

Catalyst Carriers

Typical Properties

NorPro® Catalyst Carriers

The products described in these tables represent only some of the extensive capabilities of Saint-Gobain NorPro to make carriers with widely varying physical and chemical properties. Contact us directly or through our website (www.norpro.saint-gobain.com) if you do not see your precise requirement listed. We can help you!

Size & Shape

Most materials are available in a variety of extruded shapes, including pellets (cut extrudates), trilobes, quadrilobes, rings and pentarings. Some materials can also be produced in spherical shape, and some materials are available exclusively as Accu® spheres.

Nomenclature

All products are coded in the form SA 6173 or SA 55112.

Samples sent will always be described, not only by the coding noted (where relevant) but also by a unique sample number, e.g. 2006781234. This number refers to the batch of material made and enables Saint-Gobain NorPro to trace the original formulation, who made the material, the manufacturing conditions, and all the analytical results.

The **second** letter describes the **material**:

S	A	alumina or alumina-silica
S	C	silicon carbide
S	S	silica or silica-alumina
S	T	titania
S	Z	zirconia

The **second** digit refers to the **shape**:

S	A	6	1	73	pellets or extrudates
S	A	5	2	112	spheres
S	A	5	5	51	rings
S	A	6	6	147	pentarings
S	A	6	9	73	trilobes; quadrilobes

The **first** digit refers to the **surface area**:

S	A	5	*21	low surface area (0 - 10 m ² /g)
S	C	3	*145	intermediate surface area (10 - 100 m ² /g)
S	S	6	*76	high surface area (>100 m ² /g)

The **last two or three** digits are unique to the **formulation**:

S	A	61	73
S	A	55	112



Properties

The **Surface Area** of many products may vary from the typical values shown in the tables. The degree of variation possible depends upon the material. Surface area values may vary with the instrument used for measurement. Details of Saint-Gobain NorPro's Standard Test Methods are available upon request.

Pore Volume values may vary with the instrument used for measurement. Pore Volume values reported in these tables are mercury (Hg) intrusion values. In suitable circumstances, nitrogen (N₂) values may be measured and reported.

The **Water Absorption** is the amount of water picked up in open pores during a soaking period, expressed as a percentage of the dry sample weight. This value is obtained using the carefully standardized Saint-Gobain NorPro Standard Test Method. **Bulk (Particle) Density, Apparent Porosity** and **Apparent Specific Gravity** details are available upon request.

Contact Saint-Gobain NorPro for details of other products: Accu® sphere catalyst carrier, MacroTrap® guard bed media, Denstone® and Denstone® deltaP® bed support media, ceramic pentarings, and mass transfer media and support assemblies.

Saint-Gobain NorPro Worldwide Locations

Saint-Gobain NorPro
3840 Fishcreek Road
Stow, OH 44224-5400 USA
Tel: +1 330 677 3552
Fax: +1 330 677 3609
Em: Norpro.Stow@saint-gobain.com

Saint-Gobain NorPro GmbH
Am Bahnhof
D-56414, Steinefrenz, Germany
Tel: +49 6435 9657 25
Fax: +49 6435 9657 19
Em: Norpro.Steinefrenz@saint-gobain.com

Saint-Gobain KK
3-7, Kojimachi
Chiyoda-ku
Tokyo, 102-0083 Japan
Tel: +81 3 3263 0334
Fax: +81 3 3221 9976
Em: Norpro.Tokyo@saint-gobain.com

All properties quoted are representative of production at the time of printing of this document. The properties of individual lots or samples may vary from these values. These properties are not to be construed as specifications and no warranty is implied or expressed to this effect.

NORPRO

SAINT-GOBAIN

PRODUCT CODE	DESCRIPTION	SURFACE AREA	MEDIAN PORE DIAMETER	TOTAL PORE VOL (Hg)	WATER ABS.	PACKING DENSITY		PHASE	CHEMICAL PURITY
		m ² /gm		cm ³ /g	%	lb/ft ³	kg/m ³		
Low Surface Area (<10 m²/g) Alumina/Silica									
SA 5*05	Highly macroporous	0.02	130 μm	0.22	26	60	960	α / Glassy Silica	12% SiO ₂
SA 5*18	Highly macroporous	0.05	115 μm	0.24	20	68	1080	α / Glassy Silica	13% SiO ₂
SA 5*23	Bimodal pore size distribution	0.04	15 / 150 μm	0.20	18	77	1240	α / Glassy Silica	11% SiO ₂
SA 5*21	Lower macroporosity	0.05	20 μm	0.25	23	73	1170	α / Glassy Silica	12% SiO ₂
SA 52190	Small sphere formulation	0.06	80 μm	0.30	29	62	1000	α / Glassy Silica	12% SiO ₂
SA 52252	Small sphere formulation	0.02	100 μm	0.27	26	61	980	α / Glassy Silica	12% SiO ₂
SA 5*52	Lowest macroporosity	0.35	5 μm	0.34	32	61	970	α / Glassy Silica	6% SiO ₂
SA 5*39	Bimodal pore size distribution	0.30	1.8 / 150 μm	0.43	45	50	800	α / Glassy Silica	12% SiO ₂
SA 5*180	MacroTrap® media	>1.50	0.9 / 40 μm	0.50 (1)	>40	46	740	α / Glassy Silica	6% SiO ₂
SA 55207	MacroTrap® XPore 80 media	<0.25	5 / 200 μm	0.60 (2)	>45	32	515	α / Glassy Silica	24% SiO ₂
NOTES: (1) Pore volume >0.15 cm ³ /g for pores >10 μm (2) Pore volume >0.40 cm ³ /g for pores >10 μm									
Low Surface Area (<10 m²/g) High Purity Alumina									
SA 5*51	Monomodal pore size distribution	0.18	3 μm	0.23	25	73	1170	α	0.3% SiO ₂
SA 5*61	Bimodal pore size distribution	0.25	3 μm	0.25	25	70	1120	α	0.3% SiO ₂
SA 5*62	Trimodal pore size distribution	0.75	1 / 10 / 250 μm	0.53	50	53	845	α	0.1% SiO ₂
SA 5*02	Small pore	1.0	1.2 μm	0.30	29	70	1120	α	<0.05% SiO ₂
SA 5*161	Bimodal pore size distribution	4.50	0.1 / 11 μm	0.35	35	60	960	α	1% SiO ₂
SA 5*131	High alumina MacroTrap® media	>0.9	1.1 / 40 μm	>0.4 (1)	>40	<50	<800	α	<1% SiO ₂
SA 52124	UniSpheres® catalyst carrier	5.00	0.15 μm	0.30	36	65	1040	α	<0.1% SiO ₂
SA 52238	Accu® sphere catalyst carrier	<12	0.2 μm	0.50	50	50	800	α	<0.1% SiO ₂
NOTES: (1) Pore volume >0.15 cm ³ /g for pores >10 μm									
Intermediate Surface Area (10 - 100 m²/g) Surface areas from 10 to over 100 m²/g are available									
SA 3*35	Macroporous	12	1.2 μm	0.53	59	43	688	α / Transition (γ, θ)	17.9% SiO ₂
SA 3*32	Macroporous	30	1.2 μm	0.55	60	40	640	α / Transition (γ, θ)	17.9% SiO ₂
SA 3*132	Theta alumina	55	25 / 550 nm	>0.8		34	550	Mainly θ	<0.1% SiO ₂
SA 3*145	Theta alumina	75	20 / 230 nm	>0.55		40	650	Mainly θ	<0.3% SiO ₂ ; <0.1% Na ₂ O
SA 3*77	Transition alumina	100	10 nm	0.49		49	780	α / Transition (γ, θ)	0.1% SiO ₂
SA32239	Accu® sphere catalyst carrier	100	20 nm	0.65		41	660	Delta / Theta	<0.1% SiO ₂

PRODUCT CODE	DESCRIPTION	SURFACE AREA	MEDIAN PORE DIAMETER	TOTAL PORE VOL (Hg)	WATER ABS.	PACKING DENSITY		PHASE	CHEMICAL PURITY
		m ² /gm		cm ³ /g	%	lb/ft ³	kg/m ³		
High Surface Area (>100 m²/g)									
SA 6*73	Standard pore volume	200	7 nm	0.6		40	640	γ	<0.05% Na ₂ O
SA 6*75	Higher pore volume	260	10 nm	0.83		34	545	γ	<0.05% Na ₂ O
SA 6*76	Bimodal pore size distribution	250	7 / 500 nm	1.05		28	450	γ	<0.05% Na ₂ O
SA 6*78	High pore vol., & lower surface area	175	13 nm	0.82		31	500	γ, δ	<0.05% Na ₂ O
SA 62125	UniSpheres® catalyst carrier	200	8.5 nm	0.6		40	640	γ	<0.05% Na ₂ O
SA 6*203	Bimodal pore size distribution	110	15 / 300 nm	0.8		34	550	α / Transition (γ, θ)	<0.05% Na ₂ O
SA 62135	Enhanced porosity sphere	215	8 nm	0.67		41	650	γ	<0.1% Na ₂ O
SA 6*217	Alumina-silica	115	8 nm	0.55		45	725	α / Transition (γ, θ)	1% silica
SA 6*227	Alumina-silica	225	8 nm	0.7		33	525	γ	3.5% silica
SA 6*169	JR 323 Basic alumina	250	0.11 μm	1.0		25	400	Modified Alumina	4.5% CaO; 1% MgO; 0.5% SiO ₂
SA 62240	Accu® sphere catalyst carrier	220	9 nm	0.64		37	600	γ	<0.05% Na ₂ O
Zirconia									
SZ 3*163	Monoclinic zirconia	55	16 / 60 nm	>0.27		80	1280	Monoclinic	<0.2% SiO ₂
SZ 3*108	Modified SZ 31163	70	10 / 40 nm	0.30		75	1200	Monoclinic	<0.2% SiO ₂
SZ 3*164	Monoclinic zirconia	>85	8 / 60 nm	0.29		70	1160	Monoclinic	<0.2% SiO ₂
SZ 3*107	Silica doped	95	10 / 40 nm	0.30		75	1200	Monoclinic	5% SiO ₂
SZ 3*140	Zirconia / titania	80	11 / 16 / 121 nm	0.46		50	815	Mono / Tetrag	40% anatase TiO ₂
Titania									
ST 5*122	Rutile	3	>160 nm	>0.15		95	1500	>95% Rutile	<100 ppm S
ST 3*119	Anatase (1)	40	28 nm	0.30		70	1200	Anatase	<0.3% S
ST 6*120	Anatase	150	15 nm	0.45		50	800	Anatase	<0.3% S
ST 52242	Rutile Accu® sphere catalyst carrier	7	65 nm	0.11		105	1700	Rutile	
ST 32244	Anatase Accu® sphere catalyst carrier	>30	40 nm	>0.30		56	900	>50% Anatase	
<i>NOTES: (1) Surface areas 40 - 150 m²/g available</i>									
Silica									
SS 6*137	High surface area silica	160	11 nm	0.6		39	630		+99.5% SiO ₂
SS 6*138	High surface area silica	250	12 nm	1.0		22	350		+99.5% SiO ₂
SS 6*155	Silica-alumina	>400	8 / 500 nm	0.6		34	550	Mainly Amorphous	25% Al ₂ O ₃ ; 0.35% Na ₂ O
Silicon Carbide									
SC 5*32	Ceramic bonded SiC	0.15	22 μm	0.27	27	60	960	α	13% SiO ₂
SC 5*167	Enhanced porosity SiC	0.3	24 μm	0.55	55	35	560	α	13% SiO ₂
SC 5*241	Silica bonded SiC	<0.2	8 μm	0.16	16	56	900	α	20% SiO ₂