicode Technical Committee for inclusion in the Unicode Standard.

<sup>1</sup> Form number: N4502-F (Original 1994-10-14; Revised 1995-01, 1995-04, 1996-04, 1996-08, 1999-03, 2001-05, 2001-09, 2003-11, 2005-01, 2005-09, 2005-10, 2007-03, 2008-05, 2009-11, 2011-03, 2012-01)

### C. Technical - Justification

1. Has this proposal for addition of character(s) been submitted before?	Yes
If YES explain <a href="#">see N5277 / L-24-02n</a>	
2. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)?	Yes
If YES, with whom? Leibniz-Archiv, Forschungsstelle der Leibniz-Edition, Niedersächsische Landesbibliothek (GWLb), Hanover, Göttingen Academy of Science and Humanities in Lower Saxony (DE), Philium research group of CNRS (UMR 7219, laboratoire SPHERE) / Université de Paris VII; general: scholars, researchers, authors and editors working in the field of science history and upon editions of historic text corpora (e.g. of G. W. Leibniz, but also many others)	
If YES, available relevant documents: L-2403, L-2409, L-2410	
3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included?	Yes
Reference:	
4. The context of use for the proposed characters (type of use; common or rare)	Common
Reference: mainly specialist usage, scholarly, worldwide	
5. Are the proposed characters in current use by the user community?	Yes
If YES, where? Reference: mainly Europe, Americas; other countries	
6. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP?	No
If YES, is a rationale provided?	
If YES, reference:	
7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)?	No
8. Can any of the proposed characters be considered a presentation form of an existing character or character sequence?	Yes
If YES, is a rationale for its inclusion provided?	
If YES, reference: <a href="#">see explanations on p. 1, 2, 8-10</a>	
9. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters?	No
If YES, is a rationale for its inclusion provided?	
If YES, reference:	
10. Can any of the proposed character(s) be considered to be similar (in appearance or function) to, or could be confused with, an existing character?	No
If YES, is a rationale for its inclusion provided?	
If YES, reference:	
11. Does the proposal include use of combining characters and/or use of composite sequences?	No
If YES, is a rationale for such use provided?	
If YES, reference:	
Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided?	No
If YES, reference:	
12. Does the proposal contain characters with any special properties such as control function or similar semantics?	No
If YES, describe in detail (include attachment if necessary)	
13. Does the proposal contain any Ideographic compatibility characters?	No
If YES, are the equivalent corresponding unified ideographic characters identified?	
If YES, reference:	