



Unit 18, 5100 South Service Road
Burlington, Ont. Canada L7L 6A5
Tel: (905) 333-8188
Fax: (905) 333-0500
Toll Free: 1-800-363-7907

Carbon Dioxide (CO₂) Detection Test

INTENDED USE

The Pulse CO₂ TEST is a chemical indicator system designed to provide visible indication of achieving a 5% carbon dioxide environment.

SUMMARY & PRINCIPLES

The growth of many disease-producing microorganisms is either enhanced or dependent on a carbon dioxide environment. The most commonly used environment is a 5% concentration of carbon dioxide. Numerous devices and systems have been developed and proposed for generating an optimum carbon dioxide environment. It is necessary to determine if an optimum environment has been achieved and maintained in specific transport devices and during incubation. The PULSE CO₂ TEST provides a visible indication that a 5% carbon dioxide environment has been achieved and maintained.

The PULSE CO₂ TEST consists of a chemical complex and carrier device. The presence of molecular carbon dioxide forms carbonic acid in the carrier device. When the concentration of carbonic acid exceeds the buffering capacity of the chemical complex, a color change from pink to colorless indicates that a 5% carbon dioxide environment has been achieved. A decrease or termination of a 5% carbon dioxide environment will result in a change from colorless back to the original pink color.

MATERIALS SUPPLIED

1. Paper Disc – 100
2. Reagent A in dropper bottle – 5ml
3. Reagent B in dropper bottle – 5ml

Additional Items Required:

Suitable Anaerobic jar and carbon dioxide-generating device.

STORAGE & STABILITY

The components should be stored at 15-30 degree Celsius in their original, tightly sealed containers. This CO₂ TEST is presented in ready to use format.

The CO₂ TEST should not be used if:

- a) There is evidence of contamination or excessive drying of the aqueous reagents;
- b) There is evidence of improper storage;
- c) The expiration date has passed; and
- d) The test system fails to meet established standards of quality control.

PRECAUTIONS

This product is for In Vitro Diagnostic Use Only and should be used by properly trained and qualified staff. Appropriate precautions should be against microbial hazards. All materials must be disposed of in accordance with Good Laboratory Practice guidelines for the disposal

of infectious waste materials. This product is only an integral part of the overall scheme for the collection, transportation, storage, processing, isolation, identification, and antimicrobial agent susceptibility testing of disease-producing microorganisms. Consult appropriate references for additional methods and procedures.

PROCEDURE

1. Saturate one paper disc with one drop of Reagent A followed by one drop of Reagent B. Immediately, the color of paper disc will turn pink.
2. Place the saturated paper disc into the environmental chamber, candle-extinction jar, carbon dioxide generating bag, or inside the lid of a Petri dish plate.
3. Following an appropriate incubation period (i.e. 18 to 24 hour), visible detection of the presence of 5% to 10% carbon dioxide concentration is available.

INTERPRETATION OF RESULTS

COLOR STATUS	RESULT IN INTERPRATION
Colorless	A concentration of 5% carbon dioxide IS PRESENT
Pink	A concentration of 5% carbon dioxide IS NOT PRESENT

QUALITY CONTROL

1. Saturate one paper disc with one drop of Reagent A followed by one drop of Reagent B. Immediately the color of the paper disc will turn pink.
2. Place the saturated paper disc into a candle-extinction jar. Light the candle and tightly seal the jar. Within two hours from the extinction of the flame, the disc must turn from pink to colorless.
3. After the disc has changed color from pink to colorless, open the candle-extinction jar and allow the accumulated carbon dioxide to evacuate (e.g. by blowing air into the jar). Allow jar to remain unsealed for a period of two hours. Within two hours from opening the jar, the disc must revert to the original pink color.

LIMITATIONS

1. This PULSE CO₂ TEST is only a semi-qualitative method to detect for the presence (or absence) of 5% carbon dioxide atmosphere.
2. For more accurate monitoring of carbon dioxide, other more accurate methods should be used.
3. This product should not be used to monitor carbon dioxide level other than the stated conditions under the PRECAUTIONS Section.
4. A weak candle flame using a candle jar may not generate enough CO₂ to change color from pink to colorless.

REFERENCES

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2. Am. J. Syph. Gonr. Vener. Dis. 1945. 29:19
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Pulse Scientific Inc.
Burlington, Ontario, Canada