BP21 (FFAP)

Bonded Phase for the Analysis of Acidic Compounds

PRODUCT DATA

- Bonded FFAP Phase
- Ideal for Organic Acids, Free Fatty Acids and Alcohols
- Superior Thermal and Chemical Stability
- Quality Tested for Acidic Compound Analysis

INTRODUCTION

BP21, SGE's bonded FFAP phase has been developed specifically for capillary gas chromatography analysis of underivatized short chain carboxylic acids, free fatty acids and alcohols.

BP21 also demonstrates excellent thermal and chemical stability, and low bleed characteristics.

COLUMN PERFORMANCE TESTING OF BP21 COLUMNS

BP21 capillary columns are tested for polar/acidic compound applications. Compounds such as free fatty acids and straight chain/aromatic alcohols probe the BP21 column for assurance of reproducibility and performance.

Figure 1: Column Performance Report **Remarks: Conditioning 200°C**

PEAK	COMPOUND	RETENTION	CAPACITY RATIO (k')	KOVATS INDEX
1	Solvent	0.90		
2	Ethyloctanoate	1.35	0.54	199.77
3	1-Octanol	1.68	0.90	309.46
4	Butyric Acid	2.11	1.39	400.00
5	Phenylethylacetate	3.52	2.95	564.27
6	Hexanoic Acid	3.99	3.49	600.00
7	Phenylethylalcohol	4.89	4.51	655.24

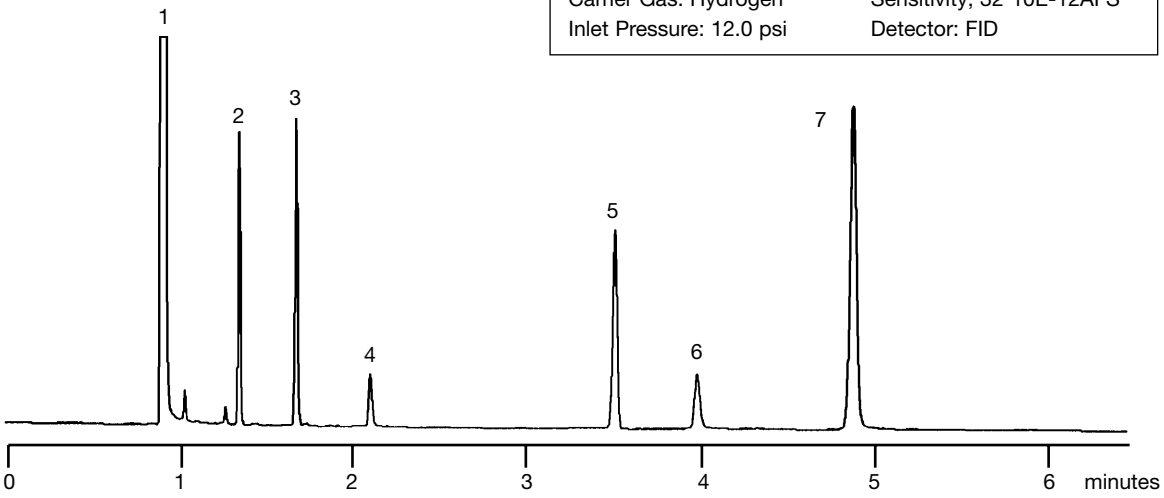
Gas Velocity (cm/sec)	49.2
Effective Plates (Peak 7)	58243
Theoretical Plates (Peak 7)	85206
Effective Plates/Metre (Peak 7)	2330
Separation Number (Peaks 6-7)	11.41
Skew (Peak 4)	1.46
Skew (Peak 7)	0.88

COLUMN SPECIFICATIONS

Phase:	**BP21 (polar), 0.25µm**
Column:	25m x 0.22mm
Max. Temp.:	220°C

TESTING CONDITIONS

Column Temp.: 145°C	
Detector Temp.: 280°C	Sample Size: 0.1µL
Injector Temp.: 240°C	Split Ratio: 60:1
Carrier Gas: Hydrogen	Sensitivity; 32*10E-12AFS
Inlet Pressure: 12.0 psi	Detector: FID



ANALYSIS OF ORGANIC ACIDS IN WATER

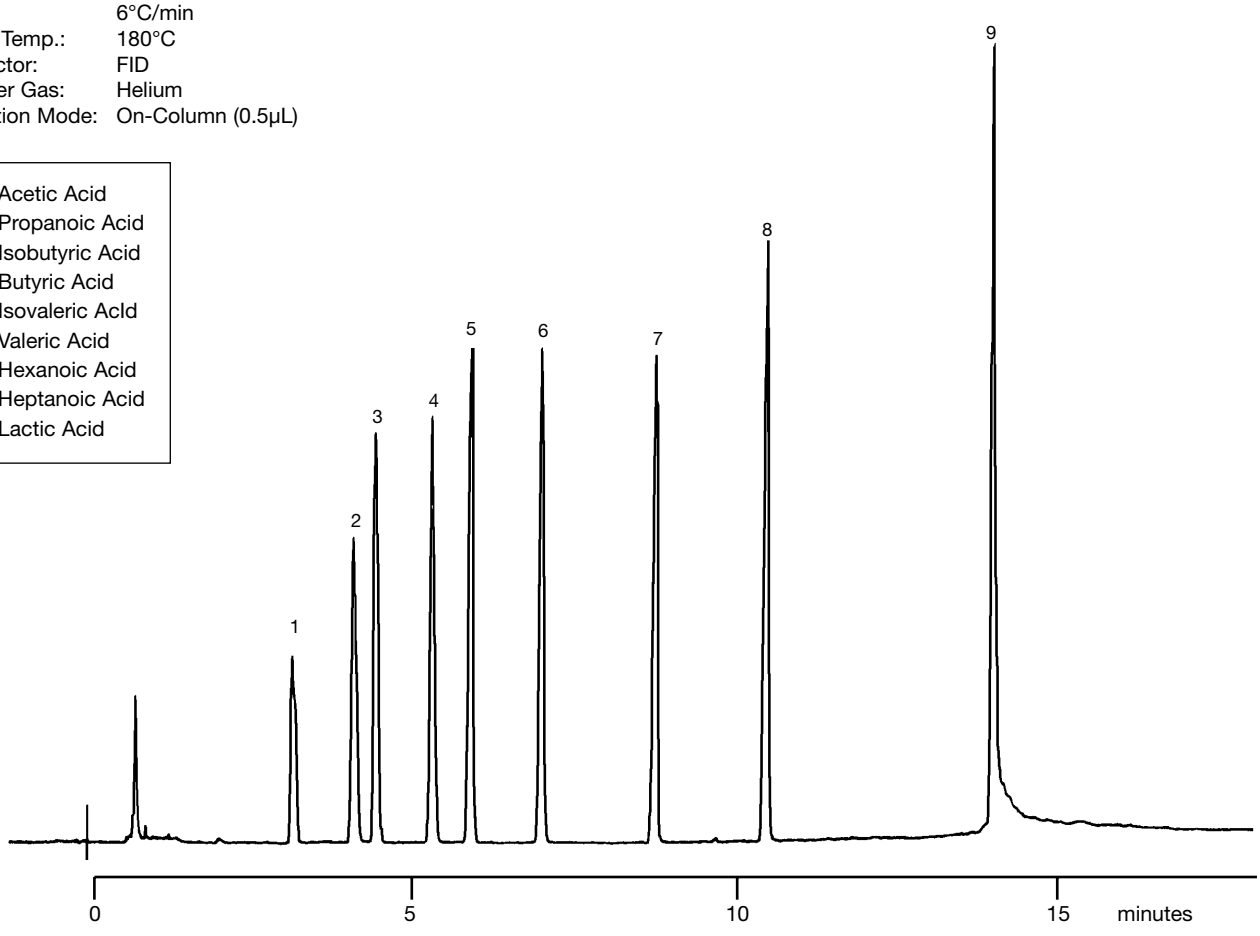
The superior thermal and chemical stability of BP21 phase is illustrated in **figure 2.** Excellent peak symmetry is obtained for a range of free organic acids (5ng) and hydroxyl acid, Lactic acid (25ng), even after 20 consecutive aqueous injections.

The chromatography obtained on the BP21 column compared highly with that obtained in the publication (D.V. McCalley, Journal of HRCC Vol 12, July 1989). Superior peak shape particularly the Lactic acid, was obtained on the SGE column even at 1/5 the concentration.

Figure 2: C_2-C_7 Acids (5ng) + Lactic Acid (25ng) in (0.03M) Oxalic Acid after 30 injections

Phase:	**BP21, 0.5µm**
Part No.	**054473**
Column:	**12m x 0.53mm**
Initial Temp.:	85°C, 0min
Rate:	6°C/min
Final Temp.:	180°C
Detector:	FID
Carrier Gas:	Helium
Injection Mode:	On-Column (0.5µL)

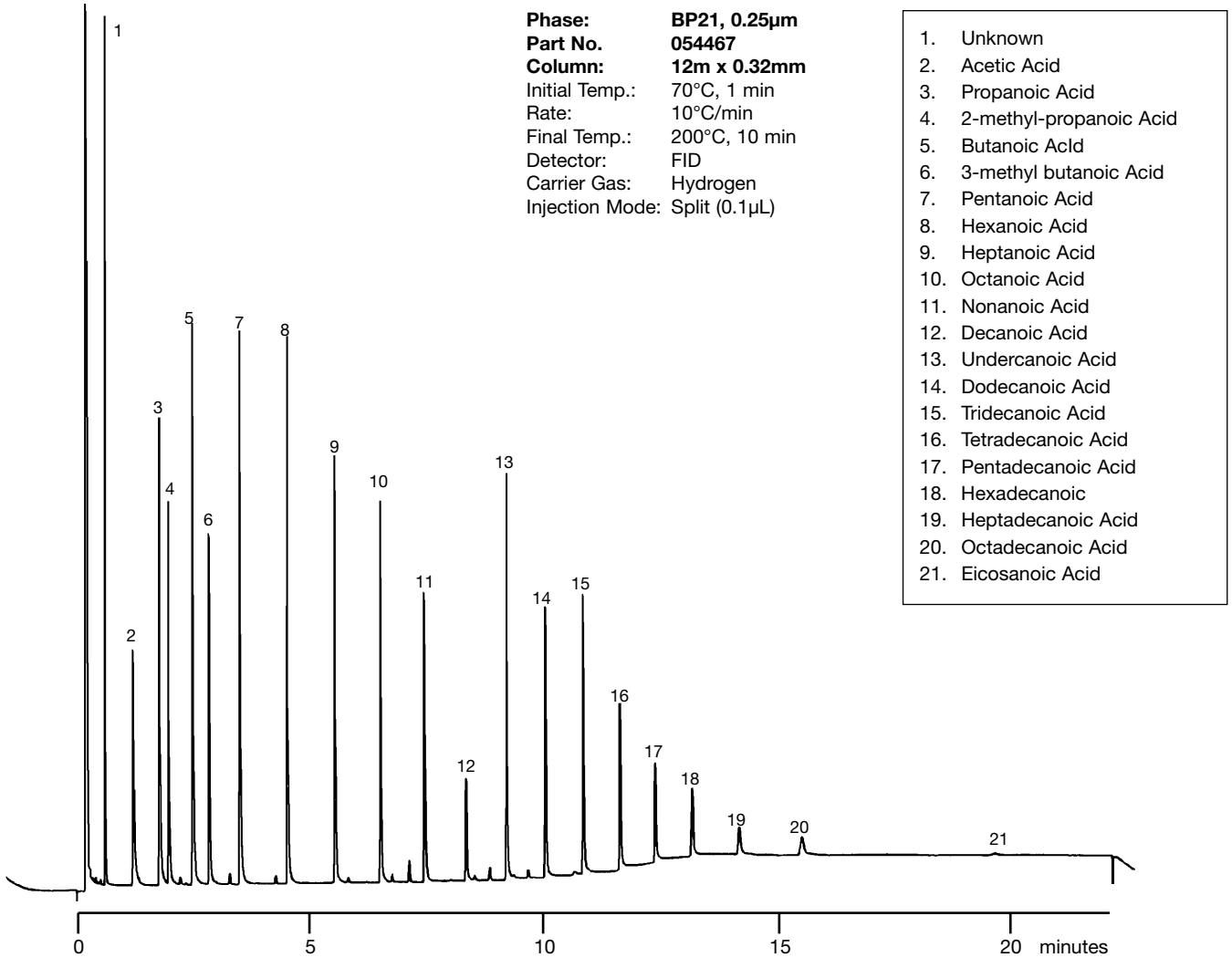
1. Acetic Acid
2. Propanoic Acid
3. Isobutyric Acid
4. Butyric Acid
5. Isovaleric Acid
6. Valeric Acid
7. Hexanoic Acid
8. Heptanoic Acid
9. Lactic Acid



FREE FATTY ACID ANALYSIS

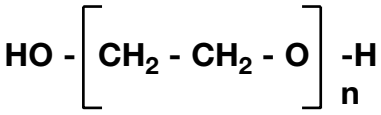
The analysis of C_2 to C_{18} free fatty acids using a BP21 column is shown in **figure 3.** The standard method of analysis for fatty acid compounds is pre-derivatisation prior to chromatography. BP21 enables the analysis of free fatty acids up to C_{20} without derivatisation. Features of the BP21 phase include short run times, excellent peak symmetry, compatibility with aqueous solutions and the low bleed at elevated temperatures.

Figure 3: Free Fatty Acids in Methanol



SPECIFICATIONS OF BP21 PHASE

Bonded Polyethylene Glycol



Max. Operating Temperature: 250°C

Min. Operating Temperature: 35°C

BP21 APPLICATION AREAS

1. Environmental analysis of acidic compounds in water.
2. Quality control of fatty acid, acidic and alcohol compounds.
3. Analysis of effluent in water treatment plants.
4. Monitoring of soluble acidic compounds.

ORDERING INFORMATION BP21 (FFAP) - Polyethylene Glycol (TPA Treated)

ID mm	Film µm	12m	25m	50m
0.22	0.25	054461	054462	054463
0.32	0.25	054467	054468	054469
0.53	0.5	054473	054474	-

ID mm	Film µm	15m	30m	60m
0.25	0.25	054464	054465	054466
0.32	0.25	054470	054471	054472
0.53	0.5	054476	054477	-

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