

MACHEREY-NAGEL

NUCLEODUR[®] HPLC columns

Chromatography



Phase overview

- Fully spherical particle shape with outstanding surface microstructure
- High pressure stability and low metal content
- Also suitable for UHPLC (1.8 µm particle size)



MACHEREY-NAGEL

www.mn-net.com




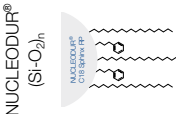
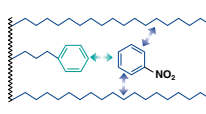

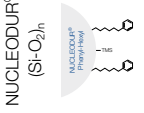
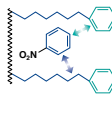

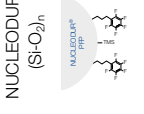
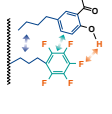

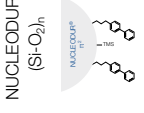
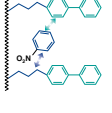

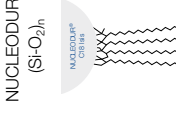
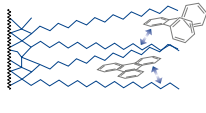

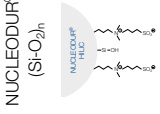
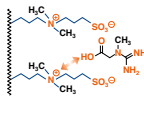

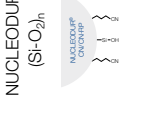
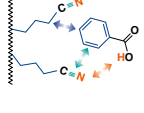


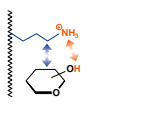


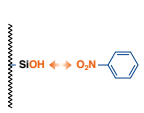
NUCLEODUR® phase overview

Phase	Specification	Characteristic*	Stability	Structure	Application	Similar phases**	Interactions · retention mechanism
C18 Gravity	octadecyl, high density coating, multi-endcapping 18% C USP L1	A ●●●●● B ● C ●●● D –	pH 1–11, suitable for LC/MS	NUCLEODUR® (Si-O) ₂ /h 	in general compounds with ionizable functional groups such as basic pharmaceuticals and pesticides	NUCLEOSIL® C18 HD Xterra® RP18 / MS C18; Luna® C18(2), Gemini®, Synergi® Max RP; Zorbax® Extend-C18; Inertsil® ODS III; Purospher® STAR RP-18; Hypersil™ BDS	hydrophobic (van der Waals interactions)
C18 Pyramid	octadecyl with polar endcapping 14% C USP L1	A ●●●●● B ●●●●● C ●●● D –	stable in 100% aqueous eluent, pH 1–9, suitable for LC/MS	NUCLEODUR® (Si-O) ₂ /h 	basic pharmaceuticals, very polar compounds, organic acids	Aqua, Synergi® Hydro-RP, AQ; Atlantis® dC18; Polaris® C18-A	hydrophobic and polar (H bonds)
C18 HTec	octadecyl, high density coating, high capacity, multi-endcapping 18% C USP L1	A ●●●●● B ● C ●●● D –	pH 1–11, suitable for LC/MS	NUCLEODUR® (Si-O) ₂ /h 	robust and well base deactivated C ₁₈ phase; all separation tasks with preparative potential	Xterra® RP18 / MS C18 / SunFire™ C18; Luna® C18(2), Gemini®, Synergi® Max RP; Zorbax® Extend-C18; Intersil® ODS III; Purospher® STAR RP-18; Hypersil™ BDS	hydrophobic (van der Waals interactions)
C18 ec	octadecyl, medium density, endcapping, available in 110 Å and 300 Å pore size 17.5% / 4% C USP L1	A ●●●●● B ● C ●●● D –	pH 1–9	NUCLEODUR® (Si-O) ₂ /h 	robust C ₁₈ phase for routine analyses	NUCLEOSIL® C18 Spherisorb® ODS II; Symmetry® C18; Hypersil® ODS; Kromasil® C18; LiChrospher® RP-18	hydrophobic (van der Waals interactions) some residual silanol interactions
PolarTec	octadecyl with embedded polar group, endcapping 17% C USP L1 and L60	A ●●●●● B ●●●●● C ●●●●● D –	stable in 100% aqueous eluent, pH 1–9,	NUCLEODUR® (Si-O) ₂ /h 	basic pharmaceuticals, organic acids, pesticides, amino acids, water-soluble vitamins	NUCLEOSIL® C18 Nautilus ProntoSIL® C18 AQ, Zorbax® Bonus-RP, Polaris® Amide-C18; Ascensis® RP Amide, SymmetryShield™ LC-ABZ+; HyPURITY™ Advance; ACCLAIM Polar AD. II	hydrophobic and polar (H bonds)
C18 Gravity-SB	octadecyl (monomeric), extensive endcapping 13% C USP L1	A ●●●●● B ●●●●● C – D –	pH 1–9, suitable for LC/MS	NUCLEODUR® (Si-O) ₂ /h 	overall sophisticated analytical separations, especially for polar compounds, e.g., antibiotics, water-soluble vitamins, organic acids	–	hydrophobic (van der Waals interactions) with additional polar interactions
C8 Gravity	octyl, high density coating, multi-endcapping 11% C USP L7	A ●●●●● B ● C ●●● D –	pH 1–11, suitable for LC/MS	NUCLEODUR® (Si-O) ₂ /h 	like C18 Gravity, however, generally shorter retention times for nonpolar compounds	NUCLEOSIL® C8 HD Xterra® RP8 / MS C8; Luna® C8; Zorbax® Eclipse XDB-C8	hydrophobic (van der Waals interactions)
C8 ec	octyl, medium density, endcapping 10.5% C USP L7	A ●●●●● B ●●●●● C ●●●●● D –	pH 1–9	NUCLEODUR® (Si-O) ₂ /h 	robust C ₈ phase for routine analyses	NUCLEOSIL® C8 ec / C8 Spherisorb® C8; Symmetry® C8; Hypersil® MOS; Kromasil® C8; LiChrospher® RP-8	hydrophobic (van der Waals interactions) some residual silanol interaction
C4 ec	butyl, medium density, endcapping, 300 Å pore size 2.5% C USP L26	A ● B ●●● C ●●● D –	pH 1–9	NUCLEODUR® (Si-O) ₂ /h 	biological macromolecules like proteins or peptides	Jupiter® C4; ACE® C4	Hydrophobic (van der Waals interactions) some residual silanol interactions

* A = ● hydrophobic selectivity, B = ● polar/ionic selectivity, C = ● steric selectivity, D = ● π-π Interactions

** phases which provide a similar selectivity based on chemical and physical properties

NUCLEODUR® phase overview

Phase	Specification	Characteristic*	Stability	Structure	Application	Similar phases**	Interactions · retention mechanism
 Sphinx RP	bifunctional, balanced ratio of propylphenyl and octadecyl, endcapping 15% C USP L1 and L11	A ●●● B ●●●● C ●●● D ●	pH 1–10, suitable for LC/MS		compounds with aromatic and multiple bond systems	no similar phases	π - π and hydrophobic 
 Phenyl-Hexyl	phenylhexyl, multi-endcapping 10% C USP L11	A ●●● B ●●●●● C ●●● D ●●	pH 1–10, suitable for LC/MS		aromatic and unsaturated compounds, polar compounds like pharmaceuticals, antibiotics	Luna® Phenyl-Hexyl; Zorbax® Eclipse Plus Phenyl-Hexyl; Kromasil® Phenyl-Hexyl	π - π and hydrophobic 
 PFP	pentafluorophenylpropyl, multi-endcapping 8% C USP L43	A ●●● B ●●●●● C ●●●●● D ●●●	pH 1–9, suitable for LC/MS		aromatic and unsaturated compounds, halogen compounds, phenols, isomers, polar pharmaceuticals, antibiotics	ACQUITY® CSH Fluoro-Phenyl; Hypersil™ GOLD PFP; Luna® PFP(2); Discovery® HS F5; Allure® PFP Propyl; Ultra II PFP Propyl	polar (H bond) dipole-dipole, π - π and hydrophobic 
 π^2	biphenylpropyl, multi-endcapping 17% C USP L11	A ●●●● B ●●●●● C ●●●●● D ●●●●●	pH 3–10		aromatic and unsaturated compounds, polar compounds like pharmaceuticals, antibiotics	Pinnacle® DB Biphenyl; Ultra Biphenyl	π - π and hydrophobic 
 C18 Isis	octadecyl phase with specially crosslinked surface modification, endcapping 20% C USP L1	A ●●●●●● B ●●●●● C ●●●●● D –	pH 1–10, suitable for LC/MS		high steric selectivity, thus suited for separation of positional and structural isomers, planar / nonplanar molecules	NUCLEOSIL® C18 AB Intersil® ODS-P; Pro C18 RS	steric and hydrophobic 
 HILIC	zwitterionic ammonium-sulfonic acid phase, no endcapping 7% C	A ● B ●●●●● C – D –	pH 2–8.5		hydrophilic compounds such as polar organic acids and bases, polar natural compounds	Sequant™ ZIC®-HILIC; Obelisc™	ionic / hydrophilic and electrostatic 
 CN / CN-RP	cyano (nitrile) for NP and RP separations, endcapping 7% C USP L10	A ● B ●●●●● C – D –	pH 1–8, stable towards highly aqueous mobile phases		polar organic compounds (basic drugs), molecules containing π -electron systems	NUCLEOSIL® CN / CN-RP	π - π and polar (H bond), hydrophobic 
 NH ₂ / NH ₂ -RP	aminopropyl for NP and RP separations, no endcapping 2.5% C USP L8	A ● B ●●●●● C – D –	pH 2–8, stable towards highly aqueous mobile phases		sugars, sugar alcohols and other hydroxy compounds, DNA bases, polar compounds in general	NUCLEOSIL® NH ₂ / NH ₂ -RP	polar / ionic and hydrophobic 
 SiOH	unmodified high purity silica, no endcapping USP L3	A – B – C – D –	pH 2–8		polar compounds in general	NUCLEOSIL® SiOH	polar / ionic 

NUCLEODUR® phase overview

Do you want to learn more about HPLC columns?



Modern HPLC phases



Chromatography catalog



Technical product information

Chromatography service – Tools and Services for an added value



www.mn-net.com/chromatography-service

Good to know

The MACHERY-NAGEL application database provides over 3000 chromatography application examples from HPLC, GC, TLC and SPE and is accessible free of charge:



<https://chromaappdb.mn-net.com/>

www.mn-net.com

MACHERY-NAGEL



Management System
EN ISO 13485:2016
ISO 9001:2015

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