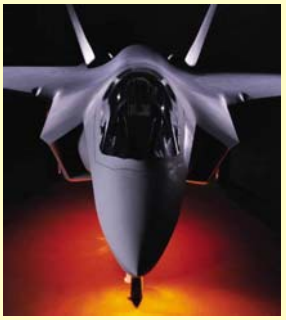
Aluminum-Lithium alloy development for thixoforming

Advantages of Aluminum-Lithium alloys

- super-light weight
- increased specific strength and e-modulus
- High performance - suitable for racecar and aircraft applications



Todays Al-Li processing problems

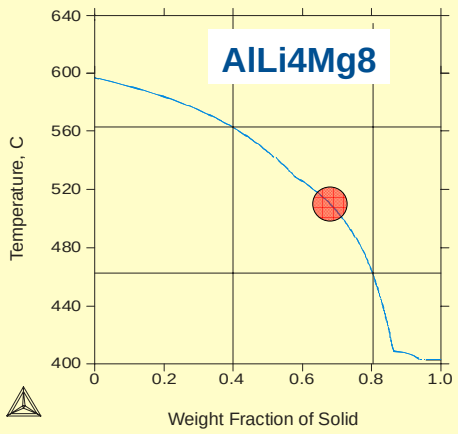
- hot crack susceptibility
- high reactivity of Lithium with refractory material, atmospheric gases and moisture
- high scrap rate > high processing costs

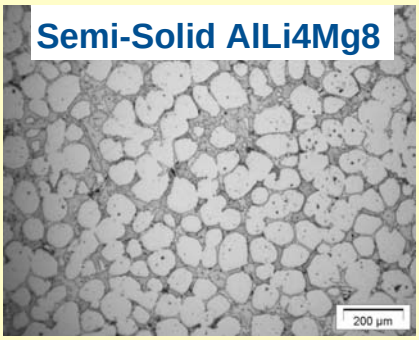
Requirements on thixoformable allyos

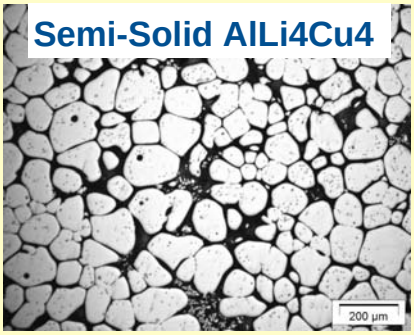
- globular primary phase < 150µm
- wide ranged solidus-liquidus interval
- rheology in semi-solid state
- low temparature sensitivity

Advantages of thixoforming Al-Li-alloys

- reduced liquid phase content > reduced hot crack susceptibility
- near net shape production > reduced machining costs







Aluminum-Lithium alloys with suitable morphology (grain refined and reheated)

The project in the framework of SFB 289

- design of suitable Al-Li precursor material for Semi Solid processing
- adjustment of mechanical and corrosion properties
- transfering demonstrator part know how to prototype

Semi-Solid cast Al-Li demonstrator

target

Formula 1
Aluminum caliper

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