Introduction

We are pleased to present the 11th YMC General Catalog.
Since its formation in 1980, YMC Co., Ltd. has been working in the rapidly changing field of chemistry. Over this time, the rate of discovery of new materials and technologies for improving the quality of life have been occurring at rates never dreamed of by past generations. Additionally, chemistry disciplines are becoming increasingly cross-linked with each other as well as with related technologies, and these discoveries generate an even greater impact on the expansion of all chemical and biological fields.
YMC Co., Ltd. believes that progress in chemistry is infinite and has focused its resources in the field of High Performance Liquid Chromatography, a key technology that contributes to the discovery, analysis, and purification of important chemical substances. Substances that are discovered, analyzed, and/or purified using YMC products frequently contribute to the improved health and well being of human and animal populations. For example, YMC is extremely proud of the important contribution that our company makes in the area of diabetes care. Compounds used in the treatment of diabetes are often analyzed and/or purified using YMC products developed and manufactured by our company.
YMC's intellectual assets and the know-how cultivated by many years of experience with High Performance Liquid Chromatography have been combined with complementing technology platforms so that we can continue our challenge of pushing limits in precision, detection, discovery, and production. The following pages in this catalogue represent the fruits of our company's effort towards helping YMC fulfill its mission of helping our customers succeed in sustaining and improving the quality of life for the present and future generations.

山村隆治

Ryuji Yamamura
CEO.

C O N T E N T S

What's New

YMC-Triart C18

Versatile hybrid silica based HPLC columns ・Hybrid silica base ・Great chemical durability ・Lower back pressure ・Excellent resolution	16～23

YMC-BioPro series
YMC-BioPro QA-F / SP-F columns

Ion exchange chromatography for peptides and proteins ・Hydrophilic polymer beads ・Non-porous type for ultra fast analysis ・Excellent resolution	106, 107

YMC-BioPro QA / SP columns

Ion exchange chromatography for peptides and proteins ・Hydrophilic polymer beads ・Porous type for analysis with high recovery ・Excellent resolution	108, 109

YMC-BioPro QA / SP bulk media

Ion exchange chromatography for peptides and proteins ・Hydrophilic polymer beads ・High recovery for biomolecules ・Two particle sizes (30, 75 μm) available	110, 111

YMC-Actus series

Excellent efficiency and durability preparative HPLC column
- Improved durability by applying axial compression technology
- Prepacked column for milligram scale preparative
- Excellent separation

138～141

YMC-DispoPack

Disposable columns for preparative chromatography
- Disposable type prepacked column for preparative
- Various preparative systems are connectable by using Luer-lock connections

154

YMC-Exphere C18, YMC*GEL HG series

High mechanical stability packing materials with high chemical stability for preparative separation
- High density and high strength silica gel
- Narrow particle distribution and pore size
- Excellent separation

156, 157

Flow-micro reaction systems

- Systems are complete to start flow-micro reaction.
- Versatile flow chemistry systems covering from laboratory use to production scale.
- Customized system are available to fit user's reactions
- Selectable system depending on price and reactions user's need

191～197

Please read this section before ordering

Checking a catalog item

Check your desired product in the ordering information section on each page.

Ordering information

Analytical columns

Particle size (μm)	Pore size (Å)	Column size inner diameter×length (mm)	Product number
S-3	120	1.0× 35	AS12S03-H501WT
		1.0× 50	AS12S03-0501WT
		1.0×100	AS12S03-1001WT
		1.5× 35	AS12S03-H5P5WT

Packing material type
S: Spherical packing material
I: Irregular packing material

Pore size

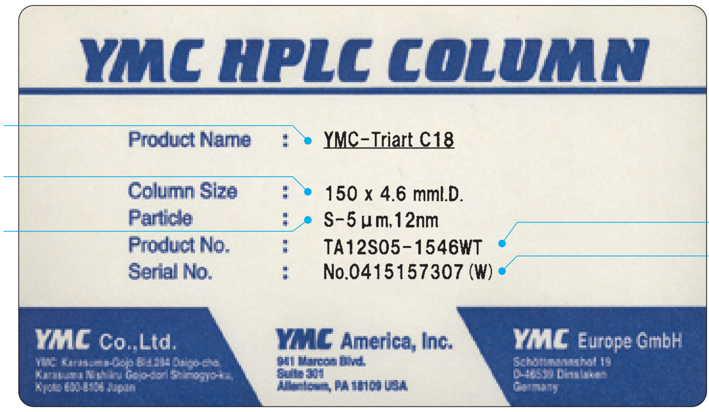
Column size
Inner diameter × length is expressed in mm.

Product number

Checking the product label

Check these items on the label of your product before re-ordering.

Product name
Column size
Particle size, pore size



Product No.
Serial No.

Purchasing products

YMC Co., Ltd. products are available all over the world. YMC America, Inc. in North and South America, YMC Europe GmbH in Europe, the Middle East and Africa, YMC India Pvt. Ltd. in India, and YMC Co., Ltd. in South East Asia and Australia conduct sales activities as local business bases. Our products are available through local distributors. For distributors all over the world, visit our web site:

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YMC columns

Type of column				USP CLASS No.	Characteristics
Reversed-phase	ODS	YMC-Triart C18		L1	· Versatile hybrid silica based HPLC columns · Great chemical durability · Excellent resolution in every conditions
		UltraHT series	YMC-UltraHT *Pro* C18	L1	· The best 2 μm-ODS column for Ultra-fast LC method · Superior separation of basic compounds
			YMC-UltraHT Hydrosphere C18	L1	· Superior separation of hydrophilic compounds · Reduced analysis time while maintaining resolution
		Pro series	YMC-Pack *Pro* C18	L1	· High-level endcapping based on our unique synthetic technology · Superior separation of basic compounds
			Hydrosphere C18	L1	· Superior separation of hydrophilic compounds · Can be used with 100% water mobile phase
			YMC-Pack *Pro* C18 RS	L1	· Highly durable ODS · Superior separation of basic compounds · Superior separation of highly hydrophobic compounds
		YMC-Pack ODS series	YMC-Pack ODS-A	L1	· Currently in use worldwide · ODS with wide pore size available, useful for separation of proteins and peptides
			YMC-Pack ODS-AM	L1	· Outstanding lot-to-lot reproducibility
			YMC-Pack ODS-AQ	L1	· Superior separation of hydrophilic compounds
			YMC-Pack ODS-AL	L1	· For separation utilizing residual silanol
		J'sphere ODS series	J'sphere ODS-H80	L1	· High carbon ODS
			J'sphere ODS-M80	L1	· Middle carbon ODS
			J'sphere ODS-L80	L1	· Low carbon ODS
		Others	YMC-Pack PolymerC18	–	· Polymer-based C18
	Other than ODS	*Pro* series	YMC-Pack *Pro* C8	L7	· High-level endcapping equivalent to Pro C18
			YMC-Pack *Pro* C4	L26	· Superior separation of basic compounds
		YMC-Pack series	YMC-Pack C_8	L7	· Useful for separation of relatively highly hydrophobic samples · C8 with wide pore size available, useful for separation of proteins and peptides
			YMC-Pack C_4	L26	· Separation behavior different from ODS · C4 with wide pore size available, useful for separation of proteins and peptides
			YMC-Pack TMS	L13	· Stationary phase with the lowest hydrophobicity of reversed-phase packing materials
			YMC-Pack Ph	L11	· Reversed-phase column with π electrons
			YMC-Pack CN	L10	· Unique selectivity due to cyano group
			YMCbasic	L7	· Superior separation of basic compounds
			YMC Carotenoid	L62	· Useful for carotenoids separation
			YMC-Pack PROTEIN-RP	–	· Reversed-phase column for separation of proteins and peptides
Normal-phase	YMC-Pack series		YMC-Pack SIL	L3	· Standard normal-phase column
			YMC-Pack SIL-06	L3	· Large specific surface area and high adsorption properties
			YMC-Pack CN	L10	· Faster column equilibration than silica gel
			YMC-Pack Diol-NP	L20	· Useful for normal-phase separation (HILIC) of hydrophilic compounds
			YMC-Pack Polyamine Ⅱ	–	· Amino column with improved durability
			YMC-Pack NH_2	L8	· Normal-phase separation column utilizing amino groups
			YMC-Pack PA-G	–	· Silica gel chemically bonded with polyamine
			YMC-Pack PVA-Sil	L24	· Silica gel chemically bonded with polyvinyl alcohol
Ion exchange	YMC-BioPro series		YMC-BioPro QA-F	–	· Hydrophilic polymer beads · Non-porous type for ultra fast analysis · Excellent resolution
			YMC-BioPro SP-F	–	
			YMC-BioPro QA	–	· Hydrophilic polymer beads · Porous type for analysis with high recovery · Excellent resolution
			YMC-BioPro SP	–	
SEC	Silica-based SEC		YMC-Pack Diol-60	L20	· Silica gel base with high pressure resistance · Economical gel filtration column · Useful for molecular weight determination of proteins and sugars
			YMC-Pack Diol-120	L20	
			YMC-Pack Diol-200	L20	
			YMC-Pack Diol-300	L20	
Chiral column	YMC CHIRAL CD BR series		YMC CHIRAL α-CD BR	–	· Cyclodextrin-type optical isomer separation column · Three different cavity sizes (α, β, and γ)
			YMC CHIRAL β-CD BR	L45	
			YMC CHIRAL γ-CD BR	–	
	Other		YMC CHIRAL NEA (R), (S)	–	· Synthetic macromolecule-type for optical isomer separation · Enables reversion of the order of elution by choosing either (R) or (S)

	Type of column	Pore size (Å)	Particle size (μm)	C%	Silanol treatment	Usable pH range	Pages: Analytical column	Pages: Preparative column
Reversed-phase	YMC-Triart C18	120	2, 3, 5	20	Yes	1.0~12.0	16~23	–
	YMC-UltraHT *Pro* C18	120	2	16		2.0~8.0	26	–
	YMC-UltraHT Hydrosphere C18	120	2	12			27	–
	YMC-Pack *Pro* C18	120	3, 5, 10	16			32~35	142,143
	Hydrosphere C18	120	3, 5	12			36~39	–
	YMC-Pack *Pro* C18 RS	80	3, 5	22		1.0~10.0	40~43	–
	YMC-Pack ODS-A	120	3, 5, 10, 15, 20, 50	17		2.0~7.5	44,45	145
		200	5, 10, 15, 20	12				
		300	5, 10, 15, 20	7				
	YMC-Pack ODS-AM	120	3, 5	17			46,47	147
	YMC-Pack ODS-AQ	120	3, 5, 10, 15, 20, 50	14			48,49	146
		200	5, 10, 15	10				
	YMC-Pack ODS-AL	120	5	17	No		50,51	147
	J'sphere ODS-H80	80	4	22	Yes	1.0~9.0	52,53	–
	J'sphere ODS-M80	80	4	14		2.0~7.5		
	J'sphere ODS-L80	80	4	9				
	YMC-Pack PolymerC18	–	6, 10	–	–	2.0~13.0	54,55	–
	YMC-Pack *Pro* C8	120	3, 5	10	Yes	2.0~7.5	60~63	–
	YMC-Pack *Pro* C4	120	3, 5	7				
	YMC-Pack C_8	120	3, 5, 10, 15, 20	10			64,65	148
		200	5, 10, 15, 20	7				
		300	5, 10, 15, 20	4				
	YMC-Pack C_4	120	3, 5, 10, 15, 20	7			66,67	149
		200	5, 10, 15, 20	5				
		300	5, 10, 15, 20	3				
	YMC-Pack TMS	120	3, 5, 10, 15, 20	4			68,69	150
	YMC-Pack Ph	120	3, 5, 10, 15, 20	9			70,71	150
	YMC-Pack CN	120	3, 5, 10, 15, 20	7			72,73	151
		300	5	3				
	YMCbasic	200	3, 5	7			76	–
	YMC Carotenoid	–	3, 5	–	–	2.0~7.5	77	–
	YMC-Pack PROTEIN-RP	200	5	4	–	1.5~7.5	74,75	–
Normal-phase	YMC-Pack SIL	120	3, 5, 10, 15, 20, 50	–	–	2.0~7.5	82,83	152
	YMC-Pack SIL-06	60	5, 10, 15	–	–			
	YMC-Pack CN	120	3, 5, 10	–	–		84,85	–
	YMC-Pack Diol-NP	60	5	–	–		86,87	–
		120	5	–	–			
	YMC-Pack Polyamine Ⅱ	120	5	–	–		88,89	153
	YMC-Pack NH_2	120	5	–	–		90	153
	YMC-Pack PA-G	120	5	–	–	4.0~7.5	90	–
	YMC-Pack PVA-Sil	120	5	–	–	2.0~9.5	91	–
Ion exchange	YMC-BioPro QA-F	non-porous	5	–	–	2.0~12.0	106,107	–
	YMC-BioPro SP-F	non-porous	5	–	–		106,107	–
	YMC-BioPro QA	porous	5	–	–		108,109	–
	YMC-BioPro SP	porous	5	–	–		108,109	–
SEC	YMC-Pack Diol-60	60	5	–	–	5.0~7.5	112,113	153
	YMC-Pack Diol-120	120	5	–	–			
	YMC-Pack Diol-200	200	5	–	–			
	YMC-Pack Diol-300	300	5	–	–			
Chiral column	YMC CHIRAL α-CD BR	120	5	–	–	3.5~6.5	128,129	–
	YMC CHIRAL β-CD BR	120	5	–	–			
	YMC CHIRAL γ-CD BR	120	5	–	–			
	YMC CHIRAL NEA (R), (S)	300	5	–	–	2.0~6.5	130,131	–

Column selection guide

Pharmaceutical products / Agricultural chemicals / Antibiotics / Antimicrobial agents / Metabolites / Steroids / Food additives / Natural products / Others

Reversed-phase — Neutral compounds, Acidic compounds

YMC-Triart C18	Versatile hybrid silica based ODS column with excellent peak shape	P.16-23
Pro series ODS	High performance ODS column processed with advanced endcapping technology	P.28-43
Pro series C8, C4	High performance reversed-phase column processed with advanced endcapping technology	P.60-63
YMC-Pack ODS series	Conventional ODS column	P.44-51
YMC-Pack C_8, C_4	Useful for cases in which retention is too strong using ODS	P.64-67
J'sphere ODS series	Three kinds of ODS with different carbon contents	P.52,53
YMC-Pack Ph	Reversed-phase column utilizing π-π interaction	P.70,71
YMC-Pack CN	Can be used in both normal-phase and reversed-phase modes	P.72,73
YMC-Pack TMS	Reversed-phase column with the lowest hydrophobicity	P.68,69
YMC-Pack PolymerC18	Polymer type reversed-phase column without effect from silanol	P.54,55

Reversed-phase — Basic compounds

YMC-Triart C18	Versatile hybrid silica based ODS column with excellent peak shape	P.16-23
Pro series ODS	Provides good peak shapes for basic compounds	P.28-43
Pro series C8, C4	Useful for cases where retention is too strong using ODS	P.60-63

Reversed-phase — Hydrophilic compounds

YMC-Triart C18	Versatile hybrid silica based ODS column with excellent peak shape	P.16-23
Hydrosphere C18	Can be used with 100% water mobile phase	P.36-39
YMC-Pack ODS-AQ	Stronger retention of hydrophilic compounds than conventional ODS	P.48,49
YMC-Pack CN	Can be used in both normal-phase and reversed-phase modes	P.72,73
YMC-Pack TMS	Reversed-phase column with the lowest hydrophobicity	P.68,69

Normal-phase

YMC-Pack SIL, SIL-06	Standard normal-phase column	P.82,83
YMC-Pack CN	Can be equilibrated faster than bare silica gel	P.84,85
YMC-Pack Diol-NP	Normal-phase column providing separation characteristics different from bare silica gel	P.86,87
YMC-Pack Polyamine II	Amino column with improved durability	P.88,89
YMC-Pack NH_2	Normal-phase column utilizing the polarity of amino groups	P.90

Vitamins

Reversed-phase — Water-soluble vitamins

YMC-Triart C18	Versatile hybrid silica based ODS column with excellent peak shape	P.16-23
YMC-Pack *Pro* C18	Provides good peak shapes due to advanced endcapping technology	P.32-35
Hydrosphere C18	Can be used with 100% water mobile phase	P.36-39

Reversed-phase — Fat-soluble vitamins

YMC-Triart C18	Versatile hybrid silica based ODS column with excellent peak shape	P.16-23
YMC-Pack *Pro* C18	Provides good peak shapes due to advanced endcapping technology	P.32-35
YMC-Pack ODS-A	Conventional ODS column	P.44,45
YMC-Pack ODS-AM	ODS column with outstanding lot-to-lot reproducibility	P.46,47

Normal-phase — Water-soluble vitamins

YMC-Pack Polyamine II	Amino column with improved durability	P.88,89
YMC-Pack NH_2	Normal-phase column utilizing the polarity of amino groups	P.90

Normal-phase — Fat-soluble vitamins

YMC-Pack SIL,SIL-06	Standard normal-phase column	P.82,83
YMC-Pack Polyamine II	Amino column with improved durability	P.88,89

Sugars

Size exclusion

YMC-Pack Diol	Useful for molecular weight determination of sugars	P.112-113

Reversed-phase — Oligosaccharides

Hydrosphere C18	Can be used with 100% water mobile phase	P.36-39
YMC-Pack ODS-AQ	Stronger retention of hydrophilic compounds than conventional ODS	P.48,49

Normal-phase — Monosaccharides, Oligosaccharides

YMC-Pack Polyamine II	Amino column with improved durability	P.88,89
YMC-Pack NH_2	Normal-phase column utilizing the polarity of amino groups	P.90
YMC-Pack PA-G	Column chemically bonded with polyamine	P.90

Sample	Separation mode	Sample type	Column	Feature	Page
Organic acids, Fatty acids	Reversed-phase	Organic acids	Hydrosphere C18	Can be used with 100% water mobile phase	P.36-39
			YMC-Pack ODS-AQ	Stronger retention of hydrophilic compounds than conventional ODS	P.48,49
	Normal-phase		YMC-Pack SIL,SIL-06	Standard normal-phase column	P.82,83
Amino acids	Reversed-phase	Free amino acids	Hydrosphere C18	Can be used with 100% water mobile phase	P.36-39
		Labeled amino acids	YMC-Triart C18	Versatile hybrid silica based ODS column with excellent peak shape	P.16-23
			YMC-Pack ODS-AM	ODS column with outstanding lot-to-lot reproducibility	P.46,47
			YMC-Pack *Pro* C18	Provides good peak shapes due to advanced endcapping technology	P.32-35
			Hydrosphere C18	Can be used with 100% water mobile phase	P.36-39
Proteins, Peptides	Ion exchange		YMC-BioPro	Ion exchange column Suitable for peptide and protein separation	P.106-109
	Size exclusion		YMC-Pack Diol	Useful for analysis of proteins or peptides	P.112,113
	Reversed-phase	Molecular weight 10,000 or less	YMC-Triart C18	Versatile hybrid silica based ODS column with excellent peak shape	P.16-23
			Pro series ODS	Provides good peak shapes due to advanced endcapping technology	P.28-43
			YMC-Pack ODS series	Conventional ODS column	P.44-51
			YMC-Pack PROTEIN-RP	Specialized column with excellent acid resistance for separation of proteins or peptides	P.74,75
			YMCbasic	Useful for separation of peptide due to minimized secondary interaction	P.76
		Molecular weight 10,000 or more	Wide-Pore Columns	Column with wide pore size useful for analysis of macromolecules	P.118-121
			YMC-Pack PROTEIN-RP	Specialized column with excellent acid resistance for separation of proteins or peptides	P.74,75
Nucleic acids	Ion exchange		YMC-BioPro	Ion exchange column Suitable for oligonucleotide and nucleic acid separation	P.106-109
	Size exclusion		YMC-Pack Diol	Useful for separation of oligonucleotides and nucleic acids	P.112,113
	Reversed-phase	Nucleic acid bases, Nucleosides, Nucleotides	Hydrosphere C18	Can be used with 100% water mobile phase	P.36-39
			YMC-Pack ODS-AQ	Stronger retention of hydrophilic compounds than conventional ODS	P.48,49
		Oligonucleotides	Hydrosphere C18	Can be used with 100% water mobile phase	P.36-39
			YMC-Pack ODS-AQ	Stronger retention of hydrophilic compounds than conventional ODS	P.48,49
			YMC-Pack ODS-A (Wide-Pore)	Wide-Pore ODS column useful for separation of macromolecules	P.118
Structural isomers	Reversed-phase		YMC-Pack *Pro* C18 RS	Highly endcapped polymeric type ODS column with excellent ability to recognize planar structure	P.40-43
			J'sphere ODS-H80	Polymeric type ODS column with excellent ability to recognize planar structure	P.52,53
			YMC Carotenoid	Useful for carotenoids separation	P.77
	Normal-phase		YMC-Pack SIL,SIL-06	Standard normal-phase column	P.82,83
Optical isomers	Reversed-phase		YMC CHIRAL CD-BR series	Cyclodextrin type optical isomer separation column	P.128,129
			YMC CHIRAL NEA	Synthesized macromolecule-type optical isomer separation column	P.106,107
	Normal-phase		YMC CHIRAL NEA	Normal-phase column for separation of optical isomers	P.130,131