RESOLUTION OENO 46/2000

INTERNATIONAL OENOLOGICAL CODEX

LIQUID SULFUR DIOXIDE

Liquid sulfurous anhydride
Sulfuris dioxydum solutum
SO_2 = 64.07
SIN NO. 220

1. OBJECTIVE, ORIGIN AND SCOPE OF APPLICATION

Sulfur dioxide is a colorless, non-flammable gas with a sharp, suffocating odor. It is stored and transported in liquid form in hardened steel tanks. These solutions are not stable and should not contain less than 50 g/l SO_2.

At a temperature of 20 °C, it is liquid under a pressure of 3.36 kg per square centimeter, or 3.30 bars.

Under standard pressure, its boiling point is -10 °C. Its density is □20 = 1.383.

This product falls under the category of antiseptic and antioxidant preservatives. Its content level in wine is subject to the regulatory limits in force concerning quantities.

2. LABELLING

The label should indicate product SO_2 content at the time of sale and its safety and storage conditions.

3. SOLUBILITY

Water at 0 °C : 79.79 l of sulfur dioxide per liter of water at standard pressure

Water at 20 °C: 39.37 l of sulfur dioxide per liter of water at standard pressure

Alcohol, 95% by vol. at 20 °C : 114.48 l of sulfur dioxide per liter of water Hydrocarbons, fatty substances and other organic compounds : soluble

4. IDENTIFYING PROPERTIES

4.1. Sulfur dioxide blackens a filter paper which is impregnated with mercury (I) nitrate.

4.2. Sulfur dioxide turns a filter paper impregnated with potassium iodine and starch solution blue. Then, the blue color disappears because of reduction of the iodine initially released.

4.3. Sulfur dioxide has a strong, characteristic odor.

5. TESTS

5.1. Non-volatile Substances

In a 500 ml container that has already been calibrated, collect 200 ml of liquid sulfur dioxide. Weigh the container immediately afterward. Let p be the mass in g sampled. Let the sulfur dioxide spontaneously evaporate. After reheating the container and removing any gaseous sulfur dioxide it still contains, weigh the container which holds the residue from evaporation. The mass of this residue should be less than 0.01 pp 100.

5.2. Preparing the Solution for Tests

Add 2 ml of concentrated nitric acid (R) and 5 ml of water to the residue left by evaporating 200 ml of sulfur dioxide (5.1). Place in a 100 °C water bath for 5 minutes. The remaining volume should be topped off with water to 200 ml.

5.3. Copper

Take a sample which corresponds to 1 g of liquid sulfur dioxide from the test solution prepared under paragraph 5.2. Top off to 10 ml with distilled water and add 0.5 ml of 10 pp 100 (v/v) hydrochloric acid solution, 15 pp 100 (m/v) citric acid (R), 1 ml of 5M ammonium hydroxide solution (R) and 0.5 ml of 1 pp 100 sodium diethyldithiocarbamate solution (concentration : 1 pp 100) in alcohol at 40% by volume (R). If a yellow coloration appears, it should be less intense than that obtained by adding 1 ml of copper solution in a concentration of 0.01 g per liter (R), 9 ml of water, 0.5 ml of 10 pp 100 (v/v) hydrochloric acid solution, 15 pp 100 (m/v) citric acid (R), 1 ml of 5M ammonium hydroxide solution (R) and 0.5 ml of 1 pp 100 sodium diethyldithiocarbamate solution (concentration : 1 pp 100) in alcohol at 40% by volume (R). (Copper content should be less than 10 mg/kg).

5.4. Iron

Take a sample of the solution prepared for tests under paragraph 5.2 corresponding to 1 g of liquid sulfur dioxide. Top off to 5 ml with water. Add 1 ml of concentrated hydrochloric acid (R), one drop of 1 pp 100 potassium permanganate (R) and 5 ml of 5 pp 100 potassium thiocyanate solution. If a red coloration appears, it should be less intense than that obtained by a control prepared with 5 ml of iron solution in a concentration of 0.010 g of iron per liter (R) and the same quantities of hydrochloric acid and thiocyanate. (Iron content should be less than 50 mg/kg).

Iron may also be quantitatively analyzed using the atomic absorption spetrophotometry method detailed in the Compendium.

5.5. Lead

In the test solution prepared under paragraph 5.2, determine the lead content using the method described in the Compendium. (Lead content should be less than 5 mg/kg). It is also possible to dose iron using the atomic photometry method described in the Annex.

Lead may also be quantitatively analyzed using the atomic absorption spetrophotometry method detailed in the Compendium.

5.6. Mercury

Using the technique described in the annex, determine mercury concentration in the test solution (5.2). (Content should be less than 1 mg/kg.)

5.7. Selenium

In a test tube, take a volume of the solution prepared for tests under paragraph 5.2 corresponding to 1.5 g of sulfur dioxide and top off to 2 ml with water. Add 8 ml of hydrochloric acid diluted to 30 pp 100 (R) and 50 mg of powdered anhydrous potassium sulfite (R) which has been verified to be selenium free. After dissolving, place the test tube in a 100 °C water bath. Examine the color in the tube after 15 minutes.

If a pink coloration appears, it should not be more intense than that obtained in a control prepared by adding 0.15 ml selenium dioxide solution in a concentration of 100 mg selenium per liter (R), 1.85 ml of water, 8 ml of 30 pp 100 hydrochloric acid (R) and 50 mg of powdered, selenium-free anhydrous potassium sulfite and, after dissolving, by placing the test tube in a 100 °C water bath for 15 minutes. (Selenium content should be less than 10 mg/kg).

5.8. Arsenic

Using the technique described in the annex, determine arsenic concentration in the test solution (5.2). Concentration should be less than 3 mg/kg.

6. STORAGE

Sulfur dioxide should be stored and delivered in a liquid state in metal cylinders equipped with a needle valve tap or slide valve and whose strength is checked regularly. Keep the containers in a cool place.

Certified in conformity Paris, 23th June 2000
The Director General of the OIV
Secretary of the General Assembly
Georges DUTRUC-ROSSET