# Urea Agar Base (Christensen) ISO

Cat. 1110

For the confirmation of Enterobacteriaceae on the basis of urease production.

## Practical information

| Aplications | Categories |
|---|---|
| Confirmation | Enterobacteria |
| Confirmation | Salmonella |
| Differentiation | Enterobacteria |

Industry: Water / Clinical / Food

Regulations: ISO 10273 / ISO 19250 / ISO 21567 / ISO 6579

CE IVD

## Principles and uses

Urea Agar Base (Christensen) may be used as an aid in the differentiation of microorganisms, particularly enteric Gram-negative Enterobacteria, on the basis of urea hydrolysis, from clinical samples and other materials. The formula is according to ISO 6579, and ISO 19250.

Urea Agar Base, with TSI Agar (Cat. 1046), may be used as a screening medium for the selection of Salmonella and Shigella. Urea Agar Base is used in spot tests for the rapid detection of urease activity and, when combined with results of other quick screening tests, it is the most common method to detect urease production by Enterobacteria. It is particularly recommended for the differentiation of members of the genus Proteus from those of Salmonella and Shigella in the diagnosis of enteric infections.

Gelatin peptone provides nitrogen, vitamins, minerals and amino acids essential for growth. Dextrose is the fermentable carbohydrate providing carbon and energy. Sodium chloride maintains the osmotic balance. Monopotassium phosphate provides buffering capacity. Urea is a source of nitrogen for those organisms producing urease. Phenol red is the pH indicator. Bacteriological agar is the solidifying agent.

## Formula in g/L

| | | | |
|---|---|---|---|
| Dextrose | 1 | Gelatin peptone | 1 |
| Monopotassium phosphate | 2 | Phenol red | 0,012 |
| Sodium chloride | 5 | Urea | 20 |

Typical formula g/L * Adjusted and/or supplemented as required to meet performance criteria.

## Preparation

Dissolve 29 grams of the Urea Agar Base (Christensen) medium in 100 ml of distilled water and sterilize by filtration. Separately, dissolve 15 grams of agar (Cat. 1800 or Cat. 1802) in 900 ml of boiling distilled water and autoclave at 121 ºC for 15 minutes. Cool the agar at 50 ºC and add it to the 100 ml of the Urea Agar Base (Christensen) already sterile. Mix well and dispense aseptically into sterile tubes. Let the medium solidify in an inclined position. Do not overheat.

Urea is considered a highly hygroscopic substance. If the medium is not kept under controlled conditions of humidity and temperature, caking of the medium may occur. For this reason, avoid sudden changes in temperature of the dehydrated medium.

## Instructions for use

» For clinical diagnosis, the type of sample is bacteria isolated from stool:

- Inoculate the tubes with an inoculation needle and extend the sample in both directions along the surface of the inclinated agar.
- Incubate the tubes with the cap loosened at a temperature of 35±2 ºC for 24±3 hours.
- Reading and interpretation of the results.

» For other uses not covered by the CE marking.

For the confirmation of Salmonella spp. according to ISO 6579 and ISO 19250, Shigella spp. acording to ISO 21567 :
- Streak the agar slant surface.
- Incubate at 37 ºC for 24 hours. Examine at intervals.
- If the reaction is positive, urea is hydrolyzed, liberating ammonia. This changes the color of phenol red to rose-pink and later to deep cerise.
- Typical Salmonella cultures does not hydrolyze urea so that the color of the urea agar will remain unchanged.
- Reincubate all negative cultures daily for up to 7 days for positives such as Brucella.

## Quality control

| Solubility | Appareance | Color of the dehydrated medium | Color of the prepared medium | Final pH (25ºC) |
|---|---|---|---|---|
| w/o rests | Fine powder | Orange-red | Light pinkish-yellow | 6.8 ± 0.2 |

## Microbiological test

Incubation conditions: (37 ºC / 24 h)
Inoculation conditions: Confirmation (isolated colony)

| Microorganisms | Characteristic reaction |
|---|---|
| Salmonella enteritidis ATCC 13076 | Urease (-): No liberation of ammonia, no change of colour |
| Salmonella typhimurium ATCC 14028 | Urease (-): No liberation of ammonia, no change of colour |
| Escherichia coli ATCC 25922 | Urease (-): No liberation of ammonia, no change of colour |
| Shigella flexneri ATCC 29903 | Urease (-): No liberation of ammonia, no change of colour |
| Proteus mirabilis ATCC 29906 | Urease (+): Liberation of ammonia with colour change to rose/rose-pink/deep cerise |

## Storage

Temp. Min.:2 ºC
Temp. Max.:8 ºC

## Bibliography

Christensen J. Bact. 52:641. 1946. Thal and Chen J. Bact. 69:10. 1955. Ewing Enterobacteriaceae. USPHS, Publication 734.
ISO 6579. Microbiology of food and animal feeding stuffs. Horizontal method for the detection of Salmonella spp.
ISO 19250 water quality-detection of Salmonella spp