

OXYGEN

New specifications prepared at the 53rd JECFA (1999) and published in FNP 52 Add 7 (1999).

SYNONYMS INS No. 948

DEFINITION

Chemical names Oxygen
C.A.S. number 7727-44-7
Chemical formula O₂
Formula weight 32.0
Assay Not less than 99.0% by volume

DESCRIPTION Colourless and odourless gas

FUNCTIONAL USES Packaging gas

CHARACTERISTICS

IDENTIFICATION

Flame test A glowing splinter, in contact with the gas, bursts into flame

PURITY

Carbon dioxide Not more than 300 µl/l
Pass 1050 ± 50 ml of the gas sample through a carbon dioxide detector tube at the rate specified for the tube. The indicator change corresponds to not more than 300 µl/l.

Carbon monoxide Not more than 10 µl/l
Pass 1050 ± 50 ml of the gas sample through a carbon monoxide detector tube at the rate specified for the tube. The indicator change corresponds to not more than 10 µl/l.

Odour Carefully open the container valve to produce a moderate flow of gas. Do not direct the gas stream toward the face, but deflect portion of the stream toward the nose: no appreciable odour is discernible.

METHOD OF ASSAY

Place a sufficient quantity of ammonium chloride-ammonium hydroxide solution, prepared by mixing equal volumes of water and ammonium hydroxide and saturating with ammonium chloride at room temperature, in test apparatus composed of a calibrated 100-ml burette, provided with two-way stopcock, a gas absorption pipette, and a levelling bulb, both of suitable capacity and all suitably interconnected. Fill the gas absorption pipette with metallic copper in the form of wire coils, wire mesh, or other suitable configuration. Eliminate all gas bubbles from the liquid in the test apparatus.

Activate the test solution by performing two to three tests that are not for record purposes.

Fill the calibrated burette, all interconnecting tubing, both stopcock opening, and the intake tube with liquid. Draw 100.0 ml of oxygen into the burette by lowering the levelling bulb. Open the stopcock to the absorption pipette, and force the oxygen into the absorption pipette by raising the levelling bulb. Agitate the pipette to provide frequent and intimate contact of the liquid, gas, and copper. Continue agitation until no further diminution in volume occurs. Draw the residual gas back into calibrated burette, and measure its volume: not more than 1.0 ml of gas remains.