

IVD solutions through partnership



MASTISOPLEX[®] *VTEC & E.coli O157*

Individual Kits for the Rapid detection
of VTEC and *E.coli* O157

VT1
VT2

*Escherichia
coli*

E.coli

O157

- Multiplex with Novel Probe Technology
- MAST[®] ISOPLEX VTEC for the detection of VT1 and VT2
- MAST[®] ISOPLEX *E.coli* O157 for the detection of *E.coli* O157
- Inhibition Controls included in each test
- Results achieved in 40 minutes

Introduction

Escherichia coli is a Gram-negative, rod-shaped bacterium commonly found in the gastrointestinal tract of humans and warm-blooded animals. While most *E.coli* constitute the commensal flora of the gastrointestinal tract, there are a number of pathogenic *E.coli* strains which can cause a variety of illness in humans and animals.¹

Verotoxin-producing *Escherichia coli* (VTEC) is one of the major causes of food-borne illness in humans, particularly *E.coli* O157. It is transmitted via the faecal-oral route when food becomes contaminated with the faeces of infected animals, predominantly cattle. The main virulence factors (genes) identified for human pathogenic VTEC are those encoding for verotoxins (VT1, VT2). VTEC causes the onset of bloody diarrhoea and has the potential to cause infections of a more severe nature including haemolytic uraemic syndrome (HUS), which can be problematic for infants often causing renal failure.¹

Rapid detection and identification of VTEC is essential in order to maintain infection control and carry out vital monitoring. The majority of microbiology laboratories use traditional culture methods to perform a single screen for VTEC-O157 such as Sorbitol MacConkey Agar supplemented with cefixime tellurite (CT-SMAC). However, this can result in other serogroups and Sorbitol-fermenting-O157 strains being overlooked, with an average of 80% of cases going undetected.²

Using Novel MAST patented Probe Technology³

MAST ISOPLEX[®] VTEC & **MAST ISOPLEX[®] *E.coli* O157** use loop mediated isothermal amplification (LAMP) technology and come in a convenient lyophilised format.

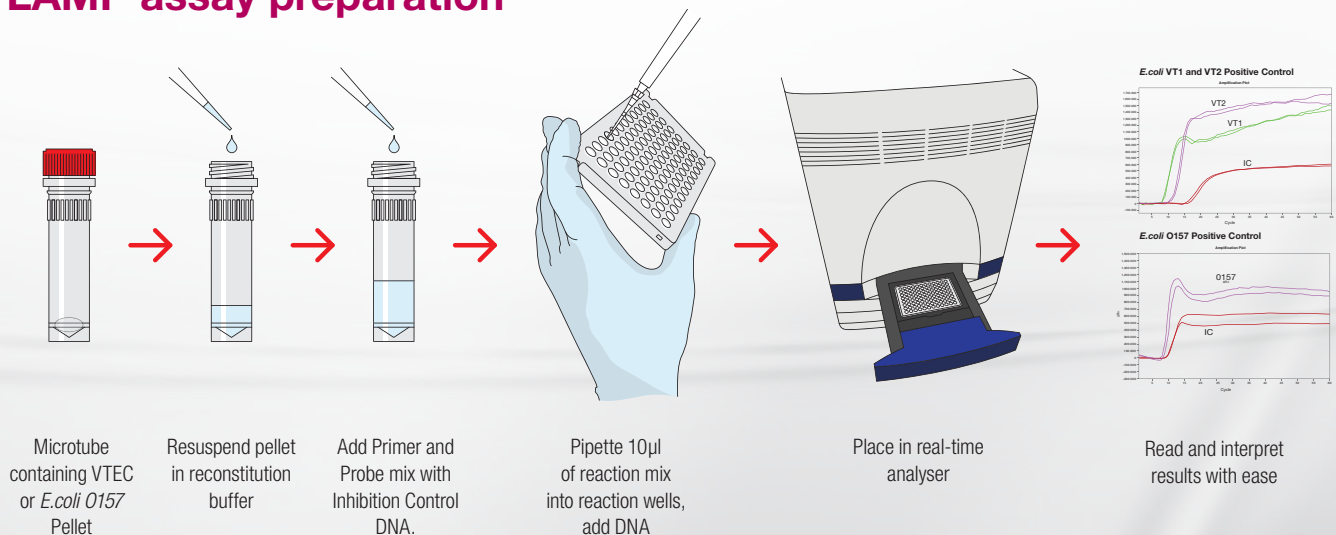
For use with real time thermal cyclers with FAM, TAMRA and CY5 channels

MAST ISOPLEX[®] VTEC kit is optimised for typing of VTEC variants 1 and 2 (VT1 and VT2). VT1 and VT2 genes can be detected simultaneously in a triplex assay format with an inhibition control DNA (IC DNA).

For use with real time thermal cyclers with FAM and TAMRA channels

MAST ISOPLEX[®] *E.coli* O157. The kit contains reagents for detection of Perosamine synthetase (RfbE) expressed by *E.coli* O157. *E.coli* O157 genes can be detected simultaneously in a duplex assay format with an inhibition control DNA (IC DNA).

LAMP assay preparation



Benefits

Kits contain Inhibition Controls

- Reducing false-negative results.

Differentiation between VT1 and VT2

- **MAST ISOPLEX[®] VTEC** detects VT1 and VT2 genes simultaneously

E.coli O157 gene detected

- **MAST ISOPLEX[®] *E.coli* O157** detects *E.coli* O157 gene

Highly Specific and Sensitive

- Highly efficient amplification process can detect femtogram levels of target DNA

Rapid & Easy to Use

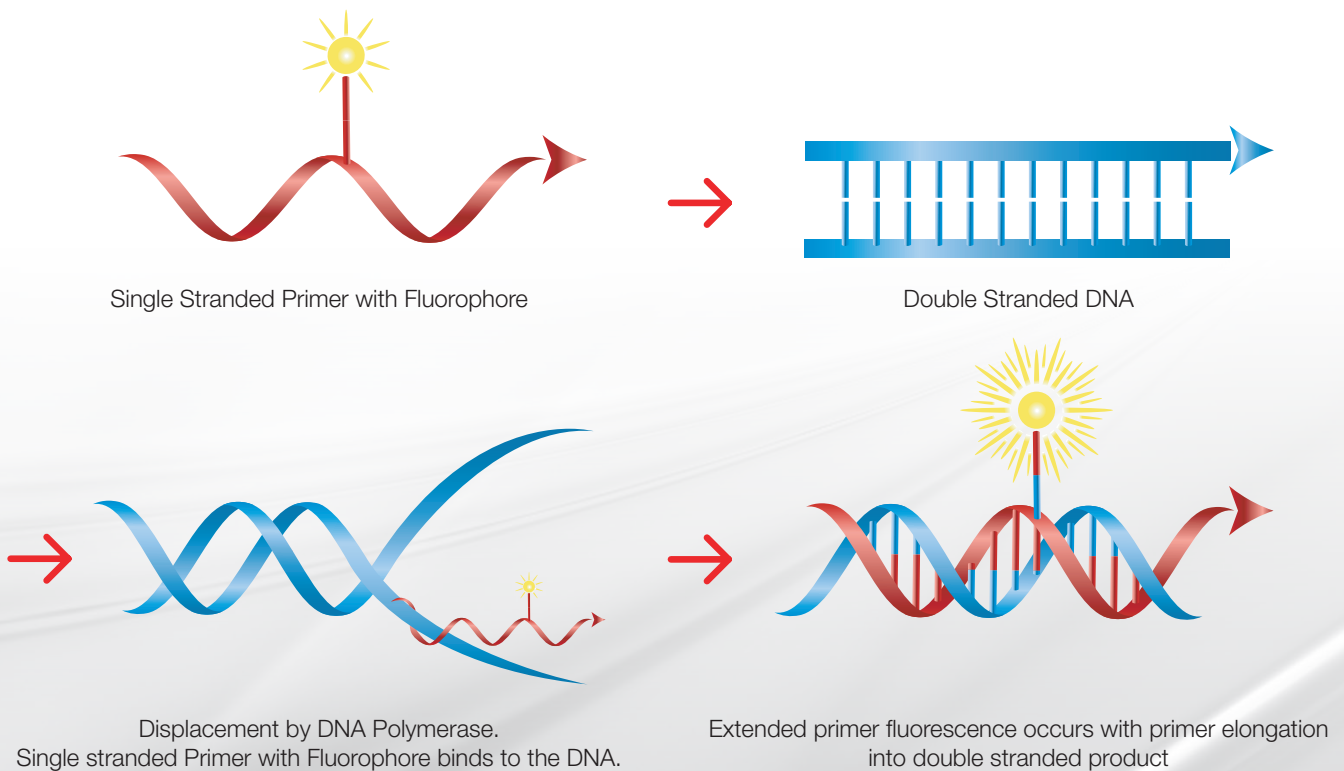
- Results within 40 minutes, permitting rapid reporting and effective outbreak monitoring

CE Marked Kits

- **MAST ISOPLEX[®] VTEC** and **MAST ISOPLEX[®] *E.coli* O157** can be applied within clinical laboratories.

Novel Probe Technology enabling Multiplexing

MAST ISOPLEX[®] LAMP assays rely on 6 specific primers that recognise 8 locations within a target DNA sequence. **MAST ISOPLEX[®] Probe** technology³ consists of single gene-specific oligonucleotides labelled with a fluorophore of choice. These oligonucleotides are incorporated into LAMP primer sets against targets of interest and enable accurate, real-time detection and amplification of target DNA.



Kit Contents

MAST ISOPLEX VTEC	Quantity	MAST ISOPLEX <i>E.coli</i> O157	Quantity
LAMP Pellets (PEL1) Red Cap	X2	LAMP PELLETS (PEL2) Violet Cap	X2
VTEC Primer and Probe Mix with Inhibition Control DNA (PP1) White Cap	X2	<i>E.coli</i> O157 Primer and Probe Mix with Inhibition Control DNA (PP2) Blue Cap	X2
Positive Control DNA Green Cap	X1	Positive Control DNA Brown Cap	X1
Reconstitution Buffer Yellow Cap	X1	Reconstitution Buffer Yellow Cap	X1
Molecular Grade Water Black Cap	X1	Molecular Grade Water Black Cap	X1

Ordering Information

Order Code	Product	Pack Size
DNA/LYO3	MAST ISOPLEX® VTEC	20 Tests
DNA/LYO4	MAST ISOPLEX® <i>E.coli</i> O157	20 Tests

References

1. Public Health England (www.gov.uk) 2018 - Interim Public Health Operational Guidance for Shiga toxin producing *Escherichia coli* (STEC)
2. Van Duynhoven, Y.T. H. P. et al. 2008. Prevalence, characterisation and clinical profiles of Shiga toxin producing *Escherichia coli* in The Netherlands. *Clin Microbiol Infect* **14**, 437 – 445
3. Suwara MI, Javed S, Gillies EA. Nucleic acid probe with single fluorophore label bound to internal cytosine for use in loop mediated isothermal amplification. World intellectual Property Organization WO2015/063498.

*** Licensed under International Patent application numbers:**

WO 00/28082, WO 01/34790, WO 01/34838, WO 01/83817, WO 01/77317, WO 02/24902, WO 02/103053 and corresponding patents owned by Eiken Co., Ltd., Japan in other countries.

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