

# BENEFITS OF A HIGH TEMPERATURE WAX PHASE

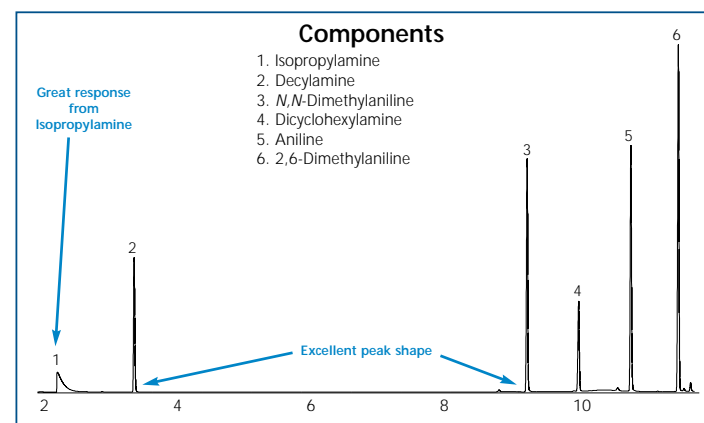
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## INTRODUCTION

SOLGEL-Wax™ is a new technology wax-type capillary column. A unique bonding process of encapsulating the polyethylene glycol into a solgel matrix is used. The solgel matrix is essentially a synthetic glass, which in turn is chemically bonded to the fused silica. The nature of this bonding process brings with it certain advantages over conventional wax columns. These advantages include excellent inertness, extreme resistance to degradation during acid analysis, greater reproducibility and a higher thermal stability of the column. The technology makes it the highest temperature wax column on the market.

The SOLGEL-WAX™ column has been shown to be extremely inert resulting in excellent peak shape of difficult-to-analyze compounds. The phase is particularly resistant to strong acids and bases.

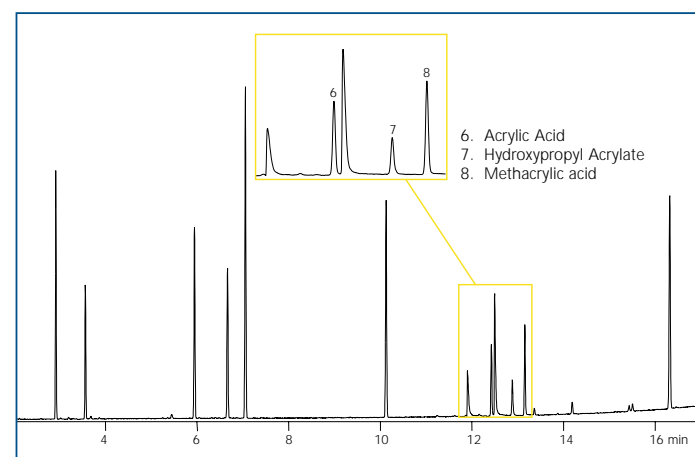
Most capillary column phases require fairly neutral samples to be injected due to susceptibility of the phase to breakdown at pH's lower than 6 or greater than 8. The chromatograms in **Figure 1** and **2** show the excellent inert, robust nature of SOLGEL-WAX. The peak shape of the amines (**Figure 1**) and



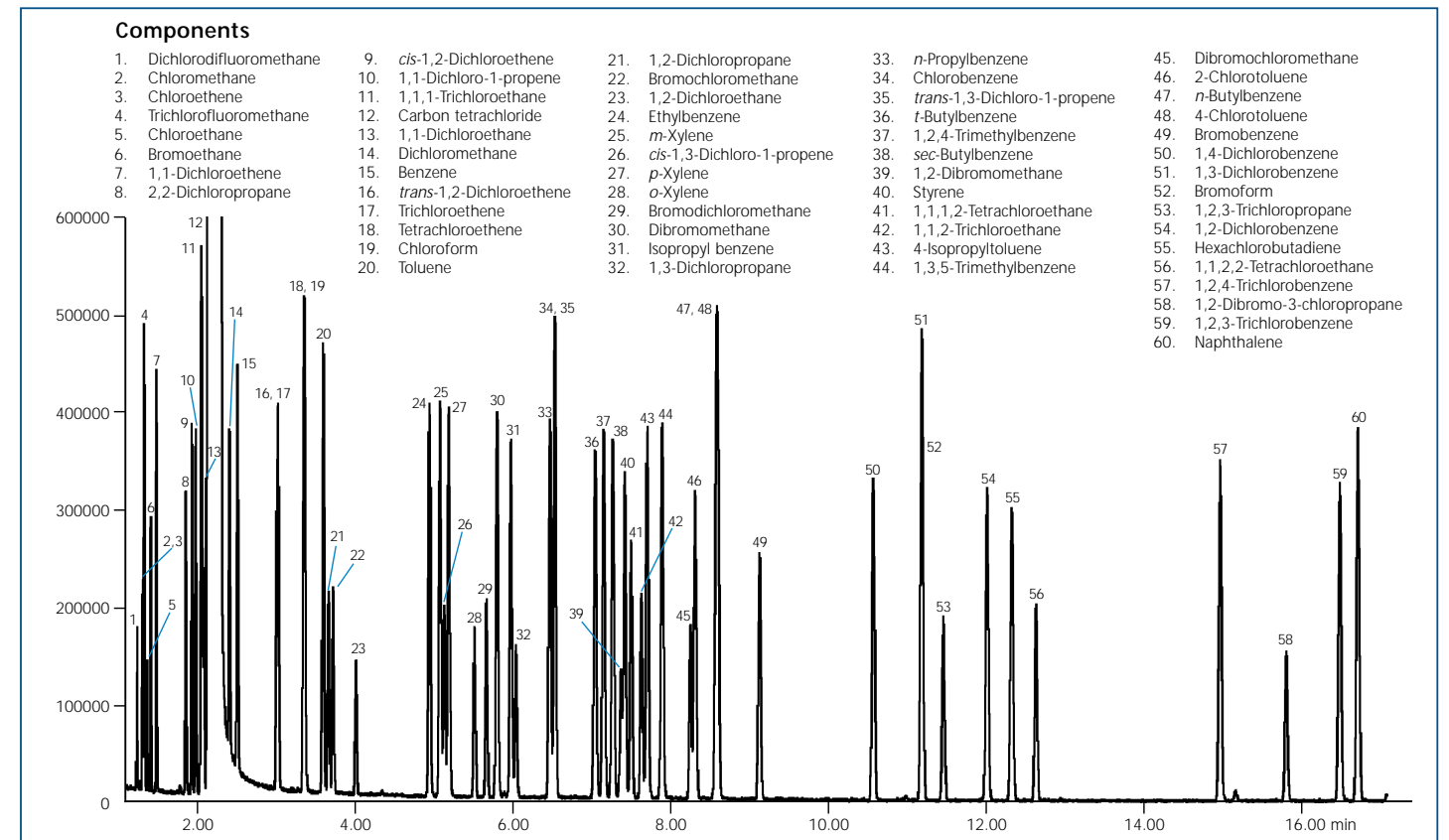
**Figure 1.** This chromatogram shows the inert, nature of SOLGEL-WAX for the analysis of a series of difficult-to-analyze amines. The peak shape of these amines is excellent and even the extremely difficult-to-analyze isopropylamine gives outstanding peak shape for this compound.

acrylic and methacrylic acid components (**Figure 2**) at the high and low pH respectively is excellent. Even the very difficult-to-analyze primary amine isopropylamine is clearly visible with a small degree of tailing. The acrylic and methacrylic acids, which normally give broad tailing peaks, show excellent peak shape reinforcing the extremely inert and robust nature of the SOLGEL-WAX column.

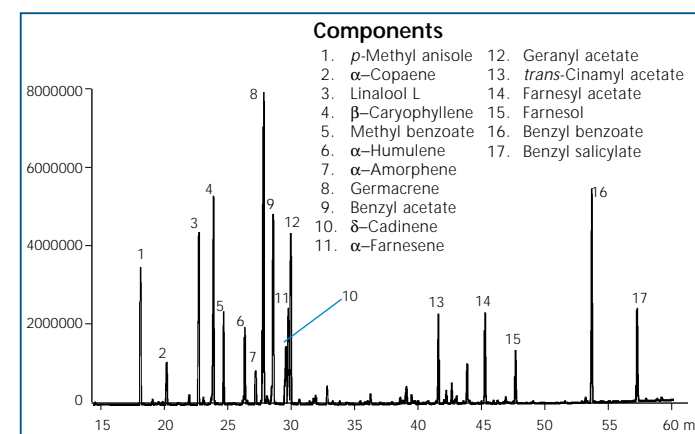
The SOLGEL-WAX column is capable of a large number of different applications giving excellent separation of a wide range of mixtures. SOLGEL-WAX has a great versatility in separating volatile mixtures. Normally, a thick film column with a low maximum temperature is required to obtain sufficient separation, while still being able to elute extremely polar fragrance compounds. This versatility makes the SOLGEL-WAX column ideal to be used in a vast number of industries ranging from environmental (**Figure 3**), fragrance companies (**Figure 4**), to FAME analysis labs, research laboratories and paint companies.



**Figure 2.** This chromatogram displays the robust nature of SOLGEL-WAX™ for acid analysis. The series of monomers including the very difficult-to-analyze acrylic and methacrylic acid are easily separated. Acrylic and methacrylic acid are two of the hardest acids to chromatograph by GC; SOLGEL-WAX gives excellent peak shape and response showing a high level of inertness and robustness.



**Figure 3.** This chromatogram displays the versatility of SOLGEL-WAX™. The U.S. EPA 502.2 mix contains many extremely volatile components along with some higher boiling compounds. SOLGEL-WAX can achieve excellent separation of the 60 components with only 6 co-elutions in less than 17 minutes on a column with a film thickness of 0.25µm thus making the thick film volatile columns obsolete.



**Figure 4.** This chromatogram shows the elution of the Ylang Ylang essential oil used in the fragrance industry. The very polar nature of the components of Ylang Ylang oil makes SOLGEL-WAX™ the ideal choice for this separation. SOLGEL-WAX gives baseline resolution of this mixture in under 60 minutes.

## SUMMARY

SOLGEL-WAX™ columns are the most robust, thermally stable, inert wax columns available on the market. The versatility of the SOLGEL-WAX column makes it ideal for multipurpose analyses able to achieve excellent separation and peak shape of a wide range of analytes.



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