

Astra[®] C18-Hybrid

ChromLine

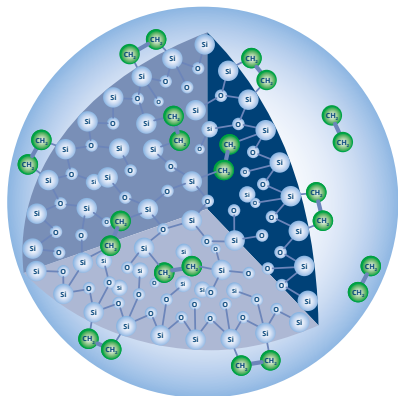


Smarter Silica for Advanced Performance

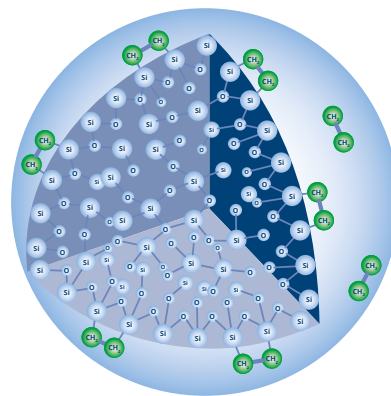
Hybrid Silica – Where Nature Meets Innovation

Hybrid silica fuses the robustness of inorganic silica with the versatility of organic chemistry, creating a material engineered for superior performance. With enhanced durability and refined surface functionality, hybrid silica enables smarter, longer-lasting solutions across advanced industrial and technological applications.

High density end-capping together with **fully hybrid particles** synthesised from scratch deliver superior high alkaline durability compared to partially hybrid solutions.



Astra[®] fully hybrid phase



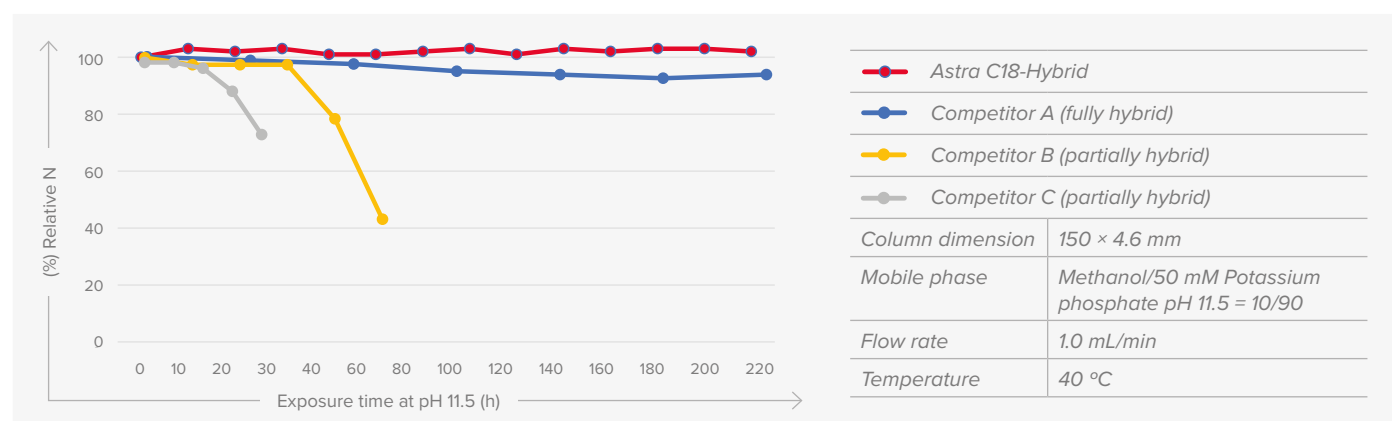
Competitive partially hybrid phase

KEY BENEFITS

- Fully hybrid particles for a wide **pH range from 1 to 12**
- C18 with **improved selectivity** for basic compounds
- **Narrow peaks at low pH** – significant reduction in acid hydrolysis of the C18 ligand
- Enhanced method development **flexibility**
- Double end-capping with unique **surface treatment for superior** peak shape
- **Stability in 100%** aqueous mobile phase, even at elevated pH

Comparison of durability of hybrid columns at pH 11.5

Astra® C18-Hybrid maintains performance under pH 11.5 stress, while partially hybrid columns degrade much earlier.

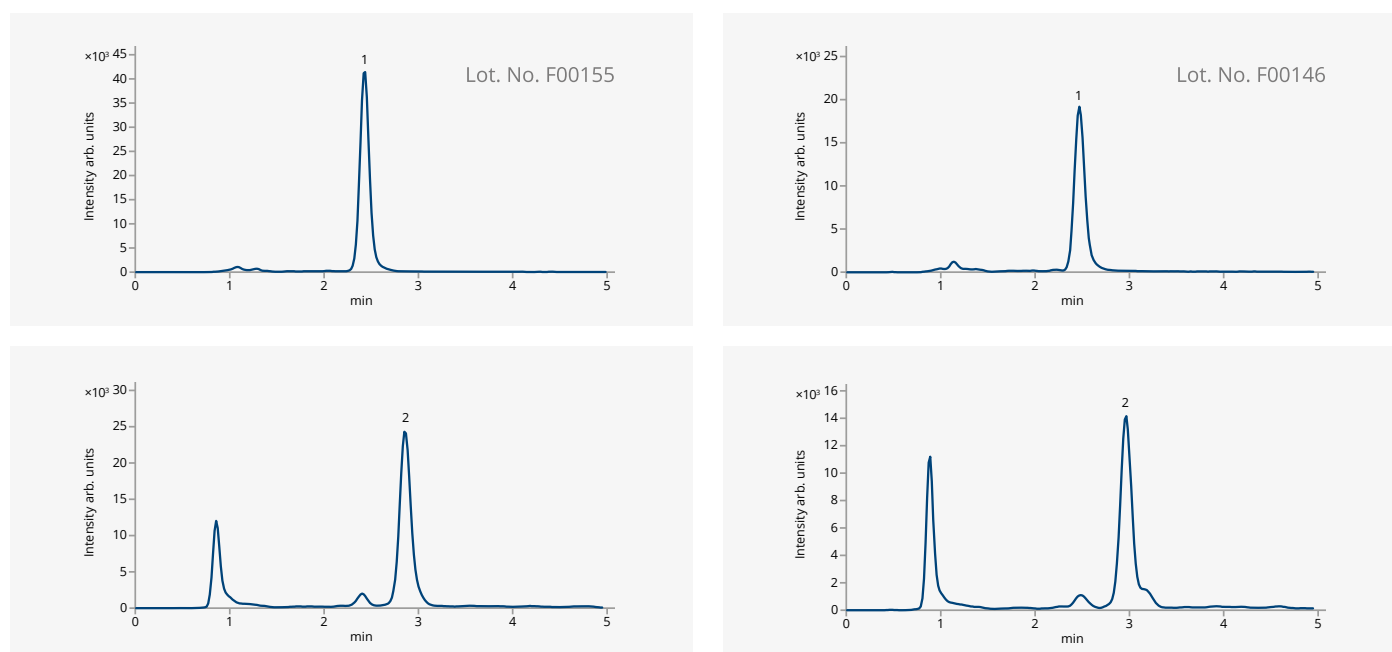


Astra® C18-Hybrid specification

Particle size (µm)	Pore size (Å)	Surface area (m²/g)	Carbon load	pH stability	Endcapping	100% Aqueous Mobile phase	USP code
3, 5	150	185	16%	1 to 12	Proprietary	✓	L1

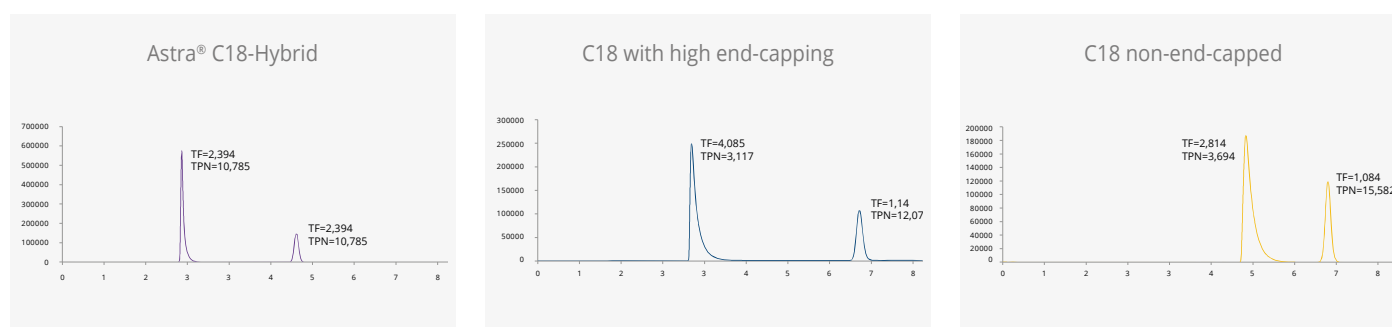
Analysis of plasma sample on different lots of Astra® C18-Hybrid column

Astra® C18-Hybrid shows excellent and completely stable results when using manufactured columns with a six-month interval.



Pyridine/Phenol test

Astra® C18-Hybrid provides superior peak symmetry, high efficiency, and excellent pyridine separation **without** the need for buffer additives. (See chromatograms.)

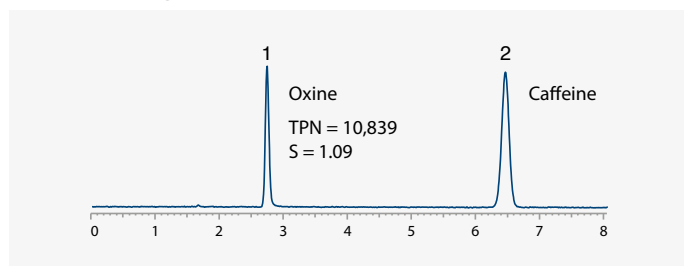


Method: ACN/UPW 30/70, 1 mL/min, 254 nm, 25 °C, inj. volume 0.5 µL. Peak 1 = Pyridine, Peak 2 = Phenol. All under the same condition.

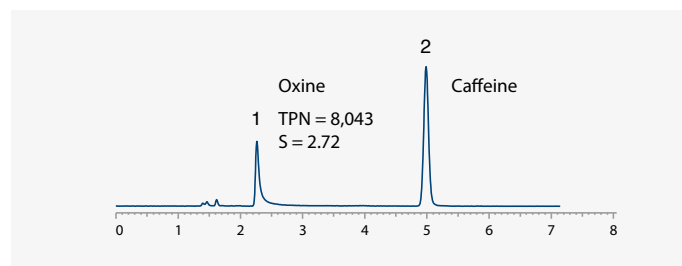
Comparison of various hybrid columns at chelating compounds separation

Chromatograms show excellent separation on Astra® C18-Hybrid column compare to fully hybrid and partially hybrid particles. Astra® C18-Hybrid shows better performance even to 1.7 µm column.

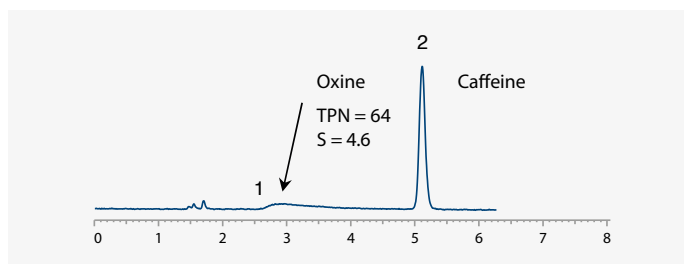
Astra® C18-Hybrid 5 µm



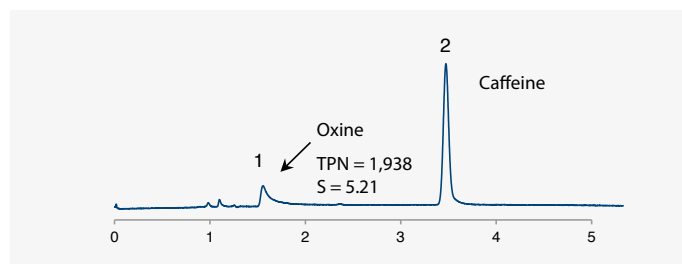
Competitor A 3.5 µm



Competitor B 5 µm



Competitor C 1.7 µm

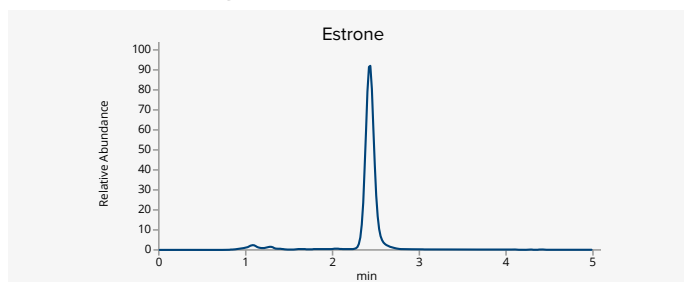


Column dimensions	150 × 4.6 mm for 3.5 and 5 µm, 100 × 2.1 mm for 1.7 µm	Analytes 1 = Oxine (CAS 148-24-3) <chem>Oc1ccc2ncnc2c1</chem> 2 = Caffeine (CAS 58-08-2) <chem>CN1C=NC2=C1C(=O)N(C)C(=O)N2C</chem>
Mobile phase	Acetonitrile/20 mM, Phosphoric acid = 10/90	
Flow rate	1.0 mL/min for 3.5 and 5 µm, 0.2 mL/min for 1.7 µm	
Temperature	40 °C	
Detection	UV @ 250 nm	

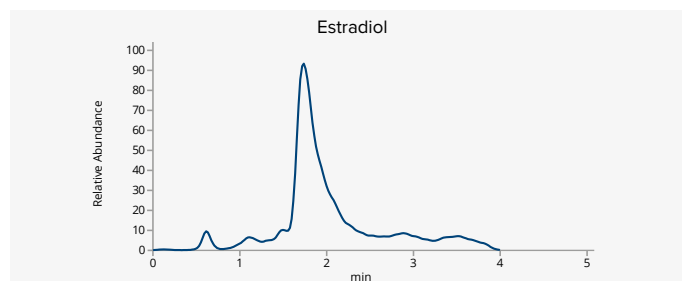
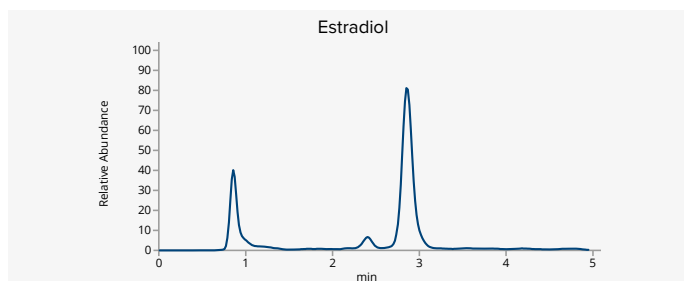
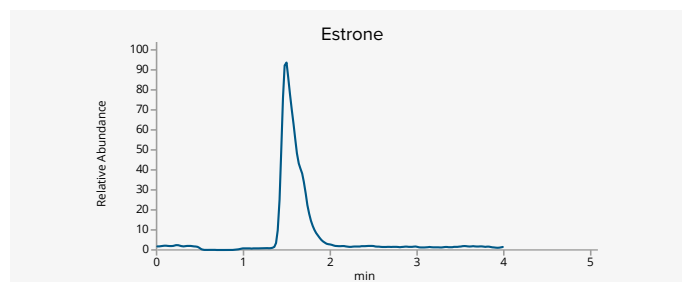
Proven in Pharma: Estrogens Analysis with Astra® C18-Hybrid column and competitive column

The same method, conditions, and sample, but a visibly different result. The Astra® C18-Hybrid column provides superior selectivity compared to competing products.

New Astra® C18-Hybrid column



Competitive column K

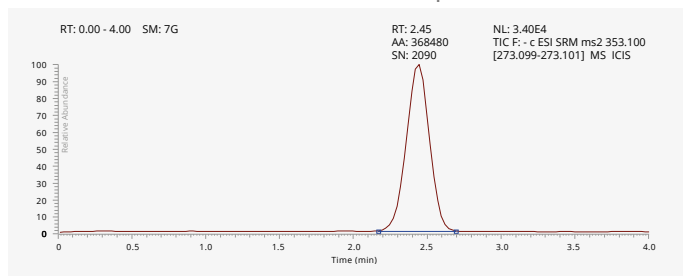


Column dimensions	Astra® C18-Hybrid, 5 µm, 250 × 4.6 mm, Part No AST-6016-LG46	Injection volume	60 µL
Mobile phase	70% MeOH + 10% 50mM (NH ₄) ₂ CO ₃ + 20% UPW Detailed information about gradient table is proprietary	Detection	LC-MS, Conditions: proprietary
Flow rate	1 mL/min	Analytes	1 = Estrone (E1), CAS: 53-16-2
Temperature	50 °C		2 = Estradiol (E2), CAS: 50-28-2

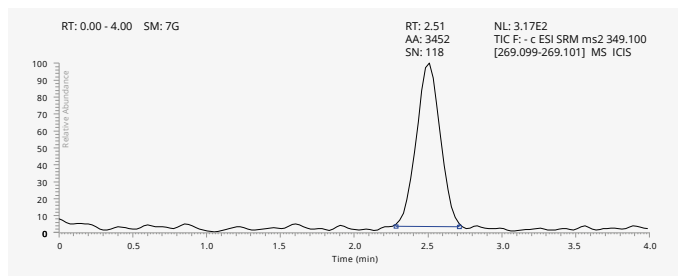
Case study: Estrone sulfate (LC/MS)

Sample preparation: protein precipitation (organic solvent), solvent evaporation, reconstitution.

Internal standard: Estrone sulfate d₄ (dE1S)



Plasma: Estrone sulfate (E1S) 10 pg/mL

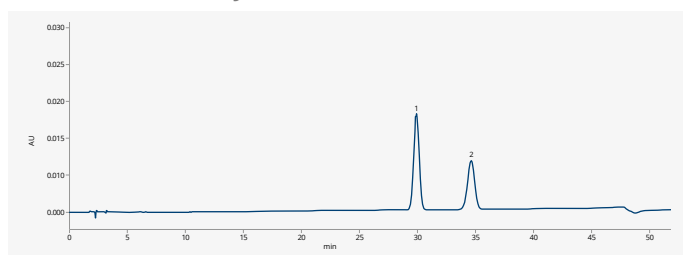


Column dimensions	Astra® C18-Hybrid, 5 µm, 50 × 4.6 mm, Part No AST-6016-LG46	Injection volume	30 µL
Mobile phase	70% MeOH + 10% 50 mM (NH ₄) ₂ CO ₃ + 20% UPW Detailed information about gradient table is proprietary	Detection	LC-MS, Conditions: proprietary
Flow rate	1 mL/min	Analytes	Estrone sulfate (E1S)
Temperature	50 °C		Estrone sulfate d ₄ (dE1S) – IS

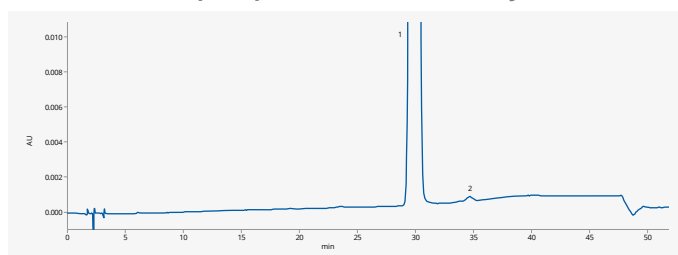
Oxycodone in Naltrexone

This application describes a simple, precise, and stability-indicating HPLC method for the simultaneous quantification of oxycodone and naltrexone.

Naltrexone and Oxycodone standard



Naltrexone sample spiked with 0.1% of Oxycodone

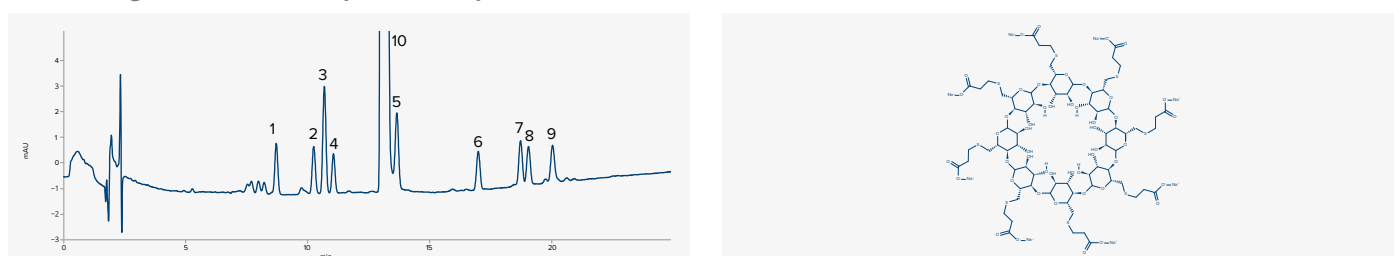


Column dimensions	Astra® C18-Hybrid, 5 µm, 250 × 4.6 mm, Part No AST-6016-LM46	Injection volume	10 µL
Mobile phase	Methanol: tetrahydrofuran, gradient	Detection	UV @ 230 nm
Flow rate	1.2 mL/min	Analytes	1. Naltrexone
Temperature	30 °C		2. Oxycodone

Analysis of Sugammadex impurities

The development of a sensitive and selective chromatographic method for the detection and separation of SGM impurities is essential for the pharmaceutical industry.

Chromatogram of SGM sample with impurities



Column dimensions	Astra® C18-Hybrid, 3 µm, 150 × 4.6 mm, Part No AST-6016-IK46	Temperature	35 °C
Mobile phase	A: PW:ACN = 95:5 + 0.2% H ₃ PO ₄	Detection	UV @ 210 nm
	B: ACN:PW = 85:15 + 0.2% H ₃ PO ₄	Analytes	1-9: Impurities
Flow rate	0.8 mL/min		10: Sugammadex sodium, CAS: 343306-79-6

