



Program Overview and Objectives: Before the Casting Alloy Data Search (CADS) tool, casting suppliers lacked a way to efficiently identify casting design options that would meet requirements. The American Foundry Society (AFS), through AMC's Innovative Casting Technologies (ICT) program, has continued to improve CADS by adding a mechanical property slide bar search. This allows suppliers to search for a combination of desired properties and find a list of alloys with processes and designations capable of achieving the requisite properties. Over 25 foundries were involved in the collection of this data, producing more than 365 datasets. To achieve cast parts that were representative of actual components, all samples were produced using designated procedures based on industry-wide best practices and all design and casting section thickness, x-ray, heat-treat, and testing parameters were fully documented.

SUCCESS STORY

Problem: Most available handbook alloy data lacks pedigreed information supporting the property values reported and is not available in a digital, easy to use web-enabled format.

Solution: CADS has a library of pedigreed data for many military casting alloys. The CADS V3.0 tool was launched with improved functionality. The new interface allows the user to identify the specified static mechanical properties and provides various options to suppliers where pedigreed data exists. Additionally, the user interface was enhanced for easier citation identification and improved drop-down alloy menu navigation.

Benefits: The new CADS V3.0 user interface gives DoD/DLA casting suppliers a quick reference tool to rapidly identify casting alloy options that meet the parts' requirements, reducing production lead times.

The screenshot shows the CADS V3.0 web interface. It features a search bar for 'Search Property Strength' and three sliders for 'Ultimate Tensile Strength (ksi)', 'Yield Strength (ksi)', and 'Elongation %'. Below the sliders are buttons for 'Search by Selected Properties' and 'Print Results'. A table displays search results with columns for Alloy Type, Alloy Name, Designation, Designation Number, Casting Process, and Thickness. Each row includes a 'Select Alloy' button.

Alloy Type	Alloy Name	Designation	Designation Number	Casting Process	Thickness
Iron	125-80-10	ASTM A 897/A 897M	125-80-10 (850-550-10)	Air-Set/Nobake Gas-Hardened/Coldbox Green Sand-Horizontally Parted Green Sand-Vertically Parted Shell Mold V-Process Sand	1 in
Iron	150-100-7	ASTM A 897/A 897M	150-100-7 (1050-700-7)	Air-Set/Nobake Gas-Hardened/Coldbox Green Sand-Horizontally Parted Green Sand-Vertically Parted Shell Mold V-Process Sand	1 in
Aluminum Alloys	356		A03560	Squeeze/Semisolid	1 x 0.83
Aluminum Alloys	356		A03560	Vacuum Casting	1.25 x 1.60

CADS can be accessed via the Alloy Database drop down from the Designers & Buyers menu on the AFS website or directly at <https://www.afscads.com/>

"CADS is a trusted and verified open access repository for data collected through collaborative efforts of the American Foundry Society, Ductile Iron Society and their members from certified testing labs per National Standards, like SAE J1099." - Scott Lammers, Executive Director, Ductile Iron Society