

Compatibility of Connectors for GPC and SEC Columns

Technical Overview

Introduction

Agilent offers a comprehensive portfolio of columns and calibrants for high performance gel permeation chromatography (GPC) and size exclusion chromatography (SEC) separations based on molecular size in solution. Agilent delivers leading solutions for characterizing and separating polymers by GPC/SEC, and manufactures all components for accurate polymer analysis.

It is important to pay careful attention when making connections in GPC/SEC because incorrectly applied connectors, or not using column and connectors from the same manufacturer, will dramatically affect your chromatography. This note offers some recommendations for suitable fittings when using GPC and SEC columns.

Column connection problems

Problems with connections are often mistaken for column issues. Connection issues can arise because different manufacturers may use different types of fitting (Figure 1). The tubing protruding from the ferrule can be too long or too short; both situations can lead to leaks, peak tailing or splitting (Figure 2). If the tubing is too long, the ferrule will not seat properly and leaks will occur. If the tubing is not pushed in far enough, a void space is created that acts as a mixing chamber or introduces dead volume, resulting in poor peak shape. If you use columns from different manufacturers, ensure you use the correct fittings.



Connector types

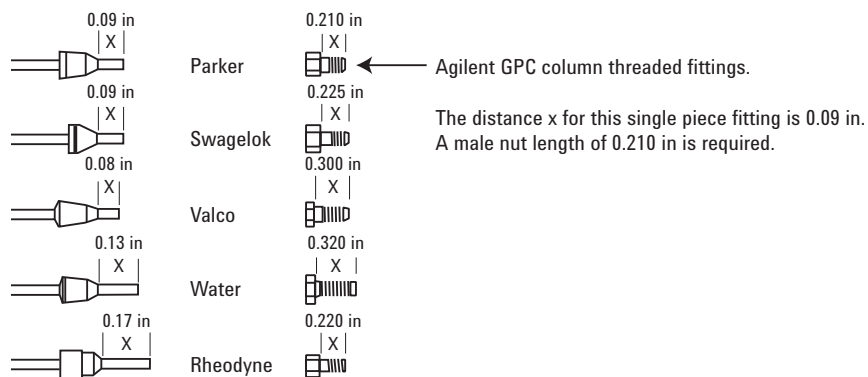


Figure 1. Type of fitting.



If distance x is too long the ferrule will not seal.

If distance x is too short dead volume is created.

Figure 2. Tubing protruding from the ferrule must not be too short or too long.

Recommended connectors

Stainless steel fittings are the best choice for permanent high pressure sealing. Agilent uses Parker type fittings with front and back ferrules that give the best performance throughout an Agilent GPC system.

We do not recommend PEEK (polyketone) fittings for GPC applications because PEEK is degraded by tetrahydrofuran, a solvent commonly used in the technique.

GPC/SEC columns and calibrants from Agilent

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Look at the Agilent Literature Library on www.agilent.com/chem/gpc-sec for a comprehensive range of application notes and technical overviews to obtain the best results from Agilent GPC/SEC columns and instruments.

www.agilent.com/chem

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