

# C30 Series

## Develosil C30-UG

[Develosil RPAQUEOUS, RPFULLERENE, Combi-RP]

## Develosil RPAQUEOUS-AR

It is chemical modification about a triacontyl radical (c30) based on a high grade silica gel.

### Physical properties of Develosil C30Series

Column name	Ligand	Carbon	End Capping	Surface area	Pore diameter	Pore volume	Range of pH
C30-UG	Triacontyl radical (Monofunctional)	18%	Yes (Double)	300m <sup>2</sup> /g	14nm	1.05mL/ g	pH2-8
RPAQUEOUS							
RPFULLERENE							
Combi-RP							
RPAQUEOUS-AR	Triacontyl radical (Trifunctional)						pH1-7

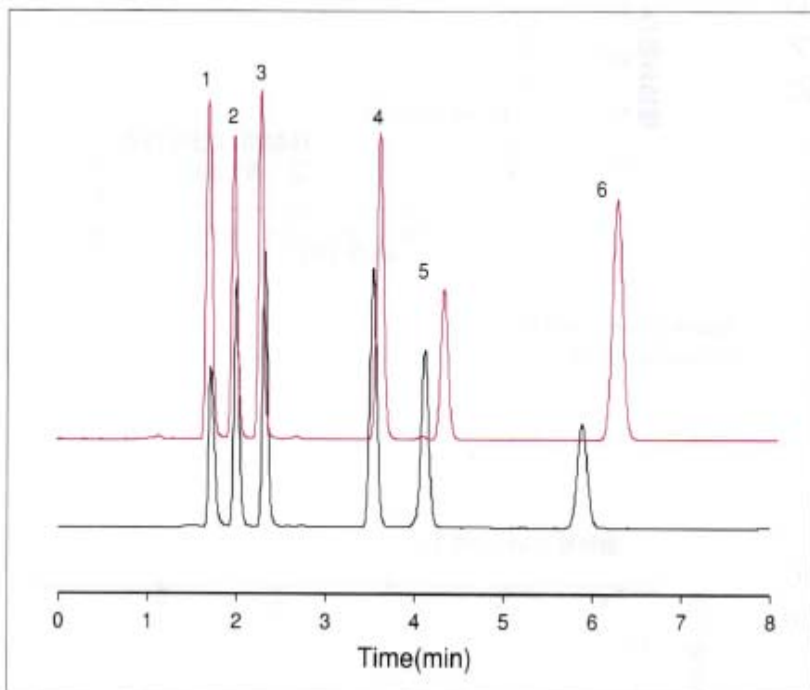
※C30-UG, RPAQUEOUS, RPFULLERENE, and Combi-RP are using the same Packing material.  
The name of article is changed and shipped to purpose-oriented.

The feature of Develosil C30 series

<b>Different characteristics from an ODS column</b>	To solution well inseparable using ODS. Develosil C30 series does not only simply have a long alkyl chain.
<b>A 100% of water mobile phase can also be used</b>	It is the present condition for retention not to become early rapidly in the usual column, if a 100% of water mobile phase is used, or not to be stabilized. In Develosil C30 series, by controlling a base material surface well shows high reproducibility also by a 100% of water mobile phase.
<b>Solid recognition ability is high</b>	Solid recognition ability changes with a monomeric type or a polymeric type, and the length of an alkyl chain is also one of factors. It is fit for an isomer, separation of polycyclic aromatic, etc.
<b>The best for separation of a liposolubility compound</b>	A result good also for carotenoid (especially carotene) or fullerene can be obtained.

# The difference between Develosil C30-UG (RPAQUEOUS) and RPAQUEOUS-AR

## Comparison 1 of column performance



### Conditions:

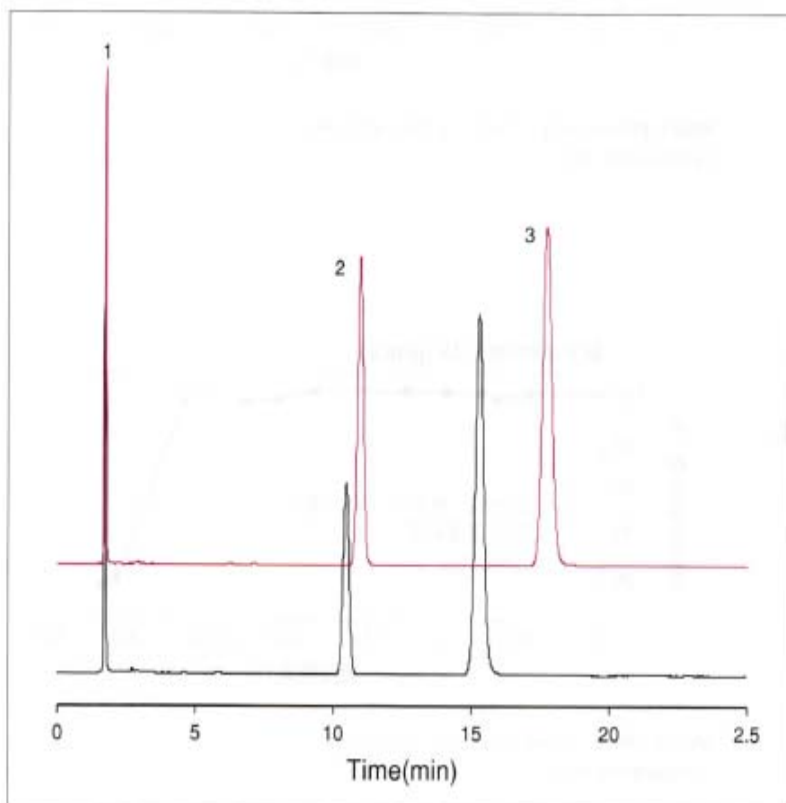
Column	: Develosil® C30-UG-5 Develosil® RPAQUEOUS-AR-5
Size	: 4.6x150mm
Mobile phase	: MeOH/Water=70/30
Flow rate	: 1.0ml/min
Temperature	: 40°C
Detection	: UV254nm
Sample	: 1.Uracil / 2.Caffeine / 3.Phenol 4.Methyl Benzoate / 5.Benzene 6.Toluene

The left figure is data based on the packing-material appraisal method of our regulation. From this chromatogram, a hydrogen associativity and hydrophobic surface polarity are evaluated.

This result shows that the equivalent degree of separation is obtained also by C30-UG or RPAQUEOUS-AR.

Column name	Hydrogen associativity	Hydrophobicity	Surface polarity
C30-UG	0.47	1.73	0.44
RPAQUEOUS-AR	0.48	1.74	0.42

## Comparison 2 of column performance



### Conditions:

Column	: Develosil® C30-UG-5 Develosil® RPAQUEOUS-AR-5
Size	: 4.6x150mm
Mobile phase	: MeOH/Water=80/20
Flow rate	: 1.0ml/min
Temperature	: 40°C
Detection	: UV254nm
Sample	: 1.Uracil / 2.o-Terphenyl / 3.Triphenylene

It is comparison of solid recognition ability. It will be said that the power of recognizing a solid compound is strong, so that this figure is high.

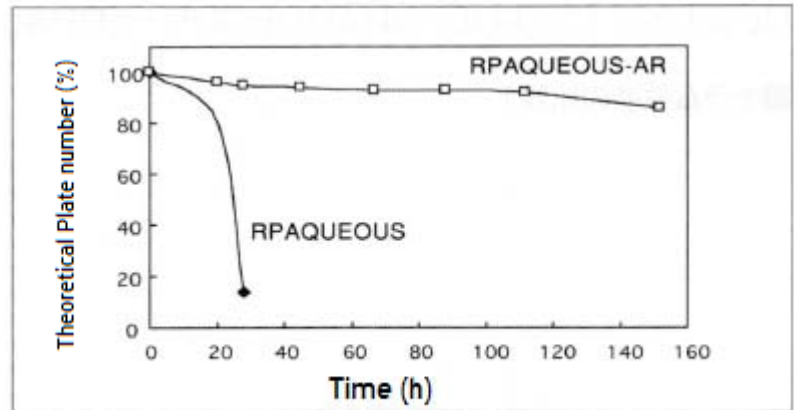
C30-UG-5  $\alpha=1.58$

RPAQUEOUS-AR  $\alpha=1.73$

It turns out that the direction of RPAQUEOUS-AR is in the tendency to recognize a solid compound.

## Durability of the column in 100% of water

It is a data figure in an acid-proof examination. RPAQUEOUS-AR which has adopted polymeric type C30 has high durability on acid terms. An ion pair reagent can be used and a result good for an amino acid, analysis of peptide, etc. can be obtained.

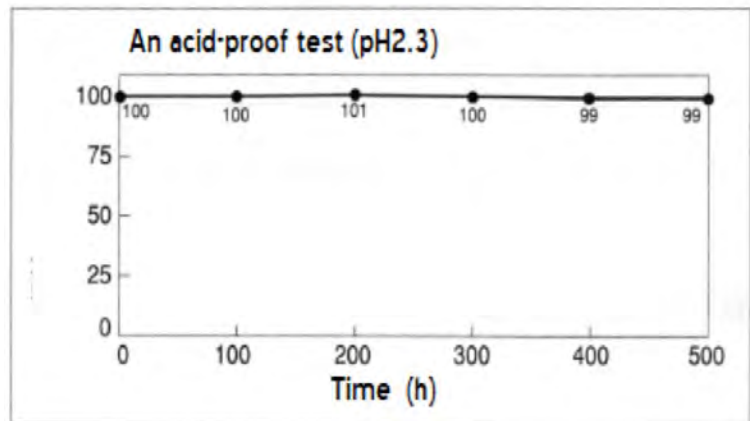


Mobile phase: 0.5%TFA  
Temperature: 40°C

## Durability of the column at the case of a contain organic solvent

The data of durability test at the time of stepping on an organic solvent to a mobile phase-proof is shown.

Under these terms, use of nourishment is enabled by the acid-proof examination for 500 hours.

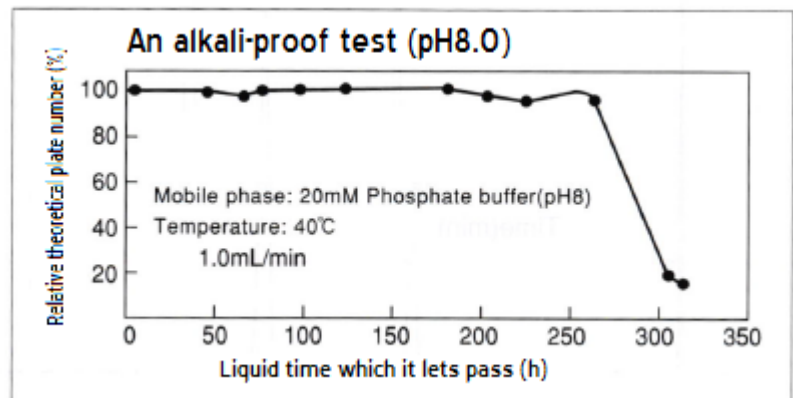


Mobile phase: CAN / 0.1 % Phosphoric acid = 98/2  
Temperature: 40°C

## Durability under 100% of a basin system, and alkali conditions

The data in an alkali resistance test is shown. High durability is shown under the alkali terms of 100% of a basin system.

Deterioration condition differs in the mobile phase to be used with pH and temperature.

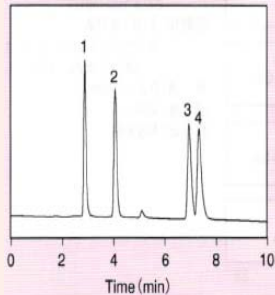


Mobile phase: 20mM Phosphate buffer(pH8)  
Temperature: 40°C  
1.0mL/min

# Application

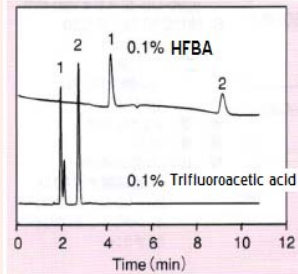
## Develosil RPAQUEOUS, RPAQUEOUS-AR

### Amino acid I



Column	Develosil RPAQUEOUS 4.6x250mm
Mobile phase	Water
Flow rate	1.0mL/min
Temperature	40°C
Detection	RI
Infection rate	10µL
Sanmple	1=Alanine 0.2% 2=Valine 0.2% 3=Isoleucine 0.2% 4=Leucine 0.2%

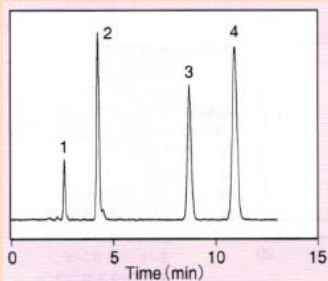
### Amino acid II



Column	Develosil RPAQUEOUS-AR-5 4.6x150mm
Mobile phase	0.1% TFA or 0.1% HFBA
Flow rate	1.0mL/min
Temperature	30°C
Detection	UV@210nm or RI
Sanmple	1=D-Alanine 2=D-Alanine-D-Alanine

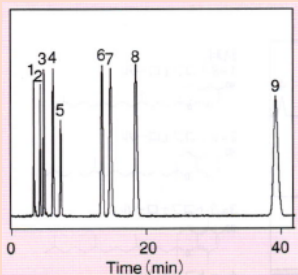
The capability of an HFBA of an ion pair is high and it also comes to hold alanine

### Catecholamine



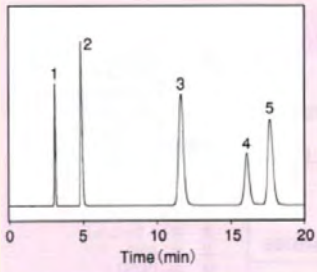
Column	Develosil RPAQUEOUS 4.6x250mm
Mobile phase	0.1% M KH <sub>2</sub> PO <sub>4</sub> , pH6.6 with H <sub>3</sub> PO <sub>4</sub>
Flow rate	1.0mL/min
Temperature	30°C
Detection	UV@210nm
Sanmple	1=Norepinephrine 2=Epinephrine 3=Dopamine 4=DL - Dopa

### Nucleotide



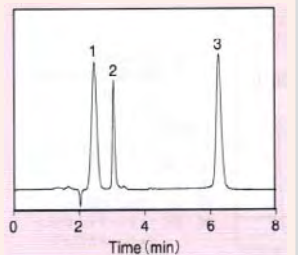
Column	Develosil RPAQUEOUS 4.6x250mm
Mobile phase	0.1% M KH <sub>2</sub> PO <sub>4</sub> , pH6.0 with KOH
Flow rate	1.0mL/min
Temperature	30°C
Detection	UV@260nm
Sanmple	1=5'-CTP 2=5'-CDP 3=5'-CMP 4=5'-GTP 5=5'-GDP 6=5'-GMP 7=5'-ATP 8=5'-ADP 9=5'-AMP

### Water soluble vitamin



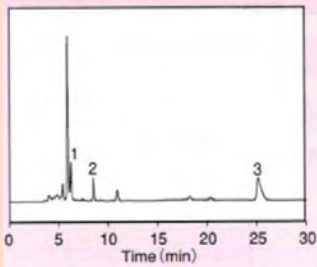
Column	Develosil RPAQUEOUS 4.6x150mm
Mobile phase	50M Na <sub>2</sub> PO <sub>4</sub> (pH6.9)
Flow rate	1.0mL/min
Temperature	30°C
Detection	UV@254nm
Sanmple	1=Orotic acid 2=Nicotinic acid 3=Pyridoxal 4=Pyridoxine 5=Nicotinamide

### Organic acid



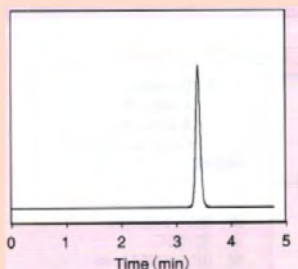
Column	Develosil RPAQUEOUS-AR-5 4.6x150mm
Mobile phase	0.1% TFA
Flow rate	1.0mL/min
Temperature	30°C
Detection	UV@210nm
Sanmple	1=Pyruvic acid (0.003%) 2=Lactic acid (0.06%) 3=Citric acid (0.08%)

### The organic acid in a kiwi berry



Column	Develosil RPAQUEOUS-AR-3 4.6x250mm
Mobile phase	0.1% Phosphoric acid
Flow rate	0.6mL/min
Temperature	20°C
Detection	UV@210nm
Sanmple	1=Quinic acid 2=Malic acid 3=Citric acid

### Ascorbic acid



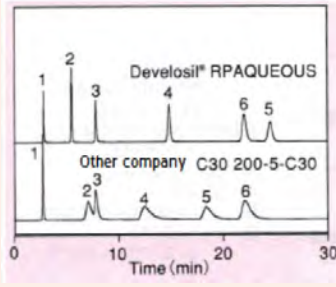
Column	Develosil RPAQUEOUS-AR-5 4.6x250mm
Mobile phase	0.1% TFA (Trifluoroacetic acid)
Flow rate	1.0mL/min
Temperature	30°C
Detection	UV@254nm
Sanmple	1=Ascorbic acid

C30 stationary phase holds ascorbic acid.  
Retention (k) is set to about 0.8 because t<sub>0</sub> is 1.9 minutes.

# Application

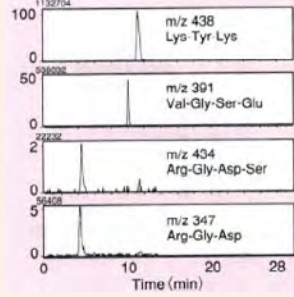
## Develosil RPAQUEOUS, RPAQUEOUS-AR

### Nucleic acid base



Column A)	Develosil RPAQUEOUS
	4.6x250mm
Column B)	Other company C30 200-5-C30
	4.6x250mm
Mobile phase	10mM Na <sub>2</sub> PO <sub>4</sub> (pH7.0)
Flow rate	1.0mL/min
Temperature	30°C
Detection	UV@254nm
Sanmple	1=Sodium nitrite, 2=Cytosine
	3=Uracil, 4=Cytidine
	5=Uridine, 6=Thymine

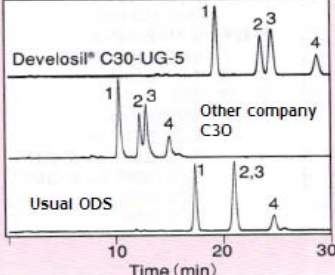
### High polarity peptide



Column	Develosil RPAQUEOUS-AR-5
	2.0x100mm
Mobile phase	A) 0.1% TFA
	B) Acetonitrile:Water=9.1
	% B 0-45% 45 minutes
Flow rate	0.2mL/min
Temperature	40°C
Detection	MS ESI

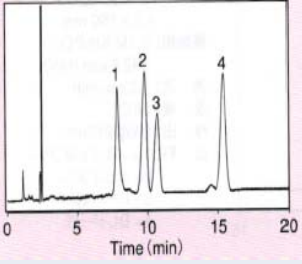
## Develosil C30-UG

### Tocopherol



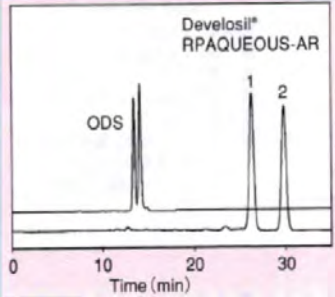
Column	4.6x250mm	Temperature	30°C
Mobile phase	Methanol : water =97 : 3	Detection	UV@295nm
Flow rate	1.0mL/min		

### Carotenoid



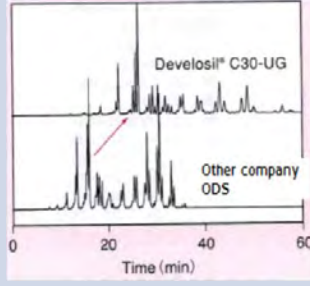
Column	Develosil C30-UG-5
	4.6x250mm
Mobile phase	Acetonitrile/methanol=50:50 + 0.05% Triethylamine
Flow rate	1.2mL/min
Temperature	30°C
Detection	VIS@480nm
Sample	1=Astaxanthin
	2=Lutein
	3=Zeaxanthin
	4=Canthaxanthin

### Alpha, B-carotene



Column	Develosil RPAQUEOUS-AR-5
	4.6x250mm
	Develosil ODS-5
	4.6x250mm
Mobile phase	Acetonitrile/chloroform = 8:2
Flow rate	1.0mL/min
Temperature	30°C
Detection	VIS@450nm
Sample	1=Alpha carotene
	2=B-carotene

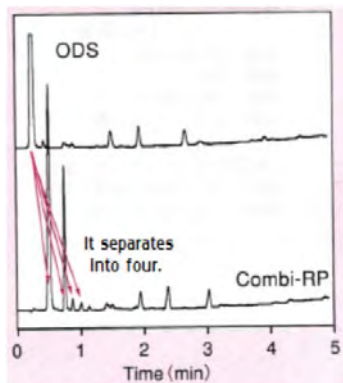
### Triglyceride (milk fat)



Column	Develosil C30-UG-5
	4.6x250mm
	Other company
	ODS S company C18
	4.6x250mm
Mobile phase	A) Acetonitrile
	B) Acetone
Time (min)	0 60 90
%A	70% 30% 30%
%B	30% 70% 70%
Flow rate	1.0mL/min
Temperature	40°C
Detection	ELSD
Sample	Milk fat

## Develosil Combi-RP

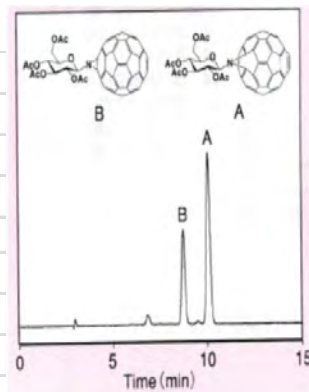
Separation of drinkable preparations  
(High throughput analysis)



Column	Develosil Combi-RP 4.6x50mm
	Develosil ODS 4.6x50mm
Mobile phase	A) 0.1% TFA
	B) Acetonitrile
	% B 0-100% 5 minutes
Flow rate	3.0mL/min
Temperature	30°C
Detection	UV@254nm

## Develosil RPFULLERENE

The diastereomer of sugar addition fullerene



Column	Develosil RPFULLERENE
	4.6x250mm
Mobile phase	Toluene/acetonitrile = 4:6
Flow rate	1.0mL/min
Detection	UV@335nm



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