

# Universal Beer Agar

## Intended Use

Universal Beer Agar (UBA Medium) is used for cultivating microorganisms of significance in the brewing industry.

## Summary and Explanation

Universal Beer Agar is a basal medium to which beer is added. It is based on the formula developed by Kozulis and Page<sup>1</sup> who compared it with other media commonly used in breweries for detecting microbial contamination.<sup>2</sup> The characteristics of Universal Beer Agar are closer to the natural environmental conditions found in the typical brewery than other media studied. It supports growth of more varieties of lactic acid bacteria and yields larger colonies in a shorter time than traditional brewer's media. Due to the presence of beer in the medium, it is selective for growth of microorganisms that have adapted

## User Quality Control

### Identity Specifications

#### Difco™ Universal Beer Agar

Dehydrated Appearance: Medium beige, homogeneous, free-flowing.

Solution: 6.2% solution, soluble in purified water upon boiling. Solution is medium to dark amber, very slightly opalescent.

Prepared Appearance: Medium to dark amber, very slightly opalescent.

Reaction of 6.2%

Solution at 25°C: pH 6.3 ± 0.2

### Cultural Response

#### Difco™ Universal Beer Agar

Prepare the medium per label directions. Inoculate and incubate at 30 ± 2°C for up to 3 days.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY
<i>Acetobacter pasteurianus</i>	12879	10 <sup>2</sup> -10 <sup>3</sup>	Good
<i>Lactobacillus fermentum</i>	9338	10 <sup>2</sup> -10 <sup>3</sup>	Good
<i>Lactobacillus johnsonii</i>	11506	10 <sup>2</sup> -10 <sup>3</sup>	Good
<i>Pediococcus acidilactici</i>	8081	10 <sup>2</sup> -10 <sup>3</sup>	Good

themselves to existent conditions in the brewery. The presence of hop constituents and alcohol inhibits growth of many airborne microorganisms not adapted to this environment.<sup>3</sup>

Universal Beer Agar supports growth of *Lactobacillus*, *Pediococcus*, *Acetobacter* and yeast strains which may be found contaminating the wort and beer.

## Principles of the Procedure

Yeast extract is a source of trace elements, vitamins and amino acids. Peptonized milk contains lactose as an energy source. Tomato juice is a source of carbon, protein and nutrients. Dextrose provides additional carbon. Dipotassium and monopotassium phosphates provide buffering capability. Magnesium sulfate, ferrous sulfate and manganese sulfate are sources of ions that stimulate metabolism. Sodium chloride provides essential ions. Agar is the solidifying agent.

## Formula

### Difco™ Universal Beer Agar

Approximate Formula\* Per Liter

Yeast Extract .....	6.1	g
Peptonized Milk .....	15.0	g
Tomato Juice (from 244 mL) .....	12.2	g
Dextrose .....	16.1	g
Dipotassium Phosphate .....	0.31	g
Monopotassium Phosphate .....	0.31	g
Magnesium Sulfate .....	0.12	g
Sodium Chloride .....	6.0	mg
Ferrous Sulfate .....	6.0	mg
Manganese Sulfate .....	6.0	mg
Agar .....	12.0	g

\*Adjusted and/or supplemented as required to meet performance criteria.

## Directions for Preparation from Dehydrated Product

1. Suspend 62 g of the powder in 750 mL of purified water (or halogen-free tap water). Mix thoroughly.
2. Heat with frequent agitation and boil for 1 minute to completely dissolve the powder.
3. While the medium is still hot, add 250 mL commercial beer (not degassed) and mix well.
4. Autoclave at 121°C for 10 minutes.
5. Test samples of the finished product for performance using stable, typical control cultures.

## Procedure

See appropriate references for specific procedures.

## Expected Results

Refer to appropriate references and procedures for results.

## References

1. Kozulis and Page. 1968. Proc. Am. Soc. Brewing Chemists, p. 52.
2. Murphy and Saletan. 1970. Tech. Q. Master Brew. Assoc. Am. 7:182.
3. MacFaddin. 1985. Media for isolation-cultivation-identification-maintenance medical bacteria, vol. 1. Williams & Wilkins, Baltimore, Md.

## Availability

### Difco™ Universal Beer Agar

Cat. No. 285610 Dehydrated – 500 g

Mexico

Cat. No. 252644 Prepared Plates (60 × 15 mm-style) – Pkg. of 20\*  
252645 Prepared Flasks, 140 mL

\*Store at 2-8°C.