

# Medium with an oxygen substrate for simultaneous inspection of coliform group and *E. coli*

## Lauryl sulfate X-GAL MUG medium series



Listed in the Guideline for Food Hygiene Inspection, Attachment II (1996)

### Quicker

- The product inspects coliform group and *E. coli* simultaneously by color and light.
- It detects bacteria in 24 hours (48 hours for BGLB).
- No additional or final testing using EMB or other medium is required.

### Less expensive and simpler

- No Durham tube is required.
- No water thermostat is required.
- A medium or test tube need not be prepared, and there is no cleaning (except for XM broth). When inspecting *E. coli*, be sure to use the BL-02 (an ultraviolet lamp of 1 366 nm).

Product name	Code #	Use	Quantity
Sterilized liquid medium Pro-media MT-30	MT-30	For a 1-ml sample	10ml x 120 test tubes or equivalent
Sterilized liquid medium Pro-media MT-31	MT-31	For a 10-ml sample	Double-concentration 10ml x 120 test tubes or equivalent
Sterilized liquid medium Pro-media MT-32	MT-32	For a 5-ml sample	Double-concentration 5ml x 120 test tubes or equivalent
Pro-media XM broth	XMC001	For medium preparation	8.5g / bag x 20
Black light	BL-02	For <i>E. coli</i> inspection, 366 nm	1pc.
MT opener	OS-01	For opening MT containers	1pc.
Paper disc	IND0101	For indole testing	100pcs.
Paper disc	GLU0101	For $\beta$ -glucuronidase testing	100pcs.



Specifications are subject to change without notice, for remodeling or quality enhancement.

## Instruction and Technical data

### How to use MT-30, MT-31, and MT-32 (MT-30, MT-31, MT-32)

- 1) Sterilizing the container surface: Wipe the aluminum-sealed top of the MT container with alcohol, then sterilize it with a flame.
- 2) Unlidding: Use a MT opener (OS-01) to open the aluminum lid of MT. The product can also be opened using a sterilized pipette.
- 3) Sample injection: Inject a sample through the hole that you made in the aluminum lid by using a pipette. Charge: MT-30, 1 ml; MT-31, 10 ml; MT-32, 5 ml
- 4) Cultivation: Cultivation time, 24 hours; cultivation temperature, 36°C ± 0.5°C
- 5) Scrapping: After use, sterilize the product before scrapping it.

\*For XM broth, be sure to dispense and sterilize the adjusted medium in a test tube before use.



### Judgment

#### Coliform group-positive

The  $\beta$ -galactosidase (an indicator of coliform group) is a lactase. This enzyme is present in coliform bacilli that ferment lactose. The coloring enzyme substrate (X-GAL) is hydrolyzed by this enzyme. The substrate then forms 5,5-dibromo-4,4-dichloro indigo, thus turning blue then to violet.

#### *E. coli*-positive

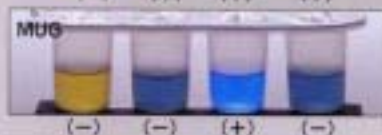
The  $\beta$ -galactosidase (an indicator of *E. coli*) is a peculiar enzyme present only in intestinal bacteria (except *Salmonella* and *Shigella*). This enzyme is retained by 95% of *E. coli*. When this  $\beta$ -glucuronidase is used to hydrolyze a light-emitting enzyme substrate MUG, 4-methylumbelliferon disengages and decomposes, then shows fluorescence when irradiated by ultraviolet radiation (1: 366 nm). The fluorescence can be observed under indoor light.

#### Indole test

Tryptophanase activity (or the ability to form indole from tryptophan) is present in 95% of *E. coli* strain. The indole test is an auxiliary test for detecting  $\beta$ -glucuronidase-negative *E. coli* (about 5%), which is sporadically present.

#### $\beta$ -glucuronidase test

Raw animal meat and fresh seafood contains  $\beta$ -glucuronidase. A coliform group inspection based on a light-emitting enzyme substrate (MUG) may produce fluorescence, thus showing a false-positive reaction, even if *E. coli* is not present. The  $\beta$ -glucuronidase test is an auxiliary test for checking this false indication of positive reaction.



### Formula

17.0g per-1 liter of purified water	
Peptone	5.0g
Sodium chloride	5.0g
Monobasic potassium phosphate	3.0g
Potassium phosphate	2.7g
Sodium lauryl sulfate	0.1g
Tryptophan	1.0g
Sorbitol	1.0g
1.0g MUG from sodium salt	0.20g
	pH 8.0 ± 0.2

[Middle: Indole-positive]  
Evaporated indole acts on filter paper impregnated with p-dimethylaminobenzaldehyde, then turns light violet.

[Middle:  $\beta$ -glucuronidase-positive]  
 $\beta$ -glucuronidase acts on filter paper impregnated with X-GLUC, then turns blue.

## ELMEX Limited

2-2 Ichigayasadohara-cho, Shinjuku-ku, Tokyo 162-0842 JAPAN  
TEL: 081-3-5229-7911 FAX: 081-3-5261-4130  
URL://www.elmex.co.jp e-mail address: info@elmex.co.jp