



GLUTEN FREE WATCHDOG

Gluten Content of Distilled Alcohol: Summary Report

Gluten Free Watchdog recently had 14 bottles of alcohol tested for gluten at the lab Bia Diagnostics. All products were tested with the sandwich R5 ELISA that detects intact gluten protein and the competitive R5 ELISA that detects gluten protein that has been broken down into smaller gluten peptides. Most alcohols were also tested with an assay that detects *any* peptide fragment from any source, including non-gluten peptides. This testing wasn't always successful on these samples.

What follows is some background information on the gluten-free labeling of alcohol followed by a summary of test results, and then detailed information on each of the specific alcohols tested. At the end of the report there are some musings based on what was learned during this testing.

My apologies in advance for the detailed nature of this report. Please let me know if you have any questions. This report is available only to subscribers to Gluten Free Watchdog.

What agency regulates alcohol?

- Alcoholic beverages in the US are regulated by either the Tobacco Tax and Trade Bureau (TTB) or the Food and Drug Administration (FDA)
- The TTB regulates the vast majority of alcohol, including:
 - Distilled spirits
 - Wines containing 7% or more alcohol by volume
 - Fermented ciders containing 7% or more alcohol by volume
 - Malt beverages (including hard lemonade) that are made using BOTH malted barley and hops
- The FDA regulates:
 - Wines and fermented ciders containing less than 7% alcohol by volume
 - Malt beverages that are made:
 - Without either malted barley OR hops
 - Without malted barley AND hops
- The TTB allows alcoholic beverages to be labeled gluten-free **ONLY** if they are made **without** any ingredients containing gluten

- The TTB allows alcoholic beverages fermented from barley or distilled from wheat, barley, or rye to be labeled “processed to remove gluten” as long as one of the following statements is included on the label:
 - “Product fermented from grains containing gluten and [processed or treated or crafted] to remove gluten. The gluten content of this product cannot be verified, and this product may contain gluten.”
 - “This product was distilled from grains containing gluten, which removed some or all of the gluten. The gluten content of this product cannot be verified, and this product may contain gluten.”
- The FDA allows alcoholic beverages under their jurisdiction that comply with the agency’s gluten-free labeling rule to be labeled gluten-free.

Main take-away points for the purposes of this post:

1. The TTB regulates distilled spirits.
2. Spirits distilled from grains containing gluten may NOT be labeled gluten-free.

The FDA and the TTB treat distilled alcohol differently

- While the FDA does not regulate distilled alcohol, it may be an ingredient in an FDA-regulated food.
- The FDA allows distilled alcohol and distilled vinegar as ingredients in foods labeled gluten-free regardless of the starting material (e.g., vanilla extract containing distilled alcohol, catsup containing distilled vinegar).
- **Why?**
 - The FDA views distilled alcohol and distilled vinegar made using distilled alcohol to be ingredients “processed to remove gluten.”
 - In a Q&A for the FDA’s proposed rule for gluten-free labeling of fermented or hydrolyzed foods, FDA writes:
 - “Can distilled foods made from ingredients derived from gluten-containing grains be labeled as “gluten-free”?”
 - Yes. Since proper distillation is capable of removing all proteins, including gluten, it would be considered as a “process to remove gluten.” Thus, an ingredient that is derived from a gluten containing grain that has been properly distilled would be allowed to be used in a food bearing the “gluten-free” claim since the ingredient would meet the requirements of 21 CFR 101.91.”

Main take-away points for the purpose of this post:

1. Distilled alcohol made from gluten-containing grain is allowed in foods labeled gluten-free.
2. A proper distillation removes all proteins including gluten.

How is the FDA proposing manufacturers demonstrate “proper distillation” and the removal of gluten?

- From the FDA
<https://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/Allergens/ucm472735.htm>
- **15. What are distilled foods?**
- Distilled foods are formed as a result of a purification process that involves heating a liquid such that volatile components with lower boiling points are vaporized and recovered separately from nonvolatile components with higher boiling points. The remaining nonvolatile compounds, whose boiling points were too high to undergo vaporization, are removed from the distilled food. Examples of distilled foods include some vinegars and distilled water.
- **16. Why are distilled foods and ingredients being considered in this proposed rule?**
- The proposed rule would clarify that, in most cases, it is unlikely that gluten will be present in a distilled food because distillation is a purification process that separates volatile components like alcohol and flavors from nonvolatile materials like proteins and sugars. However, this would depend on the adequacy of the distillation process. Scientifically valid methods to measure the protein content should find no detectable protein present and thus no gluten in distilled ingredients or distilled products.
- **17. What requirements does FDA propose for distilled foods labeled “gluten-free”?**
- We propose that a manufacturer use a scientifically valid method to measure protein content and should find no detectable protein present in the distilled food or ingredient. No detectable level of protein would indicate an absence of gluten. When choosing a method to verify the absence of protein, sensitivity of the method is one of the factors to consider. The method’s sensitivity should have a limit of detection as close to zero as possible.
- **18. Can distilled foods made from ingredients derived from gluten-containing grains be labeled as “gluten-free”?**
- Yes. Since proper distillation is capable of removing all proteins, including gluten, it would be considered as a “process to remove gluten.” Thus, an ingredient that is derived from a gluten containing grain that has been properly distilled would be allowed to be used in a food bearing the “gluten-free” claim since the ingredient would meet the requirements of 21 CFR 101.91.

Main take-away point for the purpose of this post:

1. Manufacturer should use a scientifically valid method to measure protein content and should find no detectable protein present in the distilled food or distilled ingredient.

Summary of test results

- All alcohols tested below the limit of quantification for intact gluten of 5 parts per million using the sandwich R5 ELISA.
- All alcohols tested below the limit of detection for intact gluten of 1 part per million using the sandwich R5 ELISA.
- All alcohols tested below the limit of quantification for gluten peptides of 10 parts per million using the competitive R5 ELISA.
- All but two alcohols tested below the limit of detection for gluten peptides of 4.6 parts per million using the competitive R5 ELISA; two alcohols tested at the limit of detection.
- There were difficulties testing many of the alcohols with the Pierce Quantitative Colorimetric Peptide Assay. Vodka and gin were tested successfully. All three products tested below the limit of detection for peptides (not limited to gluten) of 25 parts per million.

Cordials & Liqueurs

DeKuyper Triple Sec (orange liqueur)

<http://www.dekuyperusa.com/flavor/dekuyper-triple-sec>

What is Triple Sec?

- TTB Class: liqueur/cordial
 - TTB Type: Triple Sec
 - General Type Definition: Orange flavored liqueur/cordial

TTB definitions

- Liqueur/cordial: “Flavored spirits product containing not less than 2½% by weight sugar, dextrose, levulose or a combination thereof made by mixing or redistilling any class or type of spirits with or over fruits, flowers, plants or pure juices therefrom or other natural flavoring materials or with extracts derived from infusions, percolation or maceration of such materials”

Are harmless coloring/flavoring/blending materials allowed?

- Liqueur: TTB allows harmless coloring/flavoring/blending materials.
Coloring materials must be disclosed on the label. Flavoring materials and blending materials do not require disclosure.

Information from the DeKuyper website

“We use only all-natural ingredients in the manufacture of our 70 DeKuyper® cordial flavors. **Flavoring ingredients include the skins, seeds, roots, flowers, leaves, and pulp of various fruits and vegetables, as well as natural extracts and concentrates.** Most of the dazzling colors for which we are so well known do not come out of processing but rather from vegetable ingredients or other natural food colorings.”

Test results:

- Sandwich R5 ELISA: < 5 ppm gluten; BLD of 1 ppm gluten
- Competitive R5 ELISA: < 10 ppm gluten; BLD of 4.6 ppm gluten

Note: IF the spirit used in this liqueur was made from a gluten-containing grain, testing finished product for protein in general may detect non-gluten protein from the flavoring ingredients that may be added after distillation and used in this product. Based on data from USDA's National Nutrient Database for Standard Reference, oranges, including orange juice contain a small amount of protein.

Chambord (raspberry liqueur) (product of France)

<http://www.chambordchannel.com/en-us/>

What is Chambord?

- *Note: No TTB definition for Chambord*
- From the Chambord website: Blackberries and raspberries are chosen, squeezed, and soaked in French spirits and left for four weeks. More French spirits are added. After two weeks the fruit is pressed and the natural juices and sugars are captured. These juices are blended with extracts of black raspberry and blackcurrants. French cognac, sweet Madagascan vanilla and fragrant herbs are added and left to develop Chambord.

TTB definitions

- Liqueur/cordial: "Flavored spirits product containing not less than 2½% by weight sugar, dextrose, levulose or a combination thereof made by mixing or redistilling any class or type of spirits with or over fruits, flowers, plants or pure juices therefrom or other natural flavoring materials or with extracts derived from infusions, percolation or maceration of such materials"
- Cognac: "Grape brandy distilled in the Cognac region of France in compliance with the laws and regulations of the French Government."
- Brandy: "Spirits distilled from the fermented juice, mash or wine of fruit or from its residue at less than 95% alcohol by volume (190 proof) having the taste, aroma and characteristics generally attributed to brandy and bottled at not less than 40% alcohol by volume (80 proof)."

Are harmless coloring/flavoring/blending materials allowed?

- Liqueur: TTB allows harmless coloring/flavoring/blending materials. **Coloring materials must be disclosed on the label.** Flavoring materials and blending materials do not require disclosure.
- Cognac: Harmless coloring/flavoring/blending materials are limited to sugar, caramel and oak chip infusion. No label declaration required.

Test results:

- Sandwich R5 ELISA: < 5 ppm gluten; BLD of 1 ppm gluten
- Competitive R5 ELISA: < 10 ppm gluten; BLD of 4.6 ppm gluten

Note: IF the spirit used in this liqueur was made from a gluten-containing grain, testing finished product for protein in general may detect non-gluten protein from the flavoring ingredients that may be added after distillation and used in this product. Based on data from USDA's National Nutrient Database for Standard Reference, raspberries and blackberries, including their juices contain small amounts of protein.

Grand Marnier (orange and cognac liqueur) (product of France)
<http://grand-marnier.com/>

What is Grand Marnier?

- *Note: No TTB definition of Grand Marnier*
- From the Grand Marnier website: Grand Marnier is a remarkable combination of a premium blend of cognac and exotic oranges. Cognac is made from grapes and doubled distilled in copper barrels.

TTB definitions

- Liqueur/cordial: "Flavored spirits product containing not less than 2½% by weight sugar, dextrose, levulose or a combination thereof made by mixing or redistilling any class or type of spirits with or over fruits, flowers, plants or pure juices therefrom or other natural flavoring materials or with extracts derived from infusions, percolation or maceration of such materials"
- Cognac: "Grape brandy distilled in the Cognac region of France in compliance with the laws and regulations of the French Government."
- Brandy: "Spirits distilled from the fermented juice, mash or wine of fruit or from its residue at less than 95% alcohol by volume (190 proof) having the taste, aroma and characteristics generally attributed to brandy and bottled at not less than 40% alcohol by volume (80 proof)."

Are harmless coloring/flavoring/blending materials allowed?

- Liqueur: TTB allows harmless coloring/flavoring/blending materials. **Coloring materials must be disclosed on the label.** Flavoring materials and blending materials do not require disclosure.
- Cognac: Harmless coloring/flavoring/blending materials are limited to sugar, caramel and oak chip infusion. No label declaration required.

Test results:

- Sandwich R5 ELISA: < 5 ppm gluten; BLD of 1 ppm gluten
- Competitive R5 ELISA: < 10 ppm gluten; BLD of 4.6 ppm gluten

Note: IF the spirit used in this liqueur was made from a gluten-containing grain, testing finished product for protein in general may detect non-gluten protein from the flavoring ingredients that may be added after distillation and used in this product. Based on data from USDA's National Nutrient Database for Standard Reference, oranges, including orange juice contain a small amount of protein.

Kahlua (rum and coffee liqueur) (made in Mexico)

<https://www.kahlua.com/us/>

Label information

- Caramel color added
- Note: coloring added to liqueur must be disclosed under TTB regulations

What is Kahlua?

- TTB Class: Rum
- TTB Class: Liqueur/Cordial

TTB definitions

- Rum: "Spirits distilled from the fermented juice of sugar cane, sugar cane syrup, sugar cane molasses or other sugar cane by-products at less than 95% alcohol by volume (190 proof) having the taste, aroma and characteristics generally attributed to rum and bottled at not less than 40% alcohol by volume (80 proof)."
- Liqueur/cordial: "Flavored spirits product containing not less than 2½% by weight sugar, dextrose, levulose or a combination thereof made by mixing or redistilling any class or type of spirits with or over fruits, flowers, plants or pure juices there from or other natural flavoring materials or with extracts derived from infusions, percolation or maceration of such materials"

Are harmless coloring/flavoring/blending materials allowed?

- Rum: TTB allows harmless coloring/flavoring/blending materials. No labeling declaration required.
- Liqueur: TTB allows harmless coloring/flavoring/blending materials. **Coloring materials must be disclosed on the label.** Flavoring materials and blending materials do not require disclosure.

Test results:

- Sandwich R5 ELISA: < 5 ppm gluten; BLD of 1 ppm gluten
- Competitive R5 ELISA: < 10 ppm gluten; BLD of 4.6 ppm gluten

Note: IF the spirit used in this liqueur was made from a gluten-containing grain, testing finished product for protein in general may detect non-gluten protein from the flavoring ingredients that may be added after distillation and used in this product. Based on data from USDA's National Nutrient Database for Standard Reference, coffee and coffee liqueur contain protein.

Bailey's Irish Cream (Irish cream liqueur)

<http://www.baileys.com/en-us/home.html>

What is Bailey's Irish Cream?

- *Note: There is no TTB definition for Bailey's Irish Cream*

- From the Bailey's website: The perfect marriage of fresh, premium Irish dairy cream, the finest spirits, aged Irish whiskey and a unique chocolate blend.

TTB definitions:

- Liqueur/cordial: "Flavored spirits product containing not less than 2½% by weight sugar, dextrose, levulose or a combination thereof made by mixing or redistilling any class or type of spirits with or over fruits, flowers, plants or pure juices therefrom or other natural flavoring materials or with extracts derived from infusions, percolation or maceration of such materials"
- Irish whiskey: "Unblended whisky manufactured in the Republic of Ireland or in Northern Ireland in compliance with their laws."

Are harmless coloring/flavoring/blending materials allowed?

- Liqueur: TTB allows harmless coloring/flavoring/blending materials. **Coloring materials must be disclosed on the label.** Flavoring materials and blending materials do not require disclosure.

Test results:

- Sandwich R5 ELISA: < 5 ppm gluten; BLD of 1 ppm gluten
- Competitive R5 ELISA: < 10 ppm gluten; tested at the LOD of 4.6 ppm gluten

Note: Testing finished product for protein in general will detect non-gluten protein from the cream used in this beverage.

Gin

Tanqueray London Dry Gin

<https://www.tanqueray.com/en-us/>

Label information:

100% grain neutral spirits
Distilled 4 times

What is redistilled gin?

- TTB class: Gin
 - TTB type: redistilled gin

TTB definitions:

- Gin: "Spirits with a main characteristic flavor derived from juniper berries produced by distillation or mixing of spirits with juniper berries and other aromatics or extracts derived from these materials and bottled at not less than 40% alcohol by volume (80 proof)."
- Redistilled Gin: "Gin produced by redistillation of distilled spirits with or over juniper berries and other aromatics or their extracts, essences or flavors."

Are harmless coloring/flavoring/blending materials allowed?

- Gin: TTB allows harmless coloring/flavoring/blending materials but this is juniper berries and (optionally) other aromatics or their extracts, essences or flavors **added to mash prior to distillation**. Do not need to be declared on the label.
- Redistilled Gin: TTB allows harmless coloring/flavoring/blending materials but this material “is juniper berries and (optionally) other aromatics or their extracts, essences or flavors added to distilled spirits **prior to redistillation**. Do not need to be declared on the label.

Test results:

- Sandwich R5 ELISA: < 5 ppm gluten; BLD of 1 ppm gluten
- Competitive R5 ELISA: < 10 ppm gluten; BLD of 4.6 ppm gluten
- Pierce Quantitative Colorimetric Peptide Assay: BLD of 25 ppm peptides

Bombay Sapphire London Dry Gin

<https://www.bombaysapphire.com/products/bombay-sapphire/>

What is gin?

- TTB class: Gin
 - TTB type: Distilled gin

TTB definitions:

- Gin: “Spirits with a main characteristic flavor derived from juniper berries produced by distillation or mixing of spirits with juniper berries and other aromatics or extracts derived from these materials and bottled at not less than 40% alcohol by volume (80 proof).”
- Distilled gin: “Gin produced by original distillation from mash with or over juniper berries and other aromatics or their extracts, essences or flavors.”

Are harmless coloring/flavoring/blending materials allowed?

- Distilled Gin: TTB allows harmless coloring/flavoring/blending materials but this is juniper berries and (optionally) other aromatics or their extracts, essences or flavors **added to mash prior to distillation**. Do not need to be declared on the label.

Information from the Bombay Sapphire website:

- Vapour infused
 - Use up to 12 botanicals suspended above the spirit in perforated copper baskets during distillation.
 - “As the heated spirit vapours rise, they’re gently infused with all the rich aromatic flavours our botanicals release.”

Test results:

- Sandwich R5 ELISA: < 5 ppm gluten; BLD of 1 ppm gluten

- Competitive R5 ELISA: < 10 ppm gluten; BLD of 4.6 ppm gluten
- Pierce Quantitative Colorimetric Peptide Assay: BLD of 25 ppm peptides

Rum

Captain Morgan Spiced Rum

<https://www.captainmorgan.com/>

Label information:

- Labeled gluten-free.
- Premium Caribbean rum with spice and other natural flavors.

What is spiced rum?

- TTB Class: Flavored rum

TTB definitions:

- Flavored Rum: “Rum flavored with natural flavoring materials, with or without the addition of sugar, bottled at not less than 30% alcohol by volume (60 proof). The name of the predominant flavor shall appear as part of the class and type designation, e.g., “Butterscotch Favored Rum.” Wine may be added but if the addition exceeds 2½% by volume of the finished product, the classes and/or types and percentages (by volume) of wine must be stated as part of the class and type designation.”
- Rum: “Spirits distilled from the fermented juice of sugar cane, sugar cane syrup, sugar cane molasses or other sugar cane by-products at less than 95% alcohol by volume (190 proof) having the taste, aroma and characteristics generally attributed to rum and bottled at not less than 40% alcohol by volume (80 proof).”

Are harmless coloring/flavoring/blending materials allowed?

Flavored rum: TTB allows harmless coloring/flavoring/blending materials.

Coloring materials must be disclosed on the label. Flavoring materials and blending materials do not require disclosure.

Test results:

- Sandwich R5 ELISA: < 5 ppm gluten; BLD of 1 ppm gluten
- Competitive R5 ELISA: < 10 ppm gluten; BLD of 4.6 ppm gluten

Note: Because rum is distilled from sugar cane it is unclear whether it would be subject to the same testing requirements as alcohols distilled from gluten-containing grains. However, testing finished product for protein in general may detect non-gluten protein from the spice ingredients that may be added after distillation and used in this product. Based on data from USDA’s National Nutrient Database for Standard Reference, spices contain protein.

Bacardi Superior White Rum

<https://www3.bacardi.com/us/en/our-rums/bacardi-superior/>

What is rum?

- TTB class: Rum

TTB definitions:

- Rum: TTB definition Spirits distilled from the fermented juice of sugar cane, sugar cane syrup, sugar cane molasses or other sugar cane by-products at less than 95% alcohol by volume (190 proof) having the taste, aroma and characteristics generally attributed to rum and bottled at not less than 40% alcohol by volume (80 proof).

Are harmless coloring/flavoring/blending materials allowed?

- Rum: TTB allows harmless coloring/flavoring/blending materials. Label disclosure not required.

Information from the Bacardi website:

- “With distinctive vanilla and almond notes which are developed in white oak barrels and shaped through a secret blend of charcoal for a distinctive smoothness.”
- Bacardi rum aged in used whiskey barrels from US (information from video).

Test results:

- Sandwich R5 ELISA: < 5 ppm gluten; BLD of 1 ppm gluten
- Competitive R5 ELISA: < 10 ppm gluten; tested at the LOD of 4.6 ppm gluten

Note: Because rum is distilled from sugar cane it is unclear whether it would be subject to the same testing requirements as alcohols distilled from gluten-containing grains. Testing finished rum for protein in general may detect non-gluten protein from the flavoring ingredients that may be added after distillation.

Tequila

Jose Cuervo Especial Gold Tequila (Product of Mexico)

<http://cuervo.com/>

What is tequila?

- TTB class: Tequila
- Mexican law oversees the protection of Tequila
 - “Only alcoholic beverages made with Blue Agave or Agave Azul (Agave Tequilana Weber blue variety) grown in the states of Jalisco, Michoacan, Nayarit, Guanajuato and Tamaulipas can be labeled tequila.”

- “The Mexican federal government has established strict requirements governing tequila production.”
- “Tequila is always double distilled.”
- “Tequila must be “rested” in wood barrels for a minimum of two months. This is a requirement of the Mexican government.”

TTB Definition:

- Tequila: “Spirits distilled in Mexico in compliance with the laws and regulations of the Mexican Government from a fermented mash derived principally from the Agave Tequilana Weber (“blue” variety), with or without additional fermentable substances having the taste, aroma and characteristics generally attributed to Tequila and bottled at not less than 40% alcohol by volume (80 proof).”

Are harmless coloring/flavoring/blending materials allowed?

Tequila: TTB does NOT allow the addition of harmless coloring/flavoring/blending materials.

From the manufacturer website:

“Cuervo® Gold is golden-style joven tequila made from a blend of reposado (aged) and younger tequilas.” Tequila is aged in oak barrels.

Test results:

- Sandwich R5 ELISA: < 5 ppm gluten; BLD of 1 ppm gluten
- Competitive R5 ELISA: < 10 ppm gluten; BLD of 4.6 ppm gluten

Whiskey/Bourbon

What is the difference between bourbon and whiskey?

An informative graphic is available at <https://s3.amazonaws.com/ambassador-assets/web/Bourbon-VS-Whiskey-Infograph.pdf>

Jefferson’s Kentucky Straight Bourbon Whiskey Very Small Batch

<http://jeffersonsbourbon.com/products/>

What is straight bourbon whiskey?

- TTB Class: Whiskey
 - TTB Type: Straight Bourbon Whiskey

TTB definitions:

- Whiskey: “Spirits distilled from a fermented mash of grain at less than 95% alcohol by volume (190 proof) having the taste, aroma and characteristics generally attributed to whisky and bottled at not less than 40% alcohol by volume (80 proof).”

- Bourbon Whiskey: “Whisky produced in the U.S. at not exceeding 80% alcohol by volume (160 proof) from a fermented mash of not less than 51 percent corn and stored at not more than 62.5% alcohol by volume (125 proof) in charred new oak containers.”
- Straight Bourbon Whiskey: “Bourbon whisky stored in charred new oak containers for 2 years or more · “Straight Bourbon Whisky” may include mixtures of two or more straight bourbon whiskies provided all of the whiskies are produced in the same state.”

Are harmless coloring/flavoring/blending materials allowed?

- Straight bourbon whiskey: TTB does **not** allow the addition of harmless coloring/flavoring/blending materials.

Test results:

- Sandwich R5 ELISA: < 5 ppm gluten; BLD of 1 ppm gluten
- Competitive R5 ELISA: < 10 ppm gluten; BLD of 4.6 ppm gluten

Jack Daniels Old No. 7 Brand Whiskey (Tennessee whiskey)

<https://www.jackdaniels.com/en-us>

What is Tennessee whiskey

- TTB Class: Whiskey
- Tennessee State Law: “The law defines TN whiskey as: a spirit manufactured in TN; filtered through maple charcoal prior to aging, also know as the Lincoln County Process; made from grain that consists of at least 51% corn; distilled to no more than 160 proof (80% abv); aged in new charred oak barrels; placed in the barrel at no more than 125 proof (62.5% abv); and, bottled at not less than 80 proof (40% abv).”

TTB definitions:

- Whiskey: “Spirits distilled from a fermented mash of grain at less than 95% alcohol by volume (190 proof) having the taste, aroma and characteristics generally attributed to whisky and bottled at not less than 40% alcohol by volume (80 proof).”
- Subject to TTB rule <https://www.ttb.gov/rulings/94-5.htm>

Information from Jack Daniels website:

- Statement about gluten: “Jack Daniel's Black Label Tennessee Whiskey has no carbohydrates (sugar or starch), gluten, fats, or cholesterol, as these are removed in the distilling process. One fluid ounce of Jack Daniel's contains approximately 65 calories.”
- Made from mash of 80% corn, 12% barley, and 8% rye
- Grains are mixed with spring water and starter yeast from previous batch (this is why JD is called sour mash).
- Mash ferments for 6 days before being single distilled.

- Charcoal mellowed (made from sugar maple): filtered through charcoal
- Matured in their own barrels

Are harmless coloring/flavoring/blending materials allowed?

Whiskey (corn): TTB allows harmless coloring/flavoring/blending materials. They do not require disclosure.

Test results:

- Sandwich R5 ELISA: < 5 ppm gluten; BLD of 1 ppm gluten
- Competitive R5 ELISA: < 10 ppm gluten; BLD of 4.6 ppm gluten

Makers Mark Kentucky Straight Bourbon

<https://www.makersmark.com/>

What is straight bourbon whiskey?

- TTB Class: Whiskey
 - TTB Type: Straight Bourbon Whiskey

TTB definitions:

- Whiskey: “Spirits distilled from a fermented mash of grain at less than 95% alcohol by volume (190 proof) having the taste, aroma and characteristics generally attributed to whisky and bottled at not less than 40% alcohol by volume (80 proof).”
- Bourbon Whiskey: “Whisky produced in the U.S. at not exceeding 80% alcohol by volume (160 proof) from a fermented mash of not less than 51 percent corn and stored at not more than 62.5% alcohol by volume (125 proof) in charred new oak containers.”
- Straight Bourbon Whiskey: “Bourbon whisky stored in charred new oak containers for 2 years or more · “Straight Bourbon Whisky” may include mixtures of two or more straight bourbon whiskies provided all of the whiskies are produced in the same state.”

Are harmless coloring/flavoring/blending materials allowed?

- Straight bourbon whiskey: TTB does **not** allow the addition of harmless coloring/flavoring/blending materials.

Information from Maker’s Mark website:

- Made from soft red winter wheat

Test results:

- Sandwich R5 ELISA: < 5 ppm gluten; BLD of 1 ppm gluten
- Competitive R5 ELISA: < 10 ppm gluten; BLD of 4.6 ppm gluten

Vodka

Absolut Vodka (Produced in Sweden)

<https://www.absolut.com/us/>

What is Vodka?

TTB class: Neutral spirits or alcohol

Type: Vodka

TTB definitions:

Neutral spirits: "Spirits distilled from any material at or above 95% alcohol by volume (190 proof), and if bottled, bottled at not less than 40% alcohol by volume (80 proof)."

Vodka: "Neutral spirits distilled or treated after distillation with charcoal or other materials so as to be without distinctive character, aroma, taste or color."

Are harmless coloring/flavoring/blending materials allowed?

Vodka: Limited to citric acid (maximum of 0.1% by volume of the finished product) and sugar (maximum of 0.2% by volume of the finished product) added directly or by addition of a citric acid/sugar blender. Does not have to be disclosed. Must be all natural.

Information from the Absolut website:

Made from hard winter wheat and water.

Test results:

- Sandwich R5 ELISA: < 5 ppm gluten; BLD of 1 ppm gluten
- Competitive R5 ELISA: < 10 ppm gluten; BLD of 4.6 ppm gluten
- Pierce Quantitative Colorimetric Peptide Assay: BLD of 25 ppm peptides

For those of you interested in getting into the weeds...

- Problematic issues with FDA's proposed testing protocol
 - Gluten-free food under the jurisdiction of the FDA may contain various alcohols as ingredients. Some issues that require addressing by the FDA:
 - Cordials and liqueurs may have flavoring components added after distillation. While these components may not contain gluten protein, they may contain small amounts of protein that may be detected by a highly sensitive assay for detecting peptides. According to TTB definitions, liqueurs and cordials are "flavored spirits." If the spirit used in the liqueur or cordial is distilled from gluten-containing grain how should the manufacturer demonstrate that the cordial or liqueur is free of protein? Testing the cordial/liqueur itself may result in the

detection of non-gluten protein. The manufacturer of the cordial/liqueur (who is under the jurisdiction of the TTB not the FDA) is not likely to have tested the spirit used in the making of the cordial/liqueur. It is unclear if manufacturers that use spirits distilled from a non-gluten containing grain would be subject to testing requiring use of an assay designed to detect protein in general (versus gluten protein).

- Rum is distilled from sugar cane. It is unclear if manufacturers that use rum as an ingredient in an FDA-regulated food would be subject to testing requiring use of an assay designed to detect protein in general (versus gluten protein). If rum is subject to these requirements, there could be issues with small amounts of detectable protein due to non-gluten containing flavoring components that may be added to rum after distillation.
- Tequila is distilled from Blue Agave or Agave Azul. It is unclear if manufacturers that use tequila as an ingredient in an FDA-regulated food would be subject to testing requiring use of an assay designed to detect protein in general (versus gluten protein).
- Gin may be distilled from gluten-containing grain. Because flavoring/coloring/blending materials are not allowed after distillation, this alcohol appears suitable for testing using a sensitive assay to detect protein in general.
- Vodka may be distilled from gluten-containing grain. Because the only flavoring/coloring/blending materials allowed after distillation are citric acid and sugar, this alcohol appears suitable for testing using a sensitive assay to detect protein in general.
- Straight bourbon whiskey may be distilled from gluten-containing grain. Because flavoring/coloring/blending materials are not allowed after distillation, this alcohol appears suitable for testing using a sensitive assay to detect protein in general. FDA may want to investigate whether any substances, such as tannins which may be imparted to the alcohol from oak wood barrels during the aging process, interfere with the testing process.

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