Kosher Production of Beer: A Technical Perspective

By J.O. Krupnik

Council of Orthodox Rabbis, Southfield, Michigan, USA.

ABSTRACT

The decision of a brewery to undergo Kosher certification and to commence Kosher supervision of its production is often a complex technical and marketing issue. A review of pragmatic aspects of Kosher certification and technical issues is addressed. Protocols related to larger breweries as well as specific to smaller craft breweries are discussed.

Keywords: kosher supervision, kashruth, hechsher

INTRODUCTION

The brewery which is considering subjecting itself to Kosher scrutiny must be prepared to perform its homework. The process is methodical, and summarized in Figure 1.

The first stage is to identify and contact accepted Kosher supervisory organizations and review the commitments required.

A basic premise of Kosher production requires a generalization: a Rabbi who observes Kosher laws in his own community is a good starting resource for information and suggestions. A Rabbi knowledgeable about brewing is going to be more helpful than one who is not experienced in fermentation science. In North America, several internationally-recognized organizations are available for the brewery which decides it will become a Kosher producer, (See Table 1). Kosher supervision is a discipline as well as a service, and rates for this service may vary from organization to organization.

A second premise in assessing the Kosher-capability of a brewery is to identify the materials which come into the plant and determine which ones are already Kosher-approved. If everything coming into a plant is Kosher-approved, then it improves the likelihood that the brewery’s finished products will be approved as Kosher.

The modern brewery has a finite number of materials being delivered to it, including brewing ingredients, boiler and water treatment chemicals, CIP chemicals, etc., and it is useful to identify areas of concern from the beginning. Of course, if every product which enters the brewery already has satisfactory Kosher approval, the concerns diminish... an authorized Kosher supervisor has already attested to the appropriateness of the product for Kosher brewing.

The next stage is preparing for Kosher certification by creating a detailed listing of every single material in the brewery. Every supplier and vendor must be contacted and asked to provide current Kosher documentation on each material. If a Kosher-approval document is not available, a comprehensive statement of production on the supplying company’s letterhead is required so the reviewing Rabbi can evaluate which products might be considered as Kosher approved, and which materials will require further scrutiny.

Rabbi Joseph D. Krupnik has been the Kashrut Director for the Council of Orthodox Rabbis of Greater Detroit for the past seven years. He, along with Rabbi Berel Brody, are the editors of the widely-distributed Koshergram newsletter distributed across the USA. Rabbi Krupnik has been in the field of Kosher food supervision in eight countries, on four continents, during the last thirty years.

Email: CORDETROIT@hotmail.com
Every brewery faces a multitude of specification and selection choices, and it is helpful to specify Kosher-approval for all materials as a means to simplify the information-acquisition stage of Kosher certification. Many materials offer Kosher questions.

BREWERY MATERIALS

Malt, Dry Adjuncts, and Hops

If the grain suppliers do not have current Kosher certification, the reviewing Rabbi needs to know about production processes, (i.e., typical cycles in the malt house, use of sulfur, giberrillic acid treatment, etc.), sanitation and hygiene, and rail car and truck rejection criteria in place. A very important fact is that insect infestation makes grains non-Kosher-approved. If there is no Kosher documentation available, the Rabbi may have to interview technical staff over the phone, in person, or arrange for an approved Rabbi closer to the facility to visit. Hops and hop pellets are Kosher due to their nature and simple processing. Hop extract plants often provide letters of Kosher certification.

Liquid Adjuncts

Liquid adjuncts include beet syrups, caramelized corn syrup/molasses, honey, etc. The widespread use of liquid adjuncts are corn syrups, manufactured in the various processes of the wet-milling industry. Major manufacturers have recognized for years the importance of Kosher certification, but other issues still arise. Is the corn syrup that may be used, being transported during winter months in heated trucks that are acceptable? It might not be, if the previous load in the same tanker truck was non-Kosher and kept warm during transportation. According to Kosher laws, heat causes a contamination and transference. After a hot non-Kosher item is in a container, it will contaminate whatever follows unless a proper Kosherization process, a form of sterilization with scalding water and other requirements, is used.
TABLE I
Some recognized Kosher Supervisory Agencies in North America.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Location</th>
<th>Rabbi/Leadership</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Union of Orthodox Jewish Congregation</td>
<td>New York, New York</td>
<td>Beth Din Hameyuchud L’inyonei Kashruth of the Central Rabbinical Congress (Hisachdus Horabonim) Brooklyn, New York</td>
</tr>
<tr>
<td>The Organized Kashruth Laboratories</td>
<td>Brooklyn, New York</td>
<td>Rav Ahmuel Dovid Krausz (Udvarer Rav) Brooklyn, New York</td>
</tr>
<tr>
<td>&quot;KOF-K&quot; Kosher Supervision</td>
<td>Teaneck, New Jersey</td>
<td>Rabbi Aaron Teitelbaum (Nirbater Rav) Brooklyn, New York</td>
</tr>
<tr>
<td>&quot;Star-K&quot; Kosher Supervision</td>
<td>Baltimore, Maryland</td>
<td>Rabbi Nuchem Efraim Teitelbaum (Volover Rav) Brooklyn, New York</td>
</tr>
<tr>
<td>Igud Hakashrus of Los Angeles (Kehilla Kosher)</td>
<td>Los Angeles, California</td>
<td>K’hal Adath Jeshurun (Breuer’s) New York</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rabbinical Council of California</td>
</tr>
<tr>
<td></td>
<td></td>
<td>San Francisco, California</td>
</tr>
<tr>
<td>The Vaad Hakashrus of Denver</td>
<td>Denver, Colorado</td>
<td>Rabbinical Council of California</td>
</tr>
<tr>
<td></td>
<td></td>
<td>San Francisco, California</td>
</tr>
<tr>
<td>Chicago Rabbinical Council</td>
<td>Chicago, Illinois</td>
<td>Vaad Hakashrus of Buffalo, Inc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Canton, Ohio</td>
</tr>
<tr>
<td>Council of Orthodox Rabbis of Greater Detroit</td>
<td>Southfield, Michigan</td>
<td>Quality Kosher Supervision</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Canton, Ohio</td>
</tr>
<tr>
<td>Vaad Heir of Saint Louis</td>
<td>St. Louis, Missouri</td>
<td>Kashrus Council of Toronto</td>
</tr>
<tr>
<td></td>
<td></td>
<td>North York, Ontario, Canada</td>
</tr>
<tr>
<td>Bais Din of Crown Heights</td>
<td>Brooklyn, New York</td>
<td>Montreal Vaad Hair</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Montreal, Quebec, Canada</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Orthodox Rabbinical Council of British Columbia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Richmond, British Columbia</td>
</tr>
</tbody>
</table>
Water Treatment at the Brewery

Is brewing water adjusted with gypsum or other salts, or acidified? Are the boiler chemicals used Kosher-approved? Pasteurizer and cooling water tower chemicals should also be Kosher-approved. Steam itself cannot necessarily be considered as Kosher. It depends on the steam paths and what it contacts as it moves from one point to the next. A path which takes steam to contact a non-Kosher liquid stream, and in which the hot condensate later contacts a Kosher stream would be a concern. A problem arises when steam is part of a return system. If it passes through, or around (in a steam jacket) non-Kosher products in a different location in the brewery, the steam is considered contaminated and unuitable for the Kosher product.

Some care must be taken to understand the support systems in place also. For example, does the brewery utilize direct steaming of the mash for raising temperatures? If so, a closer review of treatment chemicals in the boiler is mandated. In a keg steaming example, incorporation into the plant of a secondary steam generator to produce steam for sterilizing kegs and to isolate the non-Kosher steam supply for the contact surface may be acceptable, if no chemicals are added to the local steam generator.

CIP Chemicals

What are the CIP chemicals being used? These cleaning materials and chemistries are in a direct contact with the same surfaces that touch the product, and if they are non-Kosher, another path of ‘contamination’ is created. The role of CIP detergents and sanitizers places these chemicals in unusual scrutiny. The last material that touches a vessel, a line, a filter, a filler bowl or a racker may be the sanitizer solution. Smaller formulators and vendors of these chemistries may not choose to undergo Kosher supervision, and the complexity of determination for Kosher use is compounded when such companies cite proprietary concerns, but a confidential dialogue between Rabbi and vendor can often facilitate Kosher use determination at the brewery in question.

Flavorings

The role of the brewery in North America has evolved. Besides beer, many facilities also produce other beverages. The same equipment could be used and (in the Kosher sense) contaminated by making such products as soft drinks, teas, juice-based drinks, new age/nutraceuticals etc., all of which require Kosher certification. These are items that have many ingredients that can be problematic.

Any time a brewery diversifies to make soft drinks, flavored alcoholic beverages, isotonic drinks, the supervisory Rabbi must study the ingredients being used. It is beyond the scope of this paper to expand into the philosophical basis of why some materials (such as those comprised of grape skin extracts or grape juices) are extremely problematic in Kosher certification. With the correct commitment, engineered isolation of Kosher and non-Kosher streams can be acceptable. Along with engineering isolation, a requirement of rigid management of production protocols is often required.

Are the different types of beer colorants Kosher? Are the flavors that are being added to these new flavored beers such as lemon, raspberry, etc. approved for Kosher use? There are many flavorings which are not Kosher approved because non-Kosher glycerine, xantham gum, butyrate (a dairy implication), etc. are ingredients. Fruit-based concentrates using grape extracts are challenging (where the same laws as those used for Kosher wine apply).

It may be useful to remember that as a customer, the brewery can specify Kosher-certified for all flavorings to avoid the technical problems that management of non-Kosher production and Kosher production require.

Additives/Treatment Agents

Breweries which may use gelatin will face a challenge, which may include change of protocol and the process known as technical ‘Kosherization’. Are there antioxidants, anti-foaming agents, chillproofing additives used?

After fermentation, beer is extremely turbid due to its yeast load and haze which forms due to cold temperature, pH drop, and reduced solubility in alcohol. Fining agents are sometimes added to help complete sedimentation. Among the possible agents used, we find isinglass, a very pure gelatin prepared from the bladders of sturgeons and some other fishes. Sturgeon is not a Kosher fish, so all of its derivatives are questionable as appropriate for Kosher use.

Irish Moss is a common kettle coagulant used to maximize the hot break. It is the dried and bleached plants of two red algae (Chondrus crispus and Gigartina mamillosa), and seaweed. Plants, like seaweed etc., can become infested with insects, which makes them unacceptable for Kosher use. So a Kosher certification of a simple kettle coagulant such as Irish Moss requires that an authorized professional evaluated that the hygiene on the harvesting boats and throughout the production process to finished kettle coagulant is acceptable.

Yeast, Fermentation and Post-fermentation Priming

Once yeast has been selected for future use, a pure culture is often maintained in a laboratory yeast bank. One of the possible methods used for the purpose of maintenance is by inoculation in a 10% lactose solution. Lactose is a disaccharide sugar present in milk. In this application and a larger-scale one, we create a unique question: Is the beer now to be considered a dairy product? Use of a dairy ingredient means that the product is specifically identified as a ‘dairy’ product. In accordance with basic laws of keeping Kosher this would mean:

a.) One could not drink the beer in question with a meat-inclusive meal, or according to prevailing custom, for six hours thereafter, since Kosher observance mandate very strict separation between ingestion of meat and milk.

b.) For those who are stringent and only use “Cholov Yisroel” milk and/or milk by-products supervised from the beginning of the milking at the farm to the end (packaging of the product by Kosher supervisors), this beer could never be used.

An interesting, related point is that sometimes, craft brewers use lactose as a ‘priming’ which will not fully ferment by the yeast one might find in a cask-conditioned or bottle-conditioned ale. A sugar such as dextrose lends itself to complete utilization in secondary fermentation in the package, but lactose allows some carbonation (fermentation byproduct) to develop, while it...
Breweries can buy used casks inexpensively, fill them with beer, and then age it in casks previously used for port or wine, especially known as a ‘barley wine’, typically 8-11% alcohol by volume. It is a strong flavored ale, which can get some reputed raisin, or date-notes in the palate.

A substitute for lactose used at priming is one of several grades of high-maltose corn syrup, which contains both fermentable and non-fermentable fractions, and is specified for different grades of fermentability.

Although really used as a brewhouse addition and not in fermentation, there are breweries which use lactic acid. Use of lactic acid produced by fermentation and certified as Kosher-Parve (Parve, or Pareve, means “neutral”) allows the resulting beer to be enjoyed as a Parve product.

Antifoams

Antifoam agents are used in other countries more often than in North America, but because breweries have cited benefits from these, their use may be increasing in the Americas. Antifoams applied at fermentation allow fermenters to be utilized more completely, consequently less headspace ’freeboard’ is required. The antifoams are typically removed by the filtration process, so the resulting bright beer is often found to have greater foam/head retention because the foam-promoting proteins normally lost in the collapsed yeasty top layer of the tank are kept in solution in the fermenter. Antifoam use yields reduced foaming, so the quality of carbon dioxide sent to the collection system is higher than carbon dioxide with high foam inclusion. Antifoams also allow breweries to increase their gravities and fermentation temperatures by suppressing increased foam problems.

There is a difference between food-grade antifoams and Kosher-approved antifoams. North America vendors do offer Kosher-approved antifoams based on mineral oil or polysiloxane. Lard-based antifoams may be deemed as food-grade, but are not Kosher.

Aging in Wooden Wine Casks/Barrels

An increasing trend in small-scale (commercial) craft-brewing is the finishing of beer (its aging) in wooden casks which formerly held either Bourbon, Port or a wine (be it regular Californian or Sherry, etc.). Three years ago, there were few breweries which did this; in 2000, there are 29 of them. Breweries can buy used casks inexpensively, fill them with beer and package it at a later date. A particular ‘style’ of beer which is getting the lion’s share of these casks is the strong ale category known as a ‘barley wine’, typically 8-11% alcohol by volume. It is a strong flavored ale, which can get some reputed benefit by taking on some flavors from the cask, and after bottling, the aging process continues (in this style of beer, oxidation with time brings on other flavors, sometimes noted and described as raisin, or date-notes in the palate).

This creates one of the most serious problems to date in this field. The aging in casks previously used for port or wine, especially when there is a synergy arising from the beer taking flavor from the cask, can create a non-Kosher status for that beer. This issue was raised many decades ago in the Jewish Responsa regarding the differences between blended and non-blended Scotch Whiskey.

Hygiene in the Kosher-certified brewery is of paramount concern. The level of cleanliness must be very high: to a world-class standard. Plant design and modification must preclude mold-growth-promoting factors, insect-ingress points, spent grain and diatomaceous earth harborage points for insects and their larvae. Active rodent abatement-intercept programs, regular silo-to-mill-to-gristcase fumigation schedules must be in place.

In addition to the above, we must learn if there are shared lines with other questionable products. What else might go through the same pasteurizer used for the beer? What other products are being bottled?

The real world is that there are going to be breweries which will make non-Kosher approved beverages as well as Kosher-approved beverages. Soup factories have been doing this for years. Engineering modification of an existing plant can provide necessary isolation. An example is found in Figure 2a, which offers a concern because sufficient mechanical protection from reverse-flow of a higher pressure non-Kosher liquid into a Kosher-routing is not in place. Figure 2b illustrates the sanitary stainless steel non-return valve inserted into the Kosher-specific route which serves as mechanical protection to prevent backflow of non-Kosher liquid into the Kosher-dedicated route if a failure occurs at the double-block-and-bleed hardware. This example illustrates that Kosher requirements can sometimes exceed plant engineering design.

In Figure 2b, it is seen that the Kosher and non-Kosher streams meet at a common manifold. These could be two routes to a filler bowl, with a common point before the filler bowl infeed line. Management requirements to separate Kosher and non-Kosher in common systems will be addressed below.

A physical process called ‘Kosherization’ was mentioned earlier. Kosherization includes a special cleaning requirement, which is based on both ritual and traditional Kosher protocols. If one seeks an engineering-based explanation of the significance of Kosherization protocols and adherence to them, it requires an understanding that Kosher laws are over 3500 years old, and might be difficult to place in a contemporary technical production perspective.

Plant Engineering and Hygiene Issues

It is possible for a common filler bowl to package both Kosher and non-Kosher streams, but in doing this, the brewery must accept a stringent management protocol and implement a discipline of scheduling and documentation.

Cleaning with caustic solution of the delivery lines, filler bowl, and filler valves and tubes is required prior to Kosher-approved beer packaging. If non-Kosher beverages have been filled on the same line prior to Kosher production, a hold time period of 24 hours, when the line is completely idle, is required after the CIP. In terms of plant scheduling, it is acceptable to bottle, can or rack non-Kosher product on Friday or Saturday, go through an accepted CIP, and then start Kosher packaging on Monday (allowing for a 24 hour minimum hold time, after the Kosherization).

Integration of Kosher production in an environment that also has non-Kosher production reduces the packaging line flexibility however. For example, after Kosher production, if a
switch to non-Kosher is made, then no change back to Kosher packaging can be scheduled unless approved CIP and 24-hour idle time is planned for the line prior to the change back to Kosher packaging.

CLOSING NOTES

In a multi-brewery organization, where the same beer is made at different sites, there are implications if only one or two of the breweries undertake Kosher certification. The consequence is that the same beer in a given brand might be Kosher-approved in one plant, but not in another. While not required on packaging, the Kosher-certifying organization can provide its own unique symbol, called a Hechsher, which can be incorporated in label graphics or outer carton materials, etc. The recognized symbols identify the beverage to the concerned customer as Kosher approved (Table I lists some common symbols in use).

The laws of Kashrus (keeping Kosher) refer not only to the fact that the ingredients are Kosher, but also that all production equipment involved are acceptable.

Any food-related vessels or utensils (pots, pans, mixing bowls, holding tanks, paddles, knives etc.) that have become ‘contaminated’ by contact with non-Kosher substances, either through any process using heat, or by prolonged contact with strongly acidic or pungent items (running the gamut from lemon juice to alcoholic beverages), may not be used until they have gone through a process to ‘Kosherize’ them.

In the case of metal vessels or utensils, this usually entails that the utensil be very thoroughly cleaned so that there is no residue whatsoever on it, inside or out. It must then stay out of use for a period of 24 hours. If the main use of the vessel is for bringing a liquid to a boil, the vessel must be boiled out with the water at 212 degrees F and then made so that the scalding water overflows the sides of the vessel. A utensil can be put into a larger vessel full of boiling water, and it must be completely immersed. It is then doused in cold water. Only then is it acceptable for use in Kosher product.

In contrast, if an item is used for baking, grilling, frying, etc. where boiling liquid is not the main heat element, then what is needed is ‘glowing’, a condition of the item being made red hot, or approximately 850-900 degrees F.

These rules apply only when the vessel is in a reasonable condition. Cracks and crevices in the vessel preclude the Kosherization process. And of course, vessels that would be damaged by this severe processing may not be Kosherized...but must be replaced.

CONCLUSION

Legend has it that Noah was fond of beer, and his son Shem brewed beer from corn, honey and dates. The Talmud, in Tractate Pesachim, considers which beverages are of the same status of wine in regards to sanctification. Beers are described as being suitable for these religious purposes, and at the time these were brews based on dates, but possibly based on barley.

Beer is often enjoyed by the Kosher-observant community at the table at Simchas (religious joyous occasions). It is found frequently at Shalom Zochors, celebrated the first Friday night after childbirth (possibly because of old symbolism and relations between beer and lactation). As in other communities, beer is appreciated for its healthful properties, and for its special place in social and private enjoyment.

ACKNOWLEDGEMENT

The author wishes to thank Mr. Jaime Jurado of the MBAA Editorial Committee for collaboration in this paper. The processes of brewing are fascinating, and the author has come to understand Talmudic references, nearly 2000 years old, to beer in the course of providing Kosher supervision at the Spoetzl (Shiner, TX USA) and at the former Stroh Winston-Salem (NC, USA) breweries for the past six years.