



SOLUÇÕES EM POLÍMEROS

Technical Report

AFK2795/25

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Date samples were received by Afinko: 03/06/2025	
Date the work was developed: 04/06/2025 to 17/09/2025	

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1 SAMPLE(S) IDENTIFICATION

Afinko identified the sample according to Table 1. Figure 1 shows an image of the sample as received.

Table 1 - Sample(s) Identification.

Afinko's Identification	Client's Identification
AFK253878	Resina B = Smart Print Bio Bite Splint Clear



Figure 1 – Image of Sample AFK253878.

2 OBJECTIVES

To perform Gas Chromatography coupled to Flame Ionization Detector (GC-FID) test on 01 (one) sample to characterize it.

3 TEST METHODS(S)

3.1 Gas Chromatography Coupled to Flame Ionization Detector (GC-FID)

Table 2 presents the test conditions.



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Table 2 - GC-FID Test Conditions.

Sample Type:	(X) Solid	
	() Liquid	
Sample Preparation:	(X) Extraction	Solvent: acetone and methanol
	() Washing	Solvent: NA
	() Dilution	Solvent: NA
	() HS	
	() Other(s):	
Standard Sample and Calibration Curve Preparation Method:	ISO 20795-2 - "Dentistry – Base polymers - Pare 2: Orthodontic base polymers. 8.5 Residual methyl methacrylate monomer"	
Sampling:	(X) Liquid	Concentration: NA
	() Head Space	Mass: NA
Chromatographic Column: - NA – WAX - Plus - 30 m × 0.25 mm i.d., coating 0.25 µm		
Heating Program of the GC Column		
Heating Rate (°C.min⁻¹)	Temperature (°C)	Isotherm (min)
-	70	10
20	210	10
Injector Temperature: 200°C		Injection Volume: 1 µL
Detector Temperature: 210°C		Split Rate: 1:10
Carrier Gas: Helium		Total Time Analysis: 27 min
Data Performed: 15/09/2025		
Equipment (s): GC Shimadzu QP-2010 plus		
Standard Test Method(s): ISO 20795-2: "Dentistry – Base polymers - Pare 2: Orthodontic base polymers. 8.5 Residual methyl methacrylate monomer"		

N.A.: not applicable.

4 RESULTS

4.1 Gas Chromatography Coupled to Flame Ionization Detector (GC-FID)

Methyl methacrylate (MMA) and pentanol (internal standard – IS) exhibited retention times of 2.44 and 6.40 minutes, respectively, as shown in Figure 2.

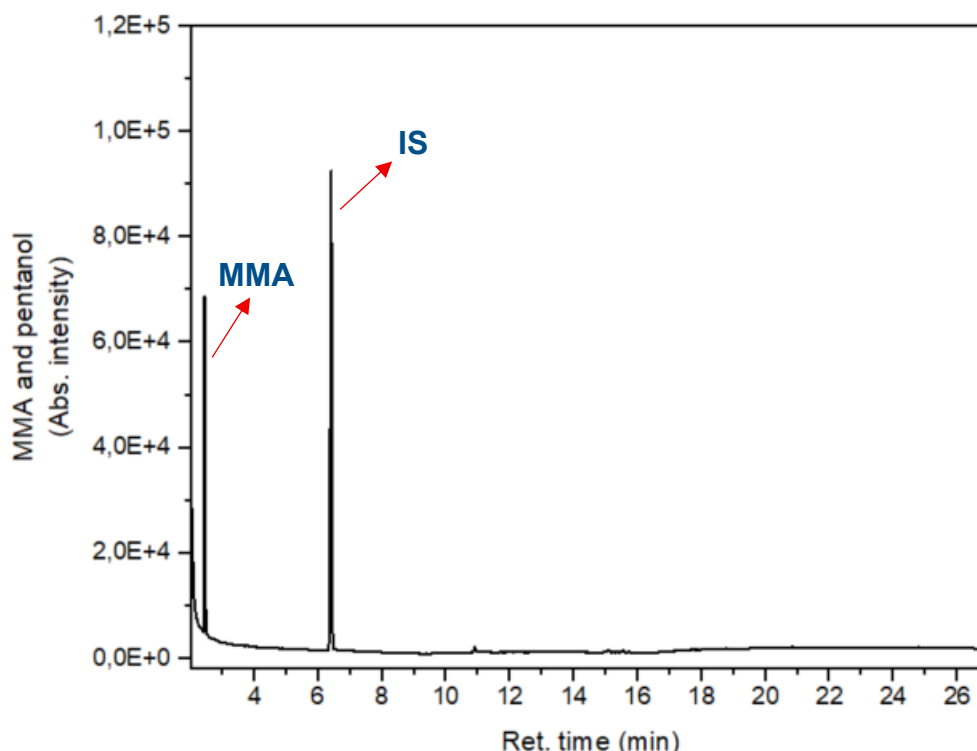


Figure 2 – GC-FID chromatogram for MMA and pentanol.

The calibration curve was obtained (Fig. 3) by plotting the ratio of the peak area of methyl methacrylate (MMA) to that of the internal standard (IS) in the calibration solutions against the corresponding concentrations of MMA, expressed in micrograms per milliliter. The linear regression equation ($y = 0.0017x - 0.077$) obtained exhibited a high correlation coefficient ($R^2 = 0.9995$), indicating excellent model fit.

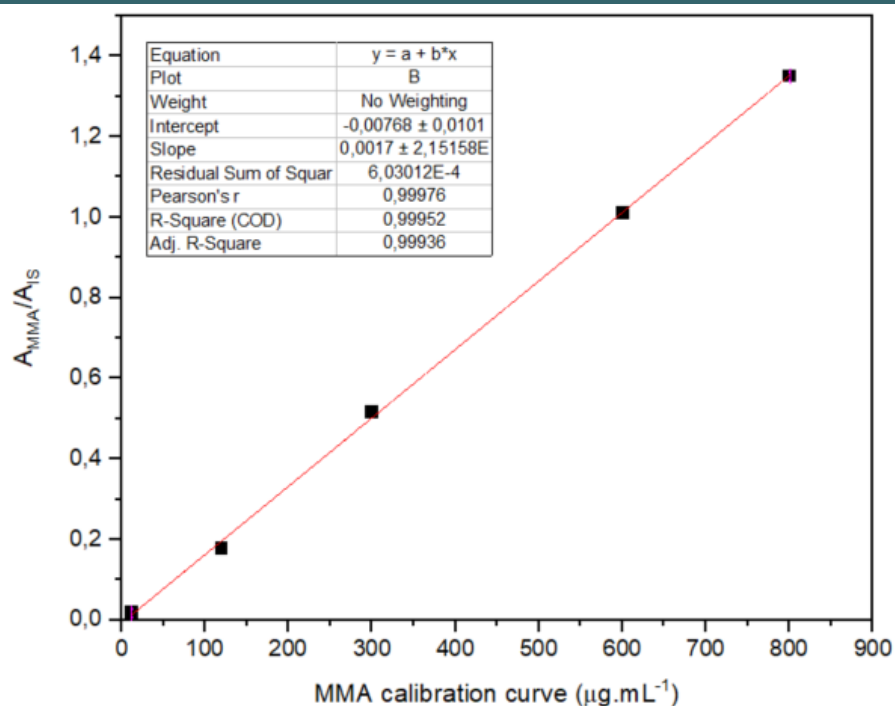


Figure 3 – Calibration curve of Methyl Methacrylate.

The peak corresponding to MMA ($t_r = 2.44$ min) was not detected in any of the replicates injections, as shown in Figures 4, 5, and 6. Accordingly, the residual MMA content in all replicates is considered to be zero.

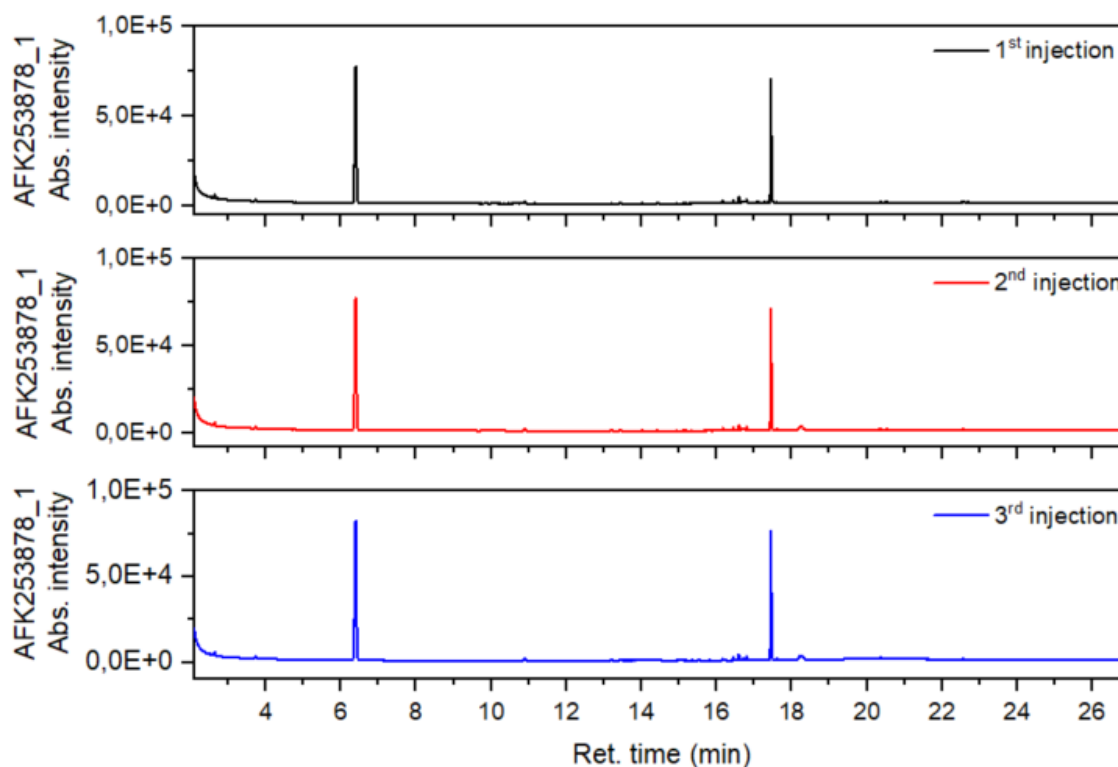


Figure 4 – GC-FID chromatogram of AFK253878 sample - first replicate injections.

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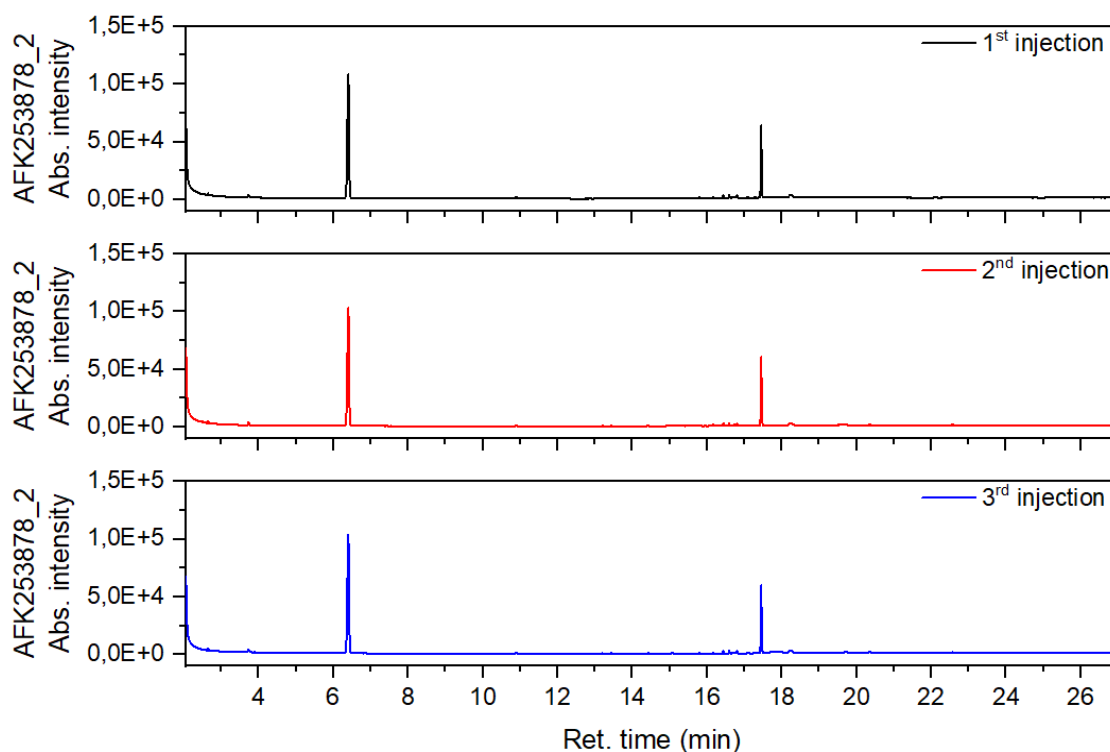


Figure 5 – GC-FID chromatogram of AFK253878 sample - second replicate injections.

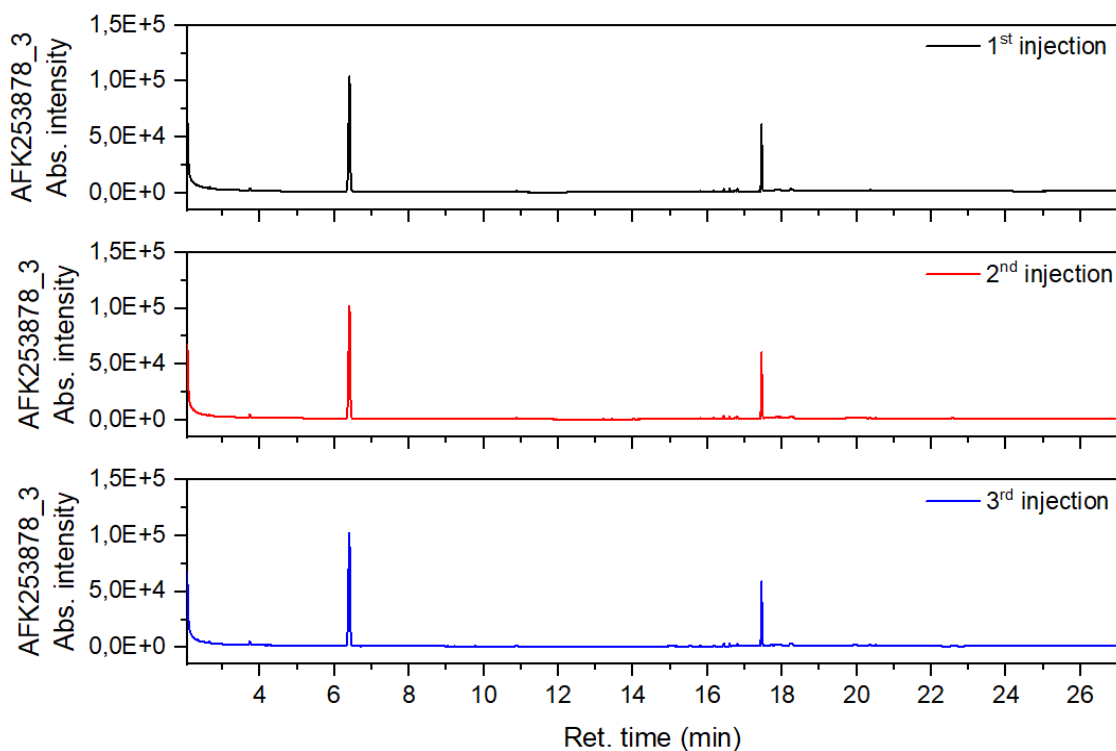


Figure 6 – GC-FID chromatogram of AFK253878 sample - third replicate injections.



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5 CONCLUSIONS

No residual Methyl Methacrylate content was detected in sample AFK253878.

São Carlos, September 17, 2025

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Final Remarks

- Results presented in this report refer exclusively to the analyzed samples, at the exact conditions the tests were performed and therefore, they must not be extended to any lot, even if similar to the ones analyzed. Additional images were inserted at completion.
- The laboratory is not responsible in case of misinterpretation of data nor eventual improper use of the document.
- The reproduction of this document must be done in full.
- Samples are maintained at Afinko for two months or for the period specified by the budget/contract.
- Afinko considers the result obtained through the tests as a comparative value to the classification referenced in the technical standards, when applied. Measurement uncertainty will only be expressed in the Technical Report upon customer's request.

-- End of report --