Came glasswork
Came glasswork is the process of joining cut pieces of art glass through the use of came strips or foil into picturesque designs in a framework of soldered metal.

Finished products can include a wide range of glasswork, including stained glass and lead light pieces. Came is made of different metals, such as lead, zinc, brass and copper. The metal came selected generally depends upon the size, complexity and weight of the project. As an alternative to came, copper foil may be used, for small, intricate pieces.

Overview

Came glasswork includes assembling pieces of cut and possibly painted glass using came sections. The joints where the came meet are soldered to bind the sections. When all of the glass pieces have been put within came and a border put
around the entire work, pieces are cemented and supported as needed. The work may be made waterproof by forcing a soft oily cement or mastic between the glass and the cames. A form of embellishment and gilding, such as Angel gilding and Eglomise, may be added to finish the piece.

Schematic depiction of H- and U-shaped lead came cross sections, with embedded glass pieces.

Glass art Tanja de Heus, Oldambt studio - the project is in process of being assembled.

Musée de Cluny students at work in a stained glass workshop - assembling glass with came.

Glass art Tanja de Heus, Oldambt studio.
Stained glass sign of a glass worker, an example of a completed work

Buckled lead came window, an undesired result of completed work that requires restoration

Works may need to be reinforced, like large pieces or ones that will be exposed to the outdoor elements. Support can be provided as the piece is made through the use of reinforced and metal-covered lead came, the use of steel strips in the came channels, or use of rigid came, such as copper, brass or zinc. Bars of steel or steel rebar may be attached to the back of finished works as reinforcement.[2]

History

Theophilus Presbyter, the first to write about joining art glass using the came technique[3] in the book De Divers Artibus. Theophilus was a Benedictine Monk who was a glass and pigment worker who practiced in the late 11th and early 12th centuries.[4][5]

See also the articles on Leadlight history and Medieval stained glass history

Materials

Materials to complete a glasswork project may include the pattern, cut glass, came, wood trim, solder, cement. Additional supplies include newspaper, cutter oil, a plywood board, masking tape, flux,[nb 1] and whiting.[7][nb 2]

Came

Lead came is often supplied in lengths of 2 m and in widths of differing sizes. It also comes in flat or domed profiles.

Brass and copper

Brass and copper have been used to bring a copper or golden hue to the works.[8] Generally, though, they were used only for windows between about 1890 and 1920. Both metals were often alternatives to zinc for Frank Lloyd Wright designed windows.[9][10]

Brass-capped lead

Brass-capped lead is another type of came used for glasswork projects.[11]

Lead

The traditional method of creating "camework glass" uses lead came, which ages into a dark blue-gray patina. In comparison to other came metal strips, like brass, copper and zinc, lead is softer and more flexible, making it easier to cut and bend. It's also inexpensive and durable. A downside is that the finished projects may be prone to sagging due to lead's softness. This can be mitigated somewhat by stretching the lead to make it more rigid before it is used.[13] Special precautions should be taken when working with this metal came to avoid to lead contamination.[11]

Ironically, the lead came windows of the medieval churches are sturdier than those of the 19th century and much of the 20th century. The composition of lead came changed over time, at first by removing other metals to make a "pure lead" and then again during war years when lead was needed for ammunition. Since the 1970s a new form of lead, restoration lead, was developed based upon medieval lead's metal composition. Restoration lead is stronger than lead came of the prior 100 years or so.[9]

Water tightness is achieved by brushing cement under the flanges of the leads to both faces prior to installation or by applying...
putty afterwards. Typically the cement consisted of linseed oil, whiting, lamp black and white spirit.

Theo van Doesburg, *Dance II*

Leaded glass window, High Street, Saffron Walden. In this case the came is an integral part of the artistic composition.

Canterbury Cathedral window is a 20th-century restoration using restoration lead cames and rods for structural support. It demonstrates good new leading, support, and the method of tying the lead to the rods.

St Michael's church, Langley, Norfolk
Zinc

Zinc makes a lightweight, strong and rigid came, which lends itself to glasswork projects that don't have many curved lines, are large, or have a number of straight lines that require greater support than lead would afford. Zinc accepts finishes, such as black and copper. Because of its strength, zinc is often used for border cames, which are U-channel cames for the outside edges.[8][11][12]

Frank Lloyd Wright used zinc came for his stained glass windows[10] Beveled glass work is generally done in zinc came, primarily because of its ability to manage the weight of heavy plate glass; whereas beveled glass works made of lead came are much more likely to buckle or sag over time.[13]

Windows on south wall of Frank Lloyd Wright's Dana-Thomas House, Springfield IL

Windows now in the American Wing of the Metropolitan Museum of Art in New York City, designed by Frank Lloyd Wright

Copper foil

A typical copper foil Tiffany lamp, with a jonquil daffodil design
Copper foil is an easy, versatile alternative to came and is particularly useful for small projects. Using copper foil, the edges of the glass pieces are wrapped with adhesive copper tape and soldered together along the adjacent copper strips. The copper foil technique (commonly called Tiffany stained glass, even though there is a debate about whether John La Farge or Louis Comfort Tiffany originated it) was invented in the 19th century, enabling creation of three-dimensional works, in addition to two-dimensional ones to which the lead came method is limited. A patent for the method of "Joining Glass Mosaics" was issued to Sanford Bray in 1886. This new method of joining pieces of stained glass used copper/copper foil instead of lead sashes. By using copper foil, one could now make cylinders, cones, and globe-shaped shades or many other irregular forms.
Copper foil glasswork

Hanukkah menorah

Tools

Tools to complete a glasswork project can include:

- **brushes**: toothbrush, scrub brush, flux brush or cotton swabs
- **carbide grinding stone**
- **cloths**
- **cork-backed straightedge**
- crimpler or burnisher, for copper foil
- **glass cutter**
- **glass grinder**
- **glazing hammer**
- **gloves**
- hammer and horseshoe **nails**
- lathekin
- **mask**: dust mask or respirator
- **metal files**
- **patinas**
- **permanent marker**
- **pliers**: breaker-grozier, combination, running
- **safety glasses**
- saw: miter came saw, hacksaw or side cutters
- **scissors**
- **soldering iron**
- **sponge**
- **utility knife**
- **vise**
- **wire brush**

Horseshoe nails for lead came glasswork

Glazier tools
Triple blade pattern shears for glasswork

Breaker-grozier pliers

See also

- Qamaria

Notes

1. ↑ Flux is used during the soldering process to better disperse heat from the soldering iron, improve the soldering process and to clean. Care should be taken to avoid contact to the skin or inhalation of its fumes.[6]
2. ↑ Whiting has two purposes. It is used to seal the glaze or cement. It is also used to clean residue off of the came and the project.[6]

References

Further reading


Restoration


British and Irish stained glass

- British and Irish stained glass (1811–1918)

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- British stained-glass artists
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Critics

- John Ruskin
Here you can explore HQ Came Glasswork transparent illustrations, icons and clipart with filter setting like size, type, color etc. Polish your personal project or design with these Came Glasswork transparent PNG images, make it even more personalized and more attractive. All Filters. Sort by Came glasswork are windows in which the individual flat glass pieces are framed by U- and H-shaped lead rods and soldered together along the edges. Before it was possible to produce larger glass surfaces, rung and lead glass windows were the only way to glaze larger wall openings. Today they are mainly realized as artistic works. Despite the similarity of names, lead glass is not used in lead glass windows. Came glasswork is the process of joining cut pieces of art glass through the use of came strips or foil into picturesque designs in a framework of soldered metal. Frank Lloyd Wright, Hollyhock House, Los Angeles, CA. Theo van Doesburg, Leaded Glass Composition I. Came glasswork is the process of joining cut pieces of art glass through the use of came strips or foil into picturesque designs in a framework of soldered metal. Contents. Overview. Hello I don't really understand this phrase "came glasswork" (it's not in the dictionary...). I'm just studying stained glass technique and this term comes... Hello. I don't really understand this phrase "came glasswork" (it's not in the dictionary...). I'm just studying stained glass technique and this term comes again very often and don't really catch its meaning I can find it in this sentence Dictionary - Dictionary of similar words, Different wording, Synonyms, Idioms for Synonym of came glasswork. Learn more.