



Problem

- Die lubricant is a source of porosity, reduces die life, increases production time / costs, and produces effluent with waste disposal issues

Objectives

- Develop die coatings that are truly non-wetted by molten aluminum
- Improve the die coatings so they can survive as long as the life of the die inserts
- Extend life of coatings

Benefits to Warfighter

- Improved quality and performance of die cast parts
- Reduced production time and costs

Description of Project:

Reducing or eliminating lubricants to improve the quality and production time of die cast parts, reducing costs and allowing them to be used in higher performance applications

Team:

Colorado School of Mines, North American Die Casting Association, Ryobi, Mercury Castings, Phygen, Tribologix



Milestones / Deliverables

- Conduct adhesion tests
- Define the mechanism controlling wetting and adhesion of molten aluminum to die coating
- Develop a coating that will add sufficient durability to the die coatings
- Conduct in-plant trials to evaluate adhesion of liquid aluminum to die coatings
- Create guidelines for depositing the coating system on die tooling

