

## TECHNICAL DATA SHEET 741

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# Microring® Bacterial Detectors

Polysciences offers a wide variety of products specific for microbiological and bacterial detection applications. Microring® bacterial detectors are simple, rapid test methods which utilize specific growth factors to identify different microorganisms.

## Microring® XV

Cat. #24644 (50 rings/pkg)

Microring® XV is a paper ring used in Haemophilus identification. It comes complete with individual printed tips containing haemin (X-factor) and nicotinamide adenine dinucleotide-NAD (V-factor) or X+V factor. This ring differentiates Haemophilus species on the basis of growth requirements for X and V factors and can be identified by their growth patterns close to the tips. V-tip also contains  $\delta$ -aminolaevulinic acid (ALA) for Porphyrin test. (The porphyrin test is best performed at the start when the ring is laid on the plate prior to incubation. Using a loop take a sample of the test organism from a growing culture and spread lightly over the V-tip. Non-haemin requiring species will cause an orange-red glow to be seen from the V-tip.)

### Procedure

1. Spread sample of the test organism onto an agar plate of Tryptone Soy Agar or Columbia Agar (without blood).
2. Using sterile forceps, carefully place Microring® XV in the center of the plate. Press each tip gently to ensure contact with surface.
3. Incubate plate overnight at 37° C.
4. Following incubation, growth patterns around each tip are read and used to identify the organism.

### Differentiation of Haemophilus species

| Species                    | Growth results at tip |    |    | Growth factor requirement | Porphyrin synthesis (ALA) | Haemolysis on horse blood* |
|----------------------------|-----------------------|----|----|---------------------------|---------------------------|----------------------------|
|                            | X                     | V  | XV |                           |                           |                            |
| <i>H. influenzae</i>       | NG                    | NG | G  | XV                        | -                         | -                          |
| <i>H. aegypticus</i>       | NG                    | NG | G  | XV                        | -                         | -                          |
| <i>H. parainfluenzae</i>   | NG                    | G  | G  | V                         | +                         | -                          |
| <i>H. haemolyticus</i>     | NG                    | NG | G  | XV                        | -                         | +                          |
| <i>H. parahaemolyticus</i> | NG                    | G  | G  | V                         | +                         | +                          |

X = Haemin    V = NAD and  $\delta$ -aminolaevulinic acid (ALA)    XV = Haemin and NAD    NG = No growth    G = Zone of growth

\* Haemolysis recorded from primary culture.

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**Microring® XV Interpretation**

| Species                    | Growth factor requirements |   | Synthesis of porphyrins from ala | Haemikysis on horse blood |
|----------------------------|----------------------------|---|----------------------------------|---------------------------|
|                            | X                          | V |                                  |                           |
| <i>H. influenzae</i>       | +                          | + | -                                | -                         |
| <i>H. aegypticus</i>       | +                          | + | -                                | -                         |
| <i>H. parainfluenzae</i>   | -                          | + | +                                | -                         |
| <i>H. haemolyticus</i>     | +                          | + | -                                | +                         |
| <i>H. parahaemolyticus</i> | -                          | + | +                                | +                         |

X = Haemin, V = NAD and δ-aminolaevulinic acid (ALA)

**Storage & Handling**

Store Microring® XV at 2-8°C

Rings maintain a shelf life of 24 months from manufacture date.

**Microring® AN**

Cat. #24645 (50 rings/pkg)

Microring® AN is a filter paper ring used for the identification of Non-sporing Anaerobes. It has 6 tips which are impregnated with a range of antibiotics for the identification of species of anaerobic Gram-negative bacilli and can distinguish Gram-positive cocci from Gram-negative cocci. Gram-negative anaerobic rods are found in more than half of clinical specimens containing anaerobes. Although difficult to perform precise identifications, in practice most groups can be presumptively identified from their antibiotic susceptibility profile, which is the basis of the Microring® AN test scheme.

**Procedure**

1. Spread sample of test organism onto a plate containing anaerobic agar.
2. Using sterile forceps, carefully place Microring® AN in the center of the plate. Press each tip gently to ensure contact with surface.
3. Incubate for 24-48 hours at 35-37° C under anaerobic conditions.
4. Following incubation, growth patterns around each tip are read and used to identify the organism. Zone diameters of 15mm or greater are considered susceptible, while those less than 15mm are regarded as resistant.

| Code | Color    | Antibiotic   | Amount  |
|------|----------|--------------|---------|
| E    | Red      | Erythromycin | 60ug    |
| RP   | Dark red | Rifampicin   | 15ug    |
| CO   | White    | Colistin     | 10ug    |
| PG   | Pink     | Penicillin G | 2 units |
| K    | Salmon   | Kanamycin    | 1000ug  |
| VA   | Blue     | Vancomycin   | 5ug     |

**Identification Table**

| Species                           | E | RP | CO | PG | K | VA | Aesculin hydrolysis | Growth in bile | Indole | Other details   |
|-----------------------------------|---|----|----|----|---|----|---------------------|----------------|--------|---|
| <i>B. Fragilis</i>                | S | S  | R  | R  | R | R  | +                   | +              | +      |   |
| <i>Prevotella melaninogenicus</i> | S | S  | V  | S  | R | R  | -                   | -              | -      | Black pigmented colonies with brick red fluorescence. |
| <i>Prevotella oralis</i>          | S | S  | S  | S  | R | R  | +                   | -              | -      |   |
| <i>B. ureolyticus</i>             | S | S  | S  | S  | S | R  | -                   | -              | -      | Oxidase positive.                                     |

E = Erythromycin, RP = Rifampicin, CO = Colistin, PG = Penicillin, K = Kanamycin, VA = Vancomycin  
 S = Sensitive, R = Resistant

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| Species                | E | RP | CO | PG | K | VA | Aesculin hydrolysis | Growth in bile | Indole | Other details               |
|------------------------|---|----|----|----|---|----|---------------------|----------------|--------|-----------------------------|
| <i>F. nucleatum</i>    | S | S  | S  | S  | S | R  | -                   | -              | +      |                             |
| <i>F. varium</i>       | R | S  | R  | S  | S | R  | -                   | +              | +      |                             |
| <i>F. mortiferum</i>   | R | S  | R  | S  | S | R  | +                   | +              | -      |                             |
| <i>Gram-pos. cocci</i> | S | S  | S  | S  | S | R  |                     |                |        |                             |
| <i>Gram-neg. cocci</i> | S | S  | R  | S  | S | S  |                     |                |        |                             |
| <i>F. necrophorum</i>  | S | S  | S  | S  | S | R  | -                   | -              | +      | Lypolytic on egg yolk agar. |

E = Erythromycin, RP = Rifampicin, CO = Colistin, PG = Penicillin, K = Kanamycin, VA = Vancomycin S = Sensitive, R = Resistant

**Microring® AN (GIFU METHOD)**

Recently a new identification scheme has been developed in Japan for use with Microring® AN. Prepare bacterial suspension as above, but adjust turbidity to between 1 and 3 MacFarland. This ensures adequate visible growth within 48hours. Using this inoculum, resistance and sensitivity are measured as follows:

| Size of Zone (mm) | ≤10           | 11-14            | ≥15           |
|-------------------|---------------|------------------|---------------|
| Interpretation    | Resistant (R) | Intermediate (I) | Sensitive (S) |

| Species                           | E   | RP | CO | PG | K | VA |
|-----------------------------------|-----|----|----|----|---|----|
| <i>B. fragilis</i>                | V   | S  | R  | R  | R | R  |
| <i>Prevotella melaninogenicus</i> | S   | S  | V  | S  | R | R  |
| <i>Prevotella intermedia</i>      | S   | S  | S  | V  | R | R  |
| <i>Other pigmented prevotella</i> | S   | S  | S  | S  | R | R  |
| <i>Prevotella oralis</i>          | S   | S  | S  | S  | R | R  |
| <i>Non-pigmented Prevotella</i>   | S   | S  | S  | R  | R | R  |
| <i>Porphyromonas</i>              | S   | S  | R  | S  | R | V  |
| <i>B. ureolyticus</i>             | S   | I  | S  | I  | S | R  |
| <i>F. nucleatum</i>               | R   | S  | V  | S  | S | R  |
| <i>F. varium</i>                  | R   | R  | S  | S  | S | R  |
| <i>Gram-neg. cocci</i>            | I/R | S  | S  | R  | V | R  |
| <i>Campylobacter</i>              | S   | R  | S  | R  | S | R  |
| <i>B. wadsworthia</i>             | R   | R  | S  | R  | S | R  |
| <i>Desulfovibrio</i>              | S   | R  | R  | R  | S | R  |
| <i>C. clostridioforme</i>         | V   | R  | R  | R  | S | S  |
| <i>C. symbiosum</i>               | S/I | S  | R  | R  | S | S  |
| <i>Anaerobispirillum</i>          | R   | S  | S  | R  | S | R  |
| <i>D. pneumonsintes</i>           | I   | I  | R  | R  | S | R  |
| <i>S. wadsorthensis</i>           | S   | S  | S  | R  | S | R  |
| <i>L. buccalis</i>                | R   | S  | S  | R  | S | R  |
| <i>C. ochracea</i>                | S   | S  | R  | I  | R | R  |

E = Erythromycin  
 RP = Rifampicin  
 CO = Colistin  
 PG = Penicillin  
 K = Kanamycin  
 VA = Vancomycin  
  
 S = Sensitive  
 R = Resistant  
 V = Variable

**Storage & Handling**

Store Microring® AN at 2-8°C  
 Rings maintain a shelf life of 12 months from manufacture date.

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## Microring® AC

Cat. #24654 (50 rings/pkg)

Microring® AC is a filter paper ring used for the identification of Gram-positive anaerobic cocci and some microaerophilic cocci. It has 3 individual printed tips containing various antimicrobial reagents. The resistance or sensitivity patterns can be used to help identify anaerobic cocci. In particular, *P. anaerobius* can be readily picked out by its sensitivity to SPS and *P. magnus* can be distinguished from *P. micros* by its resistance to Novobiocin.

### Procedure

1. Spread sample of test organism onto a plate containing anaerobic agar.
2. Using sterile forceps, carefully place Microring® AC in the center of the plate. Press each tip gently to ensure contact with surface.
3. Incubate overnight at 37° C under anaerobic conditions.
4. Following incubation, growth patterns around each tip are read and used to identify the organism.

| Code | Color | Antibiotic                    | Amount |
|------|-------|-------------------------------|--------|
| MZ   | White | Metronidazole                 | 5ug    |
| SPS  | Pink  | Sodium Polyanethol Sulphonate | 1mg    |
| NO   | Blue  | Novobiocin                    | 5ug    |

### Microring® AC Identification

| Species                                    | Metronidazole | Novobiocin | SPS | Indole | Fatty Acids from PYG broth* |
|--|---------------|------------|-----|--------|-----------------------------|
| <i>Peptococcus niger</i>                   | S             | R          | R   | -      | B,C,iv,a                    |
| <i>Peptostreptococcus asaccharolyticus</i> | S             | R          | R   | +      | B,(A,p,l)                   |
| <i>Peptostreptococcus indolicus</i>        | S             | R          | R   | +      | B,(A,p,l)                   |
| <i>Peptostreptococcus magnus</i>           | S             | R          | R   | -      | A                           |
| <i>Anaerococcus prevotii</i>               | S             | R          | R   | -      | B,A,(L),p                   |
| <i>Peptostreptococcus anaerobius</i>       | S             | S          | S   | -      | IC,A,(iv,ib,b)              |
| <i>Peptostreptococcus micros</i>           | S             | S          | R   | -      | A(s)                        |
| <i>Peptostreptococcus productus</i>        | S             | S          | R   | -      | A,l,s                       |
| <i>Peptostreptococcus tetradius</i>        | S             |            | R   | -      | L,B(A,p)                    |
| <i>Atopbium parvulum</i>                   | S             | S          | R   | -      | L,a                         |
| <i>Staphylococcus saccharolyticus</i>      | R/S           | R          | R   | -      | F/A                         |
| <b>Other microaerophilic streptococci</b>  |               |            |     |        |                             |
| <i>Streptococcus intermedius</i>           | R             | S          | R   | -      | L,a                         |
| <i>Gemella morbillorum</i>                 | R             | S          | R   | -      | L,a                         |
| <i>Streptococcus constellatus</i>          | R             | S          | R   | -      | L,a                         |

S = Susceptibility, R = Resistant, R/S = aerotolerant strains resistant

(a) Occasional strains may give a zone size >12mm, but these organisms are easily distinguishable from *Peptostreptococcus anaerobius* as they are resistant to Novobiocin.

(b) Occasional strains may give a small zone to SPS ≤ 12mm in diameter.

\* Gas-liquid chromatography analysis of fatty acid products in Peptone Yeast extract Glucose (PYG) broth.

Capital letters indicate major metabolic products, small letters indicate minor products and parentheses indicate variable reaction.

### Storage & Handling

Store Microring® AN at 2-8°C

Rings maintain a shelf life of 12 months from manufacture date.

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## Microring® GV

Cat. #24655 (50 rings/pkg)

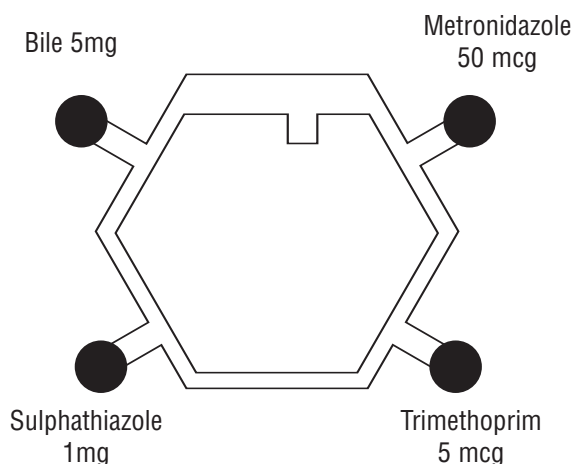
Microring® GV is a filter paper ring used for identification of *Gardnerella vaginalis*. The ring comes complete with 4 individual printed tips containing various antimicrobial reagents. Each tip of the ring contains one of the following reagents; MTZ (metronidazole), TRM (trimethoprim), STZ (sulphathiazole), and BIL, (bile salt). Each tip performs as a single identification disc because of an isolating hydrophobic barrier. On blood agar, *Gardnerella* is identified by sensitivity to 3 designated tips and resistance to 1 tip.

### Procedure

1. Spread sample of test organism onto a plate containing Columbia Agar with blood.
2. Using sterile forceps, carefully place Microring® GV in the center of the plate. Press each tip gently to ensure contact with surface.
3. Incubate plate for 48 hours at 37° C in humid atmosphere containing 5% CO<sub>2</sub>.
4. Following incubation, growth patterns around each tip are read and used to identify the organism.

| Species                      | Mtz | Trm | Stz | Bil |
|------------------------------|-----|-----|-----|-----|
| <i>Gardnerella Vaginalis</i> | S   | S   | R   | S   |
| Vaginal Lactobacilli         | R   | R   | V   | R   |
| Cat -ve Corynebacter         | R   | R   | V   | R   |

MTZ = metronidazole, TRM = trimethoprim, STZ = sulphathiazole, BIL = bile salt  
 S = Susceptible, R = Resistant, V = Variable



### Storage & Handling

Store at 4° C, avoid prolonged exposure to direct sunlight.  
 Microring® GV should be handled with forceps.  
 Avoid contact with skin to prevent contamination.  
 Rings maintain a shelf life 12 of months from manufacture date.

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## Microring® YT

Cat. #24646 (50 rings/pkg)

Microring® YT is a filter paper ring used for the identification of clinically important yeasts, especially *Candida* species. Microring® YT uses the organism's profile of susceptibilities to a small range of reagents as the basis of identification.

Microring® YT carries 6 tips impregnated with a range of dyes and antifungal reagents. Each tip acts like an individual disc because of the isolating hydrophobic barrier. Following overnight incubation, the resistance/sensitivity results of the individual tips are used to produce a 6-figure code which is matched against a database to give the identity of the yeast.

### Procedure

1. Spread sample of test organism onto a plate containing anaerobic agar.
2. Using sterile forceps, carefully place Microring® YT in the center of the plate. Press each tip gently to ensure contact with surface.
3. Incubate for 24-48 hours at 37° C under anaerobic conditions.
4. Following incubation, growth patterns around each tip are read and used to identify the organism.

| Tip # | Contents                             | Color Code | Concentration |
|-------|--------------------------------------|------------|---------------|
| 1     | Janus green                          | Purple     | 156ug         |
| 2     | Ethidium Bromide                     | Salmon     | 37ug          |
| 3     | Triphenol tetrazolium chloride (TTC) | White      | 150ug         |
| 4     | Brilliant green                      | Turquoise  | 200ug         |
| 5     | Cycloheximide                        | White      | 45ug          |
| 6     | Rhodamine 6G                         | Fuschia    | 60ug          |

### Storage & Handling

Store Microring® YT at 2-8°C

Rings maintain a shelf life of 12 months from manufacture date.

### Ordering Information

| Cat # | Description   | Size            |
|-------|---------------|-----------------|
| 24644 | Microring® XV | 1pkg (50 rings) |
| 24645 | Microring® AN | 1pkg (50 rings) |
| 24654 | Microring® AC | 1pkg (50 rings) |
| 24655 | Microring® GV | 1pkg (50 rings) |
| 24646 | Microring® YT | 1pkg (50 rings) |

### To Order:

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In The U.S. Fax: 1-800-343-3291 • 215-343-0214

In Germany Call: (49) 6221-765767

In Germany Fax: (49) 6221-764620

Order online anytime at [www.polysciences.com](http://www.polysciences.com)

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