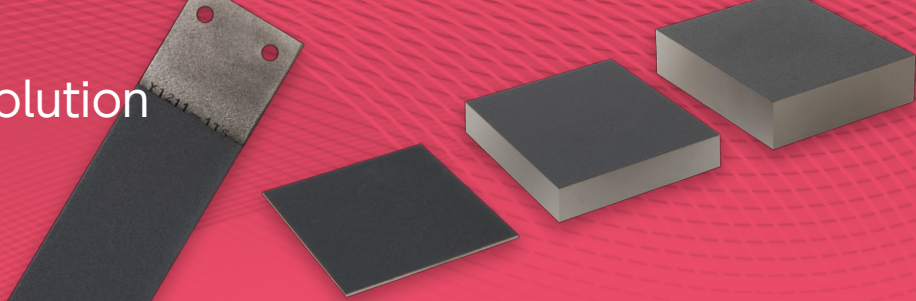


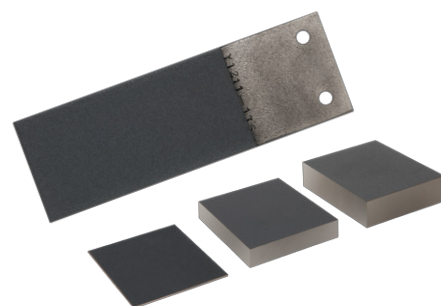
DSE® Electrode for O₂ Evolution



What is the DSE® electrode for O₂ evolution?

Anode

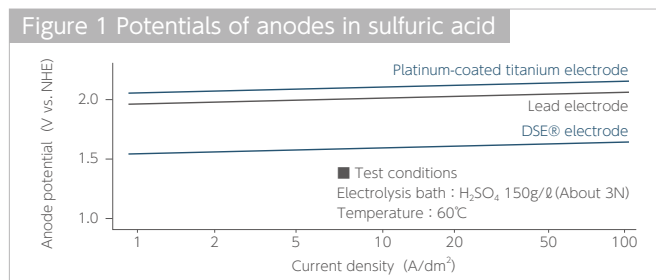
The DSE® electrode for O₂ evolution is used as an anode to generate oxygen in electrolysis processes that use inorganic acids such as sulfuric and nitric acids, some organic acids, and their salts in an electrolysis bath. The DSE® electrode offers better electrolysis and processing characteristics than platinum-covered electrodes, lead or lead-alloy electrodes, high-silicon cast iron electrodes, ferrite electrodes, and others.



Electrochemical characteristics

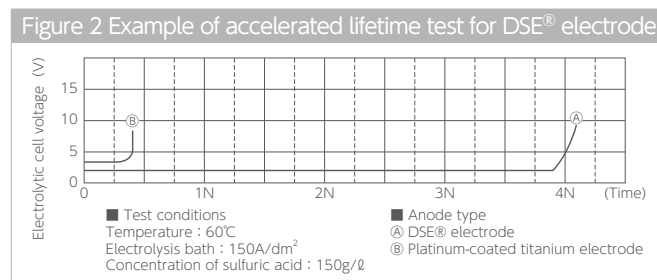
Anode potential (in sulfuric acid bath)

The anode potential of the DSE® electrode for O₂ evolution enables operation at an electrolytic voltage that is about 500 mV lower than that needed for the platinum-coated titanium electrodes that are typically used anodes for O₂ evolution. It also enables operation at an electrolytic voltage that is about 400 mV lower than that needed for a lead or lead-alloy electrode. Therefore, this electrode greatly contributes to energy saving and the reduction of power costs. (Figure 1)



Electrode lifetime

One example of our accelerated lifetime test is shown in Figure 2. This figure shows the results of the test for our DSE® electrode for O₂ evolution and a platinum-coated titanium electrode. The results show that the DSE® electrode has a longer life than the platinum-coated titanium electrode. The base material of the DSE® electrode is barely deformed or worn by the electrolysis. Hence, the electrode can be reused by reactivating its coating layer. (It is necessary, however, to examine whether a base material with a thickness of less than 1.5 mm can be recycled.)



Applications of this electrode

Production of copper foil

Manufacturers of electro-deposition copper foil use our DSE® electrode as an alternative to lead electrodes. The DSE® electrode is barely worn in use, while the electrode gap remains constant. Accordingly, copper foils can be produced with a uniform current distribution. In addition, our electrode has a lower anode potential than a lead electrode and thus can contribute to a reduction in power costs.



Other applications

- 01 Metal plating and recovery
- 02 Metal extraction and smelting
- 03 Chemical treatment of aluminum foil
- 04 Cleaning of stainless steel sheet and steel wire
- 05 Steel sheet plating
- 06 Cathodic protection
- 07 Electrophoretic coating
- 08 Organic electrosynthesis
- 09 Waste water treatment
- 10 Electrodialytic treatment

Specifications of this electrode

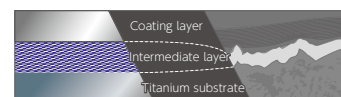
Electrode shape

According to your application, we select an electrode structure and surface shape that are best suited to the electrolysis bath conditions, and fabricate an electrode that satisfies your requirements. We can also accept orders for the design and fabrication of bus bars for electrical supply or electrode support. For example, DSE® electrodes for O₂ evolution that have the shapes shown in the right column can be produced.

Plate (flat and curved sheets)
Expanded mesh
Barred lattice
Punched sheet
Pipe
Bar
Others

Coating specifications

We propose coating specifications that are the best suited to your application, based on the track record of our coatings that have been adopted in a wide variety of areas. For instance, we adopted our unique intermediate layer for applications where electrodes are used at very high current densities, resulting in excellent longevity. We will also work with you to actively develop a product that satisfies any new needs that you may have.



DSA® and DSE® are registered trademarks of De Nora Permelec Ltd