Ampergy powders and pastes

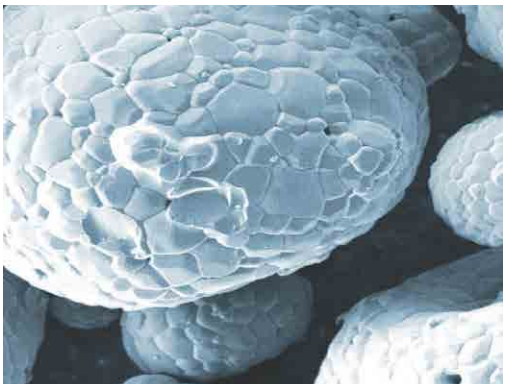
Solutions for solid oxide cells

www.hoganas.com

Höganäs
POWDER THAT EMPOWERS®

Our capabilities

Maximize the performance of your solid oxide cells with Ampergy cathode and anode ceramic powders and pastes from Höganäs. As a leader in advanced materials for solid oxide cells, SOFC and SOEC, we offer our extensive expertise in developing and producing custom engineered materials precisely to your requirements.



Application center

With over 20 years of experience in development, characterization, and production of SOFC and SOEC powders and pastes, Höganäs is capable of creating products according to the precise specifications required for SOC applications. In addition to physical and chemical analyses provided by our accredited and certified laboratory, our application center offers rheological characterization, particle size measurements directly in pastes, determination of sintering properties and thermal expansion and screen-printing tests of pastes. The center is equipped to map the complete powder production path. New powders can be developed from standards or adjusted according to customer requirements. Our development equipment has the same operating principle as those in production, and therefore we can ensure that powder properties are the same in production scale as they are in development and first trials.

Powder production

With a new powder production line built by Höganäs in 2022, our production capacity is more than sufficient to support global market demand. Continued investments are planned in anticipation of market growth in the next decade and beyond.

Paste production

Höganäs has been producing powders and pastes for the SOC market since 2016. We systematically use synergies between powder and paste production to achieve optimal quality and cost efficiency. Batch sizes can be adjusted according to customers' requirements to avoid lengthy storage times and ageing of finished product.

Ampergy powder and paste portfolio

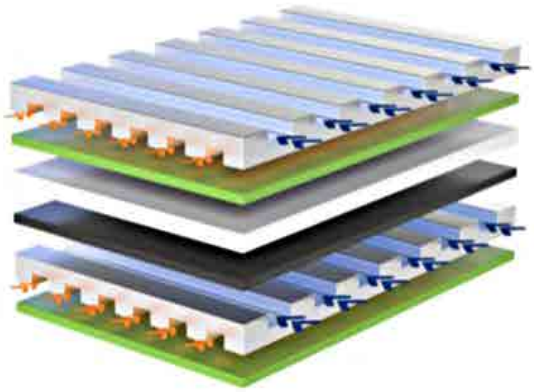
Applications	Material types	Short name	Standard stoichiometries
Oxygen electrode	LaSrMn-Oxide	LSM20	$La_{0.75}Sr_{0.20}MnO_3$
		LSM30	$La_{0.65}Sr_{0.30}MnO_3$
	LaSrCo-Oxide	LSC10	$La_{0.9}Sr_{0.1}CoO_3$
		LSC40	$La_{0.6}Sr_{0.4}CoO_3$
		LSC50	$La_{0.5}Sr_{0.5}CoO_3$
	LaSrCoMn-Oxide	LSCM	$La_{0.8}Sr_{0.2}Co_{0.1}Mn_{0.9}O_3$
	LaSrCoFe-Oxide	LSCF	$La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_3$
Protective coating on Cr containing interconnectors	MnCoFe-Oxide	MCF	$Fe_{0.1}Co_{0.9}MnO_4$
	MnCo-Oxide	MC	$Mn_{1.5}Co_{1.5}O_4$
Component for oxygen and hydrogen electrode; Barrier layer between electrolyte and electrodes	GdCe-Oxide	10GCO	$Gd_{0.1}Ce_{0.9}O_2$
		20GCO	$Gd_{0.2}Ce_{0.8}O_2$
		40GCO	$Gd_{0.4}Ce_{0.6}O_2$
	SmCe-Oxide	20SCO	$Sm_{0.2}Ce_{0.8}O_2$
Hydrogen electrode	NiO	NiO	NiO

Customizable powder solutions:

- Adjustment of particle size, specific surface area and sinter shrinkage according to customer specifications.
- Other chemical compositions/stoichiometries and mixed powders are also possible.

Ready to use pastes:

- All powders and powder mixtures are available as pastes with in-house developed binder systems, or according to customer specifications.
- Pastes are adjusted to customer defined sinter shrinkage, particle size, viscosity and powder content.



Principle setup of Solid Oxide Cell

Höganäs is first in the metal powder industry to receive SBTi-approval

SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Höganäs' vision is to **inspire industry to make more with less** and our ambition is to be the preferred supplier of sustainable metal and ceramic powders. We want to take the lead and transform the industry towards a more sustainable future. The SBTi (Science Based Targets initiative) has approved Höganäs AB's near and long-term science-based emissions reduction targets and has verified its net-zero science-based targets*.

Höganäs AB has been validated by SBTi for its commitment to reduce greenhouse gas emissions (GHG) from its own operations (scope 1&2) by 51% from a 2018 base year**, and to reduce absolute scope 3 GHG emissions from purchased goods and services, upstream transportation and distribution, and business travel by 30% within the same timeframe. With this, Höganäs becomes the first company in the metal powder industry to have its climate impact reduction targets validated by the Science Based Targets initiative (SBTi).

** Höganäs approved net-zero targets can be found using the net-zero filter function in the table at: https://sciencebasedtargets.org/companies-taking-action/*

*** The target boundary includes land-related emissions and removals from bioenergy feedstocks.*

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For more information on Ampergy and Solid Oxide Fuel Cells (SOFC), please scan the QR code.

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