

FA7905 braze clad header material

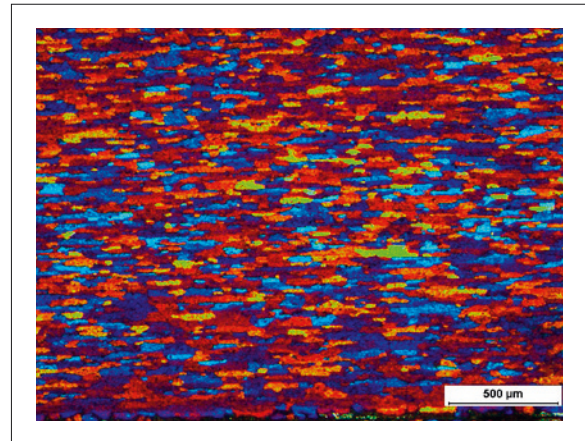


Sapa Heat Transfer

A high-strength, heat-treatable low Mg alloy for headers and tanks

This alloy is suited for controlled atmosphere brazing

FA7905 is highly suitable for headers and tanks, where a high demand of formability as well as a high post braze strength is crucial for the product performance. The defined composition of silicon and magnesium makes FA7905 easy to braze in the CAB process, while still showing good ageing behaviour after brazing. With the addition of titanium the product also shows a very good corrosion protection.



Grain structure after brazing.

Chemical composition

Weight %							
	Si	Fe	Cu	Mn	Mg	Zn	Ti
FA7905	0.6–1.0	<0.7	0.2–0.4	0.4–0.7	0.15–0.3	<0.10	0.10–0.25
AA3003	<0.6	<0.7	0.05–0.20	1.0–1.5	–	<0.10	–

Mechanical properties

Delivery condition temper and properties					
	Temper	R _{p0.2} [MPa]	R _m [MPa]	A _{50mm} [%]	IE ₂₇ [mm]**
FA7905	O	>40	115–145	>20*	10*
FA7905	H24	>150	180–230	>15*	9*
AA3003	O	>35	95–135	>20*	10*

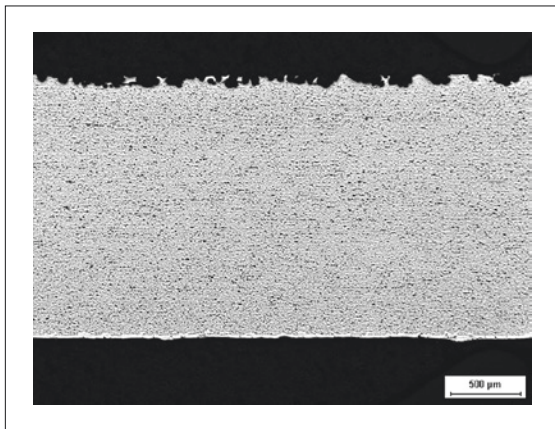
*as tested on 1.5 mm material. **Erichsen cupping index for information only.

Typical strength after brazing			
	Ageing time [days]	R _{p0.2} [MPa]	R _m [MPa]
FA7905	7	55–60*	160–165*
FA7905	14	60–65*	170–175*
AA3003	–	40**	110**

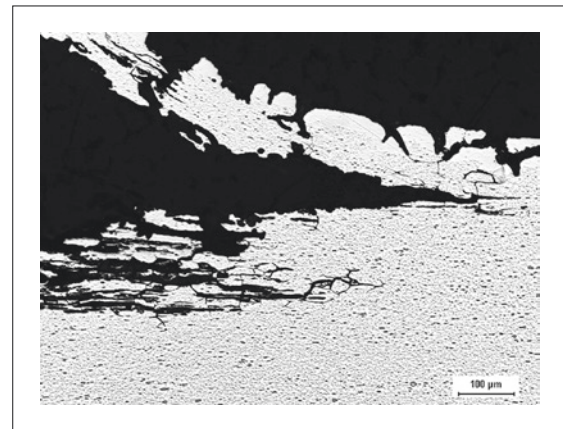
*after brazing with cooling at minimum 1°C/s and natural ageing. **as brazed.

Corrosion resistance

Corrosion potential after brazing -710 mV (SCE), similar to AA3003 which is -720 mV (SCE).

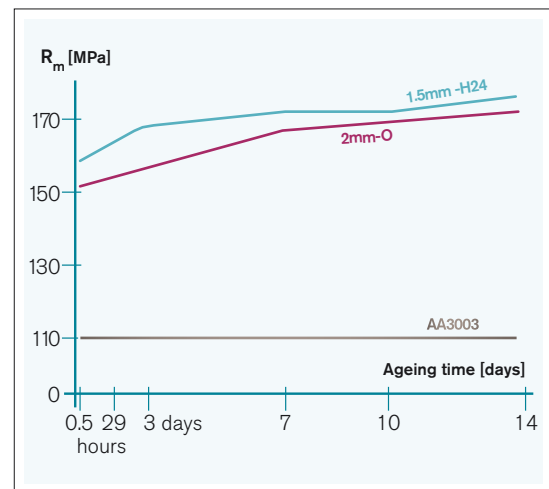
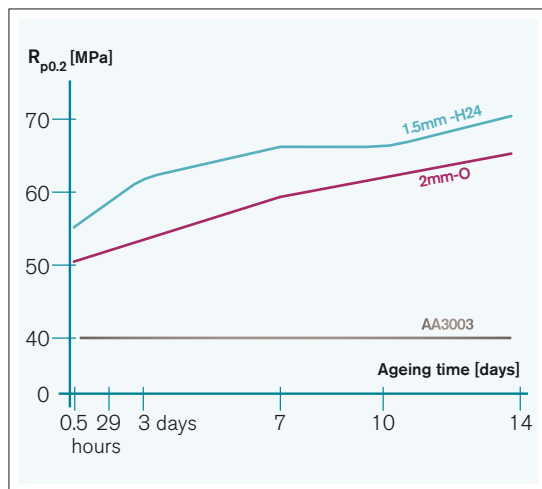


Plates of FA7905 alloy 2 mm tested in SWAAT, (ASTM G85) for 40 days: there are no perforations and the general corrosion attack is only about $100\ \mu\text{m}$.



The corrosion attack in a modified SWAAT testing (with rinsing every 10 days) clearly shows the typical lamellar corrosion related to the titanium content of the material.

Typical strength after brazing and ageing at room temperature



Yield strength (left) and ultimate tensile strength (right) after brazing in CAB with rapid cooling ($>1^\circ\text{C}/\text{s}$ between 400°C and 200°C) and natural ageing. Lower cooling rates would deteriorate the strength, as the Mg and Si then forms larger particles.

SHT process capabilities			
Width	10–1400 mm	Coil size, OD	up to 1800 mm
Thickness	0.050–3.18 mm	Inner diameter, ID	254, 305, 406, 508 mm
Clad thickness	3–15 %	Coil weight	up to 7500 kg

Exceptions to the above standard capabilities could be made available upon request.



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