

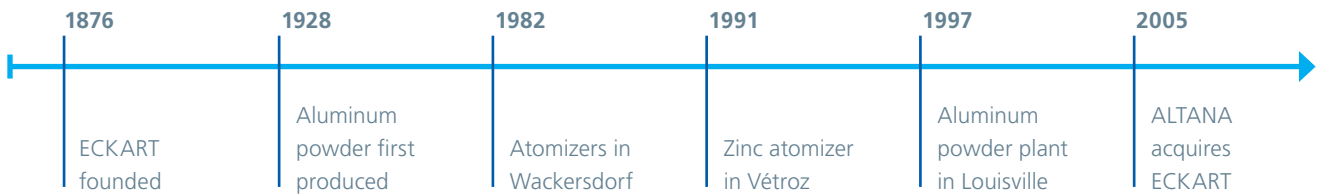


ECKART Product Portfolio of Atomized Powders and Alloys

About ECKART

ECKART is today one of the leading manufacturers of metallic and pearlescent pigments. The company has grown steadily since its founding in Germany in 1876, and produces currently pigments based on aluminum, brass, zinc, glass, and synthetic mica in 5 countries. After almost 130 years as a family-owned business, the company was sold to ALTANA in 2005. Since then, the new owners have continued to invest in growth and expanded their global operations to include facilities in Zhuhai, China, and Schererville, USA.

Within the production chain, powder is the precursor to metal-based pigments. Atomization is carried out either in the presence of air or under inert gas. The first case produces nodular and semi-spherical particles, the second case spherical particles. The company's range of powders includes aluminum, copper, zinc, and various alloys.



Our powders are used in a wide range of applications, for example:



Rocket booster



Explosives



Chemical industry



Metallic pigments

Aluminum

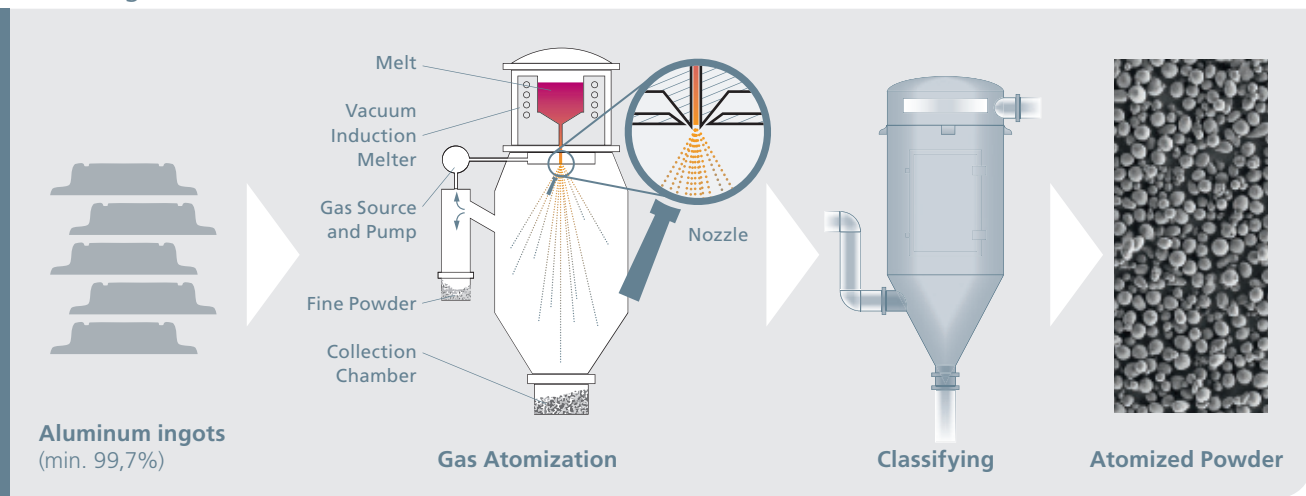
The company laid the foundation for the atomization of aluminum in Wackersdorf in 1982, when its first atomizer went into operation. Today, the facility has four atomizers: one for atomization in air, two for atomization under nitrogen, and a small atomizer for custom-made products.

With the acquisition of the Louisville location in the USA in 1997, ECKART was able to expand the production of aluminum

powders and pigments to a second continent. There, an atomizer produces all the different types of powder particles, which range from nodular to semi-spherical.

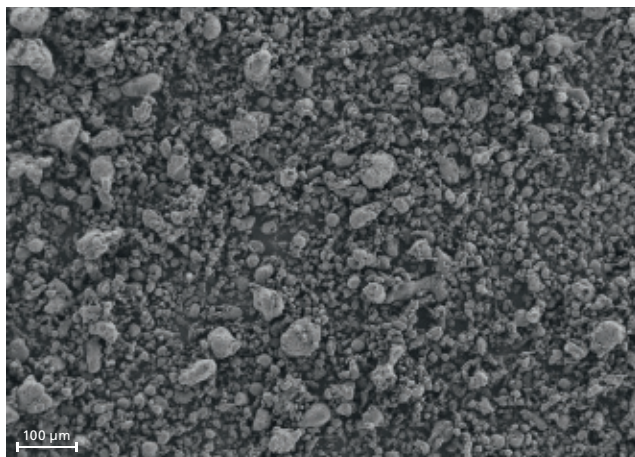
With these two production facilities, ECKART has positioned itself as a leading custom manufacturer also in the field of aluminum powders, offering the entire range of commercially available materials.

Flow Diagram

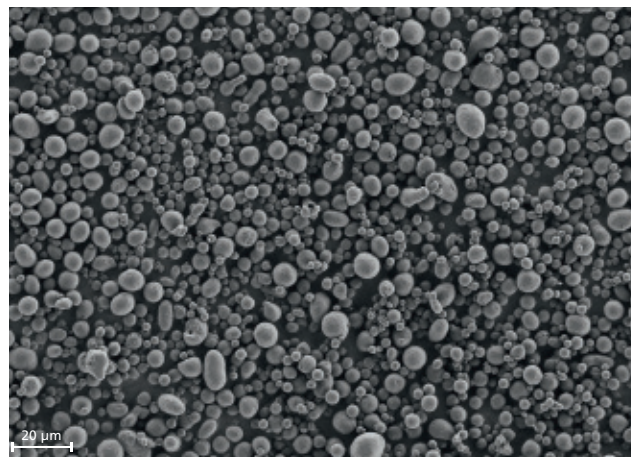


ECKART Product Portfolio of Aluminum Powder

Class	D 50	Particle shape
Class 2	> 50 µm	nodular
Class 3	20 - 50 µm	nodular / semi-spherical / spherical
Class 4	10 - 20 µm	nodular / semi-spherical / spherical
Class 5	5 - 10 µm	semi-spherical / spherical
Class 6	< 5 µm	spherical



Class 2 nodular powder



Class 4 spherical powder

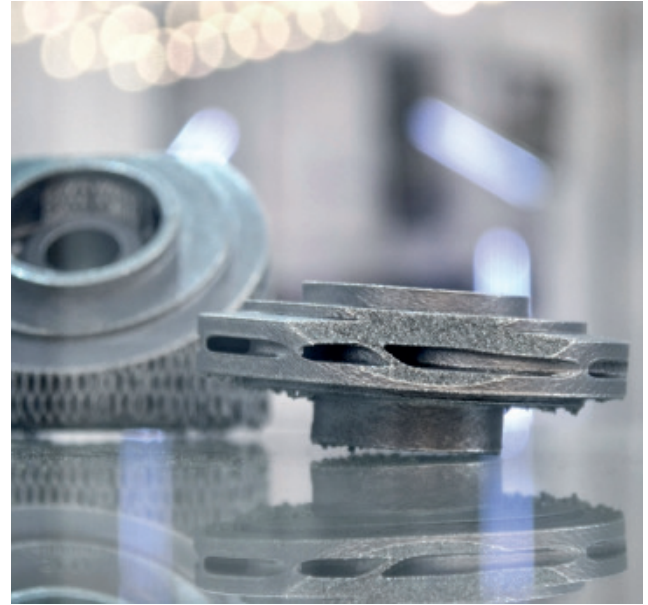
Aluminum Alloys

ECKART aluminum alloys are primarily manufactured in Wackersdorf, Germany. The atomization process is customized to ensure consistent particle distribution and homogenous chemistry.

Based on many years of experience in classification and a modern production technology, customers can choose from a wide range of products.

For further information, please contact our sales representatives.

Typical applications for these alloys include:



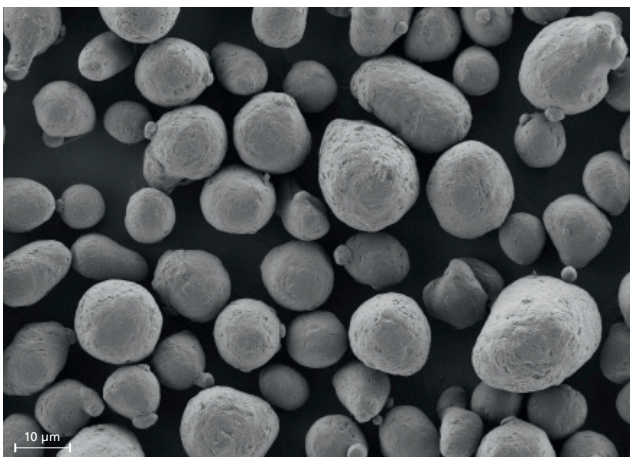
Additive manufacturing

Standard series: 2000 / 3000 / 4000 / 5000 / 6000 / 7000, special alloys available upon request

Series	Main Alloy
2000	Al-Cu
3000	Al-Mn
4000	Al-Si
5000	Al-Mg
6000	Al-Mg-Si
7000	Al-Zn
8000	Al-other elements



Brazing



AlSi10Mg



Thermal spray (© photo: Oerlikon Metco)

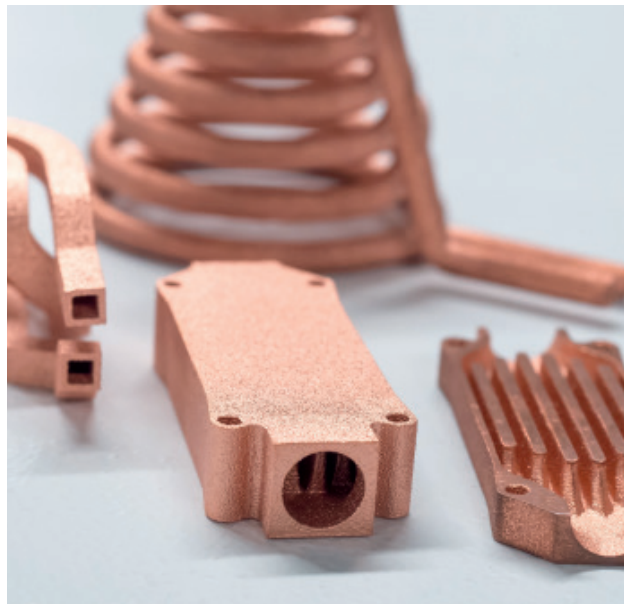
Zinc and Copper

In 1959, the then Doral S.A. started production in Vétroz, Switzerland. Twenty-two years later, in 1981, ECKART acquired this company and gradually relocated its entire zinc production to this location; in turn, the company shifted the entire Swiss aluminum and brass production to Germany.

During the early years of zinc pigment production, the company purchased the necessary powder on the market. This changed in 1991, when the management team decided to build their own atomizer. Since then, ECKART has been atomizing zinc with a purity of at least 99.995% according to DIN 1706 in an air stream in order to obtain zinc powder.

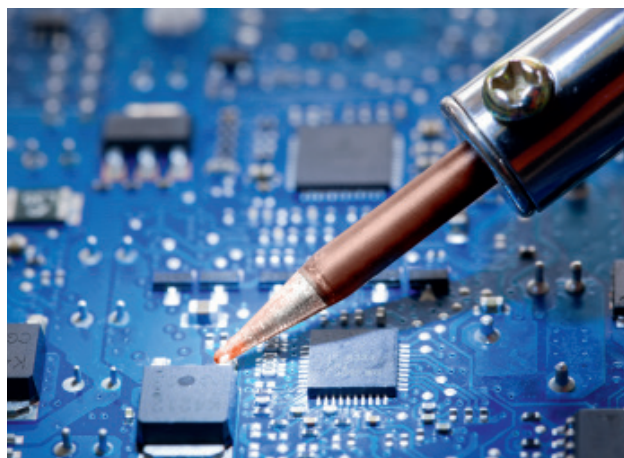
Similar to the process with zinc, also copper is melted and atomized into powder. Like aluminum, this process is carried out in Wackersdorf.

Typical applications for these powders include:

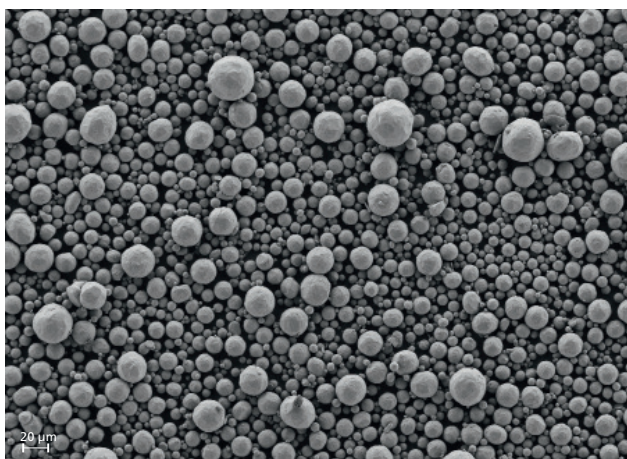


Additive manufacturing (© photo: TRUMPF Group)

Metal	Grade
Zinc AS	< 25 µm
	< 45 µm
	< 100 µm
	45 - 100 µm
Copper AS	< 45 µm



Brazing



Copper <45µm



Lubricants



ECKART Suisse SA
Route du Camping 2
1963 Vétroz, Switzerland
Tel +41 27 345 48 00
Fax +41 27 345 48 59
info.eckart.switzerland@altana.com
www.eckart.net

With compliments

ECKART GmbH
Guentersthal 4
91235 Hartenstein, Germany
Tel +49 9152 77-0
Fax +49 9152 77-7008
info.eckart@altana.com
www.eckart.net

ECKART America Corporation
830 East Erie Street
Painesville, Ohio 44077, USA
Tel +1 440 954 7600
Fax +1 440 354 6224
Toll-free: 800 556 11 11
info.eckart.america.oh@altana.com
www.eckart.net

ECKART Asia Ltd.
Unit 3706-08, 37/F, Sunlight Tower
248 Queen's Road East
Wan Chai, Hong Kong
Tel +852 3102 7200
Fax +852 2882 5366
info.eckart.asia@altana.com
www.eckart.net

0.5/April2019.0 FA
024519XX0

This information and our technical advice – whether verbal, in writing or by way of trials – are given in good faith but without warranty, and this also applies where proprietary rights of third parties are involved. Our advice does not release you from the obligation to verify the information currently provided – especially that contained in our safety data and technical

information sheets – and to test our products as to their suitability for the intended processes and uses. The application, use and processing of our products and the products manufactured by you on the basis of our technical advice are beyond our control and, therefore, entirely your own responsibility.