



### WHAT ARE CHIRAL COMPOUNDS?

Any carbon atom that is bonded to four different groups is termed a chiral or an asymmetric carbon. Molecules containing one or more of these carbon centers are considered chiral molecules. Chiral centers can exist in two forms called enantiomers. These two forms are non-superimposable mirror images of each other, but both have similar physical properties.

**New** Restek offers a wide range of cyclodextrin columns for analysis of many chiral compounds

Stationary phases incorporating modified cyclodextrins have the greatest utility in separating chiral compounds using gas chromatography. By adding the cyclodextrins to the bonded Rtx-1701 stationary phase, the lifetime and overall utility of these columns is greatly enhanced over columns made from pure cyclodextrins. Restek's applications chemists have demonstrated the stability of these columns after hundreds of repeated temperature programmed analyses. Seven unique modified cyclodextrins have been developed and separations of over one hundred chiral compounds have been demonstrated with these various columns. Check the applications section of the catalog for sample applications or call your local distributor for assistance in matching the appropriate column for your analysis.

#### Rt-bDEXm (Fused Silica)

(permethylated beta cyclodextrin doped into 14% cyanopropyl/phenyl - 86% dimethyl polysiloxane) Stable to 230°C

ID	df, (um)	temp. limits	30-Meter
0.25mm	0.25	40 to 230°C	13100
0.32mm	0.25	40 to 230C	13101

Uses: General purpose chiral phase with many published applications in the literature.

#### Rt-bDEXsm (Fused Silica)

(2,3-di-O-methyl-6-O-tert-butyl dimethylsilyl beta cyclodextrin doped into 14% cyanopropyl/phenyl - 86% dimethyl polysiloxane) Stable to 230°C

ID	df(um)	temp. limits	30-Meter
0.25mm	0.25	40 to 230°C	13105
0.32mm	0.25	40 to 230°C	13104

Uses: Excellent column for most chiral natural products found in essential oils.

#### Rt-BDEXse (Fused Silica)

(2,3-di-O-ethyl-6-O-tert-butyl dimethylsilyl beta cyclodextrin doped into 14% cyanopropyl/phenyl - 86% dimethyl polysiloxane) Stable to 230°C

ID	df (umn)	temp. limits	30-Meter
0.25mm	0.25	40 to 230C	13107
0.32mm	0.25	40 to 23 C	13106

Uses: Similar in performance to Rt-bDEXsm but provides better resolution for limonene, linalool, linalyl acetate, ethyl-2-methylbutyrate, 2,3.butane diol and styrene oxides.

**Rt-bDEXsp** (Fused Silica)

(2,3-di-O-propyl-6-O-tert-butyl dimethylsilyl beta cyclodextrin doped into 14% cyanopropylphenyl 86% dimethyl polysiloxane) Stable to 230°C

ID	df (um)	temp. limits	30-Meter
0.25mm	0.25	40 to 230°C	13111
0.32mm	0.25	40 to 230°C	13110

Uses: A specialized stationary phase which often is useful in dual column configurations with the Rt-bDEXsm for complex enantiomeric separations.

**Rt-bDEXsa** (Fused Silica)

(2,3-di-acetoxy-6-O-tert-butyl dimethylsilyl beta cyclodextrin doped into 14% cyanopropylphenyl 86% dimethyl polysiloxane) Stable to 230°C

ID	df (um)	temp. limits	30-Meter
0.25mm	0.25	40 to 230°C	13109
0.32mm	0.25	40 to 230°C	13108

Uses: Has unique selectivity for esters and lactones and other fruit flavor components.

**Rt-bDEXcst** (Fused silica)

(Proprietary cyclodextrin material doped into 14% cyanopropylphenyl - 86% dimethyl polysiloxane) Stable to 230°C

ID	df(um)	temp. limits	30-Meter
0.25mm	0.25	40 to 230°C	13103
0.32mm	0.25	40 to 230°C	13102

Uses: This proprietary stationary phase was developed specifically for the fragrance industry and has also been used for pharmaceutical applications.

**Rt-yDEXsa** (Fused Silica)

(2,3-di-acetoxy-6-O-tert-butyl dimethylsilyl gamma cyclodextrin doped into 14% cyanopropylphenyl 86% dimethyl polysiloxane) Stable to 230°C

ID	df (um)	temp. limits	30-Meter
0.25mm	0.25	40 to 230°C	13113
0.32mm	0.25	40 to 230°C	13112

Uses: This gamma cyclodextrin-based phase is better for larger organic molecules. Also useful for flavor compounds in fruit juices.

**TO OPTIMIZE CHIRAL SEPARATIONS USE:**

- 1) Faster linear velocities (80 cm/sec.) with hydrogen carrier gas.
- 2) Slower temperature ramp rates (1-2°C/min.)
- 3) Appropriate minimum operating temperature (40 or 60°C).
- 4) On-column concentrations of 50ng or less.

Request Restek's  
**A Guide to the  
Analysis of Chiral  
Compounds by GC**  
(cat.# 59889,

for more information  
on chiral separations.

