

# Agilent 2224 EZ-Guard

## Integrated Guard Columns for GC

### Data Sheet



### Introduction

For integrated column protection, Agilent introduces an extended range of leak-free and easy to use integrated guard columns for use combined with FactorFour capillary columns for gas chromatography (GC). These products enhance the choice of GC columns with integrated guard columns for mid-polar to polar stationary phases. Agilent offers the widest choice of low bleed/MS compatible GC columns with an integrated guard column. Available with EZ-Guard columns are: VF-17ms, VF-35ms, VF-1701ms, VF-1ms, VF-5ms and VF-Xms.

### Key Benefits

- No risk of leakage, saving downtime
- Easy and fast to install and operate, boosting productivity
- Integrated transfer line delivers faster detector stabilization, improving efficiency
- Available for large selection of stationary phases



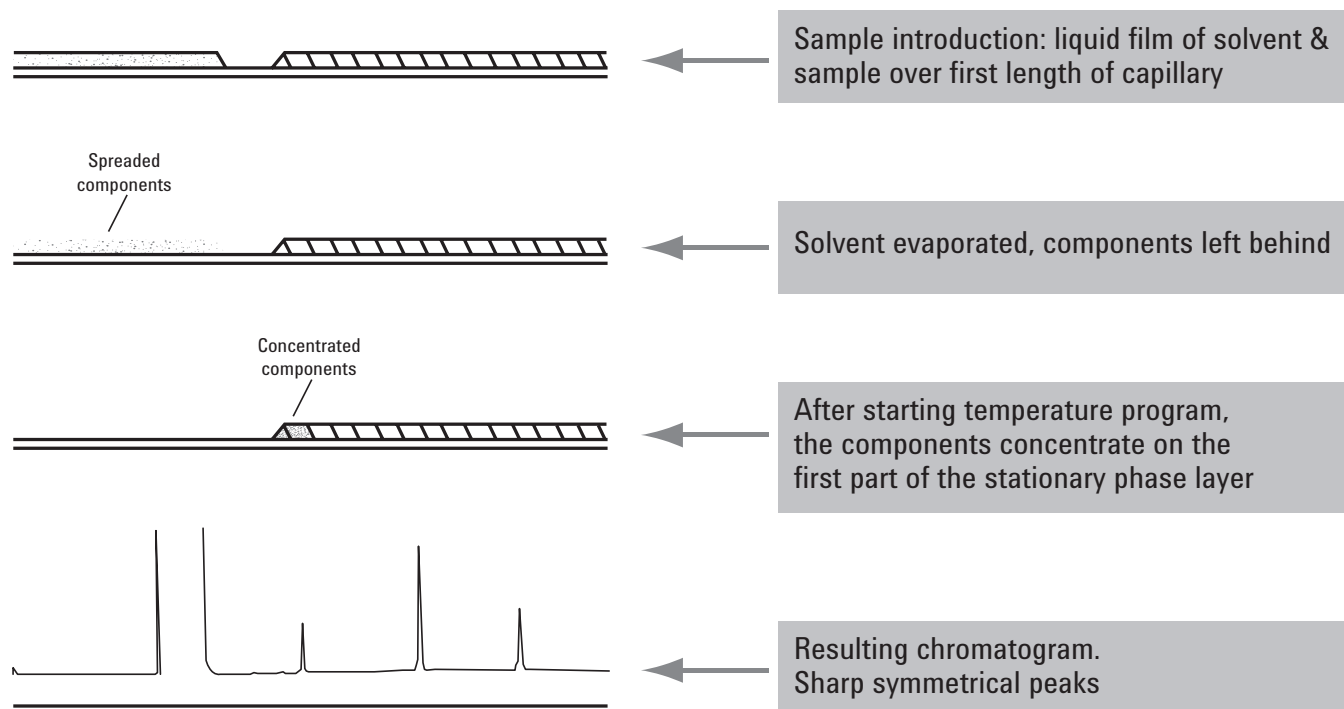
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Guard columns and retention gaps are often added to the front of the analytical column to protect against contamination. Some act as a band-focusing device for liquid samples introduced by on-column and splitless injection techniques.

For these applications, the EZ-Guard column combines a FactorFour column with a built-in guard column.

The first five or ten meter section of the EZ-Guard column (guard length depends on the column you select) is not coated with stationary phase, but has been deactivated. The absence of a column connection between the guard and analytical sections results in a 100% leak-free column, with enhanced inertness (see Figure 2). When the resolution or the analyte response diminishes, a coil is removed from the EZ-Guard column so that column performance will improve.

## GAS FLOW DIRECTION



**Figure 1. Principle of EZ-Guard**

# Comparison of a Separation of a Halogenated Pesticides Mixture using a Coupled Guard Column and an Integrated EZ-Guard Column

Technique: GC  
 Temperature Program: 220 °C  
 Carrier gas: H2  
 Pressure: 90 kPa  
 Injector: Temp 275 °C, split  
 Detector: Temp 300 °C, ECD  
 Sample Size: 2 µL, Split ratio 1:50  
 Sample Information: 0.1%, Solvent: Hexane

## Peak Identification

- |                      |                             |                             |
|----------------------|-----------------------------|-----------------------------|
| 1. Hexachlorobenzene | 6. <i>o,p</i> -DDE          | 11. Endrin                  |
| 2. <i>alpha</i> -HCH | 7. <i>alpha</i> -Endosulfan | 12. <i>o,p</i> -DDT         |
| 3. <i>gamma</i> -HCH | 8. <i>p,p</i> -DDE          | 13. <i>p,p</i> -DDD         |
| 4. Aldrin            | 9. Dieldrin                 | 14. <i>beta</i> -Endosulfan |
| 5. <i>beta</i> -HCH  | 10. <i>o,p</i> -DDD         | 15. <i>p,p</i> -DDT         |

## J&W FactorFour VF-1701ms

30 m x 0.25 mm ID, df=0.25 µm (Part No. CP9151) + 10 m Guard (methyl deactivated/coupled with Quick Seal)

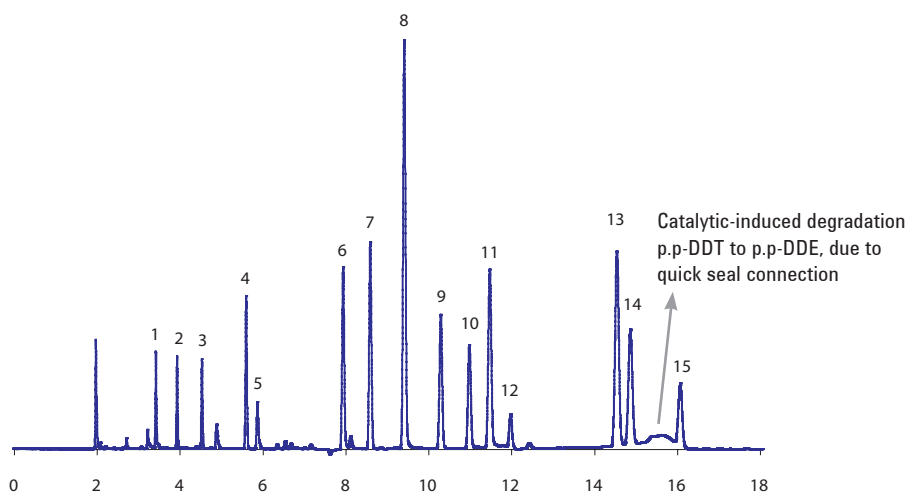


Figure 2. VF-1701ms column coupled to a 10 m Guard using Quick Seal

## J&W FactorFour EZ-Guard VF-1701ms

30 m x 0.25 mm ID, df=0.25 µm + 10 m EZ-Guard (Part No. CP9177)

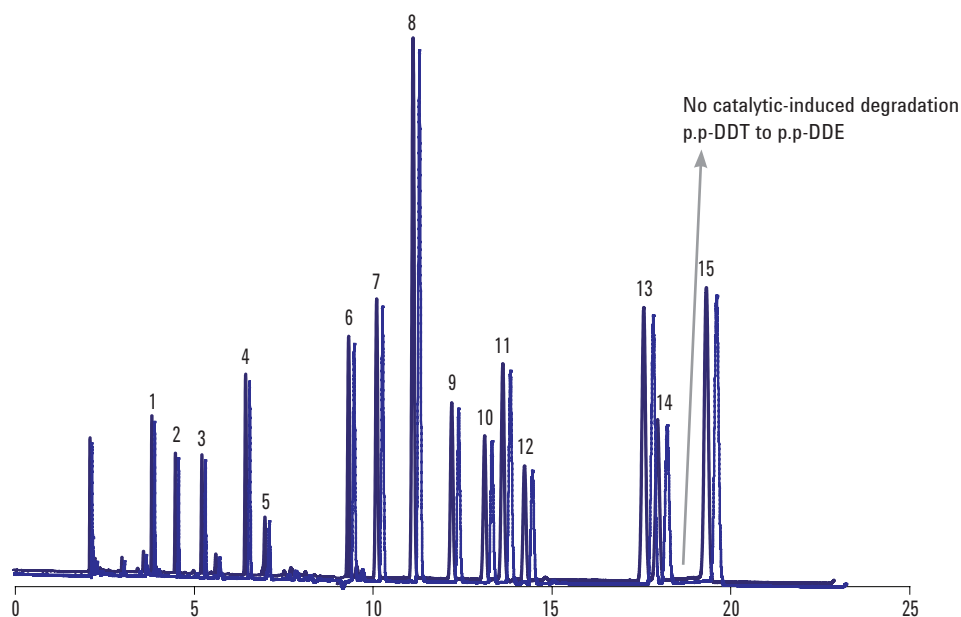


Figure 3. No catalytic-induced degradation on the VF-1701ms GC column with integrated EZ-Guard column

## EZ-Guard and FactorFour

Combining the EZ-Guard with the FactorFour GC Columns provides improved trace analysis, reduced maintenance costs, high productivity and reliable results. The FactorFour range features ultra low column bleed which reduces background noise, improves signal-to-noise ratios and enhances detection limits for trace analysis. In addition, detector contamination is reduced, decreasing maintenance downtime and boosting your productivity. Furthermore, the inertness of FactorFour columns is second to none, giving better peak shape at trace level and improving quantification accuracy.

## Integrated Transfer Line

Every EZ-Guard column also features a unique uncoated and deactivated outlet section, about 100 cm long, which acts as an integrated transfer line. This provides a shorter stabilization time with all types of detectors. The absence of a stationary phase in the last part of the column significantly reduces background noise and shortens detector stabilization time.

## Ordering Information

Part number	ID (mm)	Guard length	Column length	df ( $\mu\text{m}$ )
<b>VF-1ms</b>				
CP9023	0.20	5	12	0.33
CP9010	0.25	5	30	0.25
CP9011	0.25	10	30	0.25
<b>VF-5ms</b>				
CP9021	0.25	5	15	0.25
CP9012	0.25	5	30	0.25
CP9013	0.25	10	30	0.25
CP9014	0.25	5	30	0.50
CP9015	0.25	10	30	0.50
CP9016	0.25	5	60	0.25
CP9020	0.53	10	30	0.25
<b>VF-Xms</b>				
CP9022	0.25	10	30	0.10
CP9018	0.25	5	30	0.25
CP9019	0.25	10	30	0.25
<b>VF-17ms</b>				
CP9024	0.25	5	30	0.25
CP9025	0.25	10	30	0.25
<b>VF-35ms</b>				
CP9026	0.25	5	30	0.25
CP9027	0.25	10	30	0.25
<b>VF-1701ms</b>				
CP9176	0.25	5	30	0.25
CP9177	0.25	10	30	0.25

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