

TEST REPORT N°: 02249H/25  
 INTERTEK REFERENCE N°: 2025-LIMA-000603

<b>Client:</b> AR4 COMERCIO E SERVICOS LTDA	<b>Client's reference:</b>	Email	
<b>Contact:</b> Roberto Roque Carvalho			
<b>Address:</b> Av. Senador Vergueiro, 2123 - Sala 1205, Centro, São Bernardo do Campo – SP CEP 09750-001			
<b>Sample Description:</b> <sup>(a)</sup> UREA		<b>Date of Reception in Lab:</b> 23-September-2025	
<b>Identification:</b> Urea; Concentración 0.0 mg/kg de aldehydo		<b>Starting Date of Analysis:</b> 23-September-2025	
<b>Quantity:</b> 250.00 mL		<b>End Date of Analysis:</b> 09-October-2025	
<b>Presentation:</b> Plastic container		<b>Sample ID:</b> 2025-LIMA-000603-001	
<b>Procedence:</b> Supplied by the client.		<b>ITS REF.:</b> PER/11929-25	
<b>Testing Place:</b> Caleb Brett Laboratory			
Method/Version	Test	Result	Unit
ISO 22241-2 Annex F - 2019	Determination of Aldehyde Content Formaldehyde Content	<0.5 (*)	mg/kg
<b>Sample Description:</b> <sup>(a)</sup> UREA		<b>Date of Reception in Lab:</b> 23-September-2025	
<b>Identification:</b> Urea; Concentración 1.0 mg/kg de aldehydo		<b>Starting Date of Analysis:</b> 23-September-2025	
<b>Quantity:</b> 250.00 mL		<b>End Date of Analysis:</b> 09-October-2025	
<b>Presentation:</b> Plastic container		<b>Sample ID:</b> 2025-LIMA-000603-002	
<b>Procedence:</b> Supplied by the client.		<b>ITS REF.:</b> PER/11929-25	
<b>Testing Place:</b> Caleb Brett Laboratory			
Method/Version	Test	Result	Unit
ISO 22241-2 Annex F - 2019	Determination of Aldehyde Content Formaldehyde Content	0.9	mg/kg
<b>Sample Description:</b> <sup>(a)</sup> UREA		<b>Date of Reception in Lab:</b> 23-September-2025	
<b>Identification:</b> Urea; Concentración 2.5 mg/kg de aldehydo		<b>Starting Date of Analysis:</b> 23-September-2025	
<b>Quantity:</b> 250.00 mL		<b>End Date of Analysis:</b> 09-October-2025	
<b>Presentation:</b> Plastic container		<b>Sample ID:</b> 2025-LIMA-000603-003	
<b>Procedence:</b> Supplied by the client.		<b>ITS REF.:</b> PER/11929-25	
<b>Testing Place:</b> Caleb Brett Laboratory			
Method/Version	Test	Result	Unit
ISO 22241-2 Annex F - 2019	Determination of Aldehyde Content Formaldehyde Content	2.4	mg/kg
<b>Sample Description:</b> <sup>(a)</sup> UREA		<b>Date of Reception in Lab:</b> 23-September-2025	
<b>Identification:</b> Urea; Concentración 5 mg/kg de aldehydo		<b>Starting Date of Analysis:</b> 23-September-2025	
<b>Quantity:</b> 250.00 mL		<b>End Date of Analysis:</b> 09-October-2025	
<b>Presentation:</b> Plastic container		<b>Sample ID:</b> 2025-LIMA-000603-004	
<b>Procedence:</b> Supplied by the client.		<b>ITS REF.:</b> PER/11929-25	
<b>Testing Place:</b> Caleb Brett Laboratory			
Method/Version	Test	Result	Unit
ISO 22241-2 Annex F - 2019	Determination of Aldehyde Content Formaldehyde Content	4.8	mg/kg



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**Sample Description:** <sup>(a)</sup> UREA  
**Identification:** Urea; Concentración 10 mg/kg de aldehydo  
**Quantity:** 250.00 mL  
**Presentation:** Plastic container  
**Procedence:** Supplied by the client.  
**Testing Place:** Caleb Brett Laboratory

**Date of Reception in Lab:** 23-September-2025  
**Starting Date of Analysis:** 23-September-2025  
**End Date of Analysis:** 09-October-2025  
**Sample ID:** 2025-LIMA-000603-005  
**ITS REF.:** PER/11929-25

Method/Version	Test	Result	Unit
ISO 22241-2 Annex F - 2019	Determination of Aldehyde Content Formaldehyde Content	9.7	mg/kg

**Sample Description:** <sup>(a)</sup> UREA  
**Identification:** Urea; Concentración 30 mg/kg de aldehydo  
**Quantity:** 250.00 mL  
**Presentation:** Plastic container  
**Procedence:** Supplied by the client.  
**Testing Place:** Caleb Brett Laboratory

**Date of Reception in Lab:** 23-September-2025  
**Starting Date of Analysis:** 23-September-2025  
**End Date of Analysis:** 09-October-2025  
**Sample ID:** 2025-LIMA-000603-006  
**ITS REF.:** PER/11929-25

Method/Version	Test	Result	Unit
ISO 22241-2 Annex F - 2019	Determination of Aldehyde Content Formaldehyde Content	>10.0 (**)	mg/kg

**Sample Description:** <sup>(a)</sup> UREA  
**Identification:** Urea; Concentración 50 mg/kg de aldehydo  
**Quantity:** 250.00 mL  
**Presentation:** Plastic container  
**Procedence:** Supplied by the client.  
**Testing Place:** Caleb Brett Laboratory

**Date of Reception in Lab:** 23-September-2025  
**Starting Date of Analysis:** 23-September-2025  
**End Date of Analysis:** 09-October-2025  
**Sample ID:** 2025-LIMA-000603-007  
**ITS REF.:** PER/11929-25

Method/Version	Test	Result	Unit
ISO 22241-2 Annex F - 2019	Determination of Aldehyde Content Formaldehyde Content	>10.0 (***)	mg/kg

<sup>(a)</sup> As designated by the customer

(\*) Reference Value 0.0 – Specification: 5 Max

(\*\*) Reference Value 30.2 – Specification: 5 Max

(\*\*\*) Reference Value 49.0 – Specification: 5 Max

Remarks:

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2. Results issued in this test report are valid for this sample only, this test report is not intended to be used as a certificate of compliance or as a certificate of the quality system of the company issuing it.
3. The results of the tests issued have been carried out by the Caleb Brett Laboratory.
4. The information contained in this report is based on laboratory tests and observations made by Intertek Testing Services Peru S.A. The sample was sent by the customer for analysis only. In these cases, where we cannot prove the origin of the sample, Intertek Testing Services Peru S.A. disclaims any liability for damage or injury that may result from the use of the information contained in this report, and nothing contained should be constituted as a guarantee or representation by Intertek Testing Services Peru S.A. with respect to the accuracy of the information, sample, product or item described, or its suitability for use for any specific purpose.

End of test report

Authorized by:



## **Annex: Qualitative Report**

### **1. Objective of the essay**

Evaluate the behavior of the AR4 Test product to qualitatively detect the presence of formaldehyde at known concentrations (0 to 50 mg/kg), by observing the color change and comparing it with the AR4 Test reference scale included in the colorimetric kit, as well as with the results obtained by the instrumental method ISO 22241-2, Annex F.

### **2. Preparation of aldehyde standard solutions**

Formaldehyde standard solutions were prepared from the 32.5% urea solution at the following concentrations: 0, 1, 2.5, 5, 10, 30, and 50 mg/kg. The solutions were homogenized and prepared under controlled conditions using certified inputs.

### **3. Results Obtained**

Prepared concentration of formaldehyde (mg/kg)	Repeatability of the AR4 Test	Observed color	AR4 Test result according to the Test scale (packaging)*	Result by ISO 22241-2 method
0	3	Colorless	The KIT color scale was maintained: Approved	The color is within the color intensity of the 0 mg/kg pattern.
1	3	Light pink	The KIT color scale was maintained: Approved	The color is within the color intensity of the 1 mg/kg standard
2.5	3	Intermediate pink	The KIT color scale was maintained: Approved	The color is within the color intensity of the 2.5 mg/kg standard
5	3	Light purple	The KIT color scale was maintained: Approved	The color is within the color intensity of the 5 mg/kg standard
10	3	Dark purple	The KIT color scale was maintained: Not approved	The color exceeds the intensity of the allowed pattern
30	3	Deep purple	The KIT color scale was maintained: Not approved	The color exceeds the intensity of the allowed pattern
50	3	Very dark purple	The KIT color scale was maintained: Not approved	The color exceeds the intensity of the allowed pattern

\*According to information from the product packaging: "The AR4 Test is a qualitative colorimetric kit that reacts with aldehydes present in the sample, generating a color change proportional to the concentration. Interpretation is performed visually, comparing it with a scale provided by the manufacturer."

**4. Photograph of formaldehyde patterns:****5. Conclusions**

- A clear progression in color hue and intensity was observed with increasing formaldehyde concentration.
- The color developed was reproducible in all 3 replicates for each pattern.
- Visual interpretation was repeatable and allowed distinguishing samples below and above the 5 mg/kg limit.

**6. Photographic evidence**

Sample 0.0 mg/kg	Sample 1.0 mg/kg	Sample 2.5 mg/kg	Sample 5.0 mg/kg

Sample 10.0 mg/kg	Sample 30.0 mg/kg	Sample 50.0 mg/kg

--- END OF ANNEX ---