

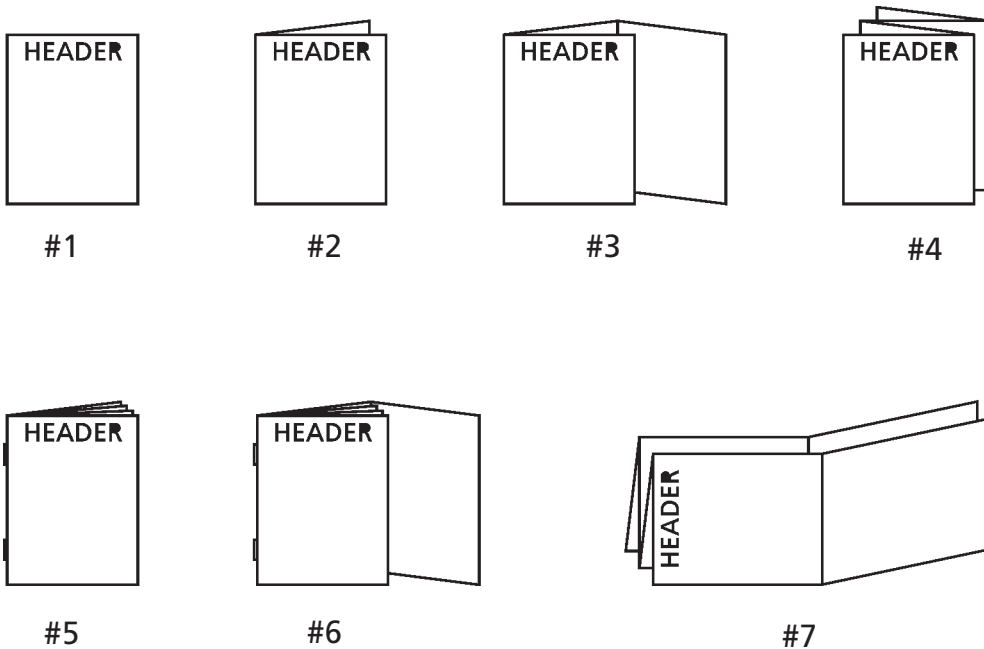
## Revisions

SO 0191-5

Rev from	Rev to	ECO #
0699	0104	2463-03

**Notes:**

1. BD Cat. Number 234210
2. Blank (Sheet) Size : Length: 9"      Width: 3.75"  
 Number of Pages: 2      Number of Sheets: 1  
 Page Size: Length 9"      Width 3.75"      Final Folded Size: 3" x 3.75"
3. Style (see illustrations below): # 7



4. See Specification Control Number N/A for Material Information
5. Ink Colors: Printed two sides  Yes     No  
 No. of Colors: 1      PMS# 2755 Blue
6. Graphics are approved by Becton, Dickinson and Company. Supplier has the responsibility for using the most current approved revision level

Label Design	Date	<small>COMPANY CONFIDENTIAL. THIS DOCUMENT IS THE PROPERTY OF BECTON, DICKINSON AND COMPANY AND IS NOT TO BE USED OUTSIDE THE COMPANY WITHOUT WRITTEN PERMISSION</small>	<b>BD</b> Becton, Dickinson and Company 7 Loveton Circle Sparks, MD 21152 USA	
Proofer	Date			
Checked By	Date			
Part Number: S1197JAA		Category and Description Package Insert, Difco Tinsdale Enrichment Desiccated	Sheet: 1 of 3 <hr/> Scale: N/A	A

**BD Difco™ Tinsdale Enrichment Desiccated**S1197JAA  
2004/01

See symbol glossary at end of insert. / Se symbolglossaret i slutningen af indlægssedlen. / Voir le glossaire des symboles à la fin de la notice. / Siehe Symbol-Erklärungen am Ende der Packungsbeilage. / Δείτε το γλωσσάριο των συμβόλων στο τέλος του ένθετου. / Vedere il glossario dei simboli alla fine del foglio illustrativo. / Consulte o glossário de símbolos no fim do folheto informativo. / Consulte el glosario de símbolos al final del prospecto. / Se symbolförteckningen vid slutet av bipacksedeln.

Kontakt den lokale BD repræsentant for at få instruktioner / Veuillez contacter le Service d'Assistance Technique de BD pour toute instruction. / Um Anleitungen zu erhalten, wenden Sie sich bitte an Ihren BD-Kundendienst. / Επικοινωνήστε με τον τοπικό αντιπρόσωπο της BD για οδηγίες. / Contattare il rappresentante BD di zona per ottenere il foglietto illustrativo. / Contacte o seu representante local da BD para obter instruções. / Para obtener el prospecto del producto, comuníquese con el representante de BD. / Kontakta lokal Becton Dickinson-representant för anvisningar.

**INTENDED USE**

Difco Tinsdale Enrichment Desiccated is used with Difco Tinsdale Agar Base for primary isolation and differentiation of *Corynebacterium diphtheriae*.

**SUMMARY AND EXPLANATION**

Tinsdale Agar Base, supplemented with Tinsdale Enrichment, is employed in the cultural diagnosis of diphtheria. Diphtheria, an acute infectious disease primarily of the upper respiratory tract but occasionally of the skin,<sup>1</sup> is caused by toxigenic strains of *Corynebacterium diphtheriae*. The three biotypes are mitis, intermedius and gravis.<sup>1</sup> The signs and symptoms of the disease are a pharyngeal membrane, sore throat, malaise, headache and nausea.<sup>2</sup> Death can result from respiratory obstruction by the membrane or myocarditis caused by the toxin.<sup>2</sup>

Tinsdale<sup>3</sup> developed a serum-cystine-thiosulfite-tellurite agar medium for the primary isolation and differentiation of *C. diphtheriae*. This formulation distinguished between *C. diphtheriae* and diphtheroids which exhibited similar characteristics. The differential principle is based on the capacity of *C. diphtheriae* to produce a brown or black halo around the colonies.

Billings<sup>4</sup> simplified Tinsdale Basal Medium by using Proteose Peptone No. 3 as a nutrient source. This modification improved the differential qualities and recovery of *C. diphtheriae*. Moore and Parsons<sup>5</sup> confirmed the halo formation of *C. diphtheriae* with one exception; *C. ulcerans* occasionally produced colonies similar to *C. diphtheriae* and required biochemical identification.

**PRINCIPLES OF THE PROCEDURE**

Tinsdale Enrichment Desiccated contains bovine serum and horse serum which provide essential growth factors. L-cystine and sodium thiosulfate provide sulfur for H<sub>2</sub>S production. Potassium tellurite is a selective agent. The formation of black to brown halos surrounding the colony results from the reduction of potassium tellurite by H<sub>2</sub>S to metallic tellurite.

Stabbing the complete Tinsdale Agar with an inoculating needle accentuates darkening of the medium by *C. diphtheriae*.

**REAGENTS****Difco™ Tinsdale Enrichment Desiccated**

Approximate Formula* Per Liter Purified Water	
Bovine Serum	333 mL
Horse Serum	380 mL
L-Cystine	2.0 g
Potassium Tellurite	1.4 g
Sodium Thiosulfate	2.8 g

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

**Warnings and Precautions:**

For Laboratory Use.

Observe aseptic techniques and established precautions against microbiological hazards throughout all procedures. After use, prepared plates, specimen containers and other contaminated materials must be sterilized by autoclaving before discarding.

**Storage instructions:** On receipt, store tubes at 2–8°C.

**PROCEDURE**

**Material Provided:** Difco Tinsdale Enrichment, Desiccated.

**Materials Required But Not Provided:** Ancillary culture media, reagents, quality control organisms and laboratory equipment as required for this procedure.

**Method of Preparation:**

Observe aseptic techniques.

1. Prepare and autoclave Difco Tinsdale Agar Base according to label directions. Cool to 50–55°C.
2. Rehydrate Difco Tinsdale Enrichment Desiccated with 15 mL sterile purified water. Rotate in an end-over-end motion to dissolve completely.
3. Add the rehydrated enrichment to the cooled medium base in the ratio of 15 mL enrichment to 100 mL base. Mix thoroughly.
4. Test samples of the finished product for performance using stable, typical control cultures.

**USER QUALITY CONTROL**

Prepare Tinsdale Agar per label directions. Inoculate to obtain discrete colonies and stab several times using an inoculating needle; incubate at 35 ± 2°C for 18–48 h.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY	APPEARANCE
<i>Corynebacterium diphtheriae</i> biotype gravis	8028	10 <sup>2</sup> -10 <sup>3</sup>	Good	Brown with halos
<i>Corynebacterium diphtheriae</i> biotype mitis	8024	10 <sup>2</sup> -10 <sup>3</sup>	Good	Brown with halos
<i>Klebsiella pneumoniae</i>	13883	10 <sup>2</sup> -10 <sup>3</sup>	Marked to complete inhibition	–
<i>Streptococcus pyogenes</i>	19615	10 <sup>2</sup> -10 <sup>3</sup>	Poor to fair	Brown to black without halos

**RESULTS**

The appearance of brown-black colored colonies surrounded by brown-black halos is presumptive evidence for *C. diphtheriae*.<sup>1</sup>

**LIMITATIONS OF THE PROCEDURE**

1. Tinsdale Agar is not suitable as a primary plating medium, since it may not support the growth of some strains of *C. diphtheriae*.<sup>1</sup>
2. *C. ulcerans*, *C. pseudotuberculosis* and (rarely) *Staphylococcus* species may produce a characteristic halo on Tinsdale Agar.<sup>1</sup>
3. Do not read Tinsdale Agar early because several organisms may exhibit slight browning on this medium in 18 h.<sup>1</sup>
4. Incubation in 5–10% CO<sub>2</sub> retards the development of halos on Tinsdale Agar.<sup>1</sup>
5. On media containing tellurite, diphtheria bacilli are shorter and stain more uniformly; however, granules are less readily observed than when grown on Loeffler's medium.<sup>6</sup>
6. Further biochemical tests may be necessary to distinguish between *C. diphtheriae* and *C. ulcerans* due to similar reactions on this medium.

**AVAILABILITY****Cat. No. Description**

234210 Difco™ Tinsdale Enrichment Desiccated, 6 x 15 mL.

278610 Difco™ Tinsdale Agar Base, 500 g

**REFERENCES**

1. Isenberg (ed.). 1992. Clinical microbiology procedures handbook, vol. 1. American Society for Microbiology, Washington, D.C.
2. Funke and Bernard. 1999. In Murray, Baron, Pfaller, Tenover and Tenover (ed.), Manual of clinical microbiology, 7th ed. American Society for Microbiology, Washington, D.C.
3. Tinsdale. 1947. J. Pathol. Bacteriol. 59:461.
4. Billings. 1956. An investigation of Tinsdale Tellurite medium: its usefulness and mechanisms of halo-formation. M.S. thesis. University of Michigan, Ann Arbor, Mich.
5. Moore and Parsons. 1958. J. Infect. Dis. 102:88.
6. Bailey and Scott. 1966. Diagnostic microbiology, 2nd ed. The C.V. Mosby Company, St. Louis, Mo.



Use by / Anvendes før / Houdbaar tot / Viimeinkäyttöpäivä / A utiliser avant / Verwendbar bis / Ημερομηνία λήξης / Usare entro / Brukes før / Utilizar em / Usar antes de / Använd före /

YYYY-MM-DD / YYYY-MM (MM = end of month) /  
 AAAA-MM-DD / AAAA-MM (MM = slutning af måned) /  
 JJJJ-MM-DD / JJJJ-MM (MM = einde maand) /  
 VVVV-KK-PP / VVVV-KK (kuukauden loppuun mennessä) /  
 AAAA-MM-JJ / AAAA-MM (MM = fin du mois) /  
 JJJJ-MM-TT / JJJJ-MM (MM = Monatsende) /  
 EEEE-MM-HH / EEEE-MM (MM = τέλος του μήνα) /  
 AAAA-MM-GG / AAAA-MM (MM = fine mese) /  
 AAAA-MM-DD / AAAA-MM (MM = slutten av måneden) /  
 AAAA-MM-DD / AAAA-MM (MM = fim do mês) /  
 aaaa-mm-dd / aaaa-mm (mm = fin del mes) /  
 AAAA-MM-DD / AAAA-MM (MM = slutet på månaden) /



Catalog number / Katalognummer / Catalogusnummer / Tuotenumero / Numéro catalogue / Bestellnummer / Αριθμός καταλόγου / Numero di catalogo / Katalognummer / Número do catálogo / Número de catálogo / Katalognummer



Temperature limitation / Temperaturbegrænsning / Temperaturlimit / Lämpötilarajoitus / Température limite / Zulässiger Temperaturenbereich / Όριο θερμοκρασίας / Temperatura limite / Temperaturbegrænsning / Limitação da temperatura / Limitación de temperatura / Temperaturbegrænsning



Batch Code (Lot) / Batch kode (Lot) / Chargennummer (lot) / Eräkoodi (LOT) / Code de lot (Lot) / Chargencode (Chargenbezeichnung) / Κωδικός παρτίδας (Παρτίδα) / Codice del lotto (partita) / Batch-kode (Serie) / Código do lote (Lote) / Código de lote (Lote) / Satskod (parti)



Consult Instructions for Use / Læs brugsanvisningen / Raadpleeg gebruiksaanwijzing / Tarkista käyttöohjeista / Consulter la notice d'emploi / Gebrauchsanweisung beachten / Συμβουλευτείτε τις οδηγίες χρήσης / Consultare le istruzioni per l'uso / Se i brugsanvisningen / Consulte as instruções de utilização / Consultar las instrucciones de uso / Se brugsanvisningen

Becton, Dickinson and Company  
 7 Loveton Circle  
 Sparks, Maryland 21152 USA  
 800-638-8663

Becton, Dickinson France, S.A.  
 38800 Le Pont de Claix, France