

## 17274 Thermoacidurans Agar

For isolation and cultivation of *Bacillus thermoacidurans* from food products.

### Composition:

Ingredients	Grams/Litre
Proteose peptone	5.0
Yeast extract	5.0
Dextrose	5.0
Dipotassium phosphate	4.0
Manganese sulfate	0.2
Agar	20.0
Final pH 5.0 +/- 0.2 at 25 °C	

Store prepared media below 8 °C, protected from direct light. Store dehydrated powder in a dry place in tightly-sealed containers at 2-25 °C.

### Directions:

Suspend 39.2 g in 1 litre distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 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. stereothermophilus* 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 (Casein peptone 10.0g/l, D(+)-Glucose 5.0g/l Bromocresol purple 0.04g/l, Agar 12.0g/l) and to the other 2 plates, add 10-20 ml Thermoacidurans Agar. *B. coagulans* will form large, cream to white colonies.

Cultural characteristics after 5 days at 15-30°C, aerobic incubation.

Organisms (ATCC)	Inoculum [cfu]	Growth	Recovery	Sporulation
<i>Bacillus thermoacidurans</i> (8038)	50-100	+++	≥70%	positive

### References:

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

