

Owens-Illinois Glass Co. – Part 2

The Bewildering Array of Owens-Illinois Glass Co. Logos and Codes

Bill Lockhart and Russ Hoenig

[In 2004, Lockhart wrote articles about maker's marks and codes used by the Owens-Illinois Glass Co. for the Society for Historical Archaeology Newsletter and a collectors' magazine. While these articles improved on earlier works (e.g., Toulouse 1971), there were still problems with some of the identifications. The current study corrects the issues and explains past discrepancies. Parts of this study were taken from Lockhart 2007 (online version of 2004 article).]

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From its beginning in 1929, the Owens-Illinois Glass Co. has been a giant in the bottle and jar industry. Its history (see Part 1) is filled with growth and innovation. As a result, there is probably no way to even estimate the billions of bottles that Owens-Illinois has produced during the more than 80 years of its tenure. That means, of course, that the Owens-Illinois manufacturer's mark and codes are the most common of all logos found by historical archaeologists in excavations and surveys of post-1930 sites.

The study of these marks and codes are therefore of great interest to archaeologists studying material culture. Bottle collectors were the first group outside of the bottle industry to be introduced to the Owens-Illinois codes via a letter from Julian Harrison Toulouse to May Jones, published in Volume 5 of *The Bottle Trail* (1965). Toulouse served his entire career as an employee of Owens-Illinois, and, as his retirement neared, he wrote numerous articles and two books aimed at bottle collectors. He joined a large group of collectors under the umbrella of May Jones to simultaneously disseminate and collect bottle information.

Although Jones was the first to publish the relationships between the Owen-Illinois mark and the numbers surrounding it, her newsletters reached a very limited audience. Toulouse (1971:406) wrote his now famous *Bottle Makers and Their Marks* and explained in more detail the relationship between the company, date, and mold codes and the Owens-Illinois logos. The

Bottle Research Group (BRG) began following up the study of manufacturer's marks in the mid-1990s with a goal of updating the Toulouse research.

As part of the BRG studies, Bill Lockhart wrote an article about the Owens-Illinois history and marks for a collectors' magazine in 1994. Later that year, he published a similar article in the Society for Historical Archaeology Newsletter, currently (i.e., in 2018) available online (Lockhart 2007). Unfortunately, his understanding of the marks – although correct as far as it went at that time – was quite incomplete. As it turns out, the codes are much more complex than we had any way to know at that time, as attested by hundreds of e-mails the BRG has received during the last decade. The following study will address the variations and errors commonly found in these marks and codes.

Turncated Owens-Illinois Glass Co. History

The Owens-Illinois Glass Co. began with the merger of two of the industry giants: the Illinois Glass Co. and the Owens Glass Co. The Illinois Glass Co. was incorporated in March 1873 and began business in August. The company was successful and made virtually every type of bottle. By 1911, Illinois Glass had obtained the first of three Owens Automatic Bottle Machine licenses and made many other containers from semiautomatic machines. The firm expanded until the merger with Owens (see Lockhart et al. 2005a for a discussion of the company and its marks).

The Owens Bottle Co. (1911-1929) grew from a series of companies that began with the Toledo Glass Co. (1896-1903). The Toledo company was succeeded by both the Owens Bottle Machine Co. (1903-1911) that made and sold the Owens Automatic Bottle Machine and the Northwestern Ohio Bottle Co. (1904-1908), a company to make bottles. The firm dropped the "Machine" designation in 1919, heralding a shift in emphasis from the sale of machines to the manufacture of bottles. In 1929, the firm merged with one of its major competitors, the Illinois Glass Co. to form the largest glass company in the industry.

The merger between the Owens Glass Co. and the Illinois Glass Co. brought under the Owens umbrella the "largest individual bottle plant in the world" (Paquett 1994:71). The merger was formally approved on April 17, 1929 (Paquette 1994:70). On March 25, 1931, the firm was

incorporated in California as the Owens-Illinois Glass Co., Ltd. The newly-renamed company purchased the Illinois-Pacific Coast Co., the largest glass manufacturer on the West Coast on November 30 of the same year. The name of the western operation was changed to the Owens-Illinois Pacific Coast Co. on April 23, 1932 (Lockhart et al. 2005b; Paquette 1994:81-82).

According to Paquette (1994:81), Owens-Illinois introduced Applied Color Lettering (ACL) in 1931, although other sources place the date of the practical application at 1934. The firm absorbed numerous smaller glass houses and pioneered considerable change in the industry. Owens-Illinois purchased Brockway, Inc. in 1988, renaming the glass container operation as Owens-Brockway, a subsidiary of Owens-Illinois (O-I 2005). The firm remains a major glass production center in 2015.

The Basic Logo and Code Formats

Toulouse established the basic code/logo sequence in 1965 (Jones 1965) as well as in his book (Toulouse 1971:406) in 1971 (Figure 1). The original manufacturer's mark used by Owens-Illinois was a merger of logos, similar to the merger of the firms. The Illinois Glass Co. had used the Diamond-I logo ("I" enclosed by a horizontally elongated diamond)



Figure 1 – Owens-Illinois codes (eBay)



Figure 2 – Second logo

used a diamond surrounding catalog numbers as early as 1897. The Owens Bottle Co. had used the Square-O (O in a square) logo since 1919. The new firm selected the entire Illinois Glass mark and superimposed an "O" – that extended beyond the top and bottom of the diamond – around the "I." Generally, the "O" was shaped as an upright oval, although the configuration could vary. Even though Owens-Illinois continued to use the old molds from both former companies until they wore out – probably no longer than ca. 1931 –

the new firm began using its recently adopted mark almost immediately. Because the merger occurred late in the year – in a transition lasting most of the month of September – very few bottles had the new logo in 1929.

In 1954, Owens-Illinois adopted a new logo that eliminated the diamond (Figure 2). Some plants began using this I-in-an-Oval mark almost immediately, and some delayed. We have recorded the old logo on bottles made at least into 1966. Russ Hoenig remembered a time in the late 1960s or early 1970s, when the main office told him to use baseplates with the older logos. Thus, there was more than a decade overlap from 1954 to at least 1966, when each logo could have been used. The second mark was used into the 21st century when it began transformation into an OI joined together by a short line (Figure 3).

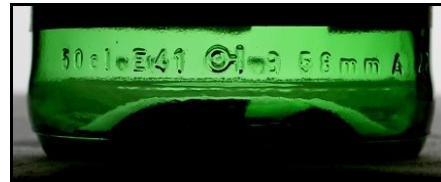


Figure 3 – Recent logo

The code positions shown by Toulouse in his original postings (Jones 1965; Toulouse 1971:406) are correct with some advisement. The code to the left of the logo generally represents the factory of manufacture with a one- or two-digit number. However, codes on liquor bottles made between 1934 and 1964 followed the federal requirements rather than the Owens sequence (see the section on liquor codes below). Left codes on packer and medicinal bottles also do not follow the same rule for the left code.

The code to the right of the logo was a date code, and this pattern was generally followed by almost all glass manufacturers from the 1930s (often earlier) to the present – although some firms failed to include date codes until sometime during the 1970s, and a few used their own positioning or even letter codes. With a very few exceptions (discussed in the liquor section), Owens-Illinois date codes were always positioned to the right of the logo. When Lockhart wrote the 2004 article, however, he was unduly influenced by soda bottles, so he addressed the date codes on those containers as if they applied to all Owens-Illinois bottles. Reality is much more complex. On some bottle types, the single-digit date code was used into the 1960s, likely into the 1970s, and possibly even into the 1980s. See the individual bottle sections below for date code variations on each type.

Below the logo was a one- or two-digit mold cavity code. These were of interest to quality control people in the factories but have little relevance to archaeologists. A final code on later bottles was a “mold” code – actually more of a catalog or model code. These identified each bottle according to a model number in the catalog, or, with private molds, an identifying number for an individual bottler. These can be useful where the number is known, although a study of relevant codes is beyond the scope of this work. To make these identifications even

more challenging, the West Coast plants used different codes than factories in the rest of the country – for the same bottle styles.

In addition, the following Mold Prefixes were used in most of the U.S.:

Liquors – L, LP, W, WP

Food – C, D, E, F, T, AT

Beverage – G, GB

Packers & Preservers – A, B, P, R, CH, FB

Milk – M, ML, CL

The same codes appeared as suffixes on glassware made in the Owens-Illinois West Coast plants (Owens-Illinois 1941). The firm adopted additional mold (model) codes over time.

The Trademark that Never Was

The decade after World War II was rife with change. The non-returnable bottle had been developed in 1935 and was extensively used during the war – and this led to a renewed interest in lighter, stronger bottles. The federal government sued Owens-Illinois for price gouging and unfair profit from war work. The use of waxed-paper milk cartons was cutting into the profits at Owens-Illinois, and the management began to move toward single-trip containers for every use. With this change in marketing strategy, the firm began looking at ways to alter its image.

E. L. Randle proposed or presented a new trade mark on July 22, 1952 (Figure 4). After investigating the increased area needed and the costs involved in changing the logo, Owens-Illinois determined that it would cost between \$225,000 and \$750,000 to make the conversion (Owens-Illinois 1952). Probably because of the expense, the mark was never adopted, although there is a small chance that it was embossed on a few trial bottles that may someday be found. The simpler “I” in an “O” – already part of the older logo – was a much easier to change.

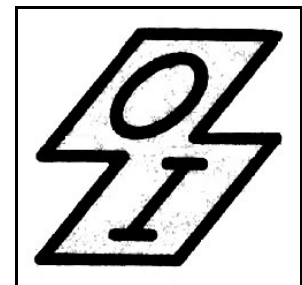


Figure 4 – The never-used logo

Owens-Illinois Factories

When Toulouse (1971:395) published his Owens-Illinois factory number list, he opened up an area of vast confusion. Even though he was an “insider,” many of his dates were incorrect, and he missed quite a few plants – some of which opened after his book was published. One of the problems that Toulouse faced was the availability of information. Much of the data on individual plants was scattered around, rather than being in a central repository, making collection of the needed dates very difficult. In addition, his entire 1971 book is riddled with typographic errors in dates. Since Toulouse was receiving much of his data in handwritten format, much of this can be forgiven, but much also just appears to be error.¹ One final issue makes correct dating difficult. Often, the erection of factories continued for as long as three years, and, frequently, sources cited the date when construction began. The important date is when production commenced. We have used the production date whenever it was available, although sometimes our only source failed to specify which date it used.

Table 1 was compiled by the BRG in conjunction with two former Owens-Illinois employees, Russ Hoenig and Phil Perry and has been revised in 2018 by the addition of internet and newspaper information. We began with the Toulouse table and traced every date through internet searches, while Russ and Phil searched Owens-Illinois documents. We spent hours discussing the often conflicting results and sorting production dates from inception dates. While a few entries remain somewhat speculative, the vast majority are solidly backed by Owens-Illinois records and other reliable sources. Kudos for this research go to Russ and Phil.

Table 1 – Plant Numbers – Owens-Illinois Glass Co.

No.	Location 1	Dates	Location 2	Dates
1	Toledo, OH	1929-1936		
2	Huntington, WV	1929-1993	Kalama, WA (NA2)	2015-present
3	Fairmont, WV	1929-1982	Muskogee, OK	1988-present

¹ In one case, Lockhart wrote that Toulouse dates were often incorrect by a year, frequently off by a decade, and even inaccurate by a century in two places. A friend e-mailed him that he had written 1988 instead of 1888 in the very next line!

4	Clarksburg, WV	1929	Brockport, NY	1963-1985
5	Cincinnati, OH	1929	Charlotte, MI	1963-2010
6	Charleston, WV	1929-1964	Winston-Salem, NC	1979-present
7	Alton, IL	1929-1983		
8	Glassboro, NJ	1929-1936 ¹	New Orleans Lapel, IN	1961-1984 1988-present
9	Streator, IL	1930-present		
10	Newark, OH	1930 ²	Atlanta, GA	1957-2018 ³
11	Evansville, IN	1929-1930	North Bergen, NJ Freehold, NJ	1963-1982 1988-1991
12	Gas City, IN	1929-1982	Zanesville, OH	1988-present
13	Chicago Heights, IL	1929-1939 ⁴	Montgomery, AL	1988-1991
14	Bridgeton, NJ	1929-1984		
15	Okmulgee, OK	1929	Waco, TX	1944-present
16	Minotola, NJ	1929-1933	Lakeland, FL	1965-2000
17	Clarion, PA	1930-2010		
18	Columbus, OH	1930-1947 ⁵	Brockway, PA	1988-present
19	Hazelhurst, PA	1930	Crenshaw, PA	1988-present
20	Brackinridge, PA	1930-1931	Oakland, CA	1937-2018
21	San Francisco, CA	1932-1937	Portland, OR	1956-present
22	San Francisco, CA	1932-1937	Tracy CA	1962-present
23	Los Angeles, CA	1932-present		
24	Los Angeles, CA	1932-1937	Mansfield, MA Ada, OK	1975-1983 1988-1991
25	Terre Haute, IN	1934-1947 ⁶	Volney, NY	1977-2001
26	Muncie, IN	1933-1935 ⁷	Toano, VA	1980-present
27	Toledo ⁸	1960-1970s	Oakland South, CA	1988-1989
28	Pomona, CA	1988-1995	Windsor, CO	2005-present

29	Danville, VA	1988-present		
30	Toronto, Ontario. ⁹	2001-2008		
31	Brampton, Ontario ⁹	2001-present		
32	unknown			
33	Chicago Heights, IL	1949-1999	Milton	2001-2003
34	Montreal, Quebec ⁹	2001-present		
35	Auburn, NY	1994-present		
36	Scoudouc, N.B. ⁹	2001-2008		
37	Lavington, B.C. ⁹	2001-2008		
51	Antiock, CA	1997		
52	Puerto Rico	1953-1954	Hayward, CA	1997-2003
55	R.M.B.C. ¹⁰	1996-present		
65	Vega Alta, Puerto Rico	1975-2008		

¹ Glassboro plant was altered to make closures in 1936 and made no glass containers after that.

² Newark closed July 1, 1930; idle until 1934; then produced fiberglass

³ Atlanta – plans for plant May 13, 1944; the firm built a warehouse in 1953.

⁴ The Kimble Glass Co. purchased the Chicago Heights plant in 1939. When Owens-Illinois acquired the Kimble factories in 1949, Chicago Heights returned as Plant No. 33.

⁵ Converted to TV tubes in 1949

⁶ Rebuilt in 1941; restarted in 1942; 3rd furnace added in 1944

⁷ Muncie converted to Insulux glass blocks in 1935 (poss. also bottles to 1937); closed in 1972.

⁸ A Libby Glass Co. plant temporarily made liquor containers (possibly only a few) at Toledo in the 1960 and possibly 1970s. It was assigned Plant #27.

⁹ These Canadian plants (formerly Consumer's Glass Co.) were jointly operated by Owens-Illinois and the recently formed Consumers Glass, Inc., in 1997 but not given Owens-Illinois numbers until Owens-Illinois acquired complete control in 2001.

¹⁰ Joint venture – was Coors Beer and Anchor Glass; now Coors Beer and Owens-Illinois

Soda and Beer Bottles

The original article centered around soda and beer bottles, and most of the details were accurate. At least one Hutchinson soda bottle – one of the few of that type made by an automatic bottle machine, and one of the last ones produced – was made in 1929 and marked with the new

Owens-Illinois logo. There is thus no question that the mark was in use from the beginning. As noted in the original article, two major changes in basemarks on beer and soda bottles occurred in 1940.

The term “Duraglas” was first embossed in cursive on bottle bases at some point during the year – so expect bottles with “0” date codes both with and without the word. Duraglas was a glass formula that was stronger than most previous glass mixtures. The story of this development is worth presenting. In the 1930s, accountants studied the cost of manufacturing a ton of glass in each factory and suggested that profits could be maximized by using less glass. Prior to that time, the only consideration was each plant’s perception of what amount of glass was needed to produce a quality container. Since management now had data on which to base profitability, it required the engineering departments to create a new formula, glass design, and a new image (presented by the public relations departments) that would use less glass in container production. The result was Duraglas.

The formula and the embossed cursive “Duraglas” continued in use until 1964, although engravers occasionally included the mark as late as 1970 or later. The base in Figure 5 had both digits of the date code altered, so this may have been an old mold that was reused. At that point, Owens-Illinois developed a new coating for the bottles called DURAGLAS – in block capital letters. The name was never embossed on bottles.



Figure 5 – Duraglas (eBay)

The second 1940 innovation was basal stippling. This consisted of tiny dots poked into the baseplate of the mold. The dots became embossed stippling on the bottles. As with Duraglas, Owens-Illinois developed stippling at some point during 1940, so the plants made bottles during the year both with and without this feature. The process aided in preventing “checks” or shallow cracks in the base due to rapid cooling. The glass industry called this process “bottom plate knurling.” It actually included stippling, chain stippling, BPMR (bottom plate metal removal, a series of concentric circles of dots) and others that were in use in the early days.

Other glass houses rapidly adopted the idea, and virtually all beer and soda bottles eventually appeared with stippled bases. For the discerning archaeologist, the stippling –

originally applied by hand – shifted to machine application in the early to mid-1940s. This can be recognized by its evenly spaced appearance, although various shops adopted the process at different times. Figure 6 shows hand stippling on the left and machine stippling on the right.



Figure 6 – Basal stippling (Patricia McFarland)



Figure 7 – Alternative stippling (eBay)

At some point during the 1970s (currently unresearched), the industry began experimenting with other forms of stippling. The most common alternative was tiny crescents that looked like a single parenthesis [((((([in a line encircling the resting point of the base (Figure 7). It is important to know, however, that some bottles made after 1940 lacked stippling and the Duraglas logo. Some bottles were not made with the Duraglas process. The presence of either feature is datable; the absence is not.

The three codes on soda and beer bottles followed the typical Owens-Illinois format, with factory code to the left, date to the right, and mold cavity code below the logo. By the late 1930s, many bottles also showed “mold” (catalog number) codes. The major issue, of course, was the date code. As discussed in the earlier study, the initial date codes were single-digit numbers. While “9” could indicate either 1929 or 1939, *very* few bottles were made by the Owens-Illinois plants with 1929 date codes (Figure 8).



Figure 8 – 1939 date code

The dating problem was at the other end. These were returnable bottles, with a typical life of about five years – with some bottles still in use more than a decade after manufacture. Thus, date codes on returnable bottles could easily overlap. Thus, a date code of “0” could equal 1930 or 1940. Owens-Illinois recognized the issue immediately and adopted two-digit date codes in 1940, but the shortage of labor due to the U.S. involvement in World War II delayed implementing the plan. Although either stippling or “Duraglas” would set the code as 1940, the lack of those features would not necessarily indicate 1930. By 1941, the Owens-Illinois engravers came up with an easy fix; they added a dot at the end of the single-digit date code to

indicate the 1940s. Thus, a code of “1.” indicates 1941. In some cases, however, the mold maker ignored (or forgot) the dot. In addition, the dot can get lost in the stippling (Figure 9).



Figure 9 – Stippling and dot

The dot system began to be phased out almost immediately. By 1943, the engravers began using the two-digit date system, occasionally inserting a “4” in front of and slightly



Figure 10 – Inserted “4” (eBay)

above the single-digit code

(Figure 10). Between 1943 and

1946, a given bottle may have a dot code or a double-digit

number. Thus, a bottle made in 1944 may be coded “44” or “4.”

It is important to remember that the dot system *only* applies to

soda and beer bottles. We have not discovered the dot dating

system on other bottle types. To add to the confusion, some

Owens-Illinois plants used a system of dots on some other bottle

types, notably prescriptions bottles. In some cases, these *may*

have indicated the month or quarter of manufacture, but we

received no consensus of opinion from Owens-Illinois sources.

Therefore, a dot following a date code on a prescription bottle is *not* indicative of a 1940s manufacture.

Often, when the same mold was used for more than one year, the engravers changed the date codes. This was done in one of three ways. The oldest was to take a ball-peen

hammer or hammer and punch and flatten the area to obliterate

the old number, then restamp

(Figure 11). The second –

and most common with

Owens-Illinois – was to drill

a hole where the number was

stamped, insert a cast iron rod, saw the rod off flush with the

mold surface, grind it to fit, then stamp the new number (Figure

12). The final option was to just stamp the new number atop



Figure 11 – Peened date code (eBay)



Figure 12 – Drilled date code

the old one. Figure 13 shows a real mess. The mold was moved from Plant No. 7 to Plant No. 3 (with a “7” engraved over the “3”) and a “1” stamped over a “7” that was stamped over a “6.”

An odd early mark only appeared on a few soda bottles: O.I.G. We have only found a single bottle with a base embossed “O.I.G. / X / 31F” (Figure 14). The “X” may have been a



Figure 14 – O.I.G. logo (Andy Higgs)

designation for an experimental bottle, “31” was a date code for 1931, and “F” indicated the Fairmont, West Virginia, plant. The date and plant codes in this position appeared frequently on bottles of this type that were made between 1925 and 1931 by the American Bottle Co., a subsidiary of the Owens Bottle Co. The American Bottle Co. plants at Streator, Illinois, and Newark, Ohio, became Owens-Illinois factories in 1929, but the date/plant code configuration was used by at least two other plants (including Fairmont) in 1930 and 1931. It therefore, becomes clear that “O.I.G.” equals Owens-Illinois Glass.”

While these are unusual, we have had this same bottle reported to us twice in different venues.



Figure 13 – Stamped date code (eBay)

Coka-Cola Bottles

The Coca-Cola Bottling Co., based at Atlanta, Georgia, required all glass houses making Coke bottles to follow its pattern for manufacturer and date codes. Early in the century – possibly as early as 1900 – Coca-Cola apparently asked or demanded that the manufacturers of the bottles emboss their logos on the heel or bases. For more information on early Coke bottles, see Porter (2012). By the time the firm adopted the hobble-skirt bottles, that requirement seems to have been forgotten. Coca-Cola reinstated the demand and revised the original configuration twice, each necessitating immediate compliance. The four periods are summarized in Table 2.

A July 23, 1919, letter from the Coca-Cola home office required a manufacturer’s mark and the year of production to be embossed on the heels of the bottles. The date code was always two digits. Owens-Illinois used the Diamond-OI logo, and both the mark and date code were usually in fine-line embossing and



Figure 15 – Heel code

are often difficult to see on a worn bottle (Figure 15). This practice continued until 1930 (Lockhart & Porter 2010).

In 1930, the code system migrated to the “skirt” of the hobble-skirt bottle, although a few bottles escaped notice and



Figure 17 – Second skirt code

retained the old system mark during 1931. The mark now had a two-digit date code to the right of the logo and the one- or two-digit mold code to the left (Figure 16). A code of 16 <0> 42 would mean the bottle was produced in 1942 in mold #16. The next shift placed the logo back on the base and transferred the date code to the left position – still on the skirt – with a hyphen between the two codes (Figure 17). A code of 52-16 now indicated a manufacture in 1952 with mold #16 (Lockhart 2010:340-343).

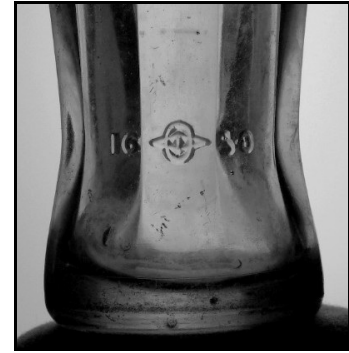


Figure 16 – First skirt code

Table 2 – Coca-Cola Glass Manufacturer Logo and Code Requirements

Dates	Requirement	Bottle Type
ca. 1900-ca. 1917	Logo*	Straight-Sided
1919-1930	Logo and date code on heel	Hobble-Skirt
1930-1952	Mold code, logo, & date code on skirt	Hobble-Skirt
1952-at least 1990s	Mold code & date code on skirt; logo on base	Hobble-Skirt

* This is extrapolated from empirical evidence; we have no documentary confirmation.

Pepsi-Cola Bottles

Until the firm adopted Applied Color Label (ACL) bottles in 1943, Pepsi-Cola had no logo or code requirements for its bottle manufacturers. During that year, however, Pepsi instituted a complex code. An example (Figure 18) will help to explain. The base of this bottle was embossed “DES. PAT. 120,277 (arch) / 14 B 48 / 9 {Diamond-OI logo} / Duraglas (cursive) / G1170 / 8.” From the top, the design patent number identified the patent used for the bottle.

The left number on the next line may be a manufacturer's code. On our sample, 14 seems to indicate Owens-Illinois; 15 for Laurens Glass Works, and 16 for Brockway Glass Co. The capital letter in the center (almost always A or B) *may* indicate the factory within the glass company (e.g., 14 B *might* mean the Streator plant of Owens-Illinois), but the final two digits are the date code – 1948 in this case. The one- or two-digit number to the left of the logo on the second horizontal line *is* the plant code (Plant No. 9 at Streator, Illinois, in the example), and Duraglas (next line) was discussed above. G1170 was the code for the bottle style, and “8.” was a mold cavity code. This same configuration (including the patent number) was used until Owens-Illinois adopted the new logo in 1954.



Figure 18 – First Pepsi code

The next format was similar but a bit simpler as shown in Figure 19. The patent number was now so out of date as to be meaningless, so it had been removed. The example base was embossed “14 B 56 / 15 {OI logo} 6 / Duraglas (cursive) / G1170.” Again, we cannot explain the “14” or “B” for certain, but “56” was the date code for 1956, and “15” was the plant code for the Waco, Texas, factory; “6” was a mold number. The Duraglas mark and style code remained the same. This format continued into the 1960s, probably later.



Figure 19 – Second Pepsi code

Liquor Bottles and Flasks

In early 1934, the *Glass Packer* (1934:502-503) reported that the Treasury Dept. had passed a law requiring several changes in the embossing on the bases or heels and the shoulders of liquor bottles and flasks. Glass manufacturers wishing to produce liquor containers had to obtain a federal licence and number and to conform to these regulations on all items made after August 1, 1934. Distilleries, rectifiers, or importers had to also procure federal numbers and permits, and they were required to use the newly marked bottles by November 1.

The requirements called for a specific code sequence on bases, with the distiller number (beginning with D), rectifier number (beginning with R), or import number (beginning with I) on

top, followed by a second line with the glass house (federal) number to the left, followed by either a dash or the manufacturer's logo (Figure 20). If a dash were used, the logo had to appear elsewhere on the base. The number to the left was a date code, and two-digit numbers were required during 1940 (in a different ordinance). The configuration for flask bases or bottle heels were very similar.

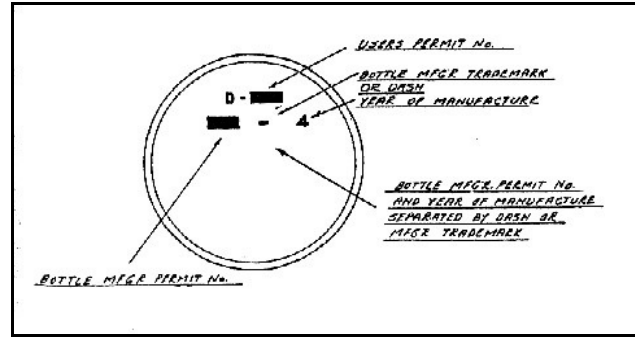


Figure 20 – Liquor Codes (*Glass Packer* 1934:503)

In addition, the shoulder of the bottles had to be embossed “FEDERAL LAW FORBIDS SALE OR RE-USE OF THIS BOTTLE.” The requirements were not rescinded until 1964.

Typically, each glass manufacturer was assigned a single number, although a few amassed extra numbers as they purchased or absorbed smaller factories. Because of its vast size and numerous plants Owens-Illinois received a large quantity of numbers. According to an Owens-Illinois 1969 internal

list of liquor permit numbers, the firm received numbers 54-55, 57-58, 60, 64-65, 88, 100, 111, 159, 171, 175, 177, 179, 180, 182, 202, 221, and 222 (see



Figure 21 – OI liquor codes (Tucson Urban Renewal and Paul Demers)

1969 document). In addition, we have recorded 56 and 62 associated with Diamond-OI logos. These probably represent plants that had been closed by 1969. Figure 21 compares a typical flask base from 1942 with one made prior to Prohibition. The codes speak for themselves.

Although much less common, Owens-Illinois occasionally used heelcodes (Figure 22). Another fairly common variation was the “factory code - date code” format with the Diamond-OI mark to the side and rotated 90 degrees (Figure 23). A final unusual but fairly common configuration was to stack the codes. In the example in Figure 24, the



Figure 22 – OI heelcode (Tom Alex)



Figure 23 – Variation code (eBay)

top code (64) is the plant number, the center (D-1) is the distiller's code, and the bottom number (45) is the date code for 1945. These and others are relatively common, so the government must not have been too concerned with order.



Figure 24 – Variation code

Milk Bottles

Owens-Illinois made milk bottles in two basic cross-sectional shapes: round and square. Round milk bottles were used long before the 1929 merger and were still made at least into the 1980s, possibly later. The earliest of these had the typical Owens-Illinois codes, with plant codes to the left of the Diamond-OI logo and single-digit date codes to the right. However, especially with West Coast factories (Plants 21-24), the single-digit codes extended to ca. 1946 with no dot delimiter (Figure 25). These plants did not fall under the Owens-Illinois envelope until 1932. Frequently, these had no stippling or Duraglas mark, so date codes of 2, 3, 4, 5, and 6 should be approached with caution.



Figure 25 – Round milk bottle base

The large letter in Figure 25 was a sorter's code or sorter's letter. Each of these was typically the first letter in the name of the dairy (P = Price's Dairy in the example). When milk bottles were returned to the dairy, they were first sorted to remove bottles that belonged to other dairies. The sorter's letter made that task much easier.

Although two other inventors had earlier patented milk bottles that were square in cross-section, they were ahead of their time. Roy Blunt of the Buck Glass Co. invented the first truly successful square milk bottle in 1942, although Owens-Illinois designed its own brand – called the Handi-Square – the following year. Although some of the early square milk bottles followed the same pattern as the round ones, the logo soon migrated to the heel of the bottle, along with

terms like “REGISTERED,” “SEALED,” or other words. The base was generally embossed “Duraglas” (cursive) until after 1964, a capital letter, and two numbers. The left number was a one- or two-digit plant code, while the right one was the date code (Figure 26). See Lockhart (2014) for a discussion of the inventions, patents, finishes, and other attributes of milk bottles over time.



Figure 26 – Square milk bottle base

Another set of codes, found on milk bottle heels, began with the letter “M”:

“M”=Gallon milks

“MH”=light weight milk

“ML”=standard weight milks

“MX” or “MLX”= standard weight milks with headspace $\frac{1}{4}$ ” below cap seat

“MY” or “MHX”= light weight milks with headspace $\frac{1}{4}$ ” below cap seat

“MZ”= non-returnable milk

Prescription Bottles

Owens-Illinois rapidly became one of the most prolific producers of prescription bottles in the United States. Both ancestral firms had carried their own brands of prescription bottles, and the new company adopted the flagship brand from each of them.

Owens Ovals

A full study of the Owens Ovals would fill a chapter by itself and is thus beyond the scope of this work. The bottle that would become the Owens Oval was first made at the Clarksburg factory of the Owens Bottle-Machine Co. in 1914, but the production shifted to the Charleston (Kanawha City) plant when it opened in 1918 (Figure 27). Concurrent with the adoption of

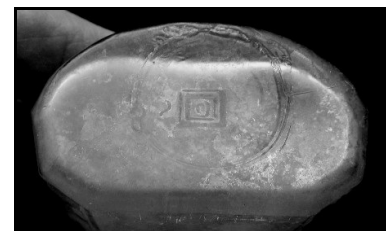


Figure 27 – Box-O logo (eBay)

the Square-O logo in 1919, the firm named the bottle the Owens Oval. The base was embossed with “OWENS” until 1926, when the “O” was placed in a box “[O]wens” and that continued until the 1929 merger (Figure 28).



Figure 28 – Box-O + WENS

With the merger, the base was embossed “OWENS / {number} {Diamond-OI logo} {number}”. The number to the left of the logo in this case is a mold number, *not* a plant code – although the number to the right *is* a date code. An example from 1939 (Figure 29) was embossed “OWENS / 12. Diamond-OI 9 (followed by 3 dots in an “L” shape).” One or more dots follows either of the numbers, sometimes both – as in Figure 29.



Figure 29 – Owens Oval base



Figure 30 – Dot codes

The dot system was developed because of the sensitive nature of prescriptions bottles. Once manufactured, they cannot be stored for too long a time because of the risk of contamination. As a result, several runs of each type of prescription bottle were made each year. The dots indicate the number of the runs, with a single dot indicating the first run, two dots for the second, etc.

When dots followed the mold codes, they would designate the machine position on multi-cavity molds. If the mold number was “7,” for example, the front cavity would have no dot. The back cavity on a dual cavity mold, however, would be “7•”; or in the case of a triple cavity mold, the code would be “7••” for the center cavity. In Figure 30, “7•” indicates the back cavity of mold number 7. The right code shows that the bottle was made in the third run in 1939. Although the dots should follow the number and be centered, on small bottles, they were often placed wherever the engraver could fit them. We have no explanation for some extraneous dots (Figure 31).



Figure 31 – Unexplained dots

From 1940s, most bottles also had “Duraglas” (cursive) embossed on the front heel, back heel, or both (Figure 32). From the inception of Owens-Illinois, the firm offered the bottles in

both prescription and continuous-thread finishes (Figure 33), and with or without graduations. The plants also made other slight variations. By the end of 1949, the plants removed the word “OWENS” from the base, although it was clearly the same bottle.



Figure 32 – Duraglas (Fort Bliss)

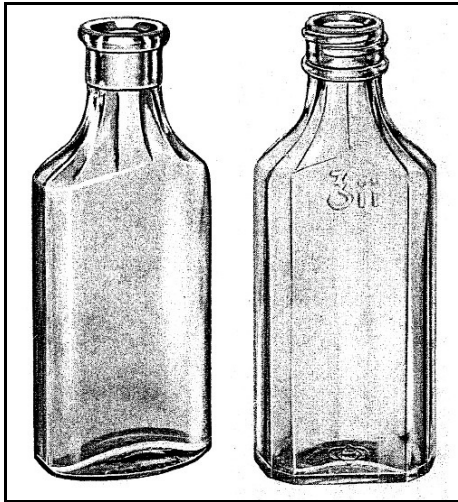


Figure 33 – Finishes (Owens-Illinois 1930 catalog)

By the 1950s or 1960s, Owens-Illinois added a code to these bottles that indicated the capacity in ounces (10, 20, 30, 40, etc.). Sometimes, the engravers would get confused and change the “0” to a “1” – thinking these were date codes. The error could be repeated. Russ Hoenig discovered one example that was embossed “94” – but was not made in 1994. This could easily create confusion for archaeologists finding later bottles. In 2015, the



Figure 34 – Owens Oval – plastic

same Owens Oval bottle style – long out of patent protection – is still used in plastic format (Figure 34).

Illinois Ovals

C.M. Schofield invented the Lyric Oval in 1912 and assigned the patent to the Sheldon-Foster Glass Co. the following year (Figure 35). Sheldon-Foster sold the Chicago Heights plant to the Chicago Heights Glass Co. later in 1913, and the new firm made the first Lyric Oval bottles. By the end of the year, the Illinois Glass Co. had acquired the factory and patent rights.



Figure 35 – Lyric Oval (Schofield 1913 patent)



Figure 36 – Diamond-I logo

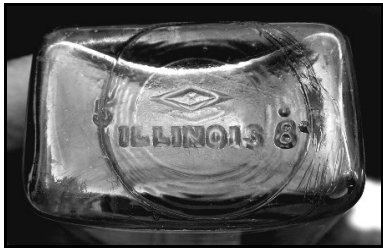


Figure 38 – ILLINOIS base

Illinois Glass made the bottles, still using the Lyric trademark along with the Diamond-I logo, until the 1929 merger (Figures 36 & 37). Toward the end of the 1920s, the firm added the word “ILLINOIS” (Figure 38). Owens-Illinois called the same bottle the Illinois Oval and added the typical Owens-Illinois codes (although the left code *still* was not a factory number). The company continued to produce the Illinois Ovals until 1949 (Figure 39).

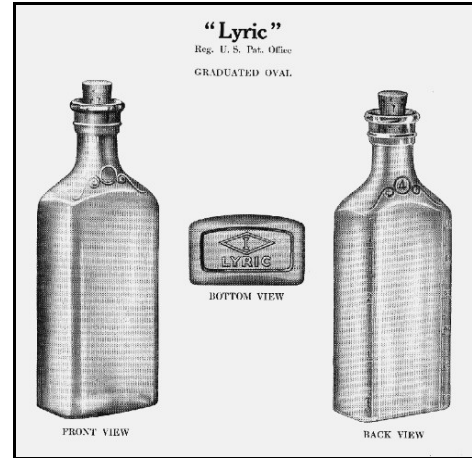


Figure 37 – Lyric Oval (Illinois Glass Co., 1906 catalog)

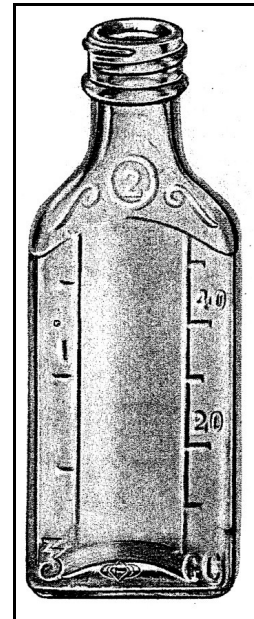


Figure 39 – Illinois Oval bottle (Owens-Illinois 1930 catalog)

Packers, Product Bottles and Jars

Typically called packers in the industry, these were bottles and jars used to hold food, medicines, household items, and a variety of other things. Until the 1970s, these were only lightly regulated. This lack of regulation means that the typical code and logo arrangement was generally followed, although one of the codes might be missing on any given jar or product bottle. Smaller bottles often only had a single-digit date code until at least the mid-1970s, and the lone digit may have extended into the 1980s (Figure 40). Many of the odder logo variations (see below) occurred on this type of container.



Figure 40 – Packer base

The Final Codes

The American Glass Research (AGR) created the Cavity Identification Detection code system in the 1970s. Commonly called the peanut code, these consisted of a series of squares made of dots that were embossed in a circular format on the bases of bottles and jars. Each square could have between one and four dots representing a numerical combination that could only be read by machines leased by AGR. Eventually, the “peanuts” evolved into two dots (Figure 41).



Figure 41 – Basal dot system



Figure 42 – OI ring codes

In 1978, Owens-Illinois adopted a system of concentric circles – since AGR had patented the dot codes. Originally the Owens-Illinois system used eight rings but that was reduced to seven rings later (Figure 42). Using a combination of missing rings and the distance between rings, Owens-Illinois was able to develop its own machines to read the code as a number. Like other “mold” codes, these were used for quality control. Owens-Illinois adopted

its own dot code – located on the heels of the containers – in the early 1990s (Figure 43).



Figure 43 – Dot heelcodes

Oddities

Engravers sometimes had bad days or were under other pressure. A mold shop foreman disclosed me that he was occasionally told to forget the date change (or other last-minute finishing touches because they needed the molds on the floor – NOW. The older types of errors – like letters missing, letters or numbers backward, or a complete misspelling – were mostly eliminated by the time that Owens-Illinois was formed. What remained were odd variations in the logos. These included a dot in the er of the diamond instead of an “I”; an empty diamond; a large “O” and small diamond; tilted or offset “I”; unusual shapes, and variations in the “I.” Figure 43 shows some examples.

Conclusion

This study takes us as far beyond my 2004 article as that one did from Toulouse (1971). But, this will not be the end. There are already tantalizing hints that we are only beginning to observe. For example, it may be possible to tie certain design and/or technique changes to specific plants. We now have the big picture; it is time to fill in the nuances.



Figure 44 – Oddities

Acknowledgments

Our gratitude to Phil Perry. Like Russ Hoenig, Phil was a former employee of the Owens-Illinois Glass Co. Phil contacted Bill Lindsey with a question *he* had for Bill. Bill, of course, had questions to ask Phil and soon brought in the rest of the Bottle Rearch Group. Phil suggested Russ, who was conducting his own research into the Pennsylvania Owens-Illinois plants. Phil and Russ provided a huge volume of non-proprietary information on Owens-Illinois and its ancestral factories. Our relationship has been a good match.

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