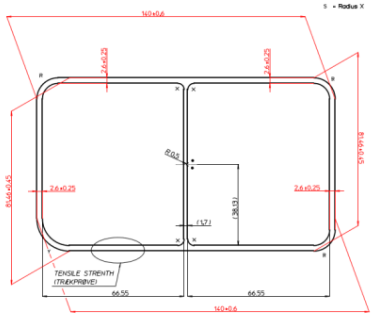
ALLOY DEVELOPMENT FOR EXTRUDED AUTOMOTIVE ALUMINIUM APPLICATIONS

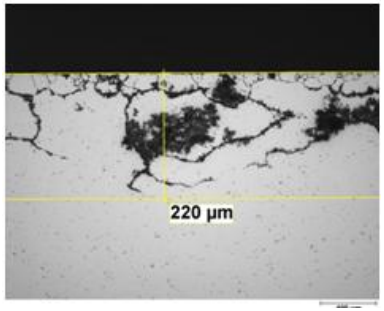
FOCUS ON CRASH, TEMPERATURE STABILITY AND CORROSION

SAPA EXTRUSIONS TØNDER
OCTOBER 14, 2013

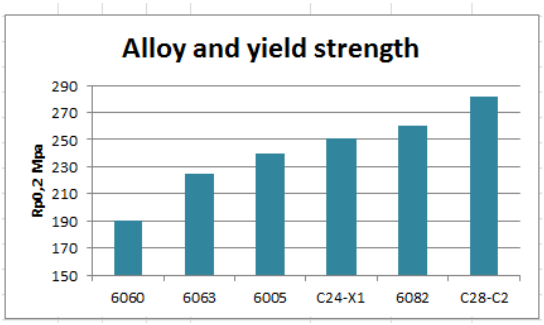
OEM REQUIREMENTS



Dimensions



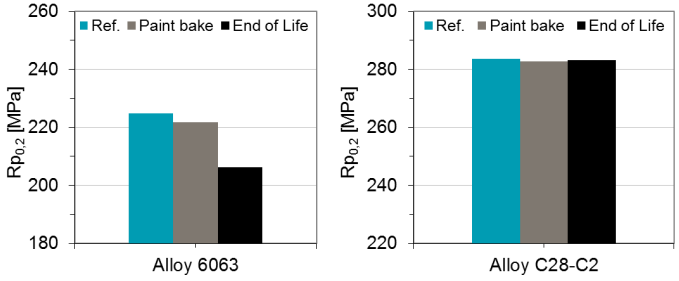
Corrosion



Mechanical requirements

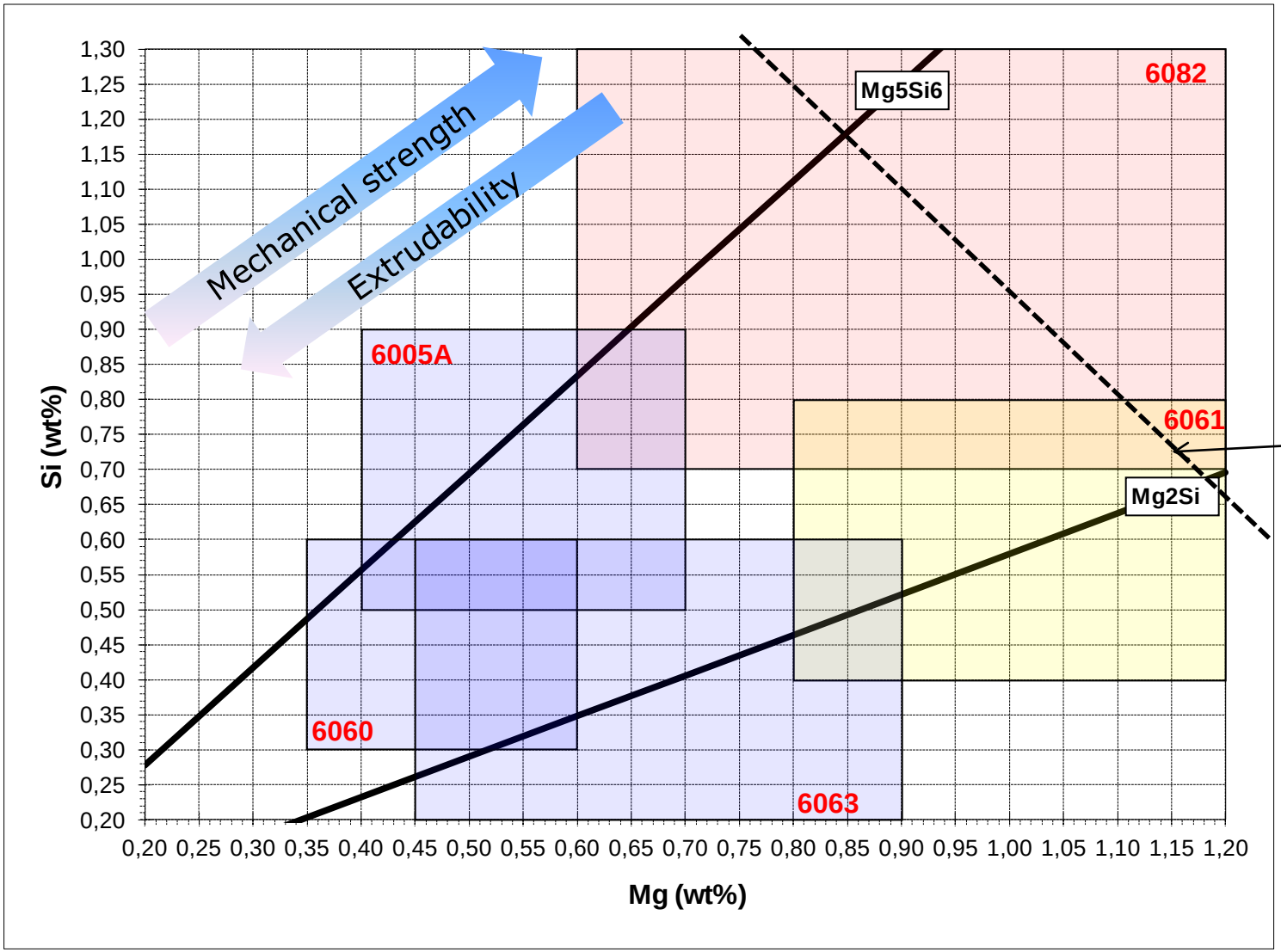
Alloy and process

Crash / ductility



Temperature stability

ALLOY DEVELOPMENT - BASICS



CHEMICAL COMPOSITION AND EFFECT (QUALITATIVE)

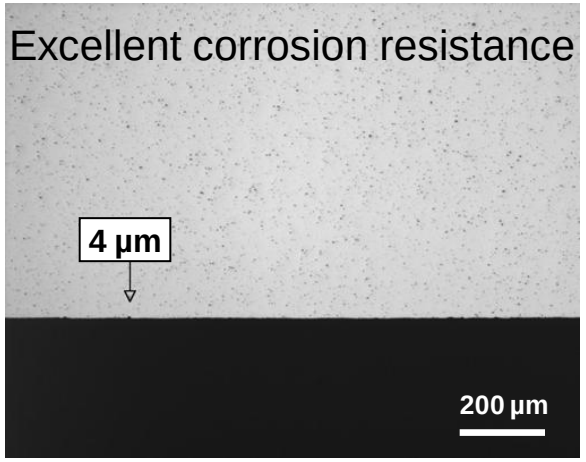
	Strength	Extrudability	Corrosion Resistant	Thermal Stability	Crash
Si	↑↑↑*	↓↓			
Mg	↑↑↑*	↓↓		↑	↑↑*
Fe	↓	↓	↓		
Cu	↑↑	↓↓	→**	↑↑	
Mn	↑**	↓↓↓	↑↑		↑
Cr	↑*	↓↓↓	↑↑		↑

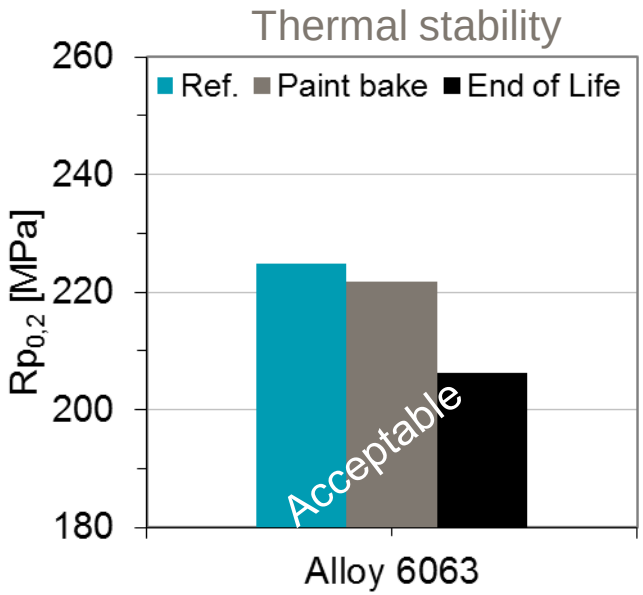
* Mg/Si ratio
** If process is in control

LOW YIELD ALLOY

Rp0,2	Rm	A5%
220± 20 MPa	≥ 225 MPa	≥ 11%

- Standard 6063 meets requirements



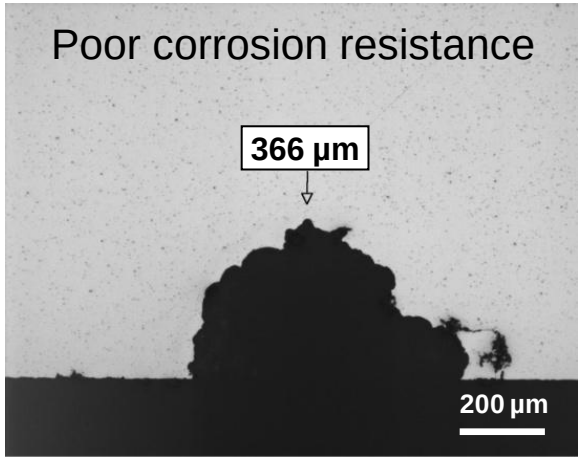


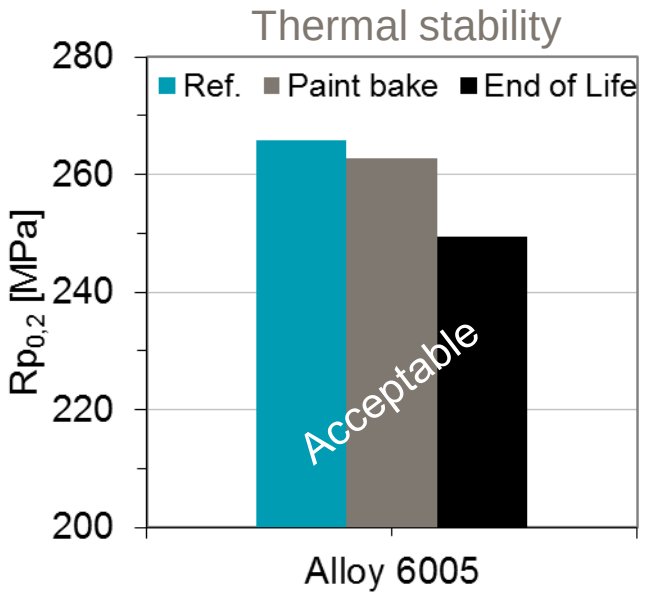
*REF.= T6/T7; PAINT BAKE = 1H AT 205°C; END OF LIFE = 1000H AT 150°C

MEDIUM YIELD ALLOY

Rp0,2	Rm	A5%
260± 20 MPa	≥ 260 MPa	≥ 10%

- Standard 6005 does not meet requirements



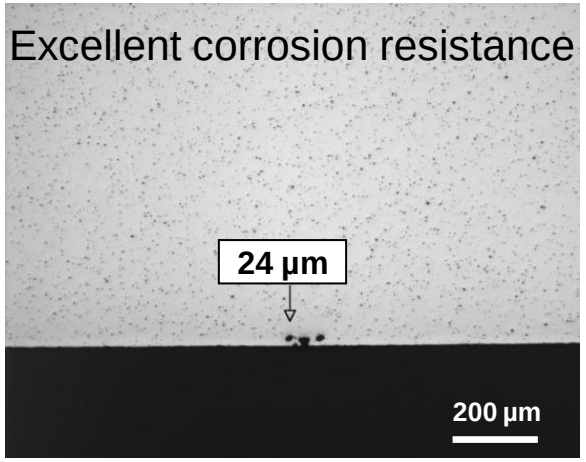


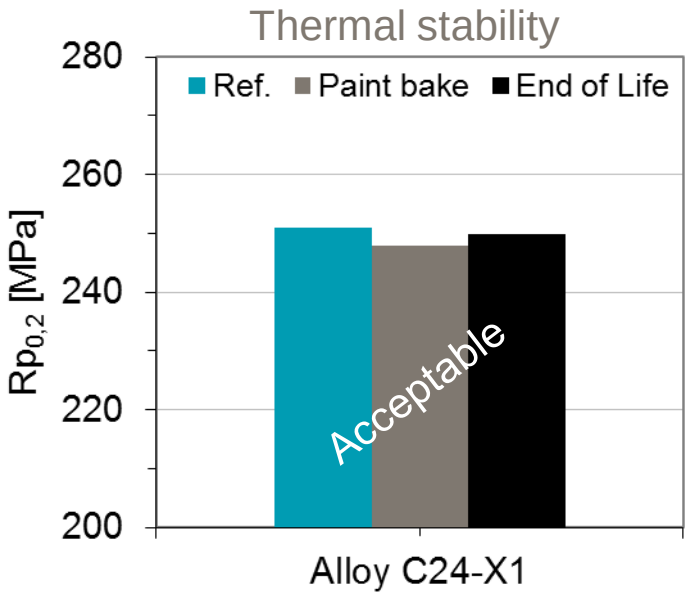
*REF.= T6/T7; PAINT BAKE = 1H AT 205°C; END OF LIFE = 1000H AT 150°C

MEDIUM YIELD ALLOY

Rp0,2	Rm	A5%
260± 20 MPa	≥ 260 MPa	≥ 10%

- New alloy developed to meet requirements
- Thermally stable at 150°C



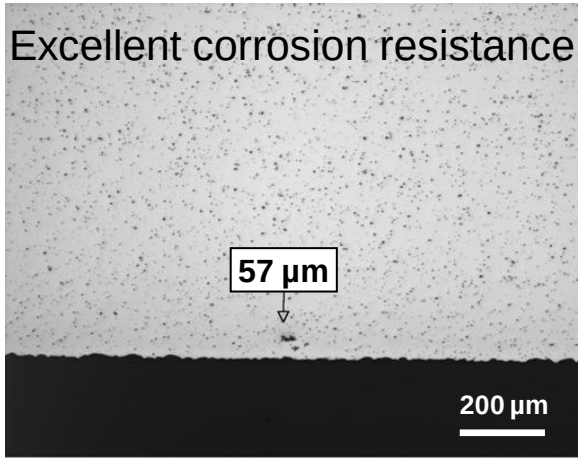


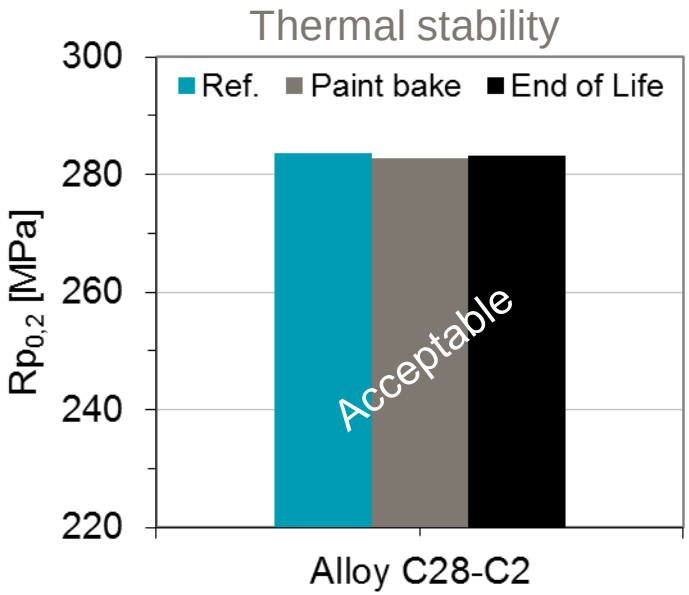
*REF.= T6/T7; PAINT BAKE = 1H AT 205°C; END OF LIFE = 1000H AT 150°C

HIGH YIELD ALLOY

Rp0,2	Rm	A5%
300± 20 MPa	≥ 305 MPa	≥ 10%

- New alloy developed to meet requirements
- Thermally stable at 150°C





*REF.= T6/T7; PAINT BAKE = 1H AT 205°C; END OF LIFE = 1000H AT 150°C

DEVELOPING TOGETHER

Your contacts:

Jörg Brunhorn
Product Manager Automotive
Phone: +45 73 93 94 06
Email: joerg.brunhorn@sapagroup.com

Mette Boye Sørensen
Process Manager
Phone: +45 73 93 93 55
Email:mette.b.sorensen@sapagroup.com

OEM Crash Standards

- DBL4919 – Qualified
  - For DBL4919.10, .20, .30 and .40
- TL116 – Under qualification
  - N/C20, N/C24 – under qualification
  - N/C28 – March 2014
  - N/C32 – Under development
- WS – Under qualification
  - WS02002A/B – Under qualification
  - WS02003A/B – End 2014
  - WS02009A – Under development