

# ORTEC®

## FoodGuard-2: Software for Quantitative Determination of Radionuclides in Food



Add-On Kit for ORTEC GammaVision Installations

# FoodGuard-2-AK

- Easily installed add-on brings the simplicity and flexibility of the FoodGuard-2 assay system to existing ORTEC GammaVision installations.
- Simple and interactive user interface to increase efficiency and decrease error.
- Editable activity limits tables derived from international standards for permissible radiation levels in food.
- Configurable alarms activated when activity level, percentage, or sum of activities is exceeded.
- Professional and customizable reports, in HTML and PDF format, for easy sharing and archiving of results.
- Supplied with a <sup>40</sup>K check source and 2-liter Marinelli beakers.
- Operator selectable calibration files for supporting additional sample containers and geometries.

The image displays four overlapping windows from the FoodGuard-2 software interface:

- Editing Limits:** Shows a table of alarm limits for various sample types and nuclides.
- System Setup:** Shows configuration parameters for the detector and administrative information.
- Run Sample:** Shows a real-time energy spectrum plot with a peak at 2047 keV.
- Analysis Report:** A detailed report for sample TD-KF-201108311722-AB, including activity levels and alarm status.

**Editing Limits - Alarm Limits Table:**

Sample Types	Alarm Limits	DIL (Bq/kg)	AL (Bq/kg)	AL (%)
W Water	<input checked="" type="checkbox"/> CS-134	100.00	50.00	50.00
M Milk	<input checked="" type="checkbox"/> CS-137	1000.00	200.00	50.00
V Vegetables	<input checked="" type="checkbox"/> I-131	100.00	50.00	25.00
G Grains				
P Proteins				
I Infant Foods				

**System Setup - Parameters:**

Counting: Detector: DSPEC\_PRO LAB 02  
 Calibration File: C:\User\FoodGuard-2\Ci  
 Check Source Activity: 31881.00 dps  
 Preset Sample Count Time: 10.00 min  
 Maximum Input Count Rate: 550.00 cps  
 Entry Format: All Details

Administrative: Department Code: AB - ABC Laboratories  
 Serial Number: 1B3-7742  
 Report Header: ABC Laboratories  
 Supervisor Password: \*\*\*\*\*  
 Confirm Password: \*\*\*\*\*

**Run Sample - Spectrum:**

Sample: TD-KF-201108311722-AB-14  
 278/550 CPS Horizontal  
 Marker: 2047 = 749.47 keV 10 Cnts

**Analysis Report - Summary:**

**ORTEC® FoodGuard-2 Analysis Report**  
 ABC Laboratories  
 System Serial Number: 1B3-7742 Department: ABC Laboratories

Sample Code: TD-KF-201108311722-AB Operator: SPT  
 Sample Type: Total Sample Name: Diet  
 Sample Location: Kingston Place of Origin: Container A123D03  
 Sample Date: Aug 31, 2011 17:22:03 Sample Weight: 0.75Kg

Analysis Start: Aug 31, 2011 17:22:06 Limits Library: USFDA Derived  
 Counting Time: 123.90s (3% dead) Live Time: 120.00s  
 The count rate (703.48 cps) is below the alarm threshold of 1400.00 cps  
**WARNING -- The sum of the activity over limit ratios (2.85) is at or above the alarm threshold of 1.00**

**Absolute Level Nuclide Report:**

Nuclide	Activity (Bq/Kg)	Uncertainty	Limit (Bq/Kg)	% of Alarm	Alarm
<sup>241</sup> Am	0.0	2.31%	2.0	0%	
<sup>131</sup> I	0.0	2.75%	170.0	0%	
<sup>103</sup> Ru	0.0	2.71%	6800.0	0%	
Group 01	3419.8	2.92%	1200.0	285%	***
Group 02	0.0	0.77%	2.0	0%	

\*\*\* A Nuclide Alarm Was Triggered

**Percent Level Nuclide Report:**

Nuclide	Activity (Bq/Kg)	Uncertainty	DIL (Bq/Kg)	% DIL Limit	% of Alarm	Alarm
<sup>241</sup> Am	0.0	2.31%	2.0	100%	0%	
<sup>131</sup> I	0.0	2.75%	170.0	100%	0%	
<sup>103</sup> Ru	0.0	2.71%	6800.0	100%	0%	

No Nuclide Alarms Triggered

# FoodGuard-2-AK

ORTEC FoodGuard 2 is a fully quantitative solution to the assay of foodstuffs for radioactivity through high-resolution gamma spectrometry with high purity germanium detectors. It has been designed to simplify and streamline the processing of samples in a busy laboratory environment. The FoodGuard-2-AK add-on kit is an easily installed, add-on for any ORTEC gamma spectrometry system which is already using GammaVision software.. It can be installed in minutes without affecting the operation of the GammaVision system and, once calibrated, provides the user with the full features of the standard FoodGuard-2 system. This represents a great simplification of operation.

The resultant workstation is a ready-to-use, full featured system for performing sophisticated analysis of food, water, and other agricultural samples containing any form of gamma ray emitting radioactive material which can be present following an accident or terrorist incident.

The FoodGuard-2 workstation software includes example limits tables from international regulatory organizations, such as the US FDA and World Health Organization, for acceptable activities of radionuclides such as  $^{137}\text{Cs}$ ,  $^{134}\text{Cs}$ , and  $^{131}\text{I}$ . These tables can also be customized with additional nuclides and different limits to meet your specific needs.

To render the FoodGuard-2 system operational, a supervisor calibrates, and sets up the sample types, alarm limits, and report outputs in a few easy steps. For routine "high sample throughput" use, an operator then enters a few key pieces of sample information using the interactive user interface, places a sample in one of the included Marinelli beakers, and starts counting.

During the count, the software provides feedback such as a spectrum and alarm notifications before presenting a professionally formatted report that can be shared or archived. The operation is designed for high sample throughput and clear results.

## What is in a FoodGuard-2-AK Add-On Kit?

The FoodGuard-2-AK add-on kit includes 6 each, 2-liter Marinelli sample beakers and a check source comprising a 2-liter Marinelli beaker filled with KCl ( $^{40}\text{K}$ ). These beakers are suitable for use with HPGe detectors with an endcap diameter of less than or equal to 83 mm. Calibration requires either the use of a replicate (a 2-liter Marinelli) standard, or if not available, the calibration may be transferred from another similar geometry (such as a 1-liter Marinelli or bottle) using the OPTIONAL ANGLE Efficiency Transfer software.<sup>1</sup>



In addition to the sample containers and check source, the FoodGuard-2-AK add-on kit includes two software items:

FG-2-B32 FoodGuard-2 Software version 1.0.11 or later.

797230 CONNECTIONS Upgrade kit version 7.02.03 or later.

## System Minimum Detectable Concentration

The MDC achieved will depend on the specifics of the system on which it is installed: specification of lead shield, relative efficiency of HPGe detector, sample size/quantity.

In the table below, MDC is specified for a 20% detector and 2-liter Marinelli beakers of liquid in a typical system. (Not guaranteed on any specific system). MDCs for larger detectors and longer count times will be lower (better).

Calibrations for additional sample densities and geometries can be created using GammaVision. Once created, the operator can easily load different calibrations for different sample types.

Measured $^{137}\text{Cs}$ MDC*	Count Time
0.75 Bq/L	10 Minutes
0.5 Bq/L	30 Minutes
*Calculated using ISO 11929 method.	

# FoodGuard-2-AK

## System Prerequisites

The FoodGuard-2-AK upgrade software will function correctly with any system currently operating ORTEC GammaVision under Windows XP or Windows 7 (32-bit)

## Ordering Information

Model	Description
FOODGUARD-2-AK	FoodGuard-2 Add-On Kit comprising: FoodGuard-2 Software CONNECTIONS Software upgrade 6 each 2-liter Marinelli beakers <sup>40</sup> K check standard
Optional	
ANGLE-BW	Advanced Efficiency Calibration software for HPGe detectors

Specifications subject to change  
080217

**ORTEC**<sup>®</sup>

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