(d) *Dryness at 20 °C.* Miscible without turbidity with 19 volumes of 60° Bé1. gasoline.

(e) *Freezing point (first needle).* Above 20 °C.

(f) *Identification test.* Place five drops of a solution containing approximately 0.1 percent tertiary butyl alcohol in ethyl alcohol in a test tube. Add 2 ml of Denige's reagent (dissolve 5 grams of red mercuric oxide in 20 ml of concentrated sulfuric acid; add this solution to 80 ml of distilled water, and filter when cool). Heat the mixture just to the boiling point and remove from the flame. A yellow precipitate forms within a few seconds.

(g) *Nonvolatile matter.* Less than 0.005 percent by weight.

(h) *Odor.* Characteristic odor.

(i) *Residual odor after evaporation.* None.

(j) *Specific gravity at 25 °/25 °C.* 0.780 to 0.786.

[T.D. ATF–133, 48 FR 24673, June 2, 1983. Redesignated by T.D. ATF–442, 66 FR 12854, Mar. 1, 2001]

§ 21.102 Caustic soda, liquid.

(a) The liquid caustic soda may consist of either 50 percent or 73 percent by weight sodium hydroxide in aqueous solution. The amount of caustic soda used shall be such that each 100 gallons of alcohol will contain not less than 8.76 pounds of sodium hyroxide, anhydrous basis.

(b) *Color.* A 2 percent solution of the sodium hydroxide in water shall be water-white.

(c) *Assay.* The sodium hydroxide content of the caustic soda solution shall be determined by the following procedure:

Accurately weigh 2 grams of liquid caustic soda into a 100 ml volumetric flask, dissolve, and dilute to the mark with distilled water at room temperature. Transfer a 25 ml aliquot of the solution to a titration flask, add 10 ml of 1 percent barium chloride solution, 0.2 ml of 1 percent phenolphthalein indicator, and 50 ml of distilled water. Titrate with 0.25 N hydrochloric acid to the disappearance of the pink color. Not less than 25 ml of the hydrochloric acid shall be required to neutralize the sample of diluted 50 percent caustic soda, and not less than 36.5 ml of the hydrochloric acid shall be required to neutralize the sample of diluted 73 percent caustic soda.

One ml of 0.25 N hydrochloric acid equals 0.01 gram of sodium hydroxide (anhydrous).

[T.D. ATF–133, 48 FR 24673, June 2, 1983. Redesignated by T.D. ATF–442, 66 FR 12854, Mar. 1, 2001]

§ 21.103 Chloroform.

(a) *Odor.* Characteristic odor.

(b) *Specific gravity at 25 °/25 °C.* Not less than 1.400.

[T.D. ATF–133, 48 FR 24673, June 2, 1983. Redesignated by T.D. ATF–442, 66 FR 12854, Mar. 1, 2001]

§ 21.104 Cinchonidine.

(a) *Melting point.* 208° to 210 °C.

(b) *Color.* White powder.

(c) *Taste.* Bitter.

(d) *Test.* A solution of cinchonidine in dilute sulfuric acid shall not have more than a faint blue fluorescence (to distinguish from quinine and quinoidine).

[T.D. ATF–133, 48 FR 24673, June 2, 1983. Redesignated by T.D. ATF–442, 66 FR 12854, Mar. 1, 2001]

§ 21.105 Citronella oil, natural.

(a) *Java type:*

(1) *Alcohol content (as Geraniol).* Not less than 85 percent by weight.

(2) *Aldehyde content (as Citronellal).* Not less than 30 percent by weight.

(3) *Refractive index at 20 °C.* 1.4660 to 1.4745.

(4) *Specific gravity at 25 °/25 °C.* 0.875 to 0.893.

(5) *Odor.* Characteristic odor.

(b) *Ceylon type:*

(1) *Alcohol content (as Geraniol).* Not less than 55 percent by weight.

(2) *Aldehyde content (as Citronellal).* Not less than 7 percent by weight.

(3) *Refractive index at 20 °C.* 1.4790 to 1.4850.

(4) *Specific gravity at 25 °/25 °C.* 0.891 to 0.904.

(5) *Odor.* Characteristic odor.

[T.D. ATF–133, 48 FR 24673, June 2, 1983. Redesignated by T.D. ATF–442, 66 FR 12854, Mar. 1, 2001]

§ 21.106 Diethyl phthalate.

(a) *Refractive index at 25 °C.* 1.497 to 1.502.

(b) *Color.* Colorless.

(c) *Odor.* Practically odorless.

(d) *Solubility.* Soluble in 20 parts of 60 percent alcohol.

(e) *Specific gravity at 25 °/25 °C.* 1.115 to 1.118.

(f) *Ester content (as diethyl phthalate).* Not less than 99 percent by weight.

NOTE. The sample taken for ester determination should be approximately 0.8 gram. The number of ml of 0.5 N potassium hydroxide used in saponification multiplied by 0.05555 indicates the number of grams of ester in the sample taken for assay.

[T.D. ATF–133, 48 FR 24673, June 2, 1983. Redesignated by T.D. ATF–442, 66 FR 12854, Mar. 1, 2001]

§ 21.107 Ethyl acetate.

(a) *85 percent ester:*

(1) *Acidity (as acetic acid).* Not more than 0.015 percent by weight.

(2) *Color.* Colorless.

(3) *Odor.* Characteristic odor.

(4) *Ester content.* Not less than 85 percent by weight.

(5) *Specific gravity at 20 °/20 °C.* Not less than 0.882.

(6) *Distillation range.* (For applicable ASTM method, see 1980 Annual Book of ASTM Standards, Part 29, page 70, Standard No. D 302–58 (1975); for incorporation by reference, see §21.6(b).) When 100 ml of ethyl acetate are distilled by this method, none shall distill below 70 °C., not more than 10 ml shall distill below 72 °C., and none above 80 °C.

(b) *100 percent ester:*

(1) *Acidity (as acetic acid).* Not more than 0.010 percent by weight.

(2) *Color.* Colorless.

(3) *Odor.* Characteristic odor.

(4) *Ester content.* Not less than 99 percent by weight.

(5) *Specific gravity at 20 °/20 °C.* Not less than 0.899.

(6) *Distillation range.* (For applicable ASTM method, see 1980 Annual Book of ASTM Standards, Part 29, page 433, Standard No. D 3127–77; for incorporation by reference, see §21.6(b).) When 100 ml of ethyl acetate are distilled by this method, not more than 2 ml shall distill below 75 °C., and none above 80 °C. (760 mm).

[T.D. ATF–133, 48 FR 24673, June 2, 1983. Redesignated by T.D. ATF–442, 66 FR 12854, Mar. 1, 2001]

§ 21.108 Ethyl ether.

(a) *Odor.* Characteristic odor.

(b) *Specific gravity at 15.56 °/15.56 °C.* Not more than 0.728.

[T.D. ATF–133, 48 FR 24673, June 2, 1983. Redesignated by T.D. ATF–442, 66 FR 12854, Mar. 1, 2001]

§ 21.109 Gasoline.

(a) *Distillation range.* When 100 ml of gasoline are distilled, none shall distill below 90 °F. Not more than 5 ml shall be collected below 140 °F., and not less than 50 ml shall distill below 230 °F.

(b) *Odor.* Characteristic odor.

[T.D. ATF–133, 48 FR 24673, June 2, 1983. Redesignated by T.D. ATF–442, 66 FR 12854, Mar. 1, 2001]

§ 21.110 Gasoline, unleaded.

Conforms to specifications as established by the American Society for Testing and Materials (ASTM) in the 1980 Annual Book of ASTM Standards, Part 23, page 229, Standard No. D 439–79. Any of the ''seasonal and geographical'' volatility classes for unleaded gasoline are considered suitable as a denaturant. (For incorporation by reference, see §21.6(b).)

[T.D. ATF–133, 48 FR 24673, June 2, 1983. Redesignated by T.D. ATF–442, 66 FR 12854, Mar. 1, 2001]

§ 21.111 Gentian violet.

(a) Gentian violet (methyl violet, methylrosaniline chloride) occurs as a dark green powder or crystals having metallic luster.

(b) *Arsenic content.* Not more than 15 ppm. (as As_2O_3) as determined by the applicable U.S.P. method.

(c) *Identification test.* Sprinkle about 1 mg of sample on 1 ml of sulfuric acid; it dissolves in the acid with an orange or brown-red color. When this solution is diluted cautiously with water, the color changes to brown, then to green, and finally to blue.

(d) *Insoluble matter.* Not to exceed 0.25 percent when tested by the following method:

Transfer 1.0 gram of sample to a 150 ml beaker containing 50 ml of alcohol. Stir to complete solution and filter through a weighed Whatman No. 4 filter paper. Wash residue with small amounts of alcohol totaling about 50 ml. Dry paper in oven for 30 minutes at