

Terragene® solutions to guarantee the safety in the food industry



Biological and Chemical indicators for thermal sterilization of liquid loads

Terragene® offers a simple and effective method for accurate control of sterilization processes in the food industry or in any other that performs sterilization of liquids. Available in a variety of formats, these high performance control devices provide consistent results in the evaluation of the effectiveness of the sterilization program.

Chemdye® Chemical Tubes

CD210 / CD220 / CD230 / CD240 / CD250

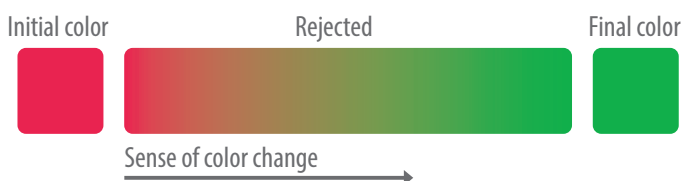
These are easy-to-use multivariable indicators, consisting of borosilicate glass tubes of 40 x 7 mm, sealed at both ends. One end is coded by colors to facilitate the identification of the indicator when outside its package. The tube contains 0,25ml of a thermosensitive red liquid that turns to green when the stated values of the critical process variables of the sterilization process have been reached. The color tubes are calibrated to respond to the specific temperature and time parameters during Dry Heat or Steam sterilization cycles. A permanent color change occurs when the proper parameters have been met at location of each control tube. A reference color guide included in the instructions for use, provides an instant visual check of the results.



Code	Description	Condition	Sterilization
CD210	Black spot	15 min 121 °C / 10 min. 126 °C	Steam
CD220	Yellow spot	3.5 min. 134 °C	Steam
CD230	Green spot	60 min. 160 °C / 30 min. 170 °C	Dry Heat
CD240	Blue spot	12 min. 180 °C	Dry Heat
CD250	White spot	120 min. 160 °C / 35 min. 180 °C / 60 min. 170 °C	Dry Heat

Performance

Chemdye® Chemical Tubes can be placed within the product to be sterilized. After exposure to the specific conditions, the liquid shows a permanent color change indicating that the parameters of the sterilization have been met.



Advantages

Easy to use. Color change from red to green provides an easy interpretation of the results.

Productivity. A permanent color change allows an immediate evaluation of the sterilization cycle.

Effectiveness. It meets the quality standards from Class 4 multivariable indicators according to EN ISO 11140-1:2009.

Flexibility. Different times and temperatures are available to control standard sterilization cycles.

Reliability. Batch number and sterilization date are printed on each box.

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Biological and Chemical indicators for thermal sterilization of liquid loads

Biological indicators: Bionova® Self-contained Spore Ampoules

BT21 / BT22 / BT23 / BT24

Bionova® Self-contained Spore Ampoules have been designed for monitoring industrial sterilization of liquids. Spore ampoules are made of hermetically sealed type I borosilicate glass, containing a specific population of *Geobacillus stearothermophilus* or *Bacillus subtilis* spores and a specially formulated synthetic culture medium that turns to yellow when spores grow. Bionova® Self-contained Spore Ampoules provide visual confirmation of sterilization within 24 hs (BT21, BT22, BT23) and 48 hs (BT24). The ampoules must be kept refrigerated at 4 -8 °C, RH 30-80 %.

Code	Intended use	Packaging	Volume	Initial color
BT21	For Steam sterilization of liquids	200 u. + 20 negative controls	0.6 ml	Purple
BT22	For Steam sterilization of liquids	200 u. + 20 negative controls	0.3 ml	Purple
BT23	For Steam sterilization of liquids	50 u. + 5 negative controls	2.0 ml	Purple
BT24	For Steam sterilization of low temperature liquids (110 °C - 121 °C)	200 u. + 20 negative controls	0.6 ml	Red

Advantages

Advantages over other BIs. The advantage in the usage of an immersible liquid BI for the testing of liquid loads instead of a spore strip or a self-contained BI, lies in the fact that the steam of an autoclave makes contact with the container, unlike solid products, the steam never comes into contact directly with the device to be sterilized, that is, the liquid contained inside of the recipient. It is worth highlighting that it is not possible to use indicators that are not submersible for liquid loads sterilization processes, and it is of great importance to consider the required time of the liquid to achieve the exposure temperature, while the sterilization chamber reaches temperature in a much faster way. That is the reason why the BI must be suspended in the appropriate location to accurately control what occurs in the liquid to be sterilized. Such place is generally the geometrical center of the liquid. Once the cycle has ended, the ampoule can be removed in sterility or directly incubated, as well as the recipient at 60 °C (BT21, BT22, BT23) and at 37 °C (BT24) to observe if growth occurs by color change of the ampoule.

Easy to use and read. Without requiring activation, the ampoules can be incubated at 37/60 °C respectively, even inside the same recipient. For incubation of these ampoules, Terragene® offers the Bionova® IC10/20 Dual Incubator.



BT21



BT22



BT23



BT24

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Accessories



Bionova® Dual Incubator

IC10/20

Bionova® IC10/20 Dual Incubator is a convenient, reliable system for monitoring Steam, Ethylene Oxide, Formaldehyde, Plasma or Vaporized Hydrogen Peroxide (VH₂O₂) and Dry Heat. Bionova® IC10/20 Dual incubator provides optimal conditions for accurate readout of a wide range of products. It consists of a heating block with a large accommodation capacity:

- 34 positions for conventional self-contained and F1 rapid readout biological indicators.

- 14 positions for self-contained ampoules, culture media and pencils for protein detection.

In addition, the incubator contains a special cavity for an external thermometer to sense the temperature along the complete heating block.

Bionova® IC10/20 incubator is pre-set at 37 ± 2 °C or 60 ± 2 °C and has high thermal stability. These temperatures cannot be modified. The incubation temperature can be selected using the switch button located at the base of the incubator. The incubator works at room temperature between 10-30 °C, Relative Humidity of 30-80 %, and voltage of 100-240 volts.

A LED light allows to determine the status of the heating. During the heating, the red light will be intermittent. Once the selected temperature is reached, the light will remain turned on.

Bionova® IC10/20 Dual incubator is manufactured with high quality materials and is easy to use.

Digital thermometer

TB-IC10/20

External accessory to the Bionova® IC10/20 that has the advantage of providing accuracy for temperature control at 37 ± 2 °C or 60 ± 2 °C. The probe length allows the integration of the temperature throughout the heating block.

Specifications

Dimensions: 70 mm (probe)

Range: -50 to +150°C / -58 to +302°F

Resolution: 0.1° between - 19.9° to 199.9°, otherwise 1°

Sampling Rate: 1 second

Battery: 1 pc x 1.5 volt type LR44 or equivalent (not included)

Ambient temperature: -10 to 50°C / +14 to +122°F






TERRAGENE

Ordering Information

Code	Appearance	Description	Units per package	Packaging
CD210		Multi-variable chemical tubes for Steam sterilization processes. 15 min. 121 °C / 10 min. 126 °C. Black spot. Turns from red to green. EN ISO 11140-1 Class 4.	100	
CD220		Multi-variable chemical tubes for Steam sterilization processes. 3-3,5 min. 134 °C. Yellow spot. Turns from red to green. EN ISO 11140-1 Class 4.	100	
CD230		Multi-variable chemical tubes for Dry Heat sterilization processes. 60 min. 160 °C / 30 min. 170 °C. Green spot. Turns from red to green. EN ISO 11140-1 Class 4.	100	
CD240		Multi-variable chemical tubes for Dry Heat sterilization processes. 12 min. 180 °C. Blue spot. Turns from red to green. EN ISO 11140-1 Class 4.	100	
CD250		Multi-variable chemical tubes for Dry Heat sterilization processes. 120 min. 160 °C / 60 min. 170 °C / 35 min. 180 °C. White spot. Turns from red to green. EN ISO 11140-1 Class 4.	100	
BT21/4 BT21/5 BT21/6		Self-contained Spore Ampoules for industrial Steam sterilization of liquids. <i>Geobacillus stearothermophilus</i> (ATCC 7953) 10 ⁴ / 10 ⁵ / 10 ⁶ spores per ampoule (7 x 40 mm). Culture medium 0,6 ml.	200 (+) 20 (-)	
BT22/4 BT22/5 BT22/6		Self-contained Spore Ampoules for industrial Steam sterilization of liquids. <i>Geobacillus stearothermophilus</i> (ATCC 7953) 10 ⁴ / 10 ⁵ / 10 ⁶ spores per ampoule (7 x 40 mm). Culture medium 0,3 ml.	200 (+) 20 (-)	
BT23/4 BT23/5 BT23/6		Self-contained Spore Ampoules for industrial Steam sterilization of liquids. <i>Geobacillus stearothermophilus</i> (ATCC 7953) 10 ⁴ / 10 ⁵ / 10 ⁶ spores per ampoule (10 x 58 mm). Culture medium 2 ml.	50 (+) 5 (-)	
BT24/4 BT24/5 BT24/6		Self-contained Spore Ampoules for industrial Steam sterilization of liquids at low temperature 110 °C - 121 °C. <i>Bacillus subtilis</i> (DSM 5230 ATCC 35021) 10 ⁴ / 10 ⁵ / 10 ⁶ spores per ampoule (7 x 40 mm). Culture medium 0,6 ml.	200 (+) 20 (-)	

Ordering Information

Code	Appearance	Description	Units per package	Packaging
IC10/20		Dual Incubator for Biological Indicators. $37\pm 2\text{ }^{\circ}\text{C}$ or $60\pm 2\text{ }^{\circ}\text{C}$	1	
TB-IC10/20		Temperature sensing probe. Accessory for IC10/20.	1	