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Ring test
Polar pesticides, QACs, and amino alcohols in fruit pouches for small children
P2513-RT

Summary

The entire report is available to participants only.

The ring test was designed, realised, evaluated, and authorised on behalf of PROOF-ACS GmbH by

Dr. Birgit Schindler
Managing Director PROOF-ACS GmbH
Project coordinator

The report was approved by

Dr. Birgit Schindler
cn=Dr. Birgit Schindler,
o=PROOF-ACS GmbH,
ou=Managing Director,
email=proof@proof-acs.de,
c=DE
2025.05.15 17:09:54 +02'00'

Dr. Birgit Schindler

Participants with any comments or concerns related to this ring test are invited to contact:

PROOF-ACS GmbH
Gottlieb-Daimler-Str. 1
28237 Bremen
Phone: +49 421 388 928 50
E-mail: proof@proof-acs.de
www.proof-acs.de

DAkkS Deutsche Akkreditierungsstelle D-EP-22211-01-00

PROOF-ACS is a DAkkS accredited proficiency testing provider according to DIN EN ISO 17043:2010 (D-EP-22211-01-00). This ring test is covered by the scope of accreditation.

PROOF-ACS GmbH does not have any analytical laboratory facilities of its own. Homogeneity testing and stability testing are subcontracted to laboratories, accredited according to DIN EN ISO 17025. The subcontracted laboratory may also participate in the ring tests. If so, the laboratory is treated in the same way as other participants and the same rules of confidentiality apply.

The proficiency test evaluates the performances of laboratories with respect to their ability to quantify polar pesticides, quaternary ammonium compounds, and amino alcohols in fruit pouches for small children. Eleven laboratories across four countries (Austria, Germany, Italy, and Vietnam) took part in the proficiency test.

The test material is prepared of a ready to eat cooked homogenate of apples, apricots, bananas, pears, and red currants, which is commercially available as fruit pouches for small children. The raw material is homogenised in a Robot Coupe R20 V.V.. The unspiked material is provided as blank material upon request. The blank material is tested for incurred residues. Incurred residues at trace levels are detected at a level of < 0.01 mg/kg of cyanuric acid and phosphonic acid, and at a level of < 0.02 mg/kg of triethanolamine.

To prepare the test material, the raw material was spiked with

- the polar pesticides chlorate, perchlorate, ethephon, phosphonic acid, glyphosate, cyanuric acid,
- nicotine,
- the quaternary ammonium compounds BAC C-10, BAC C-12, BAC C-16, BAC C-18, DDAC C-10, and DDAC C-12,
- the amino alcohols morpholine, diethanolamine, and triethanolamine.

The laboratories were free to choose to analyse all parameters within the scope of the test or a selection thereof. 11 labs took part in the basic module related to polar pesticides, 5 labs reported results related to nicotine. 6 labs analysed the quaternary ammonium compounds, while another 6 labs quantified the amino alcohols.

All labs kept the term of submission of results and are considered for evaluation. The results are summarised in the table below.

The report contains an assessment related to

- the *identification* of the quaternary ammonium compounds.
- the *trueness* of the results. The trueness is expressed as the coverage of the spiked level in %. The coverage should be at least between 70 and 120 % of the spiked level. The trueness criterion is applied to all parameters.
- the *comparability* of the results. The evaluation of the comparability is based on the z-score model. The absolute values of z-score should be at least ≤ 2. The comparability criterion is applied to chlorate, perchlorate, ethephon, phosphonic acid, and glyphosate. The comparability criterion is not applicable to all other parameters due to the limited number of reported results.

Results

Parameter	Spiked level [mg/kg]	Assigned value [mg/kg]	Assigned value in % of the spiked level	No. of results	No. of results with |z-score| ≤ 2	No. of results within 70-120 % of the spiked level
Chlorate	0.018	0.0163	91	11	10	10
Perchlorate	0.023	0.0202	88	11	10	9
Ethephon	0.048	0.0499	104	11	11	11
Phosphonic acid	0.14	0.155	111	11	11	9
Glyphosate	0.089	0.0853	96	11	10	10
Cyanuric acid	0.093	-	-	3	not applicable	2
Nicotine	0.066	-	-	5	not applicable	5
BAC C-10	0.017	-	-	6	not applicable	6
BAC C-12	0.020	-	-	6	not applicable	6
BAC C-16	0.019	-	-	6	not applicable	5
BAC C-18	0.023	-	-	6	not applicable	5
DDAC C-10	0.018	-	-	6	not applicable	6
DDAC C-12	0.021	-	-	6	not applicable	6
Morpholine	0.095	-	-	6	not applicable	6
Diethanolamine	0.13	-	-	5	not applicable	4
Triethanolamine	0.16	-	-	6	not applicable	6

To summarise:

- Eleven laboratories took part in the tests. All labs reported results and are considered for evaluation.
- The labs are familiar with the analysis of the polar pesticides except cyanuric acid. Only 3 out of 11 labs reported results related to cyanuric acid, and 2 of them pass the trueness criterion. The overall performance of the labs with respect to the polar pesticides is good.
- Five labs took part in the additional module related to nicotine, all of them with success.
- All six labs identified all spiked quaternary ammonium compounds correctly. The overall performance with respect to the QACs is satisfying.
- Six labs reported results related to the amino alcohols, five of them pass the trueness criterion for all three parameters.