

# A Pioneering Step in Evolution

Electrochemical Membrane Separation for  
**ULTRA PURE GRADE  
SODIUM METAL**

 **BASF**

The Chemical Company



# The Purest Grade Sodium Metal ever

BASF has succeeded in developing an innovative process for obtaining ultra pure sodium metal: The new Huber process, an electrochemical membrane separation method. The new separation process is far superior to the established melt electrolysis method (the Downs process) in terms of efficiency and product quality. Here's how you benefit from this pioneering step in evolution:

## Purest Quality Sodium Metal

BASF's innovative electrochemical membrane separation process gives you sodium metal of the very highest quality. Unlike the Downs process, BASF's Huber process results in ultra pure sodium with almost no impurities such as calcium or potassium. Detailed analysis data is contained in our product specifications which you can download from our homepage at [www.sodium-metal.basf.com](http://www.sodium-metal.basf.com).

## Cuts Energy Consumption Significantly

Our innovative Huber process cuts energy consumption by about one-third. You stand to benefit from enhanced price stability, because the lower consumption of energy during production helps to reduce the impact of rising electricity prices. This economic advantage has a welcome ecological side effect: you're helping to save valuable resources and contributing to sustainable development.

## Huber far superior to Downs

The new Huber process has numerous advantages over the conventional Downs process. While the Downs method is a multiple-stage process with a high degree of complexity, the single-stage Huber process is straightforward, consistent and easily manageable. Potential drawbacks of the Downs process include delayed product delivery and fluctuating product quality: every time the process stops, it needs to be re-set before production can resume. Not so the Huber process. The Huber method promotes deadline compliance and gives you a product quality you can rely on for sure, because it doesn't matter how often the process is stopped and re-started.

## Top-Class Delivery Service

Naturally, you can continue to rely on our speedy, reliable and convenient delivery service. BASF's ultra pure grade sodium metal is shipped in containers to destinations all over the world.

## New Opportunities

The unique technology that goes into the new electrochemical membrane separation process opens up exciting new opportunities. Applications will be feasible in future that seem impossible today.

# Sodium

## SUPERIOR SERVICE

# BASF — Simply the Best Choice

BASF offers you the purest sodium metal based on the company's pioneering electrochemical membrane separation procedure, the innovative Huber process. You also stand to benefit from the customer service, expertise, inventiveness and performance of the world's largest chemical company. Why not play on our strengths for success in your business:

### Verbund

BASF's Verbund system has no parallel. Verbund stands for integration and networking. Our Verbund approach with its coordinated production processes produces systematic energy and resource savings for enhanced ecoefficiency. Verbund also stands for the collective networking of knowledge and expertise among all our staff around the world. That's not including alliances with research facilities, customers and local authorities at our corporate sites.

# ULTRA PURE



Preferred shipment in containers

# Metal

### Research expertise

Successful research comes from combining market impulses with research expertise and inventive talent to give innovative products and processes. True to this principle, our output is backed by the combined expertise of our 7,000 research and development experts worldwide.

### Qualified Experts

With BASF as your partner, you'll be dealing with top experts in all areas. From production to customer service, from distribution/logistics to applications technology: You'll always be in the best of hands.

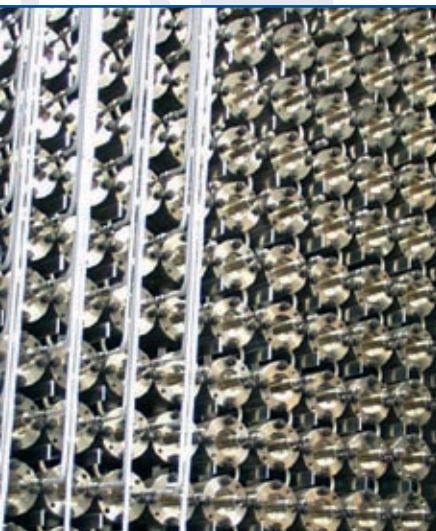
### Environmental Protection

Environmental protection is a key element governing our business policy. We use efficient processes in our plants not only to boost our product yield but to save resources, lower emissions and waste, and protect the environment.

### Safety

Safety is top of our agenda at BASF. A specially developed integrated concept shows how seriously we take safety. The holistic concept includes internal and external monitoring mechanisms such as safety audits and regular contacts with the relevant authorities. BASF is also represented in major industrial associations such as EUROCHLOR.

# RE GRADE



Detail of manufacturing process



Impression of Sodium Metal

## THE NEW TECHNOLOGY

# Electrochemical Membran Separation

The innovative Huber process is a quantum leap forward versus conventional processing by the Downs method. The new process dovetails seamlessly with BASF's integrated production system as an example of forward integration in chlor-alkali electrolysis. The principle is groundbreaking. A selective ion-conducting ceramic membrane isolates ultra pure sodium of unbeatable purity. The innovative principle does away with the process-related impurities that compromise the efficiency of the conventional Downs process.



Part of membrane  
separation equipment

Metal

**Note:**

BASF is the world's leading chemical company. Our portfolio ranges from chemicals, plastics, performance products, agricultural products and fine chemicals to crude oil and natural gas. As a reliable partner to virtually all industries, BASF's intelligent solutions and high-value products help customers to be more successful. BASF develops new technologies and uses them to open up additional market opportunities. We combine economic success with environmental protection and social responsibility, thus contributing to a better future. Further information on BASF is available on the Internet at [www.basf.com](http://www.basf.com).

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