



DAACS Cataloging Manual: Glass Vessels

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INTRODUCTION

The **Glass Vessel** table in DAACS is designed to encompass all types of glass vessels, including tablewares and bottles. The glass vessel table does not include non-vessel glass, such as window or lamp glass, which should instead be cataloged as General Artifacts.

1. GLASS MATERIAL TABLE

1.1 ARTIFACT COUNT

In general, we suggest sorting your glass fragments by color and size before identifying other attributes such as Material, Form, or Manufacturing Technique. In this manual, we use the term diagnostic to refer to any identifiable characteristics recorded in the following fields: Completeness, Form, Manufacturing Technique, Decoration, and Marks. Non-diagnostic sherds are often batched together and a lower level of detail is recorded.

There are complex batching rules for glass sherd. Please pay close attention to the batching rules that we have listed here.

1. Glass Sherds of Max. Sherd Size 15 mm or Smaller

a. If Form is “Unidentifiable,” and Completeness is “Body” or “Unidentifiable”:

- Batch by **Color, Material, Manufacturing Technique, and Mold Type** (if applicable).
- Sherds must share the same attributes in order to be batched.
- If some of the sherds are burned or patinated, enter “Not Recorded” in these fields (Condition tab).
- Be sure to record that the maximum sherd measurement is 15mm, and the total weight of the sherds.

b. If sherds are mended, decorated or diagnostic in completeness (base, rim , or finish):

- Do not batch.

c. If sherds are machine-made, see below.

2. Automatic Machine Made Glass

If Manufacturing Technique is “Machine-made”:

- Batch all machine-made sherds by **Color**.
- Disregard Max. Sherd Size, Form, and Completeness in the batching.

Count: Number of sherds in batch
Material: "Non-lead"
Glass Color: As appropriate
Vessel Category: "Not Recorded"
Form: "Not Recorded"*
Completeness: "Not Recorded"
Manu Tech: "Machine Made"
Mold Type: "Contact Mold"
Mended: "No" (default)
Decoration: "No" (default)
Sherd Thickness: Do not record
Max. Sherd Size: Do not record
Sherd Weight: Enter weight of the batch in grams

*Unless *all* sherds in the batch share the same characteristics for these fields. For example, if you have fifteen non-lead, machine-made, aqua body sherds from various forms, record Completeness as "Body" and Form as "Not Recorded."

3. All Non-Machine-Made Bottle Glass (any sherds with the Manufacturing Technique of Mouth Blown, Mold Blow, Free Blown):

- Batch glass bottle sherds by:*

Material	Manufacturing Technique
Color	Mold Type
Category	Burning (recorded on Condition tab)
Form	Maximum Sherd Size (Measurements tab)
Completeness	

*Sherds must share all of the same attribute values in order to be batched. See below for diagnostic sherds that should not be batched.

For example, five unburned wine bottle body sherds with a max. sherd size of 35 mm would have a record like the following:

Count: 5
Material: "Non-lead"
Glass Color: "Green/Olive Green"
Vessel Category: "Hollow"
Form: "Bottle, wine style"
Completeness: "Body"
Manu Tech: "Mouth Blown"
Mold Type: "Missing Information"
Mended: "No" (default)
Decoration: "No" (default)

Sherd Thickness: Do not record
Sherd Weight: Enter weight of the batch in grams
Max. Sherd Size: 35mm [numerical value only]
Burned: "No" (default)

a. Do **not** batch bottle sherds with the following attributes (catalog individually):

- Circular base sherds with a measurable length*
- Diagnostic manufacturing marks such as pontil marks, string rims and finishes
- Text marks
- Decoration

*If you have non-diagnostic bottle **base** sherds with no measurable length (i.e. fragments of the push-up), then these sherds can be batched according to the bottle glass batching rules.

4. All other non-bottle and/or non-machine-made glass sherds greater than 15 mm in size should be cataloged individually.

Please note that new batching rules for all bottle glass were implemented on October 28, 2010. Prior to implementation, all mouth-blown and mold-blown glass bottle sherds that had a maximum sherd measurement that was greater than 15 mm were individually recorded, measured and weighed. All other existing glass batching rules remain unchanged.

1.2 MATERIAL

The distinction between lead and non-lead glass is one of the first cataloging decisions that must be made in the DAACS system. Lead glass is recognized by testing whether the glass fluoresces ice blue under short-wave ultraviolet light (Jones et al. 1985:12). Developed in 1676 by George Ravenscroft, lead glass is colorless, heavy, and lustrous (Jones et al. 1985:11). Lead glass was primarily used for tablewares, but was also occasionally used for medicine vials, condiment bottles, and lamp chimneys (Jones et al. 1985:12).

In most cases, leaded glass is colorless. Please use a blacklight (UV) to test whether your sherds are leaded.

1.3 GLASS COLOR

Glass Color is a rather subjective field in DAACS so a range of **Basic Colors** section of the DAACS Color Book is used to assist with color recording. When recording color, choose the chip that most closely matches the artifact as a whole. Brief descriptions of the colors found in the Basic Colors section are found below.

- “Amber”**: Medium golden-brown
- “Amethyst”**: Very light purple
- “Blue”**: A “mid-range” or “medium” shade of blue
- “Brown”**: This color is used to describe modern, machine made bottle glass. Do not confuse with amber glass, which is redder and lighter in color.
- “Colorless”**: Clear
- “Dark Blue”**: Generally a deep, cobalt blue
- “Grey”**: From a light gray tint to a dark, nearly black tint\
- “Green/Olive Green”**: Encompasses medium green and dark green, usually applies to wine and case bottle glass
- “Light Blue”**: The lightest of the three shades of blue on the Basic Color Sheet
- “Light Green/Aqua”**: Light greenish-blue/Seafoam or sage green
- “Modern Green”**: Bright green (i.e. Sprite™ bottle glass)
- “Orange”**: Brighter in color than amber (e.g., Carnival glass)
- “Pink”**: Pale red
- “Purple”**: Note that this color is darker than Amethyst
- “Red”**: Encompasses medium to dark reds
- “Unidentifiable”**: Too burned, patinated, or otherwise altered for glass color to be determined
- “White”**: Opaque, sometimes called “milk glass”
- “Yellow”**: Any range of light-to-medium yellows

In some cases, holding a darker-colored sherd to the light can help to identify its color.

Note that the following colors appear on the Basic Color Sheet but should not be used to describe glass vessel color:

- “Black”**
- “Bronze”**
- “Copper”**
- “Gold”**
- “Silver/Tin”**

These colors are available for use in the Glass decoration table (see **Section 5.2**).

1.4 VESSEL FORM

A number of glass vessel forms are available in DAACS. Examples of many of these forms are available in the *Parks Canada Glass Glossary* (Jones et al. 1985). A few, however, deserve special mention here:

Form	Description
“Bottle, unidentifiable”	Used for bottles whose original shape or type of contents cannot be determined, either due to the fragmentary nature of the sherd or to the lack of a diagnostic manufacturer’s mark.
“Bottle, Wine style”	See section on Bottle, Wine style below (Section 7.1)
“Container, unidentifiable”	For sherds that were clearly part of a hollow container, but are too fragmentary to identify as a bottle, jar, or other more specific <i>container</i> type. This form should <i>not</i> be used if the sherd may have been a stemware or tableware (e.g., plate, tumbler).
“Not recorded”	“Not recorded” is used only when glass sherds of possibly mixed form are batched. See Section 1.1 for batching rules.
“Pharmaceutical Bottle/Vial”	Bottles for liquids and medicines. Pharmaceutical bottles come in a range of colors and with a variety of closure types, although most were closed with some sort of stopper. If you can distinguish for certain whether a vessel is a pharmaceutical bottle or a vial, please record “Pharmaceutical Bottle” or “Pharmaceutical Vial” in the notes.
“Tableware, unidentifiable”	Small fragments of leaded glass with apparent decorative elements are usually cataloged as Tableware, unidentified in DAACS. This category also includes fragments of stemware and other unidentifiable table forms.
“Unidentifiable”	Sherds that are so fragmentary, burned or undiagnostic that they cannot be distinguished as bottle, container, tableware or stemware should be cataloged as Unidentifiable.

1.5 COMPLETENESS

As with the Ceramic table, Completeness in the glass table indicates which portion of the vessel is present. A value for Completeness should be chosen that represents, as nearly as possible, all elements present on the sherd. Choices for Completeness are:

“Base”

“Base, Body”

“Base, Body, Rim”

“Base, Body, Shoulder, Neck”

“Body”

“Body, handle”

“Body, Rim”

“Body, Shoulder”

“Complete Object”	“Not Recorded”
“Finish”	“Rim”
“Finish, Neck”	“Shoulder”
“Finish, Neck, Shoulder”	“Base, Body, Shoulder”
“Finish, Neck, Shoulder, Body”	“Seal”**
“Foot”	“Stem”
“Foot, Stem, Body”	“Stem, Body”
“Foot, Stem, Body, Rim”	“Stem, Foot”
“Handle”	“Stopper”
“Lid Liner”*	“Unidentifiable”
“Neck”	

*LID LINERS:

Occasionally, one finds white “milk glass” jar lid liners used to line Mason jars. These jar lid liners should be cataloged in the glass vessel table because they are part of a vessel even though they, themselves, are not vessels. They should be cataloged as follows:

Glass Color:	“White”
Material:	“Non-lead”
Vessel Category:	“Hollow”
Form:	“Jar”
Completeness:	“Lid liner”
Manu Tech:	“Machine made”
Mold Type:	“Contact mold”

**BOTTLE SEALS:

Seals adhered to bottles are often found as separate objects. For these artifacts, Completeness should be “Seal,” with other information as appropriate. If any decoration or marks are present on the seal, record these in the Decoration/Marks tab (see Section 5). As an example,

Glass Color:	“Green/Olive green”
Material:	“Non-lead”
Vessel Category:	“Hollow”
Form:	“Bottle, wine style”
Completeness:	“Seal”
Manu Tech:	“Mouth blown”
Mold Type:	“Missing information”

1.6 MANUFACTURING TECHNIQUES AND MOLD TYPES

The manufacturing technique field indicates whether the glass was free blown, machine made, mold blown, mouth blown, or of unidentifiable manufacturing technique. These manufacturing techniques are defined clearly in the Parks Canada Glass Glossary (Jones et al. 1985:17-24).

The term “Mouth Blown,” however, requires further explanation. Jones et al. (1985:17) define “mouth-blown” as a general term that signifies “a non-machine made or press-molded container, and is used to describe the method of manufacture of a fragment that has no mold seams, no distinctive mold-blown texture, no distinctive free-blown traits, and no machine-made indicators.” For DAACS, “mouth blown” applies primarily to “Bottle, wine style” glass that is neither clearly machine-made nor clearly totally free-blown. “Mouth Blown” vessels are possibly partly mold blown and partly free blown.

The decision was made to use “Mouth Blown” primarily for wine bottle glass because it was commonly manufactured using a number of techniques to form different parts of a single bottle. For example, many “Bottle, wine style” bottles are partially mold blown and then finished with free blowing. It is often difficult, with small sherds of wine bottle glass, to determine whether the vessel was completely free blown or was partially mold blown, especially if only a small fragment of the bottle is present. Given the prevalence of wine bottle glass on archaeological sites, it seems useful to distinguish between cases where manufacturing technique for wine bottle glass is ambiguous (i.e. free blown, mold blown, or a combination) and those cases in which manufacturing technique is truly unidentified.

For other types of glass, if the exact manufacturing technique cannot be determined it should simply be recorded as “Unidentifiable.”

Here are the protocols for relationships between the Manufacturing Technique and Mold Type fields:

Manufacturing Technique	Mold Type
“Mouth Blown”	“Missing Information”
“Free Blown”	“Not Applicable”
“Machine Made”	“Contact Mold”
“Unidentifiable”	“Not Applicable”
“Mold Blown”	<i>Bottles:</i> “Contact Mold” <i>Other vessels:</i> Identify Mold Type from the following list: “Contact Mold,” “Optic Mold,” “Pattern Mold,” or “Press Mold” (see Jones et al. 1985:31-41 for descriptions), or “Unidentified.”

Note: You do not need the mold seam to designate that a vessel is “Mold Blown.” Other signs of mold blown vessels include an orange-peel textured exterior surface and smooth interior surface. In order to use “Mold Blown,” however, the secondary mold evidence must be strong and readily apparent.

1.7 MENDED?

If sherds of glass are mended together, enter “Yes” in this field. Mended sherds must be cataloged individually.

Remember to fill out Mended Sherd Weight (Measurements tab) and the Artifact ID of the sherds mended directly to the sherd being cataloged (Mends tab).

1.8 DECORATION?

If a glass sherd is decorated, enter “Yes” in this field. Decoration is recorded on all glass vessels that are non-machine-made. Be sure to fill out information about the decoration under the Decoration/Marks tab, and additional observations in the Notes field.

2. MEASUREMENTS

2.1 SHERD THICKNESS

Note: Thickness measurements are only taken for tablewares larger than 15 mm. The original surface must still be present on both sides of the sherd to measure sherd thickness. If not, this field is left blank. When a rim is present, thickness measurements are always and only taken at the rim. Again, the original surface must remain on both sides of the rim to take this measurement. If you have bottle glass sherds, of any manufacturing technique, do not record sherd thickness. This protocol also applies to individual bottle glass sherds entered as a single record.

2.2 MAXIMUM SHERD MEASUREMENT

Maximum sherd size is measured using the cataloging mats. Each mat has a series of circles used to measure sherds in 5mm increments. The size of the smallest circle into which the sherd fits completely is the sherd size. If the sherd is too large to fit within any of the circles on the mat, a tape measure is used and the measurement is rounded up to the next number divisible by 5.

The maximum sherd measurement should always be taken, even if the sherd has been burned into an unidentifiable form or shape.

2.3 SHERD WEIGHT

Always record weight for any artifact record, in grams, to the nearest tenth. If mended, see below.

2.4 MENDED SHERD WEIGHT

Record total sherd weight for the mended sherds. To calculate the individual sherd weight, divide the mended sherd weight by the number of sherds that compose it. This

value serves as an estimate for the individual sherd weight for each of the mended sherds.

2.5 RIM LENGTH

Rim Length is measured for all tableware rim sherds (e.g., drinking vessels, stemware, and other tablewares). This measurement should be taken in millimeters, to the nearest hundredth if possible. If a rim has significant curvature, its rim length is measured with a bendable tape measure.

2.6 RIM DIAMETER

Rim Diameter is taken for sherds with rim lengths of greater than 20mm. The radius template on the cataloging mat is used for this measurement –the curvature of the rim is matched to the curves on the mat to the nearest arc shown on the mat. When dealing with thicker sherds, the general rule is to measure along the exterior of the rim (rather than trying to determine the interior diameter of the vessel). Diameter measurements on the mats are in millimeters.

In order to measure the rim diameter for a flat, scalloped-edge vessel using the radius template, the fragment must have three scalloped points.

2.7 MENDED RIM DIAMETER

Enter the rim diameter for mended rim sherds.

2.8 BASE LENGTH

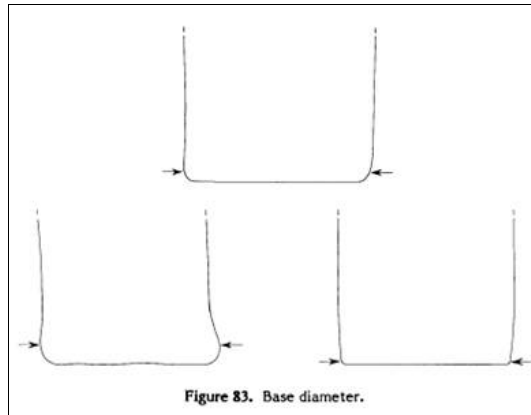
Base Length is measured for all circular bases that have a measurable base length as described herein for tableware and bottle glass forms (excludes stemware). The base length is obtained by using a soft tape to measure around the circumference of the base (see image below). In the case of wine bottle glass, this measurement is the outermost protrusion of the base.



Base Length measurement of wine bottle base

2.9 BASE DIAMETER

Base diameter is measured for spherical tableware and bottle bases (excludes stemware). Base diameter is measured with calipers for complete bases. Diameters are taken using the exterior edge of the base (see image).



Jones et al. 1985:121.

Base diameters for tablewares and bottles are estimated on sherds that have Base Length measurements greater than 20 mm and that can be confidently matched to a diameter arc on the radius template. The curvature of the base is matched to the curves on the radius template to the nearest “confidently estimated” arc that matches that curvature. By this we mean that the diameter must clearly match a single diameter arc and not have several possible matches.

If you cannot confidently match the sherd to an arc, no Base Diameter measurement should be recorded. In many cases it may be easier to obtain this measurement using the mylar rim chart, in which case the curvature is estimated by placing the mylar over the inverted sherd in order to match it. Diameter measurements on the radius template are in millimeters.

3. BOTTLE INFORMATION

The **Glass Bottle** table is used to record specific information about manufacturing techniques and vessel morphology for bottles **with free blown or handworked elements**. **Only record information on this tab if what is being recorded is identifiable or diagnostic; if it is not, it should not be recorded.**

The vast majority of the bottles included in the **Glass Bottle** table are “Bottle, wine style,” with a number of “Bottle, case” and “Pharmaceutical bottle/vial” included as well. The table was designed primarily for these types of bottles, but other bottles such as pharmaceutical vials that have handworked or free blown elements should be included in the table as well. It may be necessary to add terms to the database for such bottles, which must be done by the database administrator.

3.1 PONTIL MARK

This is the scar or mark left by the long iron rod (pontil) used to hold the bottle during the finishing process (Jones 1971:68). It is also the result of creating the pushup or kick on the base of the bottle, if present (Jones 1971:63). The following include the possible pontil mark types (after Jones 1971; Jones et al. 1985).

“Empontilled, improved and ground”: If the mark has been ground down to a relatively smooth surface, obscuring any evidence of different pontil types.

“Empontilled, type unid”: The particular type cannot be determined, but the pontil mark has not been ground.

“Not Applicable”: This is the default. Also used for machine made bottles.

Specific Pontil Types (if the mark was not “improved and ground”):

“Bare Iron”: Distinct circular mark, tends to distort the shape of the pushup. May have iron residue.

“Blowpipe”: Pipe was used as a pontil. Ring-shaped mark; not found on wine bottles after 1720.

“Glass-Tipped”: Usually small (< 30 mm), often excess glass left or bits of glass; not found on wine bottles after 1720.

“Sand Glass-Tipped”: “Thin line of glass chips encircling the pushup and enclosing a pebbled surface” (Jones et al. 1985:69).

“Quatrefoil”: Created from rod with end split into quadrants; pushup top may look square and profile may be distorted.

“Mamelon”: Small circular protrusion at the tip of the pushup (Jones et al. 1985:87).

3.2 TOTAL CONTAINER HEIGHT

Measure the total height of the bottle, if possible, in mm. An accurate way to measure this height can be found in Jones et al. 1985 (p. 116).

In Sections 3.3 through 3.6 below, each field in the Bottle Information Table is described. Since not all values for the fields in the Glass Bottle Table apply to all bottle elements, the following tables present summaries of which shapes, manufacturing techniques, and treatments apply to the respective elements.

3.3 GLASS BOTTLE ELEMENT

This field provides a place to record which part of the bottle the ensuing information about shape, manufacturing technique, and treatment refers. Not all possible bottle elements are offered as choices in the “Glass Bottle Element” field. Only those elements for which other specific information is recorded are listed in the “Element” field. The choices in this field are:

“Base”: Bottom of the bottle; extends up to the heel, which is the curved edge where the base turns up to form the body.

“Body Horizontal”: horizontal cross-section of the body; located somewhere between base and shoulders (i.e. not the cross-section of the neck).

“Finish”: The top of the bottleneck, contains elements such as the lip and the string rim that allow for the closure of the bottle (Jones et al.1985:78).

“Lip”: The area, on the exterior and top of the bottle, around the opening of the bore.

“Neck”: The area from the bottom of the finish to the shoulder.

“String Rim”: not present on all bottles; it is “the ledge or ring that protrudes from the neck just under the lip” (Jones et al. 1985:81).

Other elements that are present, but for which no additional information is added to the bottle table, are not listed in the Glass Bottle Table.

3.4 GLASS BOTTLE SHAPE

The shapes of certain elements are diagnostic to particular time periods or locales of manufacture. For that reason, a shape system was created for DAACS. The system is a simplified version of that presented in Jones et al. (1985). Catalogers in DAACS must be careful to consult the following list whenever they are cataloging glass bottle shapes because each shape applies only to certain elements.

For Base and Body sherds: Only record the shape of a base or body if it is identifiable. Do not use “Unidentifiable.”

For Finish, Lip and String Rim: Select “Unidentifiable” if you cannot determine the shape (see below for specific options).

BASE

Refers to the basal profile.

“Conical”: straight sided pushup, comes to a relatively sharp vertex

“Convex”: rounded, protruding base—found on bottles used for shipping that

were packed in crates with a packing material

“Domed”: any sort of curved, arched basal profile

“Flat”: no pushup; base extends straight across from resting point to resting point

“Four point”: Found on case bottles. “The four corners of the bottle are the only points on which the bottle stands. The heel arches slightly between these four points” (Jones et al. 1985:86).

“Rocker”: irregularly shaped base that causes the bottle to wobble

BODY HORIZONTAL

Shape of the horizontal cross-section of the body.

“Circular”: most common; the body is very nearly round in cross-section

“Ovoid”: common with free-blown bodies; body is elongated in one horizontal dimension (i.e. is not quite circular in cross-section)

“Rectangular”: has flat sides and corners at nearly ninety degrees; case bottles.

FINISH

Indicates how many components comprise the finish.

“1-part”: comprised simply of a lip

“2-part”: comprised of a lip and a string rim

“3-part”: comprised of a lip, a string rim, and any kind of third element

“Champagne”: technically a special case of a two-part finish; a finishing tool is used to create “a wide, flat string rim a few millimeters below a flat-topped or a downward-sloping lip” (Jones et al. 1985:79).

“Unidentifiable”: select this option if you cannot determine whether a finish was a 1-, 2-, or 3-part.

LIP

Shape refers to the profile of the lip.

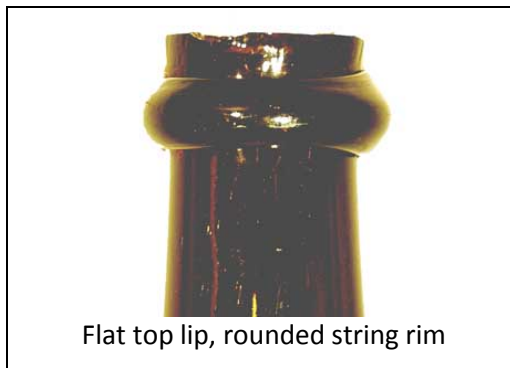
“Downsloped”: when the lip slopes outward and downward (Jones et al. 1985:81). Usually this was formed using a finishing tool. Descriptions for “downsloped” and “sloped top” sound very similar, but note the difference between the two types depicted (see photo under “sloped top,” below). With downsloped lips, the entire lip slopes. With sloped-top lips, only the top of the lip slopes down and out—in essence the top of the lip is beveled—and the rest is straight-sided.



Downsloped lip (1003-953H-NOS--00001)

“Flat side”: the lip has vertical sides

“Flat top”: the lip has a horizontal top (Jones et al. 1985:80). This applies to lips that were cracked off/burst off and not manipulated further, as well as lips that were made flat by manipulating the top to make it smooth.



“Irregular”: when the lip is either tooled or untooled and of non-uniform shape. If the shape of the lip is questionable because it is inconsistent around the circumference of the bottle, it should be cataloged as irregular.

“Rounded”: the side of the lip is rounded in profile (Jones et al. 1985:81)

“Sloped top”: “the lip is flat but slopes downward and outward”—essentially, the top of the lip is beveled and the rest is straight (Jones et al. 1985:80). See image:



*Note how the top of the lip is beveled, and the sides are straight.

“Tapered Out/Down”: lip is flared and wide at the opening and it tapers down to a narrow neck.



Tapered Out/Down lip (1013-062-1/3BC-NOS-000017)

“V-shaped”: lip slants down and out from the top, and up and out from the bottom to give a v-shaped profile. Most often created with a finishing tool. The top and bottom of the v should be almost equal in the amount of downslope and upslope, respectively, therefore resembling a true sideways “V.”

“Unidentifiable”: select this option if you cannot determine lip shape

NECK

Shape refers to the profile of the neck.

“Bulged”: neck bulges outward at the center of the neck or down toward the shoulder (Jones et al. 1985:82).

“Cylindrical”: “neck maintains a constant diameter from its base to the finish” (Jones et al. 1985:82).

“Non-Existent”: “no connecting constriction between the finish and shoulder or between the finish and body” (Jones et al. 1985:82).

“Tapered”: neck decreased in diameter from the base of the neck to the finish (Jones et al. 1985:82).

“Tapered Out/Down”: neck expands in diameter from the base of the neck to the finish (Jones et al. 1985:82).

“Rudimentary”: neck is so short as to be almost non-existent. A small constriction between the shoulder and the finish. Found most frequently on snuff bottle and on some case bottles (Jones et al. 1985:82).

STRING RIM

Not present on all bottles. It is “the ledge or ring that protrudes from the neck just under the lip” (Jones et al. 1985:81).

“Downsloped”: string rim has been modified to slope down and out (Jones et al. 1985:81).

“Flat side”: the side of the string rim is vertical.



“Irregular”: when the string rim is either tooled or untooled and of non-uniform shape. If the shape of the string rim is questionable because it is inconsistent around the circumference of the bottle, it should be cataloged as irregular.

“Rounded”: a string rim that has been tooled to give it a rounded profile (Jones et al. 1985:82).

“Upsloped”: when the lower surface of the string rim slopes upward and outward. Has a flat or rounded top. This is usually done with a finishing tool.

“V-shaped”: a string rim that has a v-shaped profile (Jones et al. 1985:81). The top and bottom of the v should be almost equal in the amount of downslope and upslope, respectively, therefore resembling a true sideways “v.” Usually this shape is formed using a finishing tool.

“Unidentifiable”: select this option if you cannot determine string rim shape

3.5 GLASS BOTTLE MANUFACTURING TECHNIQUE

Just like Shape, Manufacturing Technique is recorded only for certain elements. A very limited number of manufacturing techniques is available in the **Glass Bottle** table, and each applies only to particular elements:

BASE

“Dip Mold”: a mold in which the body—and sometimes the base-- of a bottle is blown. The bottle is then removed from the mold and the shoulder and neck free blown. Therefore, on dip-molded bottles the mold evidence terminates at the shoulder (Jones et al. 1985:26).

“Free blown”: Entirely free-formed vessel elements. Generally asymmetrical, with no evidence of molding (no mold seams, no “orange peel” on the exterior), no sharp corners or lines in the element shape (Jones et al. 1985:22).

“Molded, unid mold type”: a base with clear evidence of molding (such as mold

seams), but for which the mold type cannot be determined.

“Mouth blown”: for bases that may be partially molded and partially free blown. See Section 1.6, above, for a full explanation.

“Turn/paste”: a late nineteenth century technique in which glass was blown into a mold while the parison is being turned in the mold. Often characterized by horizontal striations on the bottle, and by a shiny surface appearance (unlike the “orange peel” effect common to most molded bottles) (Jones et al. 1985:30-31).

BODY HORIZONTAL

“Dip Mold”: a mold in which the body—and sometimes the base—of a bottle is blown. The bottle is then removed from the mold and the shoulder and neck free blown. Therefore, on dip-molded bottles the mold evidence terminates at the shoulder (Jones et al. 1985:26).

“Free blown”: An entirely free-formed vessel. Generally asymmetrical, with no evidence of molding (no mold seams, no “orange peel” on the exterior), no sharp corners or lines in the element shape (Jones et al. 1985:22).

“Molded, unid mold type”: a body with clear evidence of molding (such as mold seams), but for which the mold type cannot be determined

“Mouth blown”: for bodies that may be partially molded and partially free blown. See Section 13.1.5, above, for a full explanation.

“Turn/paste”: a late nineteenth century technique in which glass was blown into a mold while the parison is being turned in the mold. Often characterized by horizontal striations on the bottle, and by a shiny surface appearance (unlike the “orange peel” effect common to most molded bottles) (Jones et al. 1985:30-31).

FINISH

“Not recorded”: information about manufacturing technique for components of the finish is recorded separately under “Lip” and “String Rim.”

LIP

“Added glass/Untooled”: when a string of glass is added to the container to create a protruding lip.

“Crack off/burst off”: characterized by a jagged top where the blowpipe was detached from the bottle (Jones et al. 1985:40). Technically, cracked-off lips are found on mouth blown bottles, and burst-off lips on mold blown bottles, but the two are difficult to distinguish and are thus collapsed in DAACS.

“Finishing tool”: when the lip is shaped using a hand-held tool. Gives the lip a matte finish and regular shape (although not as regular as molding).

NECK

“Free blown”

“Molded, unid mold type”

“Mouth blown”

STRING RIM

“Added glass/Untooled”: when a string of glass is added to the container to create a protruding string rim.

“Finishing tool”: when the string rim is shaped using a hand-held tool. Gives the string rim a matte finish and regular shape (although not as regular as molding).

3.6 GLASS BOTTLE TREATMENT

Treatment includes procedures that are performed on particular glass bottle elements after their basic manufacture has been completed. In DAACS, the only treatment recorded is bottle “Heat treated” for bottle lips and/or string rims. Heat-treating smoothes rough glass edges, especially those that were manufactured using a “crack-off/burst-off” technique.

4. STEMWARE INFORMATION

The three main parts of a glass stemware vessel are the bowl, the stem, and the foot. In DAACS, the bowl is not called a bowl, but is instead a “body.” This designation keeps glass terminology more consistent with the “Completeness” options for other vessel types, such as ceramics.

4.1 STEMWARE BODY SHAPE

Stemware body shape refers to the overall shape of the body (or bowl) of the vessel. Jones et al. (1985:139) have developed a body shape classification system, which is used for DAACS with some additions. See Appendix 2 for a glossary of body shapes.

4.2 STEMWARE FOOT SHAPE

Stemware foot shapes for DAACS are taken directly from Jones et al. (1985:140) with additions when needed. See Appendix 2.

4.3 STEM SHAPE

Stem shapes are also borrowed directly from Jones et al. (1985:139) with additions when needed. See Appendix 2.

4.4 STEM LENGTH

Stem length should only be measured (in millimeters) if the entire stem is present.

5. DECORATION/MARKS

Decoration is recorded on all glass vessels that are non-machine-made.

5.1 DECORATION TECHNIQUE

Choose one of the following techniques:

“Acid Etched”: The vessel is covered in a waxy compound, and the design is drawn on the object by cutting away the compound in those areas to be etched. Acid is applied and dissolves or frosts the glass. Generally late nineteenth century and later (McKearin and McKearin 1948:33).

“Air Bubbles”: Bubbles of air intentionally trapped within the glass. Common on stemwares (Jones et al. 1985:50).

“Air Twist”: Air bubbles are trapped in the glass and drawn out to create helixes or swirls. Usually in stemwares (Jones et al. 1985:50).

“Casing”: Different layers of glass, usually of different color, are fused together. Outer layers are often cut to reveal inner layers more clearly (Jones et al. 1985:52).

“Copper Wheel Engraving”: Technique invented in Germany in seventeenth century). Employed a copper wheel with an abrasive agent dripped onto it as it engraved. This created a frosted appearance on the engraved surface (McKearin and McKearin 1948:32). This is a mechanical etching technique, contrasted with diamond point engraving which was, until the late nineteenth century, a freehand etching technique.

“Cut”: Practiced in Germany in the seventeenth century, spread to other parts of Europe and then to America in late eighteenth century. Glass used for cutting tends to be thicker, stronger, and softer than other glass because it had to withstand three processing steps: roughing out, smoothing, and polishing (McKearin and McKearin 1948:31). Cuts are generally deep into the glass surface compared to marks made by techniques such as etching and engraving.

“Diamond Point Engraving”: Not practiced in the United States—on import glass only (McKearin and McKearin 1948:32). A diamond-pointed tool was carefully hammered along the glass surface, creating a fine, stippled line.

“Enamel Twist”: Colored enamels are encased in glass and manipulated to form twists.

- “Enameled”**: Application of enamel to the glass surface. This enamel usually contained lead, tin, and a metallic oxide that provided color (McKearin and McKearin 1948:33).
- “Engraved”**: A general term to be used when it is not clear whether copper wheel engraving, diamond point engraving, or some other type of engraving is present.
- “Gilded”**: Gold oxide painted onto the glass surface, fired, and then burnished (McKearin and McKearin 1948:33).
- “Mixed Twist”**: A combination of air twist and opaque twist; opaque twists are created by encasing opaque glass in colorless glass and manipulating it to form twists (Jones et al. 1985:50).
- “Molded”**: Glass is blown, either by mouth or machine, into some type of mold.
- “Painted”**: When glass is simply painted using non-enamel paints. Paint tends to wear off easily, and can sometimes be distinguished from enameling because paint appears “more transparent and smoother” (Jones et al. 1985:57).
- “Sand Blasted”**: “Invented in ca. 1870 in the United States (Newman 1977: 270), this treatment was only recently adapted to decorative uses. Grains of sand are directed by high air pressure from a portable “gun” across the glass surface. The result is a frosted, finely pitted finish, with a degree of depth. The technique has been used on large panels of glass and is not very common on Parks Canada sites” (Jones et al. 1985:57).
- “Silveria”**: When a thin layer of metal foil is placed between two layers of glass (Jones et al. 1985:50).
- “Tooled”**: Decoration is worked using pincers, shears or other tools. This is often how cordoning is formed.

5.2 APPLIED COLOR

Applied colors refer to colors that are painted, enameled, or otherwise applied to the vessel. Munsell each color using the **Basic Colors** section of the DAACS Color Book, and enter that information into the Applied Color field. Keep in mind that these represent ranges of color, not exact matches. In addition, the colors “Copper,” “Silver/Tin,” “Bronze,” and “Gold” may be used to identify Glass decoration color.

Note: If the decorative technique has no applied color, enter “No Applied Color” in this field. Do not use “Not Applicable.”

5.3 STYLISTIC ELEMENTS

See Appendix 1 for the Glass Stylistic Elements glossary.

5.4 MARKS

Record any marks observed on the artifact, even if individual letters or numbers are not discernible. Enter marks as they appear on the object. Please follow the case (e.g., upper, lower, capitalization) and spacing of the mark on the object. It is not necessary to use quotation marks within the mark description.

If you have more than one horizontal line of text on a bottle, enter separate marks entries for each line. Given that this is an open text field, please denote which line of text is first or second in vertical order by adding “1st line:” before the transcribed text. If you know that part of the lettering is within a word, then use ellipses to identify its relative location. For example, here is a fragment of a Turlington’s “Balsam of Life” bottle:



The second line reads LSAM, and the corresponding marks entry would be “2nd line: ...LSAM”

If any word or letter is only partially discernible, use a question mark in brackets [?] to denote the uncertainty about its identification. Also use this protocol to represent letters or words that are not discernible at all. In the case of the Turlington’s bottle above, the first line of the marks entry would be “1st line: [?]”

For this object, the complete Marks entry would be as follows.

- 1st line: [?]
- 2nd line: ...LSAM
- 3rd line: OF
- 4th line: LIFE

If you have additional information on the complete mark, or on the manufacturer, enter this into the Notes field on the Material tab.

6. CONDITION

The default for each of the following fields is “No.” Simply choose “Yes” if any are applicable. When batching sherds according condition **other than burning**, enter as “Not Recorded” when the batch contains sherds with and without evidence of condition.

6.1 BURNED

Glass often becomes globular in shape when melted. Also, olive green “Bottle, wine style” glass tends to turn an opaque light blue when burned. If these or any other signs of burning are present, mark “Yes” in this field. As a reminder, most batching protocols divide glass that is burned versus glass that is unburned. If you cannot determine the form, completeness, and/or manufacture of a burned fragment, enter “Unidentified” in the applicable fields.

6.2 PATINATION

Patination is an iridescent crust that forms on the surface of some glass, and is caused by glass decomposition. The environment in which a piece of glass is buried, in conjunction with the original composition of the glass, greatly affect the degree of patination. Record patination as “Yes” if the surface of the glass is flaky and opaque.

6.3 SOLARIZED

Glass is colorless when produced. However, it contains manganese which will turn the glass a purplish tint when the glass has been exposed to sun for a long time (UV light). This type of glass was mostly produced during the last quarter of the nineteenth century. Solarized glass typically appears shiny or oily with a slight purple hue.

7. SPECIAL CASES

7.1 WINE BOTTLE GLASS

Material:	“Non-lead”
Glass Color:	“Green”
Vessel Category:	“Hollow”
Form:	“Bottle, Wine style” (green glass with squared horizontal cross-section should be recorded “Bottle, Case”)
Manu Tech:	“Free blown,” “Mold blown,” “Mouth blown,” “Unidentified”
Mold Type:	Dependent on Manufacturing Technique

A note on “Bottle, wine style” manufacturing technique and mold type:

To determine the manufacturing technique of a sherd of “Bottle, wine style” glass, the first step is to examine whether the glass was molded in some way. Characteristic molding signs are: presence of a mold seam, regular body shape, and smooth surface without an “orange peel” effect. If no clear signs of molding are present and the bottle is not clearly free blown, catalog as follows:

Manufacturing Technique: “Mouth Blown”

Mold Type: “Missing Information”

Burned “Bottle, wine style” glass:

This type of bottle glass often melts into amorphous lumps when heavily burned. Because of the color, however, one can still identify these lumps of glass as hollow wine-style bottles. Do not take a sherd thickness measurement unless both original sides remain unmelted.

Green, wine-style bottle glass also often turns an opaque blue when heavily burned. Catalog as described above, but list the color as Unidentified. Describe in the notes that heavy burning has turned the sherd blue or otherwise obscured the color.

7.2 MODERN GLASS

Although modern glass is recorded in DAACS, modern machine-made bottles and completely molded bottles are not included in the Glass Bottle Information Tab. This decision was made because the classification systems for molded and machine made bottles are enormously complex given the vast range of bottle shapes possible with molding. **See Section 1.1 (Artifact Count) for notes on batching machine-made glass.**

Dark brown bottle glass (cataloged as “brown” in DAACS) is almost always modern and machine made. Usually, this glass is from beer and soda bottles. Such glass should be cataloged as “Bottle, unidentifiable” unless there is some specific indication that the bottle is “Bottle, Beer” (for example, embossed lettering or label with a beer company’s name). Manufacturing Technique is “Machine Made.” Mold Type is: “Contact Mold”. There is no need to make notes about pontil marks.

8. IMAGE

Please see manual on Image capture and entry into the database. Add some common language about when to image.

9. OBJECT

Please see manual on Object entry into the database.

10. MENDS

If your sherd is mended, fill out the appropriate information in the Mends tab. Be sure to also indicate on the Main tab that the sherd is mended (Mended? “Yes”).

10.1 MENDS TO ARTIFACT

Enter only the artifact IDs for sherds that are directly mended to the sherd being cataloged.

10.2 MENDED FORM

The default for this field is “Not Mended.” Form should always be identified on an individual sherd level. Mending often allows catalogers to identify forms otherwise unidentifiable from these individual sherds. In the Mended Form field, enter in the form of the vessel as seen from its mended sherds.

11. REFERENCES

Jones, Olive

1971 Glass Bottle Push-ups and Pontil Marks. *Historical Archaeology* 5:62-73.

Jones, Olive and Catherine Sullivan, with contributions by George L. Miller, E. Ann Smith, Jane E. Harris and Kevin Lunn

1985 *The Parks Canada Glass Glossary for the description of containers, tableware, flat glass, and closures*. National Historic Parks and Sites, Canadian Parks Service, Environment Canada: Ottawa.

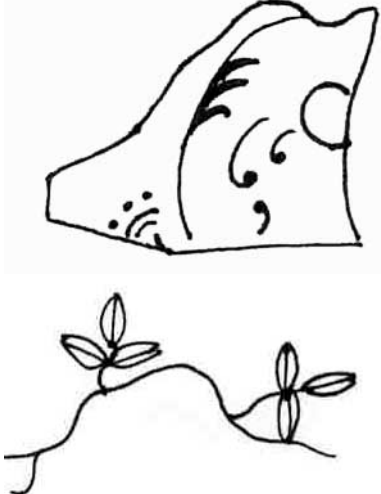



McKearin, George and Helen McKearin



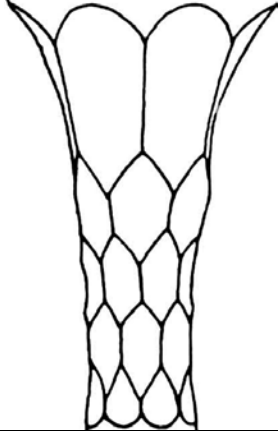
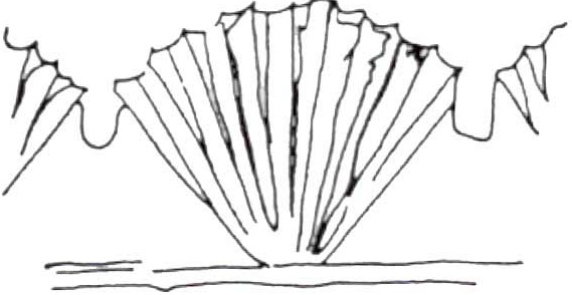
1948 *American Glass*. Crown Publishers, Inc.: New York.

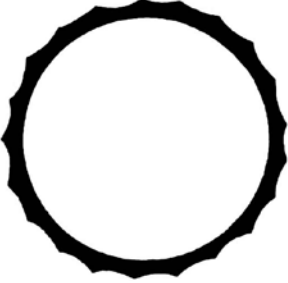
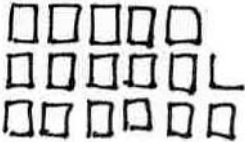

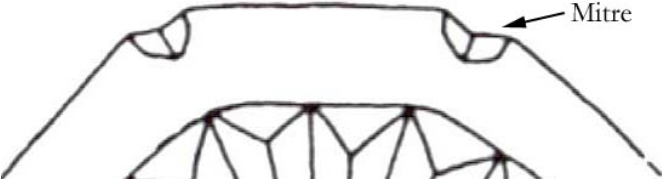
Newman, Harold

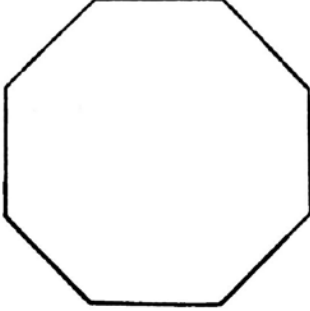
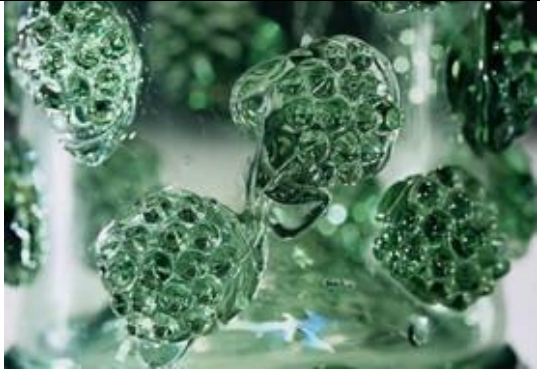
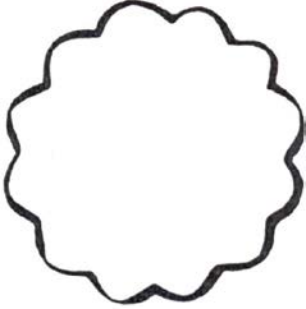

1977 *An Illustrated Dictionary of Glass*. Thames and Hudson: London.

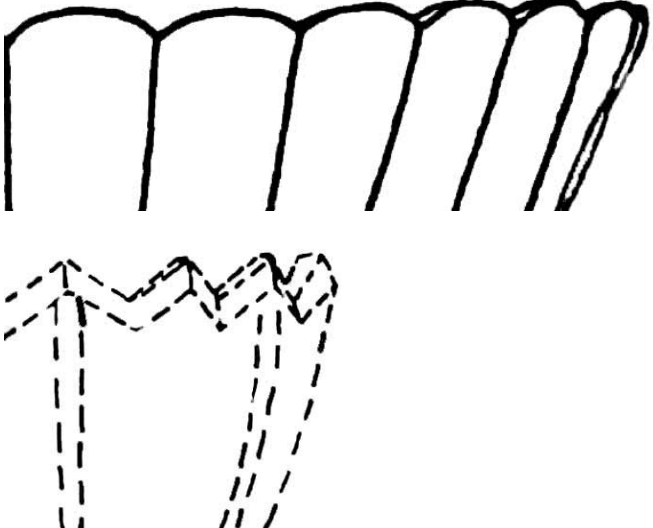
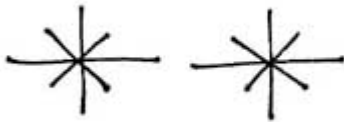
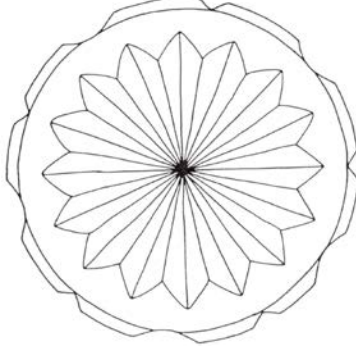
APPENDIX 1: GLASS STYLISTIC ELEMENT GLOSSARY

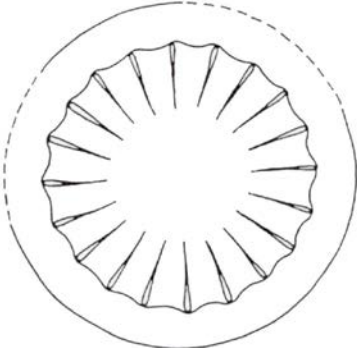
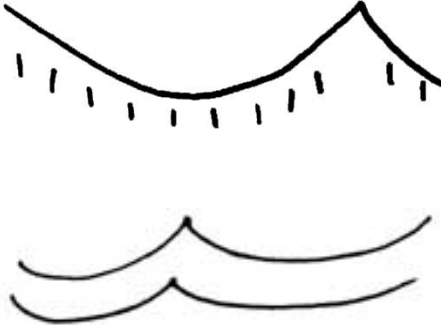

Stylistic Element	Description	Image
Band	A straight band.	
Botanical	Any botanical or floral-type element, be it a realistic or abstract rendering.	
Cartouche	Thick lines, normally curved, enclosing letters or symbols. The cartouche pictured includes thick, curved lines and areas of cross-hatching.	
Cordoned	Parallel incised lines, often seen repeated on a vessel. Most often formed by molding tooling (see Dec Tech section 6.1). Unlike ribbing which is most often oriented vertically on a vessel, cordoning is most often horizontal.	
Cross-Hatching	“A series of lines crossing over each other. In glass, these are most commonly created by engraving.” (Jones et al. 1985:58)	

<p>Double Wavy Band (currently in the database as Dble Wavy Band due to space constraints)</p>	<p>Two interlocking wavy bands that create the appearance of connected ovals or ellipses.</p>	
<p>Diamonds</p>	<p>One or more diamond shapes engraved or etched into the glass.</p>	
<p>Dogtooth Band</p>	<p>A regular, sharply jagged band.</p>	
<p>Dots</p>	<p>Small circular point or points painted or etched into the glass</p>	
<p>Facets</p>	<p>One or more small, distinct elements of various shapes cut or molded into the glass.</p>	
<p>Fan</p>	<p>One or more fan shapes.</p>	

<p>Flutes</p>	<p>“Repeating pattern of distinct, concave units parallel to each other, either adjacent to each other or at short intervals.” (Jones et al. 1985:58).</p>	 <p>Plan view of fluted vessel</p>
<p>Hobnails</p>	<p>A regular pattern of raised knops or bumps formed by blowing or pressing glass into a mold.</p>	
<p>Lettering</p>	<p>Note the presence of any lettering on non-machine-made objects. The specific words, letters, or numbers should also be recorded in the “Marks” field (see Section 5.4). Be sure to record the manufacturing technique and any applied color.</p>	
<p>Mitre</p>	<p>A V-shaped groove or incision cut into the glass.</p>	
<p>Notches</p>	<p>A regular pattern of small, shallow incisions or nicks cut, engraved, or etched into the glass.</p>	
<p>Other, see notes</p>	<p>Used when none of the other authority terms apply. The decoration should be imaged and thoroughly detailed in the Notes field.</p>	

<p>Panels</p>	<p>A (generally) flat section of a multi-sided vessel. “The panels or sides are generally of consistent or repeating sizes” (Jones et al. 1985:58). Panels are either molded or cut. They can extend the entire height of the vessel or take the shape of an arch, ending below the rim.</p>	 <p>Plan view of paneled vessel.</p>
<p>Prunt, raspberry (currently in the database as Prunt, raspberr due to space constraints)</p>	<p>A type of flat circular prunt [a blob of glass applied to a glass object as a decoration] on which there is a relief design, impressed with a tool, that has the appearance of a raspberry (Newman 1977:256).</p>	
<p>Ribs</p>	<p>“Repeating pattern of convex units parallel to each other.” (Jones et al. 1985:58).</p>	 <p>Plan view of ribbed vessel.</p>
<p>Scallop Band</p>	<p>Band consisting of a series of rounded teeth or half-circles.</p>	

<p>Scallop/Sawtooth Edge (currently in the database as Scldpd/Sawt Edge due to space constraints)</p>	<p>A repeating pattern, located on the rim of a vessel, consisting of rounded or pointed projections.</p>	
<p>Solid</p>	<p>Used when one or more surfaces of the glass sherd is covered by paint, enamel, or gilt.</p>	
<p>Star</p>	<p>Any star or asterisk-shaped design cut, engraved, or etched into the glass.</p>	
<p>Stippled</p>	<p>A series of small, close-set dots, whose decorative technique is usually molded, but can be diamond point engraved or acid etched.</p>	
<p>Sun/Starburst</p>	<p>Most commonly found on the base of vessel, starbursts and sunbursts consist of molded or cut rays radiating outward from a center point.</p>	

		 <p>Sun/Starburst</p>
Swag	Any element depicting a garland or drapery that is fastened at both ends and hangs down in the middle.	
Teardrop		
Twisted	Used to describe the elements seen in enamel and air twisted stems.	
Unidentifiable	Used when a decoration is present, but no specific details can be determined or the decoration is so small that an image or detailed notes are of little to no use.	
Wavy Band	One or more undulating lines.	

Wrythen

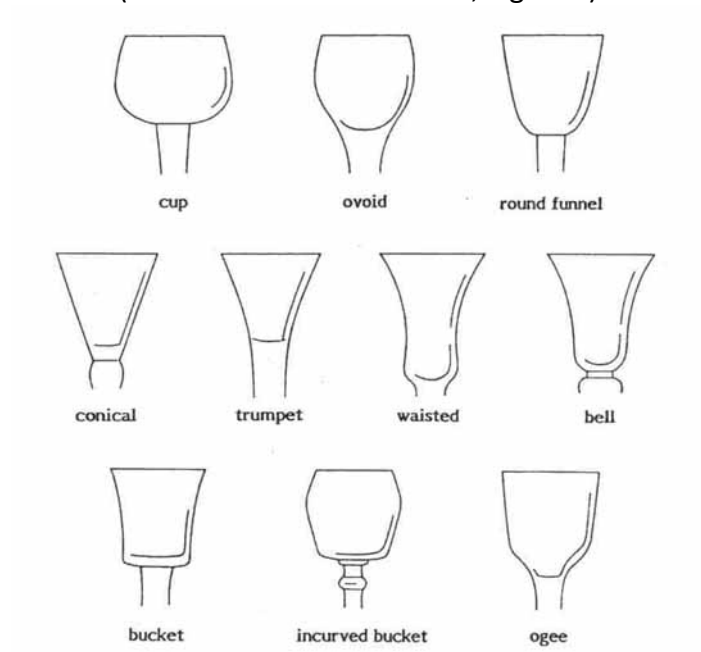
Simple decoration where external parallel grooves or ribs (applied either by hand or by blowing the parison into a dip-mold) are given a twist during blowing to create a spiral pattern.



APPENDIX 2: GLASS STEMWARE SHAPES

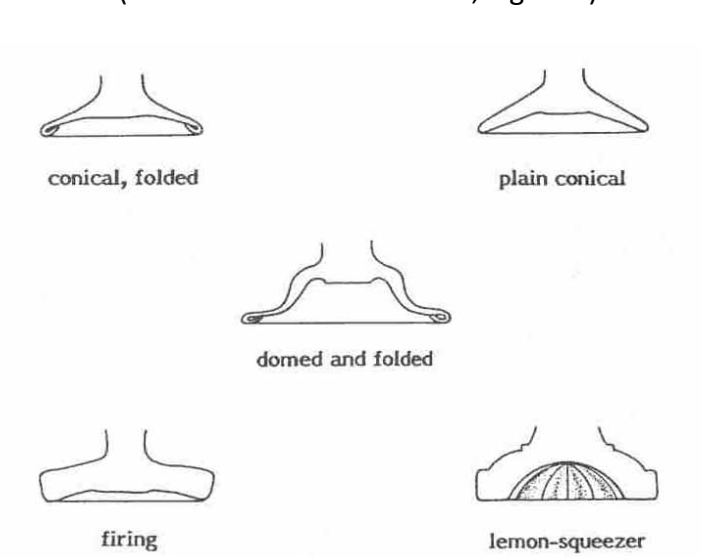
STEMWARE BODY (BOWL) SHAPES

(from Jones et al. 1985:139, Fig. 114)



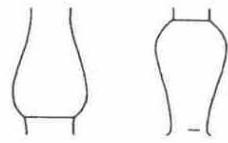
STEMWARE FOOT SHAPE

(from Jones et al. 1985:140, Fig. 116)



STEMWARE STEM SHAPE

(from Jones et al. 1985:140, Fig. 115 except for “straight stem” and “quatrefoil stem”)



true
balaster inverted
balaster



annular knob



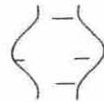
bladed knob



annulated knob



ball knob



angular knob



doubly cushioned knob



Straight stem



Quatrefoil stem