contain more than 0.392 gram of carbon dioxide per 100 milliliters of wine.

(b) *Tolerance limit.* A tolerance of not more than 0.009 gram per 100 milliliters to the maximum limitation of carbon dioxide in still wine and still hard cider will be allowed where the amount of carbon dioxide in excess of 0.392 gram per 100 milliliters is due to mechanical variations that cannot be completely controlled under good commercial practice. A tolerance will not be allowed where it is found by the appropriate TTB officer that the proprietor continuously or intentionally exceeds 0.392 gram of carbon dioxide per 100 milliliters of wine or where the variation results from the use of methods or equipment determined by the appropriate TTB officer to be not in accordance with good commercial practice.

(c) *Penalties.* Penalties are provided in 26 U.S.C. 5662 for any person who, whether by manner of packaging or advertising or by any other form of representation, misrepresents any still wine or still hard cider to be effervescent wine or a substitute for effervescent wine.

(d) *Records.* Records for the use of carbon dioxide in still wine must be maintained in accordance with § 24.319 of this section.

(Sec. 201, Pub. L. 85–859, 72 Stat. 1331, as amended, 1381, as amended, 1407, as amended (26 U.S.C. 5041, 5367, 5662))

[T.D. TTB–147, 82 FR 7663, Jan. 23, 2017]

§ 24.246 Materials authorized for the treatment of wine and juice.

(a) *Wine and juice.* Materials used in the process of filtering, clarifying, or purifying wine may remove cloudiness, precipitation, and undesirable odors and flavors, but the addition of any substance foreign to wine that changes the character of the wine, or the abstraction of ingredients so as to change the character of the wine, if not consistent with good commercial practice, is not permitted on bonded wine premises. The materials listed in this section are approved as being consistent with good commercial practice in the production, cellar treatment, or finishing of wine and, where applicable, in the treatment of juice, within the ''Specific TTB limitation'' of this section and subject to the following conditions:

(1) If the U.S. Food and Drug Administration (FDA) informs TTB that a specified use or limitation of any material listed in this section is inconsistent with the food additive requirements under the Federal Food, Drug, and Cosmetic Act, the appropriate TTB officer may cancel or amend the approval for use of the material in the treatment of wine and juice in the production, cellar treatment, or finishing of wine; and

(2) Where water is added to facilitate the solution or dispersal of a material, the volume of water added, whether the material is used singly or in combination with other water-based treating materials, may not total more than 1 percent of the volume of the treated wine or juice, or of both the wine and the juice, from which the wine is produced.

(b) *Use in combination or in multiple lots.* Subject to the conditions specified in paragraph (a) of this section, a proprietor may use the materials listed in this section in combination, provided that each material is used for its specified use and in accordance with any limitation specified for that use. If a proprietor uses several lots that contain the same material, it is the proprietor's responsibility to ensure that the cumulative amount of the material does not exceed the limitation specified in this section for that material.

(c) *Formula wine.* In addition to the materials listed in this section, other materials may be used in formula wine if approved for such use.

TABLE 1 TO PARAGRAPH (c)—MATERIALS AUTHORIZED FOR TREATMENT OF WINE AND JUICE

Materials and use	Specific TTB limitation (if applicable)	FDA reference
Acacia (gum arabic): To clarify and stabilize[1] wine.	The amount used must not exceed 16 pounds per 1,000 gallons (1.9 g/L) of wine.	21 CFR 184.1330.

TABLE 1 TO PARAGRAPH (c)—MATERIALS AUTHORIZED FOR TREATMENT OF WINE AND JUICE—Continued

Materials and use	Specific TTB limitation (if applicable)	FDA reference
Acetaldehyde: For color stabilization of juice prior to concentration.	The amount used must not exceed 300 ppm (300 mg/L), and the finished concentrate must have no detectable level of the material.[2].	FDA advisory opinion dated September 8, 2016.
Activated carbon:		
To assist precipitation during fermentation.	27 CFR 24.176	FDA advisory opinion dated September 8, 2016, which states that the activated carbon must meet the specifications in the Food Chemicals Codex and be removed from the wine.
To clarify and purify wine	The amount used to clarify and purify wine must be included in the total amount of activated carbon used to remove excessive color from wine and/or juice. 27 CFR 24.241 and 24.242.	FDA advisory opinion dated January 26, 1979, which states that the activated carbon must meet the specifications in the Food Chemicals Codex and be removed from the wine.
To remove color from wine and/or juice from which wine is produced.	The amount used to treat the wine, including the juice from which the wine was produced, must not exceed 25 pounds per 1000 gallons (3 g/L). If the amount necessary exceeds this limit, a notice is required pursuant to 27 CFR 24.242.	FDA advisory opinion dated January 26, 1979, which states that the activated carbon must meet the specifications in the Food Chemicals Codex and be removed from the wine.
Albumen (egg white): Fining agent for wine.	May be prepared in a light brine 1 ounce (28.35 grams) potassium chloride, 2 pounds (907.2 grams) egg white, 1 gallon (3.785 L) of water. Usage of brine not to exceed 1.5 gallons per 1,000 gallons (1.5 milliliters per liter) of wine.	FDA advisory opinion dated September 8, 2016.
Alumino-silicates (hydrated) e.g., Bentonite (Wyoming clay) and Kaolin: To clarify and stabilize[1] wine or juice.	None	21 CFR 184.1155 FDA advisory opinion dated July 26, 1985.
Ascorbic acid *iso*-ascorbic acid (erythorbic acid): To prevent oxidation of color and flavor components of juice or wine.	May be added to grapes, other fruit (including berries), and other primary wine making materials, or to the juice of such materials, or to the wine, within limitations which do not alter the class or type of the wine.	21 CFR 182.3013 and 182.3041.
Bakers yeast mannoprotein: To stabilize[1] wine from the precipitation of potassium bitartrate crystals.	The amount used must not exceed 3.3 pounds per 1000 gallons (400 mg/L) of wine.	GRAS (generally recognized as safe) Notice No. GRN 000284.
Calcium carbonate ($CaCO_3$) (with or without calcium salts of tartaric and malic acids):		
To reduce the excess natural acids in high acid wine, or in juice prior to or during fermentation.	The natural or fixed acids must not be reduced below 40 pounds per 1000 gallons (4.79 g/L).	21 CFR 184.1069, 184.1099, and 184.1191.
As a fining agent for cold stabilization.	The amount used must not exceed 30 pounds per 1000 gallons (3.59 g/L) of wine..	
Calcium sulfate (gypsum): To lower pH in sherry wine.	The sulfate content of the finished wine must not exceed 1.67 pounds per 1000 gallons (0.2 g/L), expressed as potassium sulfate. 27 CFR 24.214.	21 CFR 184.1230.
Carbon dioxide (including food grade dry ice): To stabilize[1] and preserve wine.	See 27 CFR 24.245	21 CFR 184.1240.
Casein, potassium salt of casein: To clarify wine.	See 27 CFR 24.243	FDA advisory opinion dated September 8, 2016.
Chitosan from *Aspergillus niger:* To remove spoilage organisms such as *Brettanomyces* from wine.	The amount used must not exceed 0.04 pounds per 1 gallon (500 g/100 L) of wine.	GRAS Notice No. GRN 000397.
Citric acid:		
To correct natural acid deficiencies in certain juice or wine.	See 27 CFR 24.182 and 24.192	21 CFR 184.1033.
To stabilize[1] wine other than citrus wine.	The amount of citric acid must not exceed 5.8 pounds per 1000 gallons (0.7 g/L). 27 CFR 24.244.	21 CFR 184.1033.

TABLE 1 TO PARAGRAPH (c)—MATERIALS AUTHORIZED FOR TREATMENT OF WINE AND JUICE—Continued

Materials and use	Specific TTB limitation (if applicable)	FDA reference
Copper sulfate: To remove hydrogen sulfide and/or mercaptans from wine.	The quantity of copper sulfate (calculated as copper) added to wine must not exceed 6 ppm (6mg/L).[2] The residual level of copper in the finished wine must not exceed 0.5 ppm (0.5 mg/L).[2].	21 CFR 184.1261.
Defoaming agents (polyoxyethylene 40 monostearate, silicon dioxide, dimethylpoly-siloxane, sorbitan monostearate, glyceryl mono-oleate and glyceryl dioleate): To control foaming, fermentation adjunct.	Defoaming agents which are 100 percent active may be used in amounts not exceeding 0.15 pounds per 1000 gallons (18 mg/L) of wine. Defoaming agents which are 30 percent active may be used in amounts not exceeding 0.5 pounds per 1000 gallons (60 mg/L) of wine. Silicon dioxide must be completely removed by filtration. The amount of silicon remaining in the wine must not exceed 10 ppm (10 mg/L).[2].	21 CFR 173.340 and 184.1505.
Dimethyl dicarbonate (DMDC): To sterilize and stabilize[1] wine.	DMDC may be added to wine in a cumulative amount not to exceed 200 ppm (200 mg/L).[2].	21 CFR 172.133.
Enzymatic activity: Various enzymes and uses, as shown in the following entries:.	The enzyme preparation used must be prepared from nontoxic and nonpathogenic microorganisms..	
Carbohydrase (*alpha*-Amylase): To convert starches to fermentable carbohydrates.	The amylase enzyme activity must be derived from:.	
	Aspergillus niger, Aspergillus oryzae, Bacillus subtilis, or barley malt; or.	FDA advisory opinion of August 18, 1983.
	from *Rhizopus oryzae;* or	21 CFR 173.130.
	from *Bacillus licheniformis.*	21 CFR 184.1027.
Carbohydrase (*beta*-Amylase): To convert starches to fermentable carbohydrates.	The amylase enzyme must be derived from barley malt.	FDA advisory opinion dated August 18, 1983.
Carbohydrase (Glucoamylase, Amylogluco-sidase): To convert starches to fermentable carbohydrates.	The amylase enzyme activity must be derived from *Aspergillus niger, Aspergillus oryzae,* or.	FDA advisory opinion dated August 18, 1983.
		21 CFR 173.130.
	from *Rhizopus oryzae,*	21 CFR 173.110.
	or from *Rhizopus niveus.*	
Carbohydrase (pectinase, cellulase, hemicellulase): To facilitate separation of juice from the fruit.	The enzyme activity must be derived from *Aspergillus aculeatus*..	FDA advisory opinion dated December 19, 1996.
Catalase: To clarify and stabilize[1] wine.	The enzyme activity must be derived from *Aspergillus niger* or bovine liver.	FDA advisory opinion dated August 18, 1983.
		21 CFR 184.1034.
Cellulase: To clarify and stabilize[1] wine and facilitate separation of the juice from the fruit.	The enzyme activity must be derived from *Aspergillus niger*.	FDA advisory opinion dated August 18, 1983.
Cellulase (beta-glucanase): To clarify and filter wine and juice.	The enzyme activity must be derived from *Trichoderma longibrachiatum* or *Trichoderma harzianum*..	For beta-glucanase derived from *Trichoderma longibrachiatum,* 21 CFR 184.1250.
		For beta-glucanase derived from *Trichoderma harzianum,* GRAS Notice No. GRN 000149.
Glucose oxidase: To clarify and stabilize[1] wine.	The enzyme activity must be derived from *Aspergillus niger*.	FDA advisory opinion of August 18, 1983.
Lysozyme: To stabilize[1] wines from malolactic acid bacterial degradation.	The amount used must not exceed 500 ppm (500 mg/L).[2].	FDA advisory opinion dated December 15, 1993.
Pectinase: To clarify and stabilize[1] wine and to facilitate separation of juice from the fruit.	The enzyme activity used must be derived from *Aspergillus niger*.	FDA advisory opinion dated August 18, 1983.
Protease (general): To reduce or to remove heat labile proteins.	The enzyme activity must be derived from:.	FDA advisory opinion dated August 18, 1983.
	Aspergillus niger or *Bacillus subtilis;* or	21 CFR 184.1027.
	from *Bacillus licheniformis*	

TABLE 1 TO PARAGRAPH (c)—MATERIALS AUTHORIZED FOR TREATMENT OF WINE AND JUICE—Continued

Materials and use	Specific TTB limitation (if applicable)	FDA reference
Protease (Bromelin): To reduce or remove heat labile proteins..	The enzyme activity must be derived from pineapple (*Ananas comosus* (L.) or *Ananas bracteatus* (L.)).	FDA advisory opinion dated August 18, 1983.
Protease (Ficin): To reduce or remove heat labile proteins.	The enzyme activity must be derived from fig (*Ficus spp.*).	21 CFR 184.1316.
Protease (Papain): To reduce or remove heat labile proteins.	The enzyme activity must be derived from papaya (*Carica papaya* (L.)).	21 CFR 184.1585.
Protease (Pepsin): To reduce or remove heat labile proteins.	The enzyme activity must be derived from porcine or bovine stomachs.	21 CFR 184.1595, FDA advisory opinion dated August 18, 1983.
Protease (Trypsin): To reduce or remove heat labile proteins.	The enzyme activity must be derived from porcine or bovine pancreas.	FDA advisory opinion dated August 18, 1983.
Urease: To reduce levels of naturally occurring urea in wine to help prevent the formation of ethyl carbamate.	The enzyme activity must be derived from *Lactobacillus fermentum*. Use is limited to not more than 200 ppm (200 mg/L) and must be filtered prior to final packaging.[2].	21 CFR 184.1924.
Ethyl maltol: To stabilize[1] wine	Use authorized at a maximum level of 100 ppm (100 mg/L) in all standard wines except natural wine produced from *Vitis vinifera* grapes.[2].	FDA advisory opinion dated December 1, 1986.
Fermentation aids: To facilitate fermentation of juice and wine..		
Ammonium phosphate/diammonium phosphate (*mono-* and *di* basic).	The amount used must not exceed 8 pounds per 1000 gallons (0.96 g/L).	FDA advisory opinion dated August 29, 2016.
Biotin (vitamin B7)	The amount used must not exceed 25 ppb (25 ng/mL).[3].	FDA advisory opinion dated August 29, 2016.
Calcium pantothenate (vitamin B5).	The amount used must not exceed 1.5 ppm (1.5 mg/L).[2].	FDA advisory opinion dated August 29, 2016.
Folic acid (folate)	The amount used must not exceed 100 ppb (100 ng/mL).[3].	FDA advisory opinion dated August 29, 2016.
Inositol (myo-inositol)	The amount used must not exceed 2 ppm (2 mg/L).[2].	FDA advisory opinion dated August 29, 2016.
Magnesium sulfate	The amount used must not exceed 15 ppm (15 mg/L).[2].	FDA advisory opinion dated August 29, 2016.
Niacin (vitamin B3)	The amount used must not exceed 1 ppm (1 mg/L).[2].	FDA advisory opinion dated August 29, 2016.
Pyridoxine hydrochloride (vitamin B6).	The amount used must not exceed 150 ppb (150 ng/mL).[3].	FDA advisory opinion dated August 29, 2016.
Soy flour (defatted)	The amount used must not exceed 2 pounds per 1000 gallons (0.24 g/L) of wine.	FDA advisory opinion dated August 29, 2016.
Thiamine hydrochloride	The amount used must not exceed 0.005 pounds per 1000 gallons (0.6 mg/L) of wine or juice.	FDA advisory opinion dated August 29, 2016.
Yeast, autolyzed	None	FDA advisory opinion dated August 29, 2016.
Yeast, cell wall/membranes of autolyzed yeast.	The amount used must not exceed 3 pounds per 1000 gallons (0.36 g/L) of wine or juice.	FDA advisory opinion dated August 29, 2016.
Ferrous sulfate: To clarify and stabilize[1] wine.	The amount used must not exceed 3 ounces per 1000 gallons (0.022 g/L) of wine.	21 CFR 184.1315.
Fractionated potato protein isolates: Fining agent for wine.	Use must not exceed 500 ppm[2] (50 g/hL) of wine.	GRAS Notice No. GRN 000447.
Fumaric acid:		
To correct natural acid deficiencies in grape wine.	The fumaric acid content of the finished wine must not exceed 25 pounds per 1000 gallons (3 g/L). 27 CFR 24.182 and 24.192.	21 CFR 172.350.
To stabilize[1] wine	The fumaric acid content of the finished wine must not exceed 25 pounds per 1000 gallons (3 g/L). 27 CFR 24.244.	21 CFR 172.350.
Gelatin (food grade): To clarify juice or wine.	None	FDA advisory opinion dated September 8, 2016.
Granular cork: To smooth wine	The amount used must not exceed 10 pounds per 1000 gallons of wine (1.2 g/L).	FDA advisory opinion dated February 25, 1985.
Isinglass: To clarify wine	None	FDA advisory opinion dated February 25, 1985.

TABLE 1 TO PARAGRAPH (c)—MATERIALS AUTHORIZED FOR TREATMENT OF WINE AND JUICE—Continued

Materials and use	Specific TTB limitation (if applicable)	FDA reference
Lactic acid: To correct natural acid deficiencies in grape wine.	27 CFR 24.182 and 24.192	21 CFR 184.1061.
Malic acid: To correct natural acid deficiencies in juice or wine.	27 CFR 24.182 and 24.192	21 CFR 184.1069.
Malolactic bacteria: To stabilize[1] grape wine.	Malolactic bacteria of the type *Leuconostoc oenos* (*Oenococcus oeni)* may be used in treating wine.	FDA advisory opinion dated February 25, 1985.
Maltol: To stabilize[1] wine	Use authorized at a maximum level of 2 pounds per 1000 gallons (240 mg/L) in all standard wine except natural wine produced from *Vitis vinifera* grapes.	FDA advisory opinion dated December 1, 1986.
Milk products (pasteurized whole, skim, or half-and-half):		
Fining agent for grape wine	The amount used must not exceed 2 parts of milk products per 1,000 parts (0.2 percent V/V) of wine.	
To remove off flavors in wine	The amount used must not exceed 10 parts of milk products per 1,000 parts (1 percent V/V) of wine.	
Nitrogen gas: To maintain pressure during filtering and bottling or canning of wine and to prevent oxidation of wine.	None	21 CFR 184.1540.
Oxygen and compressed air: Various uses in juice and wine.	None.	
Polyvinylpolypyrrolidone (PVPP): To clarify and stabilize[1] wine and to remove color from red wine or juice.	The amount used to treat the wine, including the juice from which the wine was produced, must not exceed 60 pounds per 1000 gallons (7.19 g/L) and must be removed during filtration. PVPP may be used in a continuous or batch process.	21 CFR 173.50.
Polyvinylpyrrolidone (PVP)/polyvinylimidazole (PVI) polymer (terpolymer of 1-vinylimidazole, 1-vinylpyrrolidone, and 1,2-divinylimidazolidinone; CAS 87865–40–5 (Chemical Abstracts Service Registration Number)): To remove heavy metal ions and sulfides from wine.	The amount used to treat the wine must not exceed 6.7 pounds per 1000 gallons (80 g/hL) of wine.	FDA FCN No. 000320.[4]
Potassium bitartrate: To stabilize[1] grape wine.	The amount used must not exceed 35 pounds per 1000 gallons (4.19 g/L) of grape wine.	FDA advisory opinion dated September 8, 2016.
Potassium carbonate and/or potassium bicarbonate: To reduce excess natural acidity in wine and in juice prior to or during fermentation.	The natural or fixed acids must not be reduced below 0.668 ounces per gallon (5 g/L).	21 CFR 184.1619 and 184.1613.
Potassium citrate: pH control agent and sequestrant in the treatment of citrus wines.	The amount of potassium citrate must not exceed 25 pounds per 1000 gallons (3 g/L) of finished wine. 27 CFR 24.182.	21 CFR 184.1625.
Potassium meta-bisulfite: To sterilize and preserve wine.	The sulfur dioxide content of the finished wine must not exceed the limitations prescribed in 27 CFR 4.22.	21 CFR 182.3637.
Silica gel (colloidal silicon dioxide): To clarify wine or juice.	Use must not exceed the equivalent of 20 pounds colloidal silicon dioxide at a 30 percent concentration per 1000 gallons (2.4 g/L) of wine. Silicon dioxide must be completely removed by filtration.	FDA advisory opinion dated September 8, 2016.
Sodium carboxymethyl cellulose: To stabilize[1] wine by preventing tartrate precipitation.		21 CFR 182.1745.
Sorbic acid and potassium salt of sorbic acid (potassium sorbate): To sterilize and preserve wine; to inhibit mold growth and secondary fermentation.	The finished wine must not contain more than 300 ppm (300 mg/L) of sorbic acid.[2].	21 CFR 182.3089 and 182.3640.
Sulfur dioxide: To sterilize and to preserve wine or juice.	The sulfur dioxide content of the finished wine must not exceed the limitations prescribed in 27 CFR 4.22(b)(1).	21 CFR 182.3862.
Tannin:		

TABLE 1 TO PARAGRAPH (c)—MATERIALS AUTHORIZED FOR TREATMENT OF WINE AND JUICE—Continued

Materials and use	Specific TTB limitation (if applicable)	FDA reference
To adjust tannin content in apple juice or in apple wine.	The residual amount of tannin must not exceed 24 pounds per 1000 gallons (3 g/L), calculated as gallic acid equivalents (GAE). Total tannin must not be increased by more than 150 ppm (150 mg/L; 0.150 g/L) by the addition of tannic acid (polygalloylglucose).[2].	FDA advisory opinion dated September 8, 2016.
To clarify, or adjust tannin content of, juice or wine (other than apple).	The residual amount of tannin, calculated in GAE, must not exceed 6.4 GAE per 1000 gallons of wine (800 mg/L) in white wine and 24 pounds per 1000 gallons (3 g/L) in red wine. Only tannin which does not impart color may be used in the cellar treatment of juice or wine. Total tannin must not be increased by more than 150 ppm (150 mg/L; 0.150 g/L) by the addition of tannic acid (poly-galloylglucose).[2].	FDA advisory opinion dated September 8, 2016.
Tartaric acid (L-(+)-tartaric acid):		
To correct natural acid deficiencies in grape juice or wine and to reduce the pH of grape juice or wine where ameliorating material is used in the production of grape wine.	Use as prescribed in 27 CFR 24.182 and 24.192.	21 CFR 184.1099 and GRAS Notice No. GRN 000187.

[1] To stabilize—To prevent or to retard unwanted alteration of chemical and/or physical properties.
[2] Parts per million—1 ppm = 0.128 ounces per 1000 gallons = 1 mg/L = 1000 ppb.
[3] Parts per billion—1ppb = 0.000128 ounces per 1000 gallons = 1 mg/1000L.
[4] An effective food contact notification (FCN) applies only to the food contact substance that is the subject of the FCN and is applicable only to the manufacturer/supplier listed within the notification.

[T.D. TTB–185, 87 FR 51897, Aug. 24, 2022]

§ 24.247 Materials authorized for the treatment of distilling material.

The materials listed in this section as well as the materials listed in § 24.246 are approved as being acceptable in good commercial practice for use by proprietors in the treatment of distilling material within the limitations specified in this section. If, however, the U.S. Food and Drug Administration (FDA) informs TTB that a specified use or limitation of any material listed in this section is inconsistent with the food additive requirements under the Federal Food, Drug, and Cosmetic Act, the appropriate TTB officer may cancel or amend the approval for use of the material in the treatment of distilling material.

Materials	Use	Reference or limitation
Ammonium phosphate/ diammonium phosphate (*mono*-and *di* basic).	Yeast nutrient in distilling material	The amount used shall not exceed 10 pounds per 1000 gallons (1.2 g/L). 21 CFR 184.1141a and 184.1141b.
Benzoic acid, potassium and sodium salts of benzoic acid.	To prevent fermentation of the sugar in wine being accumulated as distilling material.	The amount used shall not exceed 0.1% (w/v) as benzoic acid. GRAS per FDA advisory opinions dated 9/22/82 and 9/8/83. 21 CFR 184.1021 and 184.1733 (GRAS).
Enzyme activity	.....	The enzyme preparation used shall be prepared from nontoxic and nonpathogenic microorganisms in accordance with good manufacturing practice and be approved for use in food by either FDA regulation or by FDA advisory opinion.
Carbohydrase (Glucoamylase, Amylogluco-sidase).	To convent starches to fermentable carbohydrates.	The amylase enzyme activity shall be derived from *Aspergillus niger* or *Aspergillus oryzae* per FDA advisory opinion dated 8/18/83 or from *Rhizopus oryzae* per *21 CFR 173.130* or from *Rhizopus niveus* per *21 CFR 173.110*.
Carbohydrase (*beta*- Amylase).	To convent starches to fermentable carbohydrates.	The amylase enzyme activity shall be derived from barley malt per FDA advisory opinion dated 8/18/83.