

News Release

October 11, 2023

BASF and NZRCC sign technology license agreement for production of isononyl alcohol

- **BASF licenses its proprietary oxo-technology to Ningbo Refining and Chemical Co. Ltd (NZRCC) to produce isononyl alcohol (INA)**
- **NZRCC to build a world-scale INA production facility in Ningbo, China**
- **The startup is expected in 2026**

Ningbo, China – BASF and Ningbo Refining and Chemical Co. Ltd (NZRCC) have signed a technology license agreement to produce isononyl alcohol (INA) utilizing BASF's proprietary oxo-technology. NZRCC is a joint venture between the City of Ningbo and Zhenhai Refining and Chemical Co. Ltd (ZRCC), an affiliate of China Petroleum & Chemical Corporation (SINOPEC).

The license agreement allows NZRCC to build a world-scale INA production facility at ZRCC's integrated refinery and petrochemical complex in Zhenhai, China. The plant shall have a production capacity of 200,000 tons per year and is expected to come on stream in 2026.

BASF has extensive expertise in this INA process, as well as corresponding catalysts, and equipment. This technology was successfully developed and implemented at BASF's Verbund site in Ludwigshafen, Germany, and subsequently

adopted by BASF MPCCC Company Limited (BMC), a joint venture between BASF and SINOPEC, which established the first INA plant in China in 2015.

"We are pleased to grant NZRCC the license for our INA technology. NZRCC will be the second INA plant in China to utilize BASF's process technology which has been proven to produce INA with stable energy and feedstock consumption rates, leading to reliable production," stated Shahab Taebi, Director Business Opportunities and Forecasting, Petrochemicals Division, BASF SE. "With ZRCC's expertise in constructing and operating large integrated refining and petrochemical plants, the new INA plant will enable NZRCC to expand their chemical portfolio with a safe and proven technology."

INA is a plasticizer alcohol used in the production of PVC plasticizers, Diisononyl Phthalate (DINP) and Diisononyl Cyclohexane Dicarboxylate (DINCH) which offer better toxicological profiles compared to Diethylhexyl phthalate (DEHP or DOP) based on 2-Ethylhexanol (2EH).

PVC products using INA esters as plasticizers are used in various applications, such as automotive, flooring, wall coverings, and wires and cables. BASF's non-phthalate plasticizer, Hexamoll® DINCH, has received approval for applications involving close human contact, including food packaging, medical apparatus, and toys.

As a leading provider in INA technology, BASF's comprehensive technology license includes tailored feedstock purification, dimerization, hydroformylation, and aldehyde hydrogenation for INA production. Additionally, the license package can include equipment, catalysts, and absorbents to ensure added reliability for the licensees.

More information about ZRCC

Zhenhai Refining and Chemical Co. Ltd (ZRCC) is currently at the helm of a collective enterprise structure, described as a "1+24+N" community of shared future. This structure comprises 24 joint ventures and custodial enterprises, including NZRCC. NZRCC is a joint venture established by SINOPEC and Ningbo City in 2018 (share ratio 85:15). In accordance with the principle of "integrated coordination but independent legal entity operation", ZRCC will be solely responsible for the management of NZRCC. (collectively known as ZRCC).

About BASF

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. More than 111,000 employees in the BASF Group contribute to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio comprises six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care and Agricultural Solutions. BASF generated sales of €87.3 billion in 2022. BASF shares are traded on the stock exchange in Frankfurt (BAS) and as American Depositary Receipts (BASFY) in the United States. Further information at www.basf.com.

