

Testing for
E. coli O157 (Including H7)
in Composite
375 gram samples

Beef Trim





E. coli O157:H7 is an important human pathogen that has been linked to numerous food borne outbreaks due to the consumption of improperly cooked beef. *E. coli* O157:H7 is regulated by the USDA-FSIS under directive 10.010.1 as an adulterant if present in raw beef products. Beef producers and suppliers have rigorous testing programs in place to screen their products for *E. coli* O157 including *E. coli* O157:H7.

Due to the perishable nature of raw beef, pathogen testing methods must provide accurate results in the shortest time frame possible. Testing must facilitate the recovery of potentially injured cells plus allow amplification of low cell numbers to levels that are detectable by rapid microbiological methods. The quality of the enrichment media used for the initial part of any rapid screen plays a vital role in the success of the entire method.

Recommended Sample Size For RapidChek® *E. coli* Testing: Beef Trim

The use of rapid methods to detect *E. coli* O157 and *E. coli* O157:H7 are everyday practices for meat suppliers and processors. No matter what method a supplier chooses to use, all tests consist of two parts: **Enrichment** followed by **Detection**. Many factors need to be taken into consideration: sample matrix, time, temperature and sample size. Each plays an important role in the ability of the **Enrichment** to resuscitate and grow the *E. coli* if present in a sample. The importance of proper and efficient enrichment applies to all types of detection methods whether they are PCR, immunoassay, cultural or any combination of these.

Standard food industry practice has been to test 25 gram samples of meat. This is the sample size that rapid methods have initially validated. Recently, the meat industry has shifted from the validated 25 gram sample size to a more economical and efficient 375 gram composite sample size.



RapidChek *E. coli* O157 (Including H7) has been validated by an independent laboratory to test 375 gram samples of beef trim within 10 hours when incubated at 42°C and used at a 1:5 sample to media dilution.

Recommended Best Practices For Testing Beef Trim With RapidChek *E. coli* O157.

Collecting the Sample

SDIX recommends that meat suppliers and processors follow the recommendations and best practices outlined by both the USDA-FSIS and BIFSCO. Their recommendations can be found on the following web sites:

www.bifsc.org under "Best Practices"
www.fsis.usda.gov

Routine samples: RapidChek *E. coli* O157

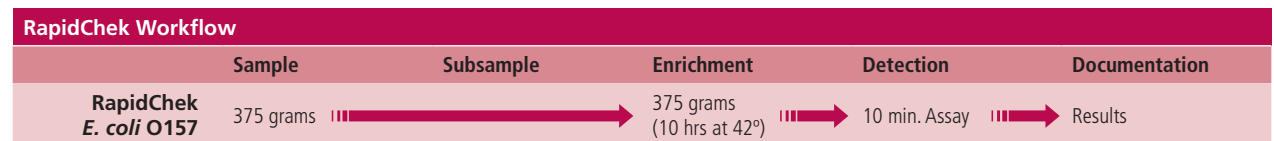
There is third party validation data to demonstrate that the RapidChek *E. coli* O157 test method works well for detecting *E. coli* O157 in a 375 gram beef trim composite sample within a 10 hour time period when incubated at 42°C at a 1:5 sample to media dilution. SDIX recommends that meat suppliers, processors and third party laboratories follow current practices and test 375 gram samples of beef trim. Proper testing of a 375 gram beef trim composite sample follows these steps:

- 1 Prepare the N60 sample at a 1:5 sample to media dilution
- 2 Enrich sample for 10 hours at 42°C
- 3 Perform detection and document results

Cited below is the validation study demonstrating that RapidChek *E. coli* O157 is reliable and accurate for screening a 375 gram beef trim sample.

Comparative Evaluation of the RapidChek *E. coli* Test Method for Detection of *E. coli* O157 (Including H7) in Beef Trim.

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Choosing the best testing approach is essential to achieving the standard of continuous improvement required under HACCP. Testing methods should also have a meaningful impact on the total cost in use for food safety programs and most importantly, provide maximum assurance of reliability in your results through documented studies and data.

In response to recent industry testing changes, it has become increasingly important to review and redesign testing protocols to detect *E. coli* O157:H7 in raw beef products. The effects of compositing samples while maintaining shortened incubation times and the use of rapid detection devices must be managed appropriately. This document provides information with the goal of contributing to your success in implementing good HACCP principles and ensuring accurate results.





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