

AMC

AMERICAN METALCASTING CONSORTIUM

MOLD MATERIAL DATA SEARCH (MMDS) TOOL PROGRAM OVERVIEW AND OBJECTIVES

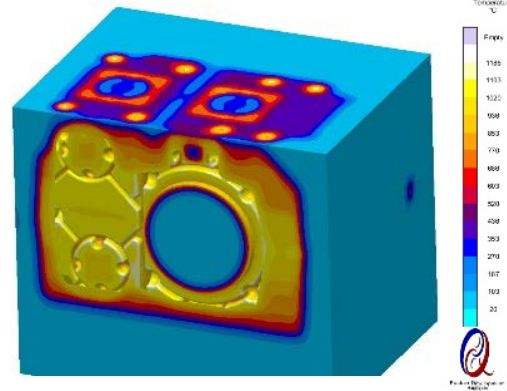


As part of the American Metalcasting Consortium (AMC), the MMDS Tool is being developed and maintained by the American Foundry Society (AFS) in partnership with Product Development & Analysis (PDA), LLC as an online mold and core material database to assist DoD, OEMs, and metalcasters with easy accessibility to thermo-physical and thermo-mechanical properties. This database has been designed to capture the most commonly used mold and core materials for various alloys and processes including 3D printed sand additive manufacturing. The material properties can be imported into Integrated Computational Materials Engineering (ICME) tools such as casting process simulation. The MMDS database is being populated with recently tested data sets.

SUCCESS STORY

Problem: ICME and casting process simulation predictions are inaccurate without validated mold and core material thermo-physical and thermo-mechanical properties.

Solution: Over the past several years, a user-friendly web-based CADs tool and database have been developed to provide critical design properties for many alloys. Using a similar approach, MMDS is being developed to assist the design engineer in selecting the right core and mold material data based on the application, the alloy being cast, and the appropriate molding and core processes planned. If the desired primary properties like strength and hardness for the mold or core are known, an engineer can choose the right mold and core materials from the MMDS database.



Benefit: This web-based tool enables design and simulation engineers to easily find simulation input data. Data can be exported digitally into an Excel spreadsheet suitable for various ICME tools for accurate predictions of microstructure, properties, soundness, residual stress, and distortion to meet demands for the safety and security of warfighters with increased payloads.

“In today’s design and manufacturing optimization quest by OEMs, accurate and comprehensive cast alloy and mold/core material properties with a complete pedigree of information such as casting process, chemistry, type of silica sand used for the test specimens, microstructure, and section thickness are available to the design engineers digitally for their design validations using FEA and process simulation.”

Jiten Shah, President, PDA LLC



FOR MORE INFORMATION
ABOUT AMC GO TO:
AMC.ATI.ORG
OR CALL 843-760-3483