

 KOREA INSTITUTE OF MACHINERY & MATERIALS	PRESS RELEASE	Research Institute to bring a better future based on innovation in mechanical technology
Release Date	2022. 06. 09., AM 08:30 KST	
Release Embargo	(☑ No)	
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KIMM Publishes Guidance on Vessel Storage Tank Materials for Alternative Fuels

- The Korea Institute of Machinery and Materials (KIMM) and the Korean Register (KR)
published a comprehensive guidance on the metal materials in Vessel Storage Tanks -

- ☐ The Korea Institute of Machinery and Materials (President Dr. Sang Jin Park, hereinafter referred to as KIMM), an institute under the jurisdiction of the Ministry of Science and ICT, and the Korean Register (hereinafter referred to as KR) have published together a comprehensive guidance on the metal materials suitable for use in eco-friendly fuel storage tanks, such as those used for storing hydrogen, methanol and ammonia.
- ☐ The newly published ‘Guidance on selecting metal material for the containment systems of alternative fuels on vessels’ includes detailed technical information on all the metal materials suitable for such containment systems. The technical information was jointly developed by Dr.

Yongjin Kim's research team at the Department of Reliability Assessment (Head: Jon-won Park) under the Mechanical Systems Safety Research Division of KIMM and the Research and Development Division of KR. Dr. Yongjin Kim, who conducted this joint research with KR, said that the document was extensively prepared for the selection of eco-friendly alternative fuel storage tanks.

- ☐ The International Maritime Organization (IMO) intends to regulate the greenhouse gas emissions from existing international ships. As a result, the Energy Efficiency Existing Ship Index (EEXI), the technical requirement to reduce carbon intensity and the Carbon Intensity Indicator (CII), the operational carbon intensity reduction requirements will enter into force from January 2023.
- ☐ This timely guidance will be welcomed by universities, research institutes, shipowners and clients, indeed anyone who is working to develop eco-friendly vessels" said Mr. Daeheon Kim, Executive Vice President of KR R&D Division.
- ☐ In the short term, the global maritime industry is struggling to adopt various strategies such as applying engine power limitation systems, installing energy-saving devices or optimizing navigation routes in order to comply with the greenhouse gas regulations for existing ships. In the medium to long term however, more vessels will need to use low-carbon or zero-carbon fuels as they offer the most effective way to dramatically reduce greenhouse gas emissions.
- ☐ As a result, much research is being done to assess and evaluate alternative vessel fuels, particularly ammonia, biogas, hydrogen and methanol. The systems, methods and materials for storing such fuels onboard vessels are becoming more important as well.
- ☐ KIMM and KR have proposed suitable metal materials that can be used for containment systems (storage tank) and for the supporting structures taking into account the characteristics of the various eco-friendly alternative fuels. Applicability evaluation methods and procedures are also included in the document.

- ☐ The guidance examines the various restrictions and technical limitations affecting metal materials used to contain liquid hydrogen, which is technically the most difficult to store in large capacities and currently hardly used for vessels as the gaseous hydrogen causes damage to materials.
- ☐ The guidance published can be found on the KR website (www.krs.co.kr/eng/).

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The publication of this guidance was conducted with the support from the “Development of the Safety Standards for Marine Hydrogen Storage Vessels and Fuel Supply Systems” of the Ministry of Oceans and Fisheries.

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