NUCLEOSIL® HD

HPLC columns filled with adsorbents of the NUCLEOSIL® HD generation

NUCLEOSIL® 100-3 C_8 HD **NUCLEOSIL® 100-5 C_8 HD**
NUCLEOSIL® 100-3 C_{18} HD **NUCLEOSIL® 100-5 C_{18} HD**

Our HPLC columns of the NUCLEOSIL® HD family are packed with reversed phase adsorbents showing an optimized lot-to-lot reproducibility, base deactivation and stability. High purity NUCLEOSIL® 100 silica spheres with a pore size of 100 Å and a particle size of 3 or 5 µm, respectively, are used as base material. A special activation of the silica is followed by the optimized surface coating reaction and final endcapping of the residual silanol groups. This results in a high density (hence HD) surface modification. The carbon content is above 20 % (octadecyl) or 13 % (octyl) despite of the monomeric coating. Due to the outstanding lot-to-lot reproducibility, stability and base deactivation NUCLEOSIL® HD adsorbents are recommended for all critical separations in reversed phase HPLC.

Product specification:

	NUCLEOSIL® 100-3 C_8 HD	NUCLEOSIL® 100-5 C_8 HD	NUCLEOSIL® 100-3 C_{18} HD	NUCLEOSIL® 100-5 C_{18} HD
base material	NUCLEOSIL® 100	NUCLEOSIL® 100	NUCLEOSIL® 100	NUCLEOSIL® 100
pore size	100 Å	100 Å	100 Å	100 Å
particle size	3 µm	5 µm	3 µm	5 µm
spec. pore vol.	1 mL/g	1 mL/g	1 mL/g	1 mL/g
surface	350 m^2/g	350 m^2/g	350 m^2/g	350 m^2/g
modification	octyl/monomer	octyl/monomer	octadecyl/monomer	octadecyl/monomer
endcapped	yes	yes	yes	yes

Column installation

For installation, please observe the flow direction indicated on the column label. The eluent in the column is acetonitrile / water. For equilibration the column should be flushed at a reduced flow rate with at least 10 column volumes of the eluent.

Eluent selection

HPLC columns of the NUCLEOSIL® HD family are operated with typical reversed phase eluents such as mixtures of acetonitrile / water or methanol / water. The aqueous part may be adjusted with suitable buffers. However, one should always keep in mind, that complete solubility of all buffer components in the aqueous / organic mixture is required. For an optimum column lifetime the pH value of the eluent should be between 2 and 8. However, NUCLEOSIL® HD adsorbents show a good stability outside this range, too.

Separation of compounds with basic groups

Interaction with residual silanols and ionization of the analyte can result in tailing. This effect reduces the detection sensitivity and resolution of a separation. In addition to using a base deactivated adsorbent, proper selection of the chromatographic conditions can positively influence the separation of basic compounds. In general, methanol as organic modifier gives better peak symmetries for basic compounds than acetonitrile.

Buffering the eluent can also improve peak symmetry. NUCLESIL® HD features short retention times and good peak symmetry for basic compounds even when using eluents of neutral pH values.

Flow rate

The flow rate influences the time needed for a separation, the resolution and the column lifetime. The upper limit is given by the column back pressure, which should be below 250 bar, to ensure an optimum column life. Especially for mixtures of methanol and water, the viscosity of the mixture, and thus the back pressure, depends on the eluent composition. At about 40 % methanol the viscosity reaches a maximum. For this reason a reduced flow rate is recommended, when changing the eluent composition.

Temperature

The column temperature influences retention time, selectivity and peak width. Generally, increasing temperatures result in lower retention times and pressures. However, the column temperature should be at least 30 °C below the boiling temperature of the eluent, in order to ensure proper detection. Also, careful degassing of the eluent is required for increased temperatures.

Sample

If possible, the sample should be dissolved in the starting eluent, and filtered through a CHROMAFIL® filter (e.g. CHROMAFIL® PET 45/25, REF 729020). As additional column protection, we recommend use of a ChromCart® guard column cartridge with the NUCLEOSIL® HD packing, which can be used for the ChromCart® system as well as for the EC column system (using the guard column adaptor EC, REF 721359).

Column storage

Columns should be stored with a mixture of acetonitrile / water or methanol / water as eluent. If the column was run with buffers, prior to storage, it should be flushed first with demineralized water, and then with the acetonitrile / water or methanol / water mixture of your choice.

NUCLEOSIL® HD phases are available in numerous column dimensions from microbore to preparative scale. For more information ask for our free product literature.

Please visit our Application-Database at *www.mn-net.com*

Germany and International:
MACHEREY-NAGEL GmbH & Co. KG
Neumann-Neander-Str. 6-8 · 52355 Düren
Tel.: +49 (0) 24 21 969-0 · Fax: +49 (0) 24 21 969-199
e-mail: info@mn-net.com

USA:
MACHEREY-NAGEL Inc. · 2850 Emrick Boulevard · Bethlehem, PA 18020 · Tel.: +1-484 821 09 84 · Fax: +1-484 821 12 72
e-mail: sales-us@mn-net.com

France:
MACHEREY-NAGEL EURL · B.P. 135 · 67722 Hoerdt
Tél.: +33 (0) 3 88 68 22 68 · Fax: +33 (0) 3 88 51 76 88
e-mail: sales-fr@mn-net.com

Nucleosil HD GB 07.10 – A007647