

*The
Connecticut
Agricultural
Experiment
Station,
New Haven*

Analysis of
Wine and Beer
Coolers

BY LESTER HANKIN

A cooperative study by The Connecticut
Agricultural Experiment Station and
the Excise Tax Division of the
Connecticut Department of Revenue Services

Bulletin 840

October 1986



The Connecticut Agricultural Experiment Station,
founded in 1875, is the first experiment station in America. It is chartered
by the General Assembly to make scientific inquiries and experiments
regarding plants and their pests, insects, soil and water, and to perform analyses for State
agencies. The laboratories of the Station are in New Haven and Windsor; its Lockwood
Farm is in Hamden. Single copies of bulletins are available free upon request to Pub-
lications; Box 1106; New Haven, Connecticut 06504. ISSN 0097-0905

Analysis of Wine and Beer Coolers

BY LESTER HANKIN

Wine coolers are a new and popular beverage. Since their origin in 1981, their sales have grown to nearly \$1 billion per year (2,3,6). Their appeal is likely their flavors derived from the blend of wine with fruit juice, carbonation, and their perceived lower caloric and alcohol content (6). In this Bulletin alcohol means ethyl alcohol.

Wine coolers, according to the Department of the Treasury (5), contain a base of standard wine to which is added concentrated or unconcentrated juice, flavoring, water, citric acid (for tartness), sugar, and carbon dioxide. The alcohol content of the wine is reduced to less than seven percent alcohol by volume and the total volume of the product is increased by the addition of water and other components. Although the alcohol content of standard wine is usually high enough to act as a preservative, the alcohol content below seven percent in the cooler requires added preservatives to stabilize the product and prevent secondary fermentation after bottling. Winemakers may add sulfiting agents, sodium benzoate, or potassium sorbate, or a combination of these.

Another type of cooler is beer coolers (8). Currently no specific standards of identity for beer coolers exist. Beer coolers are similar to wine coolers except that the base beverage is beer rather than wine. Flavoring is added to the beer before processing of the cooler is completed. Spokesmen for the beer cooler industry state that, unlike wine coolers, beer coolers are pasteurized (8). Also unlike wine coolers, statements on the label about the alcohol content of beer coolers are prohibited (4).

A third type of beverage is wine from which the alcohol has been removed. Currently no regulations pertain to such products. They are usually advertised as "wine without alcohol."

The Excise Tax Division of the Connecticut Department of Revenue Services regularly submits samples of coolers and other alcoholic beverages to this Station for determination of alcohol content. The tax is levied on the product according to the determination. According to Connecticut Statutes (1), wine contains not less than 3.2 percent of alcohol and is taxed at 30 cents per gallon. Beer, on the other hand, must contain more than one-half of one percent of alcohol and is taxed at 10 cents per gallon. Products containing less than one-half of one percent alcohol are not taxed. Wine coolers are taxed at 30 cents per gallon and beer coolers at 10 cents per gallon.

Wine and beer coolers, of course, contain constituents other than alcohol. In addition to alcohol they may contain sugars such as fructose, glucose, and sucrose. Sugars and alcohol contribute calories, a subject of concern to many. Thus, we tested wine and beer coolers not only for their alcohol content but also for sugars to determine calories. Table wine, for example, with about 12 percent alcohol, contains about seven percent sugars and averages 14 calories per ounce. Beer contains about four percent sugar, averages 4.5 percent alcohol, and contains about 13 calories per ounce. Hard liquor, on the other hand, ranges from 65 to 83 calories per ounce with increasing proof (9).

In this Bulletin we report analyses of the alcohol content of wine and beer coolers, their sugar content, and their calories.

METHODS

Samples were supplied by manufacturers to the Excise Tax Division of the Connecticut Department of Revenue Services for taxation purposes. Sixty-seven were wine coolers, six were beer coolers, and three were wine without alcohol.

Alcohol was determined by methods described by the Association of Official Analytical Chemists (7) or by gas chromatography (GC). For GC analysis samples were filtered if necessary, diluted, and injected into the gas chromatograph. A Hewlett-Packard model 5890 gas chromatograph with a flame ionization detector and a glass column (6' x 1/4" x 4 mm id) was used. The column was packed with 1% carbowax 20M on chromosorb WHP (100-200 mesh) and kept at 80C. Propanol was used as the internal standard.

Sugars (fructose, glucose, sucrose) were determined by High Performance Liquid Chromatography (HPLC). Samples were filtered if necessary, diluted, and injected directly into the HPLC column. The HPLC unit consisted of a ConstaMetric IIG pump (Milton Roy Co.) equipped with a Rheodyne 7105 injector fitted with a 100 microliter loop. Detection was with a RefractoMonitor with a differential refractive index detector (Milton Roy Co.).

Calories were calculated as follows: (4 times grams of sugar) plus (6.93 times grams of ethyl alcohol).

RESULTS

The names of the 76 samples of wine and beer coolers, and wine without alcohol are listed in Table 1. The percentages of alcohol guaranteed and found are then shown. The percentage of the three sugars--fructose, glucose, and sucrose--are also tabulated. Finally, the calories per ounce are shown.

The average percent of alcohol in the wine coolers was 5.7 percent with a range from 2.9 to 7.0 percent (Table 2). The average percent of alcohol in the beer coolers was 4.8 percent with a range from 3.7 to 5.2 percent. The average percent of alcohol in the wine without alcohol was 0.05 percent (Table 1). The amount of alcohol found in the wine coolers averaged

104 percent of guarantee, but ranged from 81 to 123 percent.

All products contained fructose and glucose, but only six contained sucrose (Table 1), probably added as a separate ingredient. The fructose and glucose were probably from the juices added as flavoring. Generally the wine coolers contained about eight percent sugars, the beer coolers seven percent, and the wine without alcohol, four percent (Table 2).

Calories in coolers are derived from the sugars and alcohol. The wine and beer coolers averaged 19 and 17 calories per ounce, respectively (Table 2). The wines without alcohol had fewer calories, averaging four per ounce, since the alcohol was removed.

SUMMARY

Sixty-seven wine coolers, six beer coolers, and three wines without alcohol were tested for their content of alcohol, sugars, and calories. The alcohol content of wine coolers averaged 5.7 percent and beer coolers 4.8 percent. All wine without alcohol had less than a half percent alcohol. The average alcohol content of the wine and beer coolers was 104 percent of guarantee but ranged from 81 to 123 percent. The sugar content of the wine coolers averaged about eight percent and of beer coolers seven percent. The wine and beer coolers contained about 18 calories per ounce, and the wine without alcohol about 4 per ounce.

ACKNOWLEDGMENTS

Analyses were performed by Vipin Agarwal, John Hayes, Lucia McLean, and Sherman Squires. Pasquale Oronzo and Robert Brown of the Excise Tax Division obtained the samples.

REFERENCES

1. General Statutes of the State of Connecticut, revised to January 1, 1985. Chapter 220, Alcoholic Beverages Tax; section 12-435, Tax on sale of alcoholic beverages.
2. Goldberg, H.G. Seasons drink: coolers. New York Times, July 2, 1986.

3. Hessekiel, D. Thirsty consumers guzzling wine coolers. New Haven Register, March 30, 1986.
4. Industry Circular 85-13, Labeling and advertising malt beverages with less than one-half of one percent alcohol by volume as "non-alcoholic/alcohol free" and restrictions for use of the class designation "beer." Department of the Treasury, Bureau of Alcohol, Tobacco and Firearms.
5. Industry Memorandum NA-84-1, Production Labeling, Advertising and Importation of "Wine Coolers." Department of the Treasury, Bureau of Alcohol, Tobacco and Firearms.
6. McNulty, T.J. Alcohol. New Haven Journal-Courier, July 14, 1986.
7. Official Methods of Analysis. 1984, 14th edition. S. Williams (ed.). Association of Official Analytical Chemists, Arlington, VA.
8. Spaulding, M. 1986. Beer cooler marketing activity building to a head. Prepared Foods 155:90-91.
9. Watts, B.K. and A.L. Merrill. 1963. Composition of Foods. U.S.D.A. Agricultural Handbook No. 8. U.S. Government Printing Office, Washington, DC.

TABLE 1--ANALYSIS OF WINE AND BEER COOLERS AND WINE WITHOUT ALCOHOL

Brand/Bottler or Vendor	Alcohol,		% Fruc-	% Glu-	% Su-	Calories
	% Guar.	% Found	tose	cose	crose	/oz.
WINE COOLERS						
Bartles and Jaymes WC						
E & J Gallo	5	5.2	4.6	1.2	0	15
California Cooler-Tropical						
California Cooler	6	6.0	4.4	3.0	0	19
Calvin Cooler-Chablis						
Calvin Cooler Wines	7	6.5	3.1	3.5	0	19
Calvin Cooler-Chablis						
Calvin Cooler Wines	6.9	5.8	3.3	2.9	0	17
Calvin Cooler-Citrus						
Calvin Cooler Wines	7	5.7	4.2	4.2	0	20
Calvin Cooler-Pina Pineapple						
Calvin Cooler Wines	6	5.9	3.3	3.1	0	20
Cape Cod Cranberry Cooler						
Cape Cod Wine	3.5	3.6	2.4	2.3	0	13
Citronet WC						
Heublein Wines	4	4.3	2.6	2.3	0	13
Coastal Valley Cooler						
Glunz Cellars	none	5.4	3.5	3.9	0	18
Creative Cooler-Wine Tea						
Creative Cooler	6	6.5	3.6	3.9	0	20
Creative WC-Margarita						
Creative Cooler	6	5.7	3.3	4.0	0	18
Dewey Stevens Premium Light WC						
Creative Cooler	4	4.5	2.8	0.9	0	14
Diamond Citrus Twist Cooler						
Diamond Island Cellars	6	6.0	3.5	4.5	0	20

TABLE 1--Continued

Brand/Bottler or Vendor	Alcohol,		% Fruc-	% Glu-	% Su-	Calories
	% Guar.	% Found	tose	cose	crose	/oz.
WINE COOLERS (CONTINUED)						
Diamond Orange Squeeze Cooler						
Diamond Island Cellars	6	5.3	3.2	3.8	0	17
Diamond Passion Punch Cooler						
Diamond Island Cellars	6	5.8	3.6	4.6	0	19
Diamond Wild Berry Cooler						
Diamond Island Cellars	6	5.8	3.5	4.3	0	19
Florida WC-Apple						
Florida Wine	6	6.1	5.3	4.0	0	21
Florida WC-Cool White						
Florida Wine	6	6.2	5.0	3.5	0	20
Florida WC-Orange						
Florida Wine	6	6.5	3.9	3.2	0	19
Florida WC-Orange						
Florida Wine	6	5.3	4.4	3.0	0	18
Florida WC-Peach						
Florida Wine	6	6.4	4.9	3.6	0	23
Florida WC-Strawberry						
Florida Wine	6	7.0	3.4	2.5	0	19
Florida WC-Strawberry						
Florida Wine	6	5.9	3.5	2.6	0	17
Franzia WC-White Zinfandel						
Franzia Winery	5	5.3	3.0	3.3	0	16
HI 5 Cooler						
Tom Pree Wine	5	5.1	3.9	3.0	0	17
Manischewitz WC-Berry						
Manischewitz Wine	5	5.3	4.1	4.7	0	20
Manischewitz WC-Berry						
Manischewitz Wine	5	5.3	4.1	5.0	0	20
Manischewitz WC-Cream White						
Manischewitz Wine	5	5.3	4.6	4.5	0.6	20
Manischewitz WC-Cream White						
Manischewitz Wine	5	5.1	3.8	4.8	0	19
Manischewitz WC-Pina Coconetta						
Manischewitz Wine	5	5.4	4.3	5.2	0	20
Manischewitz WC-Pina Coconetta						
Manischewitz Wine	5	4.9	4.3	4.5	0	20
Manischewitz WC-Lemonade						
Manischewitz Wine	5	5.5	3.7	3.6	1.4	20
Manischewitz WC-Lemonade						
Manischewitz Wine	5	5.5	4.6	4.5	1.4	22
Peach-A-Roo WC						
Central Vineyards	6	5.9	6.6	7.3	0	26

TABLE 1--Continued

Brand/Bottler or Vendor	Alcohol,		% Fruc-	% Glu-	% Su-	Calories
	% Guar.	% Found	tose	cose	crose	/oz.
WINE COOLERS (CONTINUED)						
Quenchette French Cooler-Raspberry						
Les Grands Chais France	3.5	3.5	1.6	1.3	7.6	18
Quinn's Cooler-White Wine and Citrus						
R.R. Quinn and Co.	6	6.2	2.7	3.5	0	18
Royal Dutch Cooler-Banana Cream						
Marquis B.V., Holland	6	6.6	0.8	1.0	10.9	29
Royal Dutch Cooler-Strawberry Cream						
Marquis B.V., Holland	6	6.4	1.0	1.0	10.3	25
Seagram's WC-Citrus & White Wine						
Joseph E. Seagram & Sons	4	4.2	2.7	3.0	0	14
Seagram's WC-Citrus & White Wine						
Joseph E. Seagram & Sons	4	4.1	3.3	3.9	0	15
Seagram's WC-Golden						
Joseph E. Seagram & Sons	5.1	5.2	3.1	4.2	0	17
Seagram's WC-Peach Flavored						
Joseph E. Seagram & Sons	5.1	5.7	3.3	3.9	0	18
Seagram's WC-Peach Flavored						
Joseph E. Seagram & Sons	5.1	4.3	3.5	4.4	0	17
Seagram's WC-Premium						
Joseph E. Seagram & Sons	5.1	5.4	3.4	4.2	0	18
Steidl's WC-Red						
Steidl Wine	5	5.7	3.4	3.8	0	18
Steidl's WC-White						
Steidl Wine	5	5.8	3.5	3.8	0	18
Sun Country Tropical Cooler						
Sun Country Cellars	6	5.5	3.5	4.1	0	18
The Grape Vine WC-Rose						
Monarch Wine	4	4.9	3.8	4.7	0	18
The Grape Vine WC-White						
Upper Bay Wine Cellars	6	5.6	3.8	4.0	0	19
20/20 WC-Citrus						
20/20 Wine	5	5.3	4.5	5.0	0	22
20/20 WC-Lambrusco						
20/20 Wine	6	6.9	3.4	3.7	0	20
20/20 WC-Orange						
20/20 Wine	5	6.0	2.4	3.8	0	20
20/20 WC-Orange						
20/20 Wine	5	5.4	4.4	4.8	0	20
20/20 WC-Orange						
20/20 Wine	5	5.1	3.0	4.2	0	17
20/20 WC-Peach						
20/20 Wine	5	5.6	3.5	3.9	0	18

TABLE 1--Continued

Brand/Bottler or Vendor	Alcohol,		% Fruc-	% Glu-	% Su-	Calories
	% Guar.	% Found	tose	cose	crose	/oz.
WINE COOLERS (CONTINUED)						
20/20 WC-Peach						
20/20 Wine	5	4.7	3.4	4.3	0	17
20/20 WC-Raspberry						
20/20 Wine	5	5.6	4.6	4.1	0	20
20/20 WC-Raspberry						
20/20 Wine	5	6.2	2.7	3.2	0	17
20/20 WC-Raspberry						
20/20 Wine	5	5.8	3.9	4.5	0	19
20/20 WC-Raspberry						
20/20 Wine	5	5.7	4.0	3.9	0	23
20/20 WC-Strawberry						
20/20 Wine	5	5.9	2.7	3.3	0	17
20/20 WC-Tropical						
20/20 Wine	5	5.5	5.5	6.3	0	23
20/20 WC-Tropical						
20/20 Wine	5	5.9	2.9	3.4	0	17
Widmer Niagara WC						
Widmer's Wine Cellars	3	2.9	3.7	3.2	0	13
Wild Irish Rose WC-Citrus Rose						
Richards Wine	6.5	5.9	4.1	4.0	0	19
Wild Irish Rose WC-Orange Rose						
Richards Wine	6.5	6.0	4.3	4.4	0	20
Wild Irish Rose WC-Tropical Rose						
Richards Wine	6.5	6.0	4.1	4.5	0	20
BEER COOLERS						
LaCroix Sparkling Cooler-Citrus						
G. Heileman Brewing	none	5.0	4.1	3.0	0	17
LaCroix Sparkling Cooler-Citrus						
G. Heileman Brewing	none	4.1	3.7	2.8	0	17
LaCroix Sparkling Cooler-Strawberry						
G. Heileman Brewing	none	4.1	4.1	4.4	0	15
LaCroix Sparkling Cooler-Strawberry						
G. Heileman Brewing	none	5.0	3.9	2.9	0	19
White Mountain Cooler-Contains No Wine						
Colorado Cooler	none	5.1	3.8	2.6	0	16
White Mountain Cooler-Orange						
Colorado Cooler	none	5.2	3.6	2.6	0	16
WINE WITHOUT ALCOHOL						
St. Anna						
Caves St. Jacques	<0.5	0.06	1.3	1.1	0	3
St. Anna						
Caves St. Jacques	<0.5	0.04	2.3	2.0	0	5
Willi Sauer White						
Caves St. Jacques	<0.5	0.04	2.2	2.2	0	5