

Summary of Results

External Quality Assessment of Water Microbiology Bottled and Mineral Water Scheme

Distribution Number: BMW37

Sample Numbers: BMW37A, BMW37B

Distribution Date:	January 2025
Results Due:	31 January 2025
Report Date:	06 February 2025
Samples prepared and quality control tested by:	Divya George Afifa Halim Nafeesa Hussain Sabine Naujokat Zak Prior Jake Videlefsky
Data analysed by:	Joanna Donn Nita Patel
Report compiled by:	Joanna Donn Nita Patel
Authorised by:	Nita Patel

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UK Health Security Agency
Food and Environmental Proficiency Testing Unit (FEPTU)
61 Colindale Avenue
London
NW9 5EQ
Tel: +44 (0)20 8327 7119
Fax:

For further information about the scheme please refer to:

Scheme Guide: <https://www.feptu.org.uk/schemes/scheme-guide/>

Guide to Scoring and Statistics: <https://www.feptu.org.uk/schemes/scoring/>

General guidance for z-scores:

Participants' enumeration results are converted into z-scores using the following formula:

$$Z = \frac{(X_i - X_{pt})}{\sigma_{pt}}$$

X_i = participants' result expressed (expressed as a log₁₀ value)
 X_{pt} = assigned value (participants' consensus median (expressed as a log₁₀ value))
 σ_{pt} = the fixed standard deviation for the examination (calculated by FEPTU)

The σ_{pt} -value expresses the acceptable difference between the individual participant's result and the participants' consensus median. The σ_{pt} -value used for calculating z-scores for all parameters in the Bottled and Mineral Water Scheme is 0.35. A guide to interpreting z-scores follows, although laboratories must interpret their scores in the context of their own laboratory situation.

z = -1.99 to +1.99 **satisfactory**
z = -2 to -2.99 or +2 to +2.99 **questionable**
z = < -3.00 or > +3.00 **unsatisfactory**

It is usually recommended that z-scores exceeding +/-2 are investigated to establish the possible cause. As a general rule, UKHSA recommends that all questionable and unsatisfactory results are investigated.

FEPTU Quality Control: To demonstrate homogeneity of the sample, a minimum of 10 LENTICULE® discs, selected randomly from a batch, are tested in duplicate for parameters requiring enumeration.

To demonstrate stability of the sample, a minimum of six LENTICULE discs, selected randomly from a batch, are examined throughout the distribution period for enumeration parameters.

UK Health Security Agency uses methods stipulated in The Natural Mineral Water, Spring Water and Bottled Drinking Water (England) Regulations (2018).

The FEPTU results are used for guidance in the preliminary intended results notification, letters are posted on the website immediately after every distribution; electronic notification of their availability is sent to all participants.

Refer to section 19.0 of the Scheme Guide if you have experienced difficulties with any of the examinations.

<https://www.feptu.org.uk/schemes/scheme-guide/>

Participants are reminded that reporting an incorrect or false negative results could have serious public health implications.

Results as summarised in the performance assessment sheet included in this report, provide a more effective indication of on-going problems with the enumeration of low levels of indicator organisms in bottled and mineral water samples. Performance assessment cannot be undertaken as effectively if laboratories do not participate in all distributions for the Bottled and Mineral Water Scheme.

Please contact FEPTU staff for advice and information:

Repeat samples	Carmen Gomes or Kermin Daruwalla	Tel: +44 (0)20 8327 7119
Data Analysis	Nita Patel	Fax:
Microbiological advice	Nita Patel or Zak Prior	Email: foodeqa@ukhsa.gov.uk
General comments and complaints	Nita Patel or Zak Prior	FEPTU's website
Scheme consultants	Stephen Bullock	
Scheme Co-ordinator	Nita Patel	

Accreditation: UKHSA Water EQA Scheme for Bottled and Mineral Water is accredited by the United Kingdom Accreditation Service (UKAS) to ISO/IEC 17043:2010.



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Sample: BMW37A

Contents:

Citrobacter freundii (48) (wild strain), *Escherichia coli* (72) (wild strain), *Enterococcus casseliflavus* (46) (wild strain), *Pseudomonas aeruginosa* (25) (wild strain), *Paeniclostridium sordellii* (previously known as *Clostridium sordellii*) (22 per 50mL) (wild strain), *Staphylococcus saprophyticus* (8 per mL) (wild strain)

Expected Results:

All counts are expressed as colony forming units (cfu) in 250mL except sporulated sulphite-reducing anaerobes which is in 50 mL and the colony counts at 37°C/24h and 22°C/72h which are cfu per mL.

The fixed standard deviation value (σ_{pr} value) used for calculation of the z-scores is 0.35 for all parameters.

Parameter	Coliform bacteria	<i>E.coli</i>	Enterococci	<i>P.aeruginosa</i>	Sporulated sulphite-reducing anaerobes	Colony count 37°C/24h	Colony count 22°C/72h
FEPTU median	128	71	46	29	21	6	8
No. results returned	46	46	46	43	35	45	42
Assigned value (Participants median all)	114	78	39	14	25	15	5
Uncertainty of assigned value*	0.05	0.04	0.02	0.08	0.07	0.03	0.1
Participants mean (all results)	106	72	39	18	25	15	5
Participants median (MPN only)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Participants median (MF only)	113 (n=44)	77 (n=44)	N/A	N/A	N/A	N/A	N/A
Expected Range	33 - 360	25 - 247	12 - 123	1 - 43	1 - 79	5 - 47	1 - 16
Standard deviation**	0.23	0.2	0.09	0.27	0.31	0.14	0.48
No of outlying counts	5	4	1	0	8	1	4
False positives	N/A	N/A	N/A	N/A	N/A	N/A	N/A
False negatives	0	0	1	13	8	0	2
Your result							
Score for performance assessment							
Z-score							

* $U(X_{pr})$ is based on results transformed to a log₁₀ scale

** Robust S^* based on median absolute deviation about the participants' median ($MADe$)

Total sent samples	49
Not examined	2
Non returns	1

Sample: BMW37B

Contents:

Enterobacter cloacae (54) (wild strain), *Escherichia coli* (24) (wild strain), *Enterococcus durans* (48) (wild strain), *Pseudomonas aeruginosa* (44) (wild strain), *Clostridium perfringens* (46 per 50mL) (wild strain), *Kocuria kristinae* (33 per mL) (wild strain), *Pseudomonas fluorescens* (8 per mL) (wild strain)

Expected Results:

All counts are expressed as colony forming units (cfu) in 250mL except sporulated sulphite-reducing anaerobes which is in 50 mL and the colony counts at 37°C/24h and 22°C/72h which are cfu per mL.

The fixed standard deviation value (σ_{pr} value) used for calculation of the z-scores is 0.35 for all parameters.

Parameter	Coliform bacteria	<i>E.coli</i>	Enterococci	<i>P.aeruginosa</i>	Sporulated sulphite-reducing anaerobes	Colony count 37°C/24h	Colony count 22°C/72h
FEPTU median	81	23	49	43	50	22	32
No. results returned	46	46	46	45	35	45	42
Assigned value (Participants median all)	68	21	44	39	47	26	31
Uncertainty of assigned value*	0.03	0.03	0.02	0.04	0.03	0.02	0.02
Participants mean (all results)	67	23	44	36	45	26	29
Participants median (MPN only)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Participants median (MF only)	68 (n=44)	21 (n=44)	N/A	N/A	N/A	N/A	N/A
Expected Range	22 - 215	7 - 66	14 - 139	11 - 123	15 - 149	8 - 82	10 - 96
Standard deviation**	0.14	0.15	0.1	0.24	0.13	0.12	0.12
No of outlying counts	1	1	4	6	3	0	1
False positives	N/A	N/A	N/A	N/A	N/A	N/A	N/A
False negatives	0	1	2	0	1	0	0
Your result							
Score for performance assessment							
Z-score							

* $U(X_{pr})$ is based on results transformed to a log₁₀ scale

** Robust S^* based on median absolute deviation about the participants' median ($MADe$)

Total sent samples	49
Not examined	2
Non returns	1

Performance Assessment Sheet

Distribution	Sample	Coliform bacteria score	<i>Escherichia coli</i> score	Enterococci score	<i>Pseudomonas aeruginosa</i> score	Sporulated sulphite-reducing anaerobes	Colony Count 37°C/24 h score	Colony Count 22°C/72 h score
BMW37	BMW37A							
	BMW37B							
BMW36	BMW36A							
	BMW36B							
BMW35	BMW35A							
	BMW35B							
Total maximum possible score								
Total percentage								

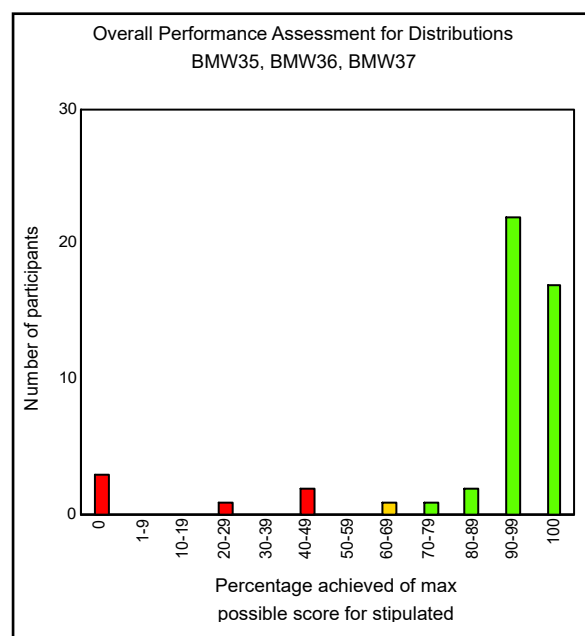
Performance Assessment Comment:

Participants are reminded that to take advantage of the performance assessment overtime tool provided in the reports they need to take part in more than one distribution a year.

Performance assessments are designed to alert participants to on-going problems with their examinations and are provided after every distribution. Scores are allocated to results reported for every parameter, for every sample to help assess performance.

Cumulative scores are calculated for the current and the previous two distributions for the Bottled and Mineral Water Scheme. Participants' cumulative scores for each of the examinations are compared with the maximum possible scores after every distribution.

Your overall performance with the enumerations of low levels of indicator organisms in Bottled and Mineral Water proficiency testing samples for the current and the previous two distributions are collated in the chart to



Performance Assessment Comment:

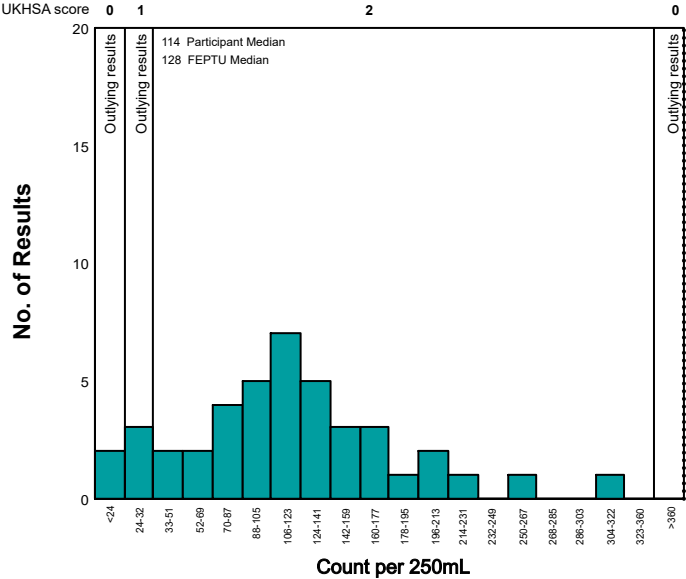
Laboratories that achieve less than 70% of the maximum possible score are likely to be experiencing significant problems with their examinations and are advised to:

- refer to the relevant distribution reports for sample-specific comments
- refer to the website guidance documents:

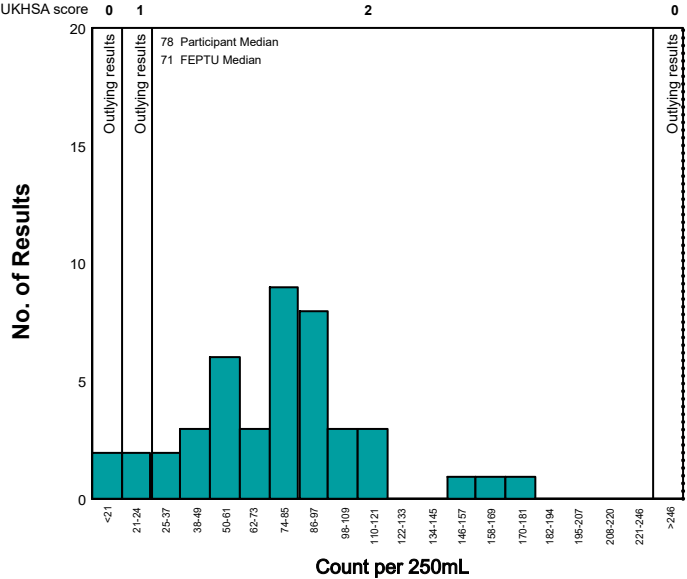
[Scheme Guide - FEPTU](#) and [Scoring - FEPTU](#)

- contact the organisers for advice

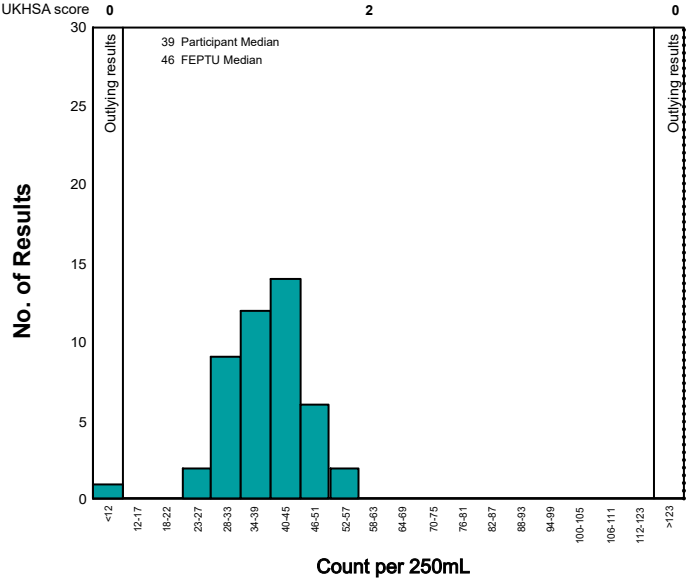
BMW37A: Coliform bacteria



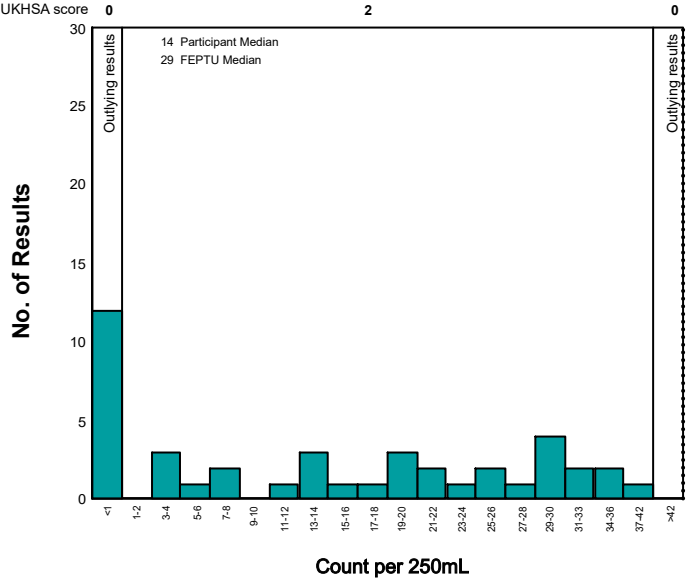
BMW37A: *Escherichia coli*



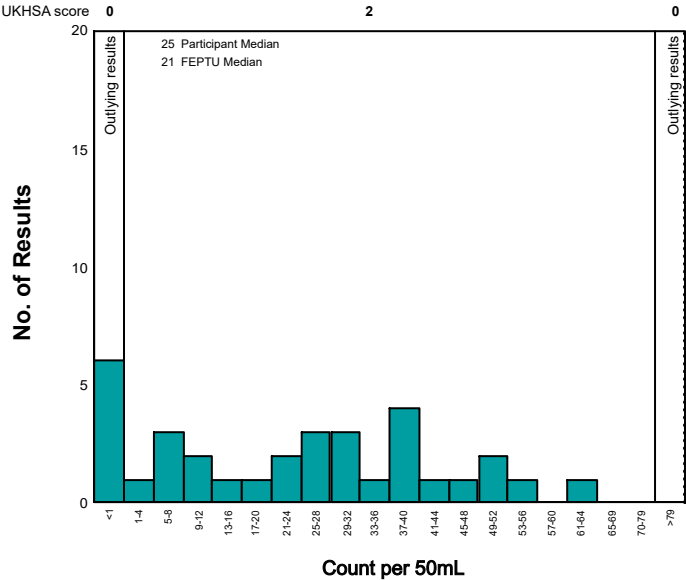
BMW37A: Enterococci



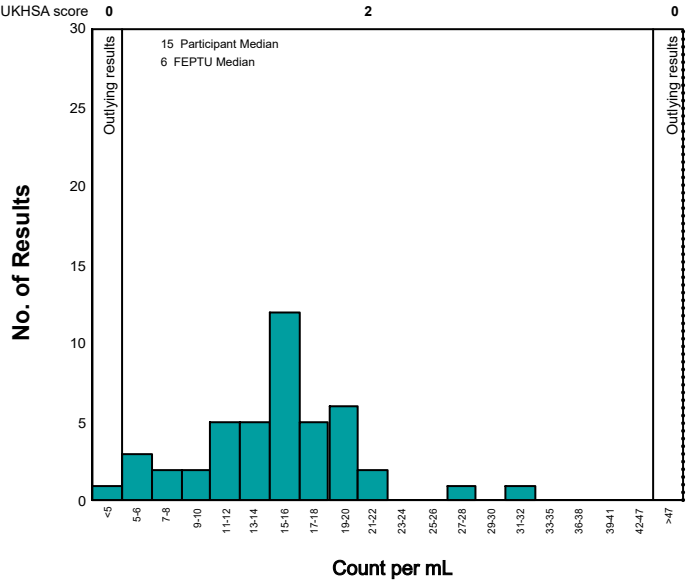
BMW37A: *Pseudomonas aeruginosa*



BMW37A: Sporulated sulphite-reducing anaerobes

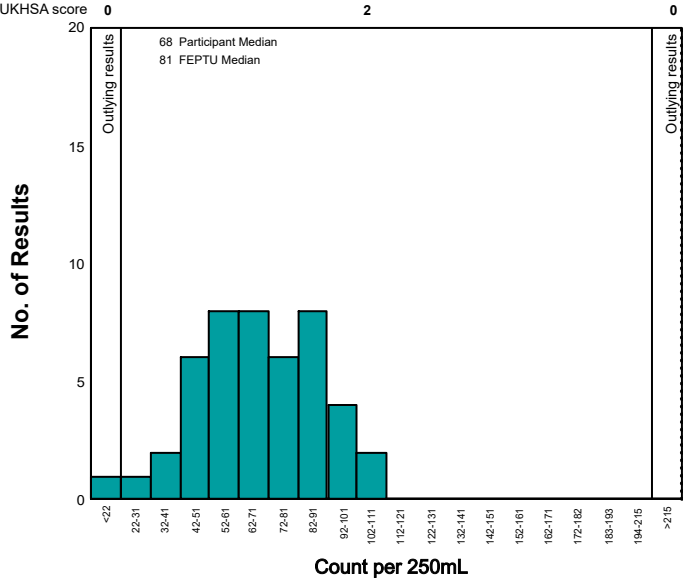


BMW37A: Colony Count 37°C/24 h

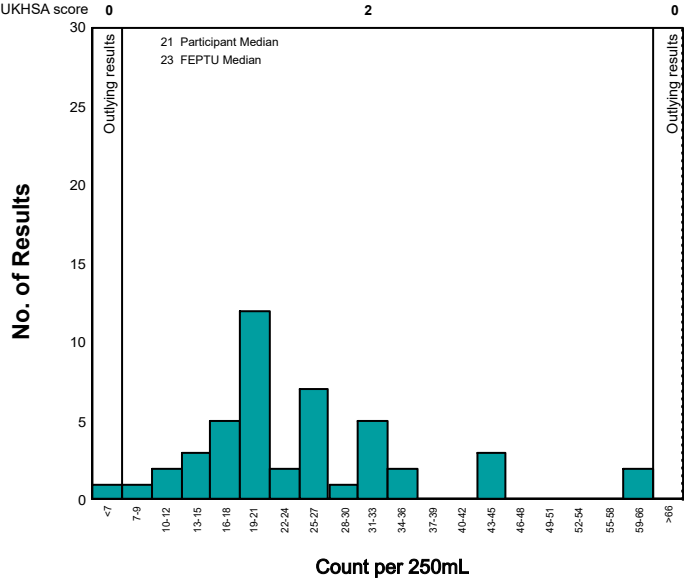


No data for graph

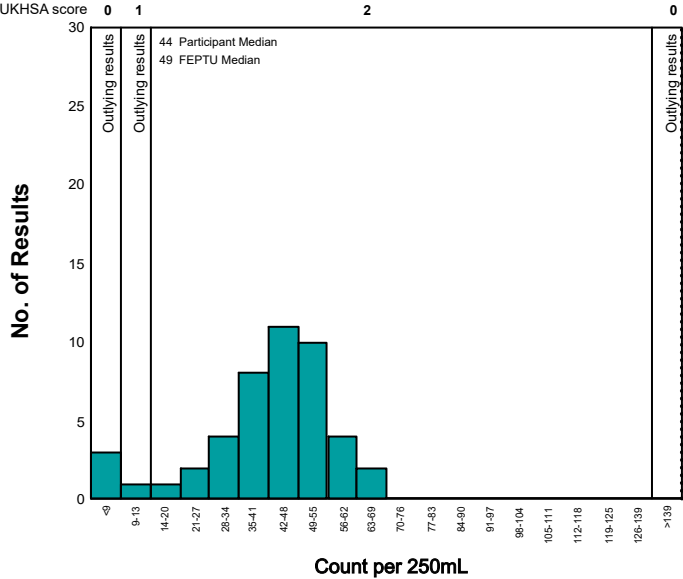
BMW37B: Coliform bacteria



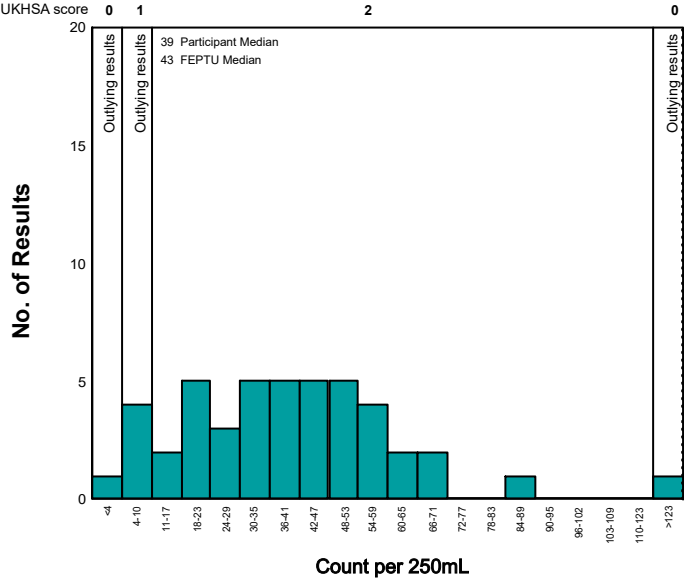
BMW37B: *Escherichia coli*



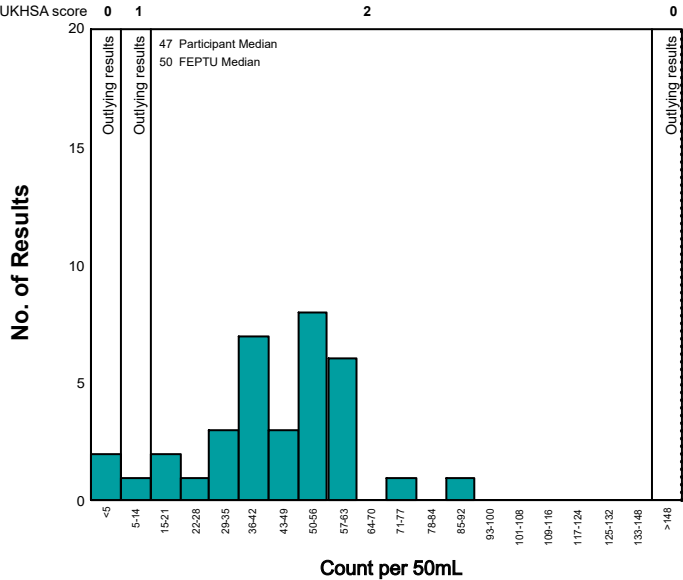
BMW37B: Enterococci



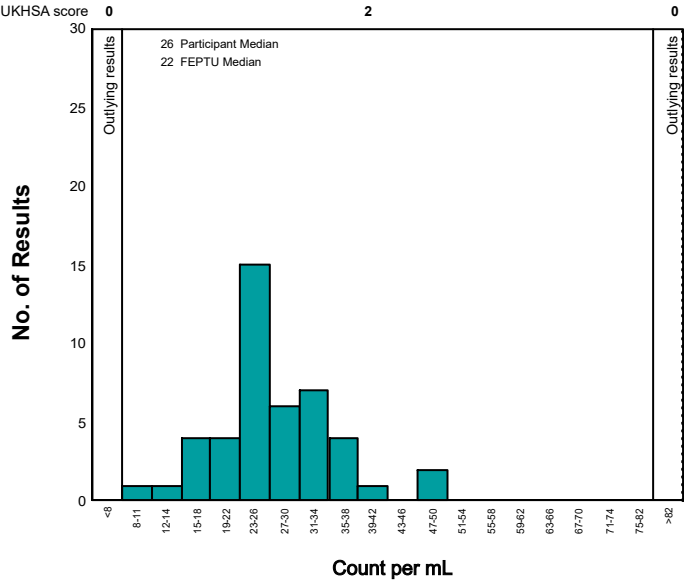
BMW37B: *Pseudomonas aeruginosa*



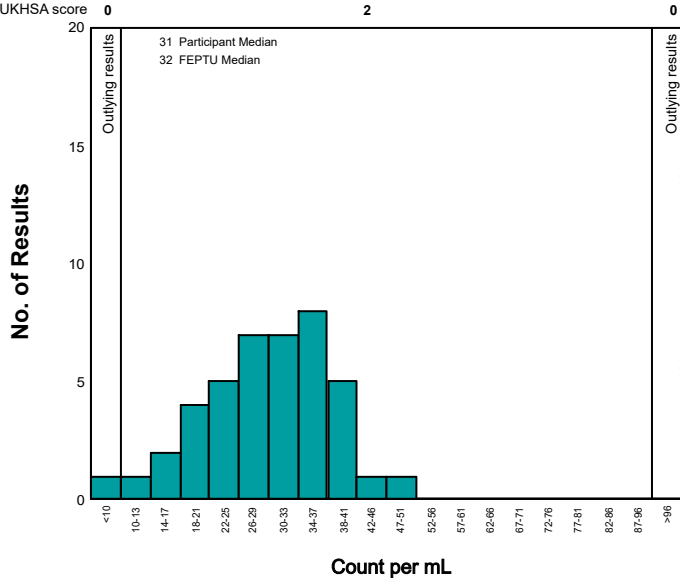
BMW37B: Sporulated sulphite-reducing anaerobes



BMW37B: Colony Count 37°C/24 h



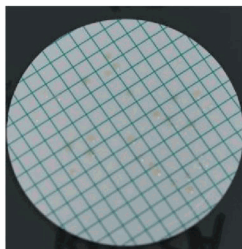
BMW37B: Colony Count 22°C/72 h



Sample specific comment

BMW37A – *Pseudomonas aeruginosa*

13/43 (30%) of the laboratories reported a false negative result for this examination. The sample contained a *P. aeruginosa*, and the participants' median was 14 colony forming units per 250mL. This strain of *P. aeruginosa* formed atypical colonies on *Pseudomonas* Cetrimide Agar (PCN) after 48 hours incubation. Pale green/beige (see image below) colonies were observed in the FEPTU laboratory. Confirmation tests on this strain gave a weak fluorescence, casein hydrolysis was weak, non-pigmented and oxidase positive. This examination has not been scored.



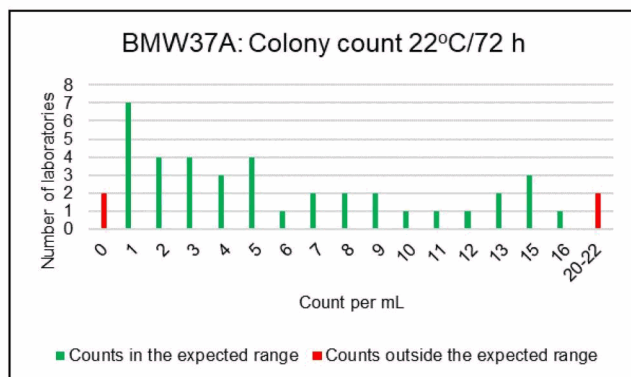
BMW37A – Sporulated sulphite-reducing anaerobes

8/35 (23%) of the laboratory reported a false negative result for this examination when the sample contained a *Clostridium sordellii* with a participants' median of 25 colony forming units per 50mL. In the FEPTU laboratory this organism grew as 0.5mm round black colonies on Tryptose Sulfite Cycloserine Agar (TSC) after 24 hours incubation anaerobically at 37°C. Results with confirmation tests were weak acid production, positive gelatine liquification in Lactose Gelatin Medium (LGM), nitrate negative and motile.

Participants reporting an incorrect result should request a repeat sample for their own internal investigation.

BMW37A: Colony count 22°C/72 h

Below is the graph of the colony count which is not shown in the main scheme report.



General comment:

If you do not return a result for a distribution, you will not be able to view all the participants' results data in your individualised report. Please contact us by email if you require this information: foodeqa@ukhsa.gov.uk.

New website

We are pleased to announce the launch of our new website: <https://www.feptu.org.uk/>. Please refer to this website to obtain the latest information for your proficiency testing.

Information of importance

To understand more about the proficiency testing schemes, please use the following links for information on:

1. Report format explained: [Annotated report](#)
2. Performance rating: [Performance-over-time](#) and [Scheme guide](#) (section 16.0)
3. Scoring and statistics used: [Scoring information and stats](#)
4. Homogeneity and stability: [Scheme guide](#) (section 9.0)
5. Complaints and appeal process: [Scheme guide](#) (section 20.0 and 21.0)

For further information about the operation of the service including confidentiality and terms of participation, please refer to the Scheme Guide: [Scheme guide](#)

End of report

