Green Hydrogen using renewable energy sources

AGC to Build New Facility for FORBLUE[™] S-SERIES, a Fluorinated Ion-Exchange Membranes Suitable for Green Hydrogen Production in Kitakyushu City - Resume of Chemicals Business in Kitakyushu City after 24 years -

Tokyo, January 30, 2024 – AGC (AGC Inc., Headquarters: Tokyo; President: Yoshinori Hirai), a world-leading manufacturer of glass, chemicals, and high-tech materials, has announced that it has decided to construct a new production facility for <u>FORBLUE™ S-SERIES</u>, a fluorinated ion-exchange membranes suitable for producing green hydrogen^{*1} at its Kitakyushu Site (Tobata-ku, Kitakyushu City). AGC will invest approximately 15 billion Japanese yen for the new facility, which is scheduled to start operation in June 2026. After further capacity expansion, AGC aims to achieve FORBLUE™ S-SERIES sales of approximately 30 billion Japanese yen in fiscal 2030. The new plant will be AGC's first chemical plant to operate in Kitakyushu City in 24 years since the discontinuation of sodium bicarbonate production in 2002. It will be the AGC's third chemical production site in Japan following the Chiba and Kashima plant.





Mechanism of PEM water electrolysis

Catalytic electrode

FORBLUE[™] S-SERIES

lon-Exchange membrane

H₂O

Green hydrogen, which is produced by water electrolysis process using renewable energy sources, is attracting attention as a next generation clean energy source, and many projects for its production and supply are being planned worldwide. The water electrolyzers currently in practical use today are mainly alkaline systems, which is suitable for power sources with stable load, such as hydroelectric power. Yet they are not suitable for power sources where the load fluctuates easily, such as solar power. Therefore, there is growing interest in the PEM^{*2} systems that can efficiently utilize these power sources. In addition, fluoropolymers are attracting attention as a material that can extend the usable period of ion-exchange membranes used in PEM systems.

To address the rapidly growing global demand for green hydrogen, AGC has decided to build a new mass production facility for the FORBLUE[™] S-SERIES of fluorinated ion-exchange membranes for PEM water electrolyzers, which are made from its proprietary high-performance fluoropolymers. This series features the world-leading (1) voltage performance to suppress power consumption and (2) high gas barrier performance^{*3}, which is important for operational safety of water electrolyzers. These characteristics are based on the polymer design and membrane formation technologies AGC has cultivated over many years. Pilot sales began in 2017, and the series has been highly evaluated by wide range of customers since then.

<Media inquiries>

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Under its long-term management strategy <u>Vision 2030</u>, the AGC Group is aiming to contribute to the realization of a sustainable society through its unique materials and solutions. By providing high-performance ion-exchange membranes suitable for green hydrogen production, AGC will contribute to the realization of a carbon neutral society.

<Notes>

*1 Hydrogen produced using renewable energy sources without emitting CO₂ in the production process (Source: Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry website)

*2 Proton Exchange Membrane

*3 Refers to the difficulty in allowing gases to pass through (permeability). The better the gas barrier property, the more hydrogen and oxygen gases are prevented from mixing.

<Reference>

1. Overview of AGC's Kitakyushu Site

Location	5-1-1 Makiyama, Tobata-ku, Kitakyushu City	
Business profile	Logistics base functions and property management	
Number of employees	8 (as of end-2023)	
History	1914 Begins operations as a flat glass manufacturing plant	
	1917 Starts chemical business with the production of soda ash (first ammonia and	
	soda business in Japan)	
	1921 Begins production of sodium bicarbonate (first in Japan)	
	1981 Discontinues manufacturing of flat glass.	
	1993 Starts manufacturing of automotive glass	
	2002 Discontinues production of sodium bicarbonate (ends chemicals business)	
	2009 Discontinues manufacturing of automotive glass	
	2026 Scheduled to begin production of fluorinated ion-exchange membranes	

2. FORBLUE[™] family product lineup

The <u>FORBLUE™ brand</u> is a family brand of AGC product line that provide a "separation" solution for chemical substances.

FORBLUE [™] FLEMION [™]	Ion-exchange membranes for salt electrolysis process (for producing caustic
	soda/caustic potash, and chlorine)
FORBLUE [™] SELEMION [™]	General purpose ion-exchange membranes and dialyzers (for purifying
	wastewater, etc., recovering and refining valuable materials)
FORBLUE [™] i-SERIES	Electrolyte polymer dispersion for fuel cells
FORBLUE [™] S-SERIES	Ion-exchange membranes for water electrolysis, redox flow batteries, a wide
	variety of electrolysis and electrodialysis processes
FORBLUE [™] sunsep [™]	Hollow fiber membrane gas dryer/humidifier

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