

# Provisional Guidance for Chemistry Notation Using UEB with Nemeth

# **Approved June 2020**

The BANA Chemistry Committee developed this provisional guidance for transcribing chemistry using Nemeth in UEB contexts. This document is a revision of the previously published provisional guidance and will be obsolete after the updated Chemistry Code is published.

These guidelines are to be applied in addition to those presented in the most recent edition of *Guidance for Transcription Using the Nemeth Code within UEB Contexts*.

As with all BANA publications, this material is intended to be used in its entirety. These materials may be duplicated, but not altered.

# BACKGROUND

The Braille Code for Chemical Notation is based on The Nemeth Braille Code for Mathematics and Scientific Notation. Specific provisions for using braille symbols for the construction of chemical notation such as bonds, electron dots, ring structures, and arrows, are outlined in the Braille Code for Chemical Notation. If tactile illustrations are used, Guidelines and Standards for Tactile Graphics must be followed in preparing the tactile graphics. When transcribing chemistry, biology, and physics texts, to assure proper formation of chemical symbols and structures, refer to the most recent edition of the codes and guidelines as well as any BANA "Guidance" documentation regarding their use in conjunction with UEB.

# **FRONT MATTER**

# **Special Symbols Page**

Chemistry Code symbols used in the volume must appear on the Special Symbols page. Place the symbols under the subheading "Chemistry Symbols" and list them in braille order according to the rules of UEB.

### Example 1

**Chemistry Symbols** 

\_\_\_\_\_ Horizontal single bond (including indicators). Dots 25 may be repeated in order to accommodate labels or other symbols.

## **Transcriber's Notes Page**

Use of the Nemeth Code and the Chemistry Code as well as the Guidance documents must be cited on the Transcriber's Notes page as follows. "Mathematical content is transcribed according to *The Nemeth Braille Code for Mathematics and Science Notation, 1972 Revision,* 2007-2015 Updates, including the *Guidance for Transcription Using the Nemeth Code within UEB Contexts* (Approved April 2018). Chemical symbols are transcribed according to the *Braille Code for Chemical Notation, 1997,* including the *Provisional Guidance for Chemistry Notation Using Nemeth in UEB Contexts.*" If diagrams are included in the transcription, also include the following statement. "Tactile graphics are presented according to the *Guidelines and Standards for Tactile Graphics, 2010.*" And, if a Graphic Symbols page is included, "Graphic symbols used throughout this volume are shown on the Graphic Symbols page, braille page t\_."

# **NEMETH CODE SWITCH INDICATORS**

Narrative text is transcribed in UEB. When it is determined that technical notation should be presented in either Nemeth Code or the Nemeth-based Chemistry Code, a switch is required. Nemeth Code switch indicators are used. See *Guidance for Transcription Using the Nemeth Code within UEB Contexts* for guidance on when to switch and for usage and spacing of the indicators.

- Opening Nemeth Code Indicator (followed by a space)
- **Here** Nemeth Code Terminator (preceded by a space)
- Single-word Switch Indicator

# **Switching Rules for Chemical SYMBOLS**

A switch to Nemeth Code is required when a chemical element SYMBOL occurs within narrative text. (SYMBOL is defined in Section 3.5 of the Chemistry Code.) Follow Nemeth Code rules regarding use or nonuse of the English-letter indicator.

## Example 2

The symbol for carbon is C; for iodine, I; for silver, Ag; and for bromine, Br.

## Example 3

Sodium chloride, or NaCl, has a 1:1 ratio of sodium and chloride ions.

## Example 4

The sodium cation is indicated as Na<sup>+</sup>.

## Example 5

The molecular formula for water is  $H_2O$ .

## Example 6

```
CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O
```

## Example 7

Fe(II) and Fe<sup>II</sup> are other ways to notate the ferrous ion Fe<sup>2+</sup>.

# **Switching Rules for Chemical Words**

Within narrative, names of chemical compounds may be transcribed in UEB unless symbols associated with the word require a switch according to the *Guidance for Transcription Using the Nemeth Code within UEB Contexts*.

The presence of a grouping symbol associated with a chemical word does not require a switch to Nemeth Code.

## Example 8

copper(II) oxide

A hyphenated expression requires a switch to Nemeth Code if it contains a character or symbol from the Nemeth Code.

## Example 9

GDP is a guanosine 5'-diphosphate sodium salt.

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The presence of a prime sign requires a switch to Nemeth Code.

### Example 10

1,4-addition

Notation using an unspaced comma requires a switch to Nemeth Code.

### Example 11

3-chloro-2,3-dimethylbutanoic acid

Notation using an unspaced comma requires a switch to Nemeth Code.

### Example 12

a  $\beta$ -keto ester

A Greek letter requires a switch to Nemeth Code.

When a chemical word carries a superscript, include the word inside the switches.

## Example 13

copper<sup>II</sup> sulfate

# Typeform

Retain typeform for chemical abbreviations, acronyms, chemical groups, and concentration of solutions as explained in Section 9 of the Chemistry Code.

#### Example 14

... where molatity  $(m) \frac{\text{moles solute}}{\text{kg solvent}}$ 

In narrative context, italic typeform of a chemical term does not require a switch to Nemeth Code.

#### Example 15

Table 18.1 summarizes the n-alkanes through decane, which contains 10 carbon atoms.

#### Example 16

The *trpR* operator has three changes in the 5'CTAG-3' half-sites.

Except for italics, typeforms that have mathematical or chemical meaning require a switch to Nemeth Code.

### Example 17

D-glucosamine is made naturally in the form of glucosamine-6-phosphate.

The small capital letter typeform indicator is specific to the Chemistry Code and so must be listed on the Special Symbols page.

# **Chemical Abbreviations and Acronyms**

When a chemical abbreviation or acronym appears in narrative context, code switching is not required unless it contains a character or symbol from the Nemeth Code.

#### Example 18

Variations in DNA are called single-nucleotide polymorphisms or SNPs.

#### Example 19

RNase A is a small protein.

#### Example 20

RNAse H breaks down RNA molecules.

When a chemical abbreviation or acronym appears in technical context, follow Nemeth Code rules regarding capitalization, punctuation, and spacing. Capitalize letters individually.

### Example 21

tRNA<sup>His</sup> maturation

### Example 22

```
glucose + 2 NAD+ + 2 P_i + 2 ADP \rightarrow 2 pyruvate + 2 ATP + 2 NADH +
2 H_2O
```

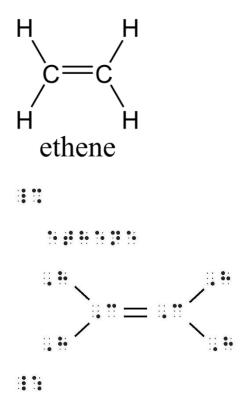
# **Spatial Diagrams of Molecular Structures**

In spatial diagrams of molecular structures containing oblique bonds or chemical arrows other than yields arrows or equilibrium arrows, tactile (raised line) representation is preferred over the use of braille symbols. Follow the directives given in the most recent edition of *Guidelines and Standards for Tactile Graphics* regarding techniques, line styles, spacing, and the creation of a Graphic Symbols page.

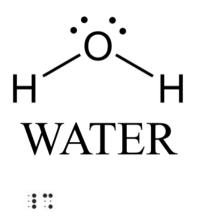
When raised lines are used in a molecular diagram, all bonds and arrows in the structure are to be drawn. Element SYMBOLS, electron dots, and math symbols must be depicted as braille symbols. The English-letter indicator is omitted for single-letter SYMBOLS in a tactile graphic.

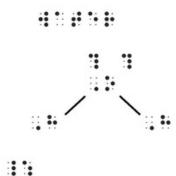
A switch to Nemeth Code is required when the diagram contains math or chemistry symbols. Assuming these examples are displayed to narrative, the left margin is cell 3 according to Nemeth Code rules. Code switch indicators are in cell 1.

#### Example 23



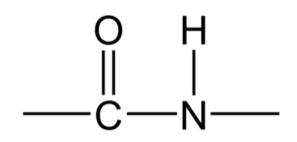


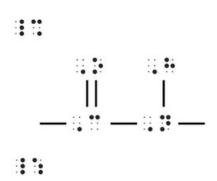




A molecular structure containing only straight vertical or horizontal bonds and only yields or equilibrium arrows may be depicted entirely with braille symbols or as a tactile graphic. Methods must not be combined in the same diagram.







If the diagram does not contain math or chemistry symbols represented as braille symbols, a switch to Nemeth Code is not required.

