

Synthesis Columns: Asahi SCS Column™ and Asahi ACS Column™

Flow-through reactors for millimole- to mole-scale oligonucleotide synthesis



Built For You.

Mid- to large-scale oligosynthesis has moved from legacy mixed bed reactors to more efficient flow-through column formats. At Asahi Kasei Bioprocess, we bring over a decade of experience to every synthesis column that we deliver, continually improving our platform as we gain valuable feedback from sponsors and contract manufacturers alike.

This knowledgebase allows us to understand that oligosynthesis is a very different process than chromatography, which our engineers contemplate when designing your mid-scale and large-scale synthesis columns. You may use a swellable solid support or a rigid support. Your bed height may only be a few centimeters or ten centimeters. You may run your synthesis once a month or once a day. No matter how you have developed your synthesis process, rest assured that Asahi Kasei Bioprocess engineers will design a synthesis column that is ideal for your mid- or large-scale oligonucleotide production needs.





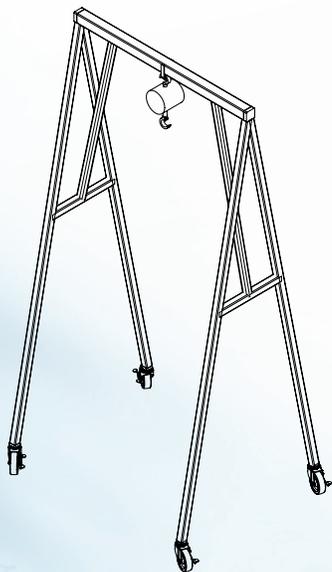
Proven for Mid-Scale and Large-Scale Oligosynthesis

Demand for cGMP oligonucleotides continues to increase as RNA and DNA therapeutics advance through clinical trials. Driven by a desire to reduce manufacturing costs and increase product yields, Asahi Kasei Bioprocess offers a suite of proven solid-phase flow-through synthesis columns ranging from 10 to 100 cm i.d. Our synthesis columns have produced multiple compounds at various scales, including validation batches, and can be used with various synthesizers. Ask your local representative about pairing our synthesis columns with an Asahi Oligosynthesizer.™

Asahi SCS Column™



SCS Ergo: a portable column stand which allows the column to be rotated 180° for ergonomic handling. Both end plates of the column are easily accessible.



SCS Lift: a portable lift mounted on a specially designed A-frame to assist operators as they remove the column top plate and bottom plate.

Our industry-leading Asahi SCS Column™ is the ideal choice for fixed bed height applications using swellable supports. CAD-modeled “active” flow distribution generates uniform dispersal of amidites and reagents across the entire column surface, even for columns packed with short bed heights, resulting in maximum coupling efficiency. Column frits can be easily exchanged using a novel scraper seal arrangement. The Asahi SCS Column also offers versatility to perform manual bed height adjustments between 2 and 15 cm while leaving a user-defined gap between the support surface and the top plate frit to accommodate support swelling and prevent pressure spikes during the synthesis process.

Unlike chromatography columns, synthesis columns must be unpacked after each cycle. To assist with these regular tasks, the mid-scale Asahi SCS Column is now available with two new options: SCS Ergo and SCS Lift.

These options greatly reduce the time required for column packing and unpacking by allowing easy access to the column end plates and assisting their removal and insertion. They are recommended for users who intend to pack and unpack the Asahi SCS Column more than once per week.

Options for Asahi SCS Column include

- » Electropolishing
- » Heating jackets
- » SCS Ergo package
- » SCS Lift package
- » IQ/OQ documentation and execution
- » ASME Code stamp
- » CE marking with compliance to Pressure Equipment Directive 2014/68/EU



Asahi ACS Column™

Ideal for rigid supports that don't swell, the flow-through Asahi ACS Column™ offers "hoist-free" operation for easy frit removal and simplified column packing and unpacking via axial compression of an integrated piston. The same "active" flow distribution technology from the Asahi SCS Column is used in the Asahi ACS Column to provide optimum dispersion of amidites and reagents across your solid support. With the Asahi ACS Column, the piston is always in contact with the packed solid support without a gap.

Asahi ACS Column features

- » Slurry inlet port for easy loading of solid supports
- » Slurry outlet port for unpacking soft supports or support sampling

Documentation for Synthesis Columns

To support your clinical and commercial manufacturing of oligonucleotides, all Asahi SCS and Asahi ACS columns are provided with a GMP documentation package. The package includes the following:

- » User manual
- » Pressure test certificate
- » Spare parts list
- » Material certificates for product contact surfaces
- » USP Class VI certificates for product contact seals
- » BSE/TSE-free certificates for product contact seals



Choose our industry-leading, solid-phase flow-through synthesis columns available from 10 to 100 cm i.d.

Ordering Information

Asahi SCS Column

Catalog No.	Column Dimensions	Pressure Rating	Adjustable Bed Height	Theoretical DNA Capacity*	Theoretical RNA Capacity**
SCS10	10 cm i.d. x 15 cm L	20 bar	2 – 15 cm	8 – 30 mmol	4 – 18 mmol
SCS15	15 cm i.d. x 15 cm L	20 bar	2 – 15 cm	40 – 70 mmol	18 – 40 mmol
SCS20	20 cm i.d. x 15 cm L	20 bar	2 – 15 cm	70 – 130 mmol	40 – 75 mmol
SCS30	30 cm i.d. x 15 cm L	20 bar	2 – 15 cm	130 – 280 mmol	75 – 160 mmol
SCS35	35 cm i.d. x 15 cm L	20 bar	2 – 15 cm	200 – 380 mmol	100 – 230 mmol
SCS40	40 cm i.d. x 15 cm L	20 bar	2 – 15 cm	280 – 500 mmol	160- 300 mmol
SCS45	45 cm i.d. x 15 cm L	20 bar	2 – 15 cm	300 – 630 mmol	190 – 380 mmol
SCS50	50 cm i.d. x 15 cm L	20 bar	2 – 15 cm	500 – 750 mmol	300 – 470 mmol
SCS60	60 cm i.d. x 15 cm L	20 bar	2 – 15 cm	0.75 – 1 mol	460 – 670 mmol
SCS70	70 cm i.d. x 15 cm L	20 bar	2 – 15 cm	0.80 – 1.5 mol	500 – 920 mmol
SCS80	80 cm i.d. x 15 cm L	20 bar	2 – 15 cm	1 – 2 mol	0.67 – 1.2 mol
SCS100	100 cm i.d. x 15 cm L	20 bar	2 – 15 cm	2 – 3 mol	1.2 – 1.8 mol

Note: SCS Ergo and SCS Lift options are available for SCS10 to SCS50 column sizes (see Standard Column Options table).

Asahi ACS Column

Catalog No.	Column Dimensions	Pressure Rating	Adjustable Bed Height	Theoretical DNA Capacity*	Theoretical RNA Capacity**
ACS10	10 cm i.d. x 30 cm L	10 bar	4 – 15 cm	8 – 30 mmol	4 – 18 mmol
ACS15	15 cm i.d. x 30 cm L	10 bar	4 – 15 cm	40 – 70 mmol	18 – 40 mmol
ACS20	20 cm i.d. x 30 cm L	10 bar	4 – 15 cm	70 – 130 mmol	40 – 75 mmol
ACS30	30 cm i.d. x 30 cm L	10 bar	4 – 15 cm	130 – 280 mmol	75 – 160 mmol
ACS35	35 cm i.d. x 30 cm L	10 bar	4 – 15 cm	200 – 380 mmol	100 – 230 mmol
ACS40	40 cm i.d. x 30 cm L	10 bar	4 – 15 cm	280 – 500 mmol	160- 300 mmol
ACS45	45 cm i.d. x 30 cm L	10 bar	4 – 15 cm	300 – 630 mmol	190 – 380 mmol
ACS50	50 cm i.d. x 30 cm L	10 bar	4 – 15 cm	500 – 750 mmol	300 – 470 mmol
ACS60	60 cm i.d. x 30 cm L	10 bar	4 – 15 cm	0.75 – 1 mol	460 – 670 mmol
ACS70	70 cm i.d. x 30 cm L	10 bar	4 – 15 cm	0.80 – 1.5 mol	500 – 920 mmol
ACS80	80 cm i.d. x 30 cm L	10 bar	4 – 15 cm	1 – 2 mol	0.67 – 1.2 mol
ACS100	100 cm i.d. x 30 cm L	10 bar	4 – 15 cm	2 – 3 mol	1.2 – 1.8 mol

Note: Customized Asahi SCS and Asahi ACS columns are available upon request.

*Based on 200 µmol/g loading for DNA synthesis and maximum bed height of 10 cm.

**Based on 120 µmol/g loading for RNA synthesis and maximum bed height of 10 cm.

Capacity is approximate and depends on your process, bed height and solid support loading.

Standard Column Options

Catalog No.	Description
OPT012	Electropolished wetted parts for 6 – 10 cm i.d. columns
OPT212	Electropolished wetted parts for 15 – 20 cm i.d. columns
OPT412	Electropolished wetted parts for 30 – 45 cm i.d. columns
OPT612	Electropolished wetted parts for 50 – 60 cm i.d. columns
OPT712	Electropolished wetted parts for 70 – 80 cm i.d. columns
OPT812	Electropolished wetted parts for 100 – 120 cm i.d. columns

OPT014	ASME Code Stamp for 15 – 35 cm i.d. columns
OPT214	ASME Code Stamp for 40 – 60 cm i.d. columns
OPT414	ASME Code Stamp for 70 – 80 cm i.d. columns
OPT614	ASME Code Stamp for 100 cm i.d. columns or larger

OPT015	Heating jacket for 6 – 10 cm i.d. columns
OPT215	Heating jacket for 15 – 20 cm i.d. columns
OPT415	Heating jacket for 30 – 45 cm i.d. columns
OPT615	Heating jacket for 50 – 60 cm i.d. columns
OPT715	Heating jacket for 70 – 80 cm i.d. columns
OPT815	Heating jacket for 100 – 120 cm i.d. columns

OPT016	Heating jacket w/ insulation/sheathing for 6 – 10 cm i.d. columns
OPT216	Heating jacket w/ insulation/sheathing for 15 – 20 cm i.d. columns
OPT416	Heating jacket w/ insulation/sheathing for 30 – 45 cm i.d. columns
OPT616	Heating jacket w/ insulation/sheathing for 50 – 60 cm i.d. columns
OPT716	Heating jacket w/ insulation/sheathing for 70 – 80 cm i.d. columns
OPT816	Heating jacket w/ insulation/sheathing for 100 – 120 cm i.d. columns

SRV-112	IQ/OQ documentation and execution service for one (1) column
SRV-303	Standard column documentation package
SRV-304	GMP column documentation package

SCSE1	SCS Ergo: rotating stand for SCS10 to SCS25 synthesis columns
SCSE2	SCS Ergo: rotating stand for SCS30 to SCS40 synthesis columns
SCSE3	SCS Ergo: rotating stand for SCS45 and SCS50 synthesis columns
SCSL1	SCS Lift: hoist device for SCS10 to SCS25 synthesis columns
SCSL2	SCS Lift: hoist device for SCS30 to SCS40 synthesis columns
SCSL3	SCS Lift: hoist device for SCS45 and SCS50 synthesis columns



Equipment designed to respect your individual needs.

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Technical Support and Warranty Information

A reliable technical support network is available throughout the United States, Europe and Asia.

We offer an extendable 1-year warranty, service contracts and a personalized level of service for peace of mind and timely support when you need it.

For more information, please visit:

www.ak-bio.com

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Asahi ACS Column is a trademark of Asahi Kasei Bioprocess America, Inc.

Asahi Oligosynthesizer is a trademark of Asahi Kasei Bioprocess America, Inc.

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