



## Thermoacidurans Agar

M125

Thermoacidurans Agar is recommended for isolation of *Bacillus thermoacidurans* from food products.

### Composition\*\*

Ingredients	Gms / Litre
Proteose peptone	5.000
Yeast extract	5.000
Dextrose	5.000
Dipotassium phosphate	4.000
Agar	20.000
Final pH ( at 25°C)	5.0±0.2

\*\*Formula adjusted, standardized to suit performance parameters

### Directions

Suspend 39 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 50°C and pour into sterile Petri plates.

### Principle And Interpretation

*Bacillus coagulans* is commonly found in soil and has been isolated from canned tomato products and dairy products. This organism is responsible for flat-sour spoilage of canned foods (1). *B. coagulans* is also referred to as *B. thermoacidurans* (2). They are of primary importance in spoilage of low-acid foods packed in hermetically sealed containers (2). Spoilage due to bacterial growth is accompanied by a reduction in pH from 0.3 to 0.5 (3) and also the ends of the can remain flat. Thermoacidurans Agar, described by Stern et al (3) is recommended by APHA (1) for cultivation and isolation of *B. coagulans* from canned foods. *B. coagulans* is described as a facultative thermophile, that can grow at 20 to 55°C, and can also grow at pH levels between 5.0 to 7.0. *B. stercorophilus* can also grow at 55°C but it can not tolerate a pH value of 5.0 and therefore will not grow on Thermoacidurans Agar.

Proteose peptone and yeast extract provide nitrogenous compounds, vitamin B complex and other essential growth nutrients. Dipotassium phosphate buffers the medium. Dextrose acts as an energy source.

Extract juice from the canned foods and subject it to heat shock. Transfer 1 ml of the heat shocked sample to 4 sterile Petri plates and to each of 2 plates, add 10-20 ml Dextrose Tryptone Agar (M092) and to the other 2 plates, add 10-20 ml Thermoacidurans Agar. *B. coagulans* will form large, cream to white colonies.

### Quality Control

#### Appearance

Cream to yellow homogeneous free flowing powder

#### Gelling

Firm, comparable with 2.0% Agar gel.

#### Colour and Clarity of prepared medium

Yellow coloured clear to slightly opalescent gel forms in Petri plates

#### Reaction

Reaction of 3.9% w/v aqueous solution at 25°C. pH : 5.0±0.2

#### pH

4.80-5.20

#### Cultural Response

M125: Cultural characteristics observed after an incubation at 55°C for 18-48 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Sporulation
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*Bacillus thermoacidurans* 50-100 luxuriant  $\geq 70\%$  positive  
*ATCC 8038*

### Storage and Shelf Life

Store below 30°C in tightly closed container and the prepared medium at 2 - 8°C. Use before expiry date on the label.

### Reference

1. Downes F. P. and Ito K., (Eds.), 2001, Compendium of Methods for the Microbiological Examination of Foods, 4th Ed., APHA, Washington, D.C.
2. Becker M. E., Pederson C. S., 1950, J. Bacteriol., 459:717
3. Stern R. N., Hegarty C. P. and Williams O. B., 1942, Food Research, 7:186.

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