May Glass Cookware Be Kashered?

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In consultation with Dr. Marvin Steinberg, Professor Food Engineering, University of Illinois at Urbana-Champaign.

This paper was adopted on January 17, 1990 by a vote of eight in favor, nine opposed, and one abstaining (8-9-1). Members voting in favor: Rabbis Kassel Abelson, Elliot Dorff, Amy Eilberg, Richard Eisenberg, Arnold M. Goodman, David Lincoln, Herbert Mandl, Avram I. Reisner. Members voting in opposition: Rabbis Ben Zion Bergman, Jerome M. Epstein, Lionel E. Moses, Mayer E. Rabinowitz, Joel Rembaum, Seymour J. Rosenbloom, Joel Roth, Steven Saltzman, Gordon Tucker. Abstaining: Rabbi Dov Peretz Elkins.

שאלה

May cookware made out of glass such as Corningware, Pyrex and Vision be kashered? Sometimes stains form on the surface; are these stains absorbed into the glass?

תשובה

There are various ways to ritually kasher utensils:
שטיפה – rinsing in cold water.
הגעלה – immersion in boiling water.
ליבון – heating in the fire to a high temperature.
The prescribed methods of kashering for a particular utensil depend on the way the utensil is generally used, and on the way the forbidden food substance was absorbed. This is summarized in the principle כבולעו כך פולטו (as the vessel absorbs, so does it rid itself of what is absorbed).[1]

The Committee on Jewish Law and Standards of the Rabbinical Assembly provides guidance in matters of halakhah for the Conservative movement. The individual rabbi, however, is the authority for the interpretation and application of all matters of halakhah.

Kashering Glass

In regard to glass, the traditional commentaries are divided. There are three approaches:[2]

1) Glass does not absorb and therefore does not need kashering beyond cleaning and rinsing.

2) Glass is like metal and requires immersion in boiling water.

3) Glass is like pottery and cannot be kashered.

Two of these approaches which reflect the extremes, that glass does not absorb, and that glass is like pottery which absorbs, are found in the *Shulḥan Arukh*:

> כלי זכוכית אפילו מכניסן לקיום ואפילו משתמש בהן בחמין א"צ שום הכשר שאינם בולעין. ובשטיפה בעלמא סגי להו. הגה ויש מחמירין ואומרין דכלי זכוכית אפילו הגעלה לא מהני להו. וכן המנהג באשכנז ובמדינות אלו.
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> Glass vessels, even if used for storage or used to cook hot food, do not require kashering for they do not absorb. Simply washing suffices. However, there are those who are more stringent and hold that glass vessels may not be kashered even by immersion in boiling water. This is the custom of the *Ashkenazim* which is prevalent in these areas.[3]

The later *Sephardim* generally follow the more lenient approach, while the *Ashkenazim* follow more stringent approaches.

The Physical Characteristics of Glass

Since the different approaches depend on whether glass absorbs food or not, it is essential to investigate the physical characteristics of glass, whether used for cooking or serving. To the extent that the more stringent practices would apply to glassware used for cooking (כלי ראשון) any leniencies applied to cookware would also apply to glass servingware.

Though there are several varieties of glass used for cooking – Pyrex, Corningware and Vision – whether it is opaque glass (Pyrex) or glass ceramic (Corningware or Vision), there seems to be no essential difference in properties. The glass out of which cookware is made is a solid solution obtained by melting a mixture of silicone dioxide and other minerals, followed by controlling cooling. It may contain crystals dispersed in the solid solution and these crystals make the glass opaque; this is Corningware. In contrast to metal which has a certain amount of surface roughness, glass has zero porosity – too small to measure with instruments. A glass utensil thus presents a "continuous phase" in contact with food and is highly unlikely to absorb any food particles at all, in contrast to metal which has some surface porosity. Glass is

unaffected chemically by foods, corroded only by strong alkali, strong acids, or by hydrofluoric acids, all of which are not found in foods.[4]

Sometimes bakeware (Pyrex) or cookware (Corning or Vision) may temporarily discolor due to contact with exposed metal in the dishwasher, iron in the water supply, burned-on food, build-up of tea or coffee oils, or general soil. They can be cleaned by using a non-abrasive cleansing powder such as Bon Ami or Corning cleaner. Abrasive metal cleansing pads and harsh cleansers should not be used, for they may scratch the surface. Such scratches are unaesthetic, but do not promote absorption of food into the glass itself because glass is non-absorbent.[5]

CONCLUSION

It is apparent that the more lenient approach is based on the physical qualities of the glass. Glass does not absorb and therefore does not require kashering beyond a careful cleaning and rinsing. This is true whether the glassware is used for cooking (כלי ראשון) or serving (כלי שני).

However, certain restrictions should be followed:

1. It is preferable to use separate sets of glass serving ware, cookware dishes for milk, meat and Passover use.
2. However, if changes are to be made:

a. Glass serving pieces, dishes upon which hot food is placed, etc. should not be used both for meat and milk within a 24 hour period, but if they were inadvertently used (בדעבד) the food is not טרף.

b. When cooking or baking utensils are to be changed from meat to milk, or from milk to meat, or from *ḥametz* to Passover use, a symbolic kashering for educative purposes is desirable. Hence, such utensils should be immersed in boiling water in accordance with an Ashkenazic practice (seeing to it that care is taken to preheat the utensils to avoid cracking). However, if such cookware were inadvertently used without such a process (בדעבד) the food is not טרף.

NOTES

1. *Pesaḥim* 30b.
2. Tzvi Cohen, הגעלת כלים לפסח, המקום התורני בישראל, 5740 p. 308.
3. שו"ע או"ח תנ"א: כ"ו (*Oraḥ Ḥayyim* 451:26).
4. Letter from Professor Marvin Steinberg, Department of Food Science, University of Illinois at Urbana-Champaign, dated May 4, 1989. Letter from Eugene H. Fontana, July 19, 1979.
5. Letter from Wendy Broadfoot (representative of the glassware company), January 26, 1989 (with cleaning instruction pamphlet).

Addendum 1: Letter from Dr. Steinberg

For a dilute acid only hydrofluoric is active against glass but foods do not contain measurable fluorides. For the other acids to act against glass, they have to be much, much more concentrated than exist in food. On the logarithmic pH scale, the most acid food is above pH 3 while for corrosion the pH would be below 1.

Metals, however, relative to glass would change with cooking. Even stainless steel can corrode; it depends on the composition and conditions of use.

Sincerely,
Marvin P. Steinberg
Professor of Food Engineering

MPS/bj
Enclosures

Addendum 2: Letter from Eugene H. Fontana.

July 19, 1979

Mr. David Pollock
380 Riverside Drive
New York, New York 10025

Dear Mr. Pollock:

In response to your phone call on July 18, Mr. Hagy has asked that I reply to your inquiry concerning the porosity of Corning's Corelle, Pyrex, and Corning Ware tableware products. Our measurements have shown that tableware having the above Corning tradenames are nonporous, as are the finest vitrified chinas. We have determined this by mercury intrusion at pressures to 15000 psi on porosimeters manufactured by the American Instrument Company (AMINCO) of Silver Spring, Maryland. These units measure pore volumes and pore sizes between 100 and 0.012 microns. Another unit which we have can reach 60,000 psi and can penetrate pores as small as 0.003 microns. Data obtained with this equipment are reproducible to within˘ 0.5% and are comparable to, or better than, that obtained with ASTM procedure #C373-72, which is the water absorption method used for whitewares.

I hope that this information has answered your questions. If more information is needed, please write or call.

Sincerely yours,
Eugene H. Fontana

Physical Properties Res. Dept.
EHF: jc

Addendum 3: Cleaning Instructions for Glass Cookware

Problem	Probable Cause	Solution
Metal Marks grayish lines or markings. (May appear on rim or surface).	Metal utensil, exposed metal on dishwasher racks, contact with metal pans.	Use cleaners like the enclosed. Bar Keepers Friend or Zud. Repeat if necessary.
Rust or brownish marks.	Iron deposits in water supply.	Soak in full-strength vinegar, then, if necessary, scrub.
Tea or coffee stains (in cups)	Build up of tea or coffee oils.	Add one tbs. laundry bleach, fill w/water and let stand just until stain disappears. Bon Ami, Soft Scrub or baking soda may also be used.
Mineral Deposits dull, (May appear as if inside surface is chipping away).	Water supply.	Fill ware w/solution of 1 pt. vinegar to 1 pt. water or full strength vinegar, and gently boil 20 min.
Pebbly look on new dinnerware.	Protective coating used to prevent damage in shipping.	Friends or Zud.Then scrub w/ enclosed cleanser. Bar Keepers
Detergent build-up.	Dishwasher.	Wash with detergent and hot water before using.
Burned-on food.	Heat too high; overcooked.	Use a cleanser like the enclosed, Bon Ami or soft scrub.
Glue from labels.	Factory application.	Soak in hot detergent water
Cleaning of plastic, cork, or metal accessory parts, including detachable handles.	General soil.	Soak in dishwasher detergent or run through a complete dishwasher cycle. Wipe clean with damp cloth.
Staining of thermal servers	Build-up of tea or coffee oils.	One tbs. baking soda in warm water (use a soft bottle brush if necessary) and then rinse. Spout may be cleaned by applying a paste of baking soda and wiping clean w/ cloth.

Recommended Cleaning Tools: Dobie, Tuffy, or any other plastic pad.

Caution: When using any cleaning solution, take necessary precautions. Never mix household cleaning products. Chemical mixtures may interact causing objectionable or hazardous results! The enclosed cleanser, Bar Keepers Friend and Zud are abrasive cleansers; continued use can cause scratching.