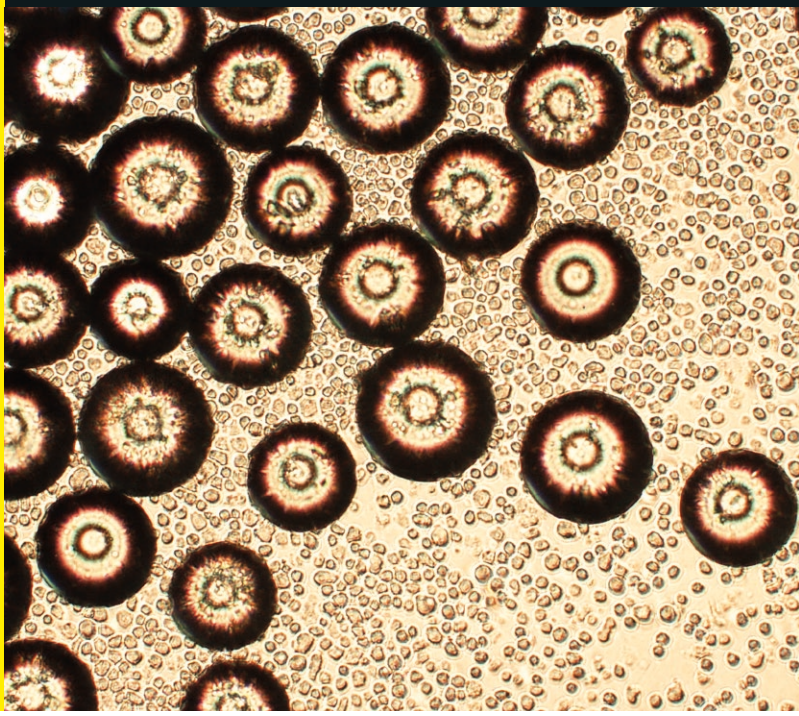
SARTORIUS

Product Datasheet

Microcarrier Products

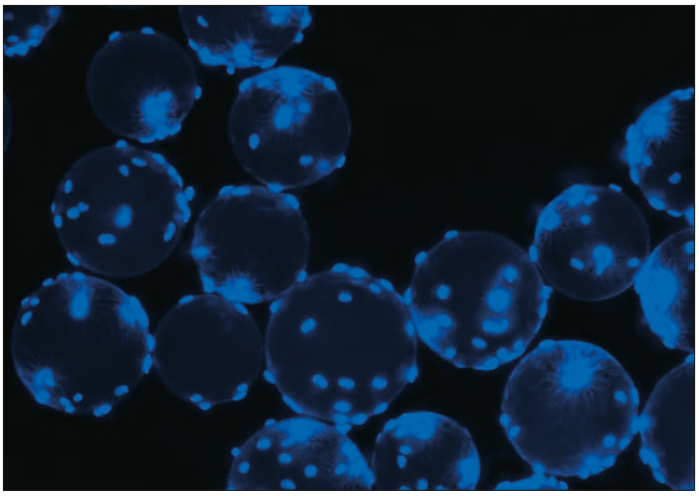
Simplifying adherent, cell-based research and manufacturing



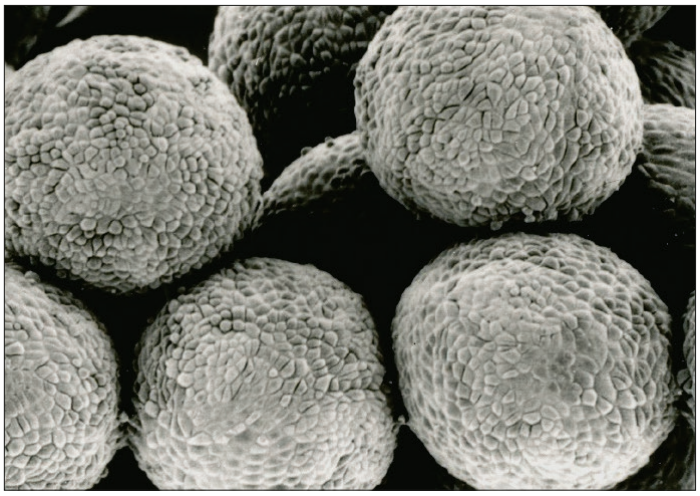
Product Information

Since its inception in 1984, SoloHill® has developed an extensive range of commercially available microcarrier products. By successfully combining cutting-edge research with high-quality manufacturing, SoloHill® not only offers excellent products but also provides valuable technical expertise to ensure optimal results. Our talented scientists are available to assist with product selection, process optimization, and technology transfer to end-user laboratories.

Microcarriers are tiny spheres that normally range from 90 to 300 microns in diameter. The relative density of microcarriers is close to water, which facilitates easy suspension in a cell culture medium. Their core material, surface chemistry, and coating promote attachment and growth of anchorage-dependent cells and influences the production of biologics in cell culture processes. A fundamental benefit of microcarriers is that they provide a large effective surface area with a relatively small footprint, allowing large-scale manufacturing of biologics for lower capital investment.



Human mesenchymal stromal/stem cells (hMSCs) growing on SoloHill® Microcarriers

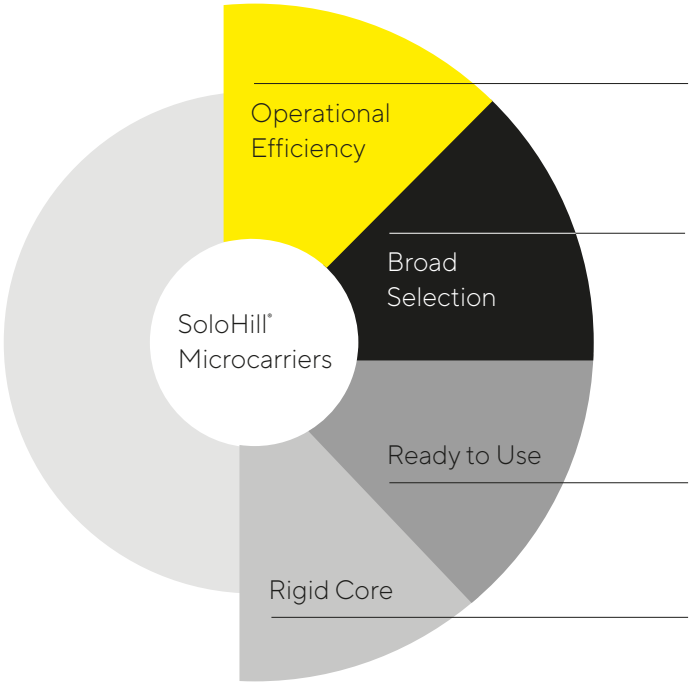


Scanning electron micrograph of Vero cells on SoloHill® Microcarriers

Benefits

Sartorius SoloHill® Microcarrier technology has many advantages for the large-scale production of high-quality, anchorage-dependent cells.

- Proven Track Record: Used by the animal and human health industry for over 30 years.
- Streamlined Solution: Simply sterilize and use: hydration and pre-swelling steps are not required.
- Ready-to-Use: Sterile format with sterility assurance level (SAL) 10^{-6} eliminates sterilization validation and shortens manufacturing process.



Manufactured from the same core material as 2D plastic culture ware, minimum adaptation required.

Optimized size, surface chemistry, and relative density to support easy suspension and allow superior cell attachment and growth of diverse cell types.

Sterile format (SAL =10^{-6}) offers convenient and easy way to transfer sterile microcarrier in a bioreactor bag.

Withstands mechanical harvest methods, promotes easy and rapid cell disassociation and separation from cell suspension, and simplifies seed-train scale-up applications.

Applications

Microcarrier technology provides an efficient, cost-effective tool to scale up various adherent, cell-based biopharmaceutical applications such as advanced cell and gene therapy, vaccines, and biologics production. Historically, microcarrier and stirred-tank bioreactor technologies have been used successfully by the biopharmaceutical industry, and this platform is accepted by regulatory agencies for both animal and human health product manufacturing.

A wide range of commercially available, traditional stainless steel, and single-use stirred-tank bioreactors are used to scale processes up to 3000 m^2 surface area or greater using microcarrier technology. Additionally, microcarrier-based scale-up performed in controlled bioreactor systems facilitates automated closed system operations, thereby diminishing contamination risks and providing a regulated manufacturing environment for consistent product manufacturing.

Product Specification

SoloHill's diverse microcarrier products are manufactured and handled under ISO 9001 standards. All microcarrier types are offered in standard non-sterile and sterile (gamma-irradiated), ready-to-use formats that facilitate ease of use. Specific cell types have different requirements for attachment, growth, and biologic production, hence the optimal microcarrier should be selected experimentally.

Microcarriers are offered in a convenient starter kit format to accelerate this initial screening and evaluation. Selecting the optimal microcarrier type is key to a successful culture. Sartorius offers a variety of microcarrier types in multiple size formats ranging from 10 grams to 1000 grams, allowing user flexibility during the selection and optimization of manufacturing processes.

Microcarrier Types and Their Properties

Microcarrier type, core material, and surface chemistry	Part Number Prefix	Relative density range	Size [microns]	Surface area [cm^2]	Surface charge	Protein-coated	Number of MC per gram
Plastic Cross-linked polystyrene	P-221	1.022 – 1.030	125 – 212	360	No	No	4.6×10^5
	P-215	1.022 – 1.030	90 – 150	480	No	No	1.0×10^6
	P-421	1.034 - 1.046	125 – 212	360	No	No	4.6×10^5
Plastic Plus Cross-linked polystyrene, cationic-charged	PP-221	1.022 – 1.030	125 – 212	360	Yes	No	4.6×10^5
Star-Plus Cross-linked modified polystyrene, cationic-charged	SP-221	1.020 – 1.035	125 – 212	360	Yes	No	4.6×10^5
Hillex® II Modified polystyrene, cationic-charged	H-170	1.080 – 1.150	150 – 210	515	Yes	No	5.5×10^5
Collagen Cross-linked polystyrene coated with Type 1 porcine collagen (gelatin)	C-215	1.022 – 1.030	90 – 150	480	No	Yes	1.0×10^6
	C-221	1.022 – 1.030	125 – 212	360	No	Yes	4.6×10^5
	C-421	1.034 – 1.046	125 – 212	360	No	Yes	4.6×10^5
Fact III Cross-linked polystyrene coated with Type 1 porcine collagen (gelatin), cationic-charged	F-221	1.022 – 1.030	125 – 212	360	Yes	Yes	4.6×10^5

Ordering Information

Microcarrier type	Part number	Weight [gram]	Ready to use [Sterile]
Plastic Cross-linked polystyrene	P-215-020	10	No
	P-215-070	500	No
	P-215-080	1,000	No
	P-221-020	10	No
	P-221-050	100	No
	P-221-070	500	No
	P-221-080	1,000	No
	PIR-221-020	10	Yes
	PS-221-05MDS100	100	Yes
	P-421-020	10	No
	P-421-070	500	No
	P-421-080	1,000	No
Plastic Plus Cross-linked polystyrene, cationic-charged	PP-221-020	10	No
	PP-221-050	100	No
	PP-221-070	500	No
	PP-221-080	1,000	No
	PPIR-221-020	10	Yes
	PPS-221-05MDS100	100	Yes
Star-Plus Cross-linked modified polystyrene, cationic-charged	SP-221-020	10	No
	SP-221-050	100	No
	SP-221-070	500	No
	SP-221-080	1,000	No
	SPIR-221-020	10	Yes
	SPS-221-05MDS100	100	Yes
Hillex® II Modified polystyrene, cationic-charged	H-170-020	10	No
	H-170-050	100	No
	H-170-070	500	No
	H-170-080	1,000	No
	HIR-170-020	10	Yes
	HS-170-05MDS100	100	Yes

Microcarrier type	Part number	Weight [gram]	Ready to use [Sterile]
Collagen-coated Cross-linked polystyrene coated with Type 1 porcine collagen (gelatin)	C-215-020	10	No
	C-215-070	500	No
	C-215-080	1000	No
	C-221-020	10	No
	C-221-050	100	No
	C-221-070	500	No
	C-221-080	1,000	No
	CIR-221-020	10	Yes
	CS-221-05MDS100	100	Yes
	C-421-020	10	No
	C-421-070	500	No
	C-421-080	1,000	No
FACT III Cross-linked polystyrene coated with Type 1 porcine collagen (gelatin), cationic-charged	F-221-020	10	No
	F-221-050	100	No
	F-221-070	500	No
	F-221-080	1,000	No
	FIR-221-020	10	Yes
	FS-221-05MDS100	100	Yes
Microcarrier Starter Kit (Plastic, Plastic Plus, Star-Plus, Hillex® II, Collagen-coated, Fact III)	SK102-1521B	10g of each	No

Custom size options are available upon request, contact at microcarriers@sartorius.com.

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