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Adhesive Technical Support Europe

Comparison of Araldite[®] 2015
(Araldite[®] AV 5308 / Hardener HV 5309-1)

& Araldite[®] 2015-1
(Araldite[®] AV 5308 / Hardener HV 5309-2)

NEW PRODUCT DEVELOPMENT REPORT

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INTRODUCTION

In order to provide more user friendly and sustainable products to our customers, we have developed a new system called Araldite® 2015-1, which is equivalent in performance to the Araldite® 2015.

The following side by side report was issued to compare directly performances of the standard Araldite® 2015 with the new system Araldite® 2015-1. Processing parameters like density, mix ratios in weight & volume are the same with exception of slightly reduced pot-life and higher thixotropy.

RESULTS & DISCUSSION

Unless otherwise stated, the figures given below were all determined by testing standard specimens made by lap-jointing 114 x 25 x 1.6 mm strips of aluminium alloy. The joint area was 12.5 x 25 mm in each case. Cure conditions : 16h/40 °C

Functional properties

	Hardener HV 5309-1 (Araldite 2015)	Hardener HV 5309-2 (Araldite® 2015-1)
Aspect	Beige soft paste	Beige soft paste
Viscosity	Thixotropic	Highly thixotropic
Mix Ratio	100:100 (wt and vol)	100:100 (wt and vol)

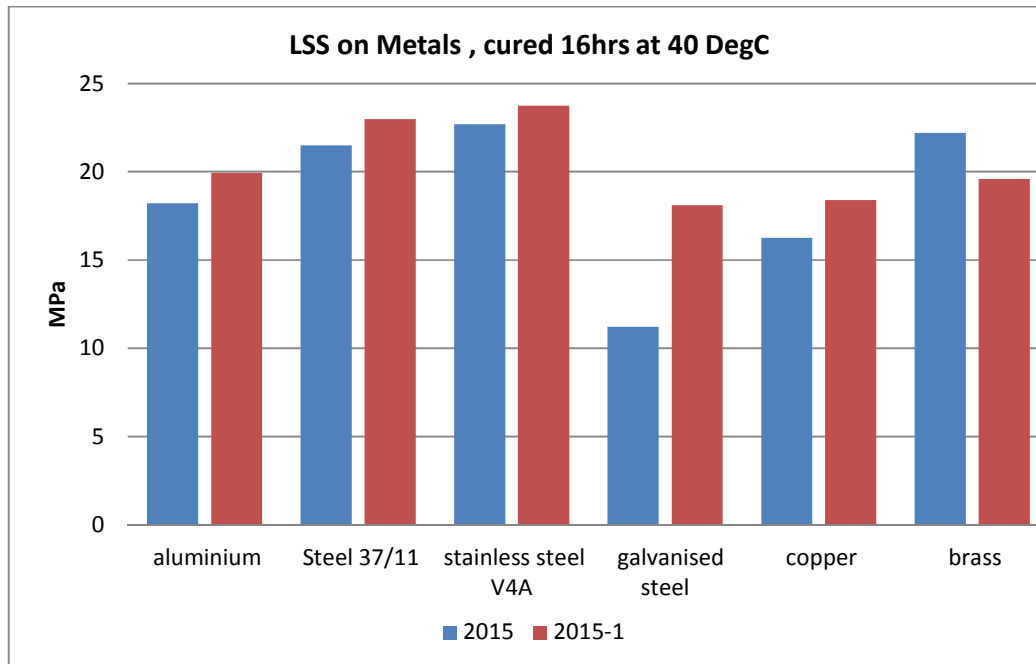
Reactivity

	Araldite® 2015	Araldite® 2015-1
Pot life (100 g)	80 - 90 min.	45 - 55 min.

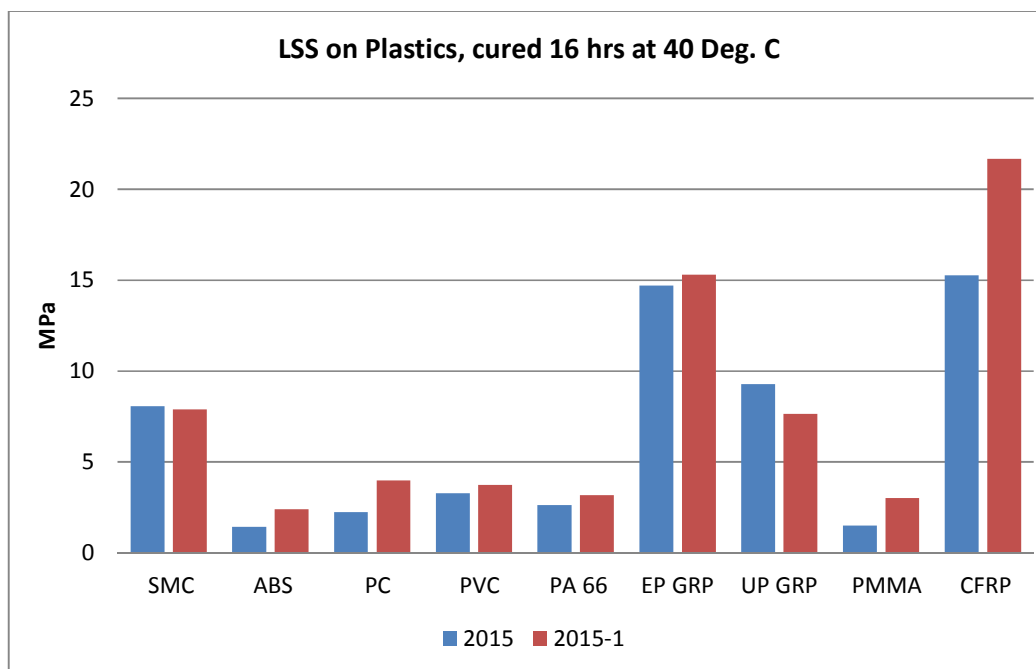
Time to reach a specific lap shear strength on sandblasted aluminium at different temperatures.

Time to reach Lap Shear Strength	Araldite® 2015	Araldite® 2015-1
1 MPa @ 15 °C	6 hours	6 hours
10 MPa @ 15 °C	16 hours	15 hours
1 MPa @ 23 °C	4 hours	4 hours
10 MPa @ 23 °C	8 hours	8 hours
1 MPa @ 40 °C	1 hour	1 hour
10 MPa @ 40 °C	2 hours	3 hours

Lap Shear Strength (LSS) on different substrates (ISO 4587)



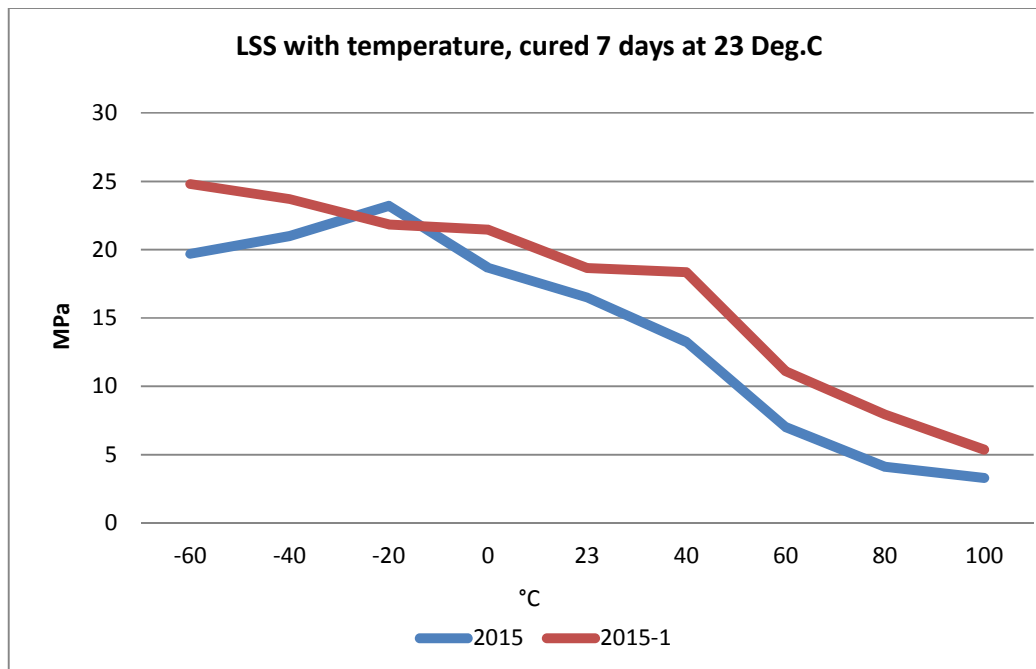
Metal substrates : sandblasted & degreased with acetone



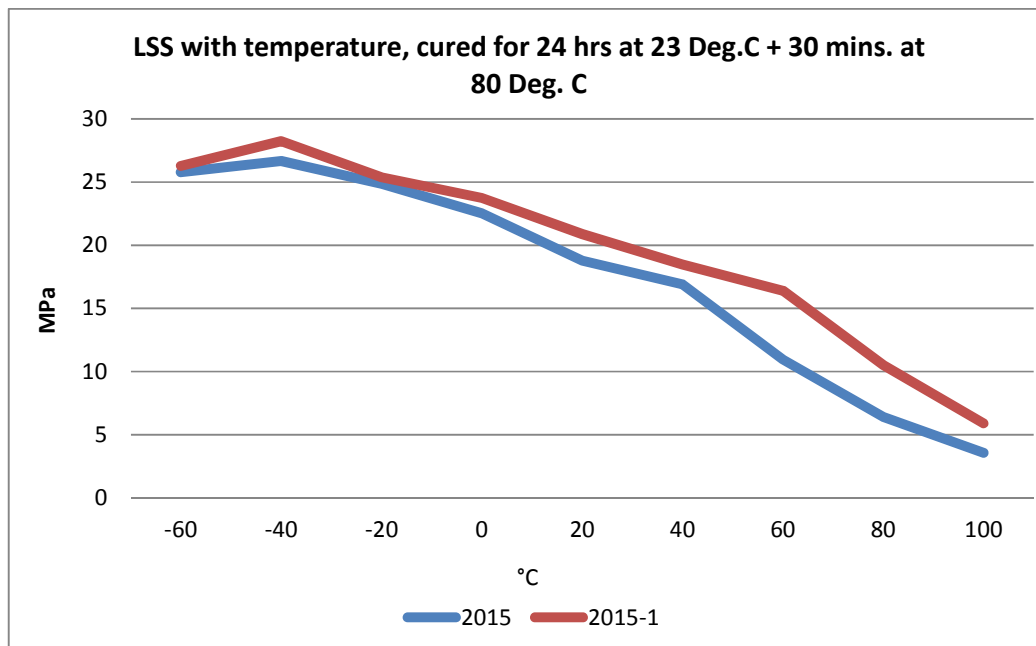
Plastic substrates : abraded & degreased with isopropanol

Lap Shear Strength vs temperature (ISO 4587)

Cure 7 days at RT



Cure 24 hours at 23°C + 30 minutes at 80°C



Tensile properties (ISO 527)

Cure 16 hours at 40°C

	Tensile modulus (MPa)	Tensile strength (MPa)	Elongation at break (%)
Araldite® 2015	1550 MPa	24	5.7%
Araldite® 2015-1	1590 MPa	21	4.2%

Flexural properties (ISO 178)

Cure 16 hours at 40°C

	Flexural modulus (MPa)	Flexural strength (MPa)
Araldite® 2015	1650	43
Araldite® 2015-1	1800	43

Lap Shear Strength after Thermal cycling

25 cycles (-30°C to 70°C to -30°C)

Cure 16 hours at 40°C

	Lap Shear Strength after Thermal cycling (MPa)
Araldite® 2015	19.3
Araldite® 2015-1	21.4

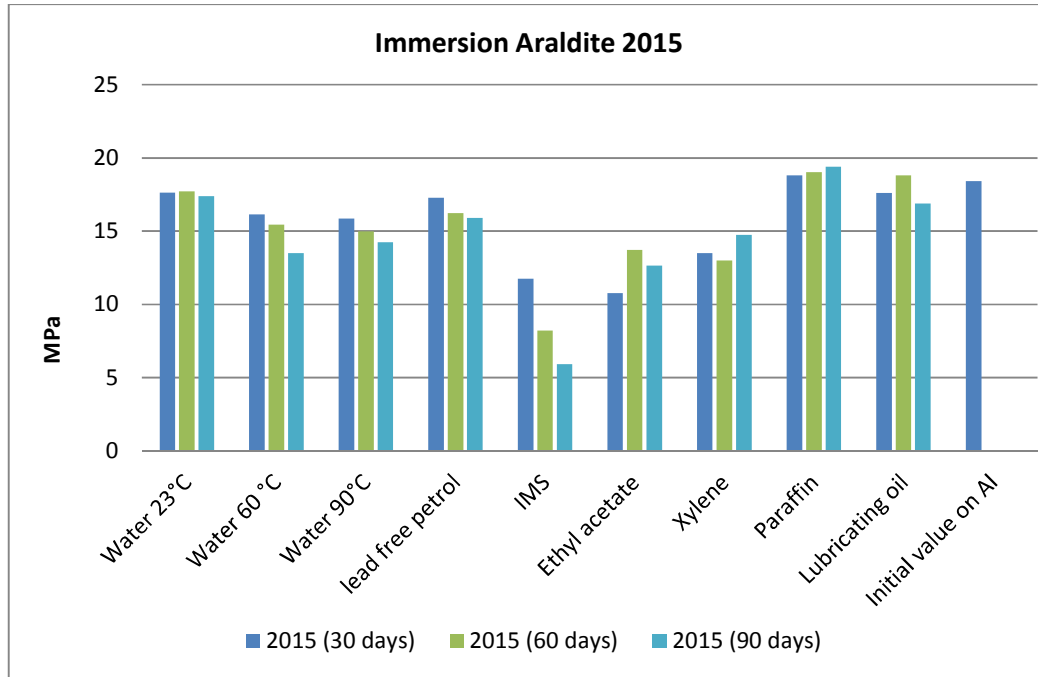
Glass transition temperature (DMA)

Cure 1 hour at 80°C

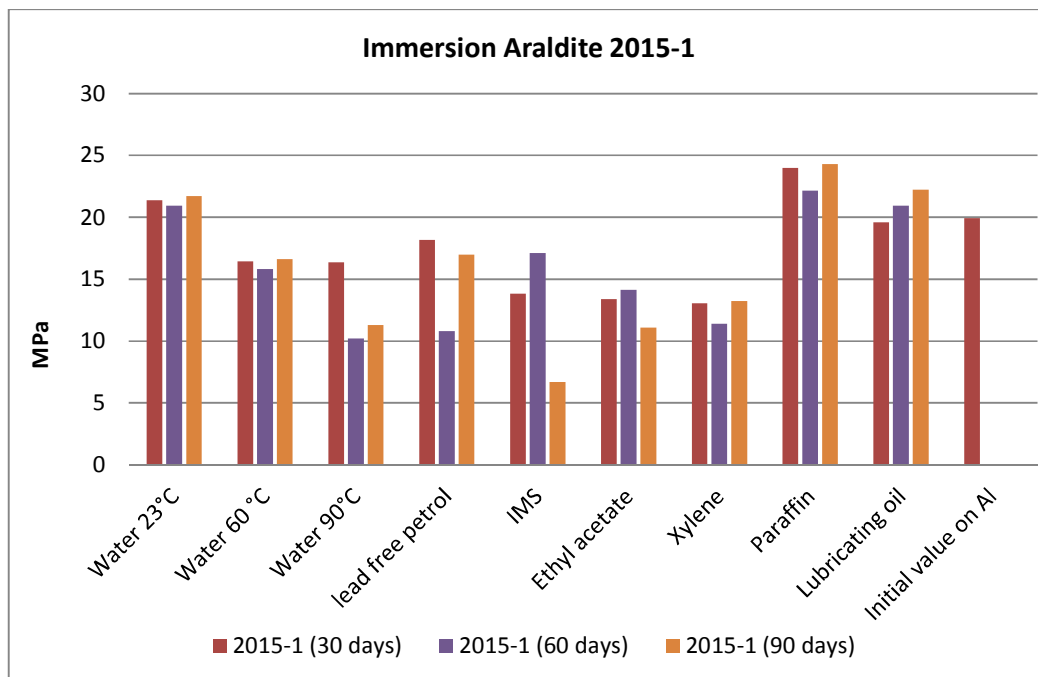
	Glass transition temperature by DMA (°C)
Araldite® 2015	78°C
Araldite® 2015-1	80°C

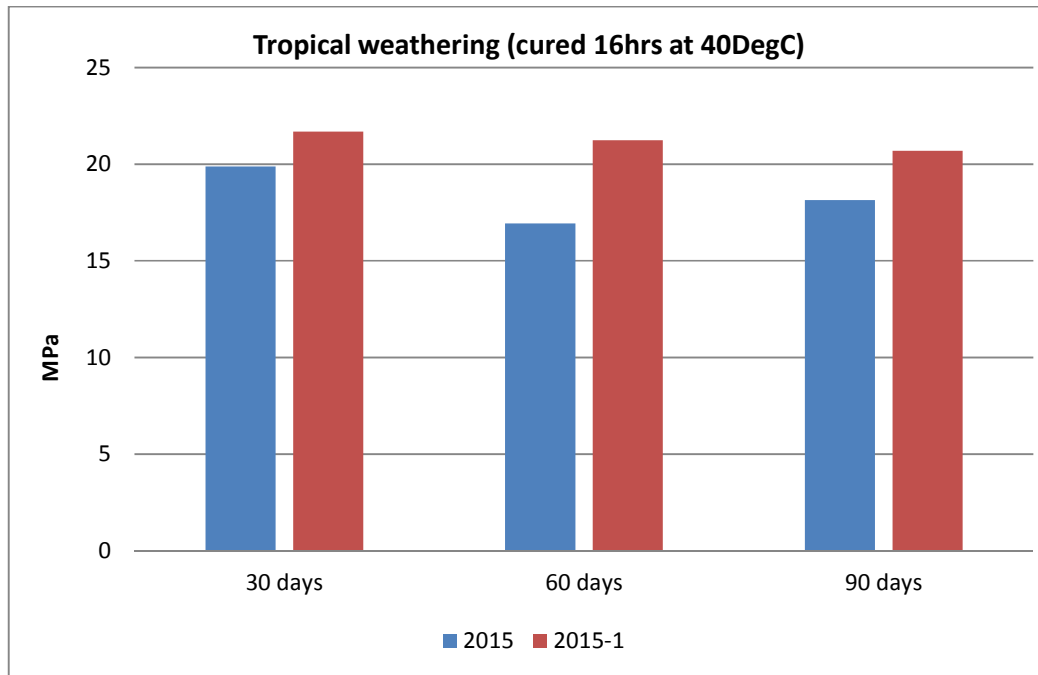
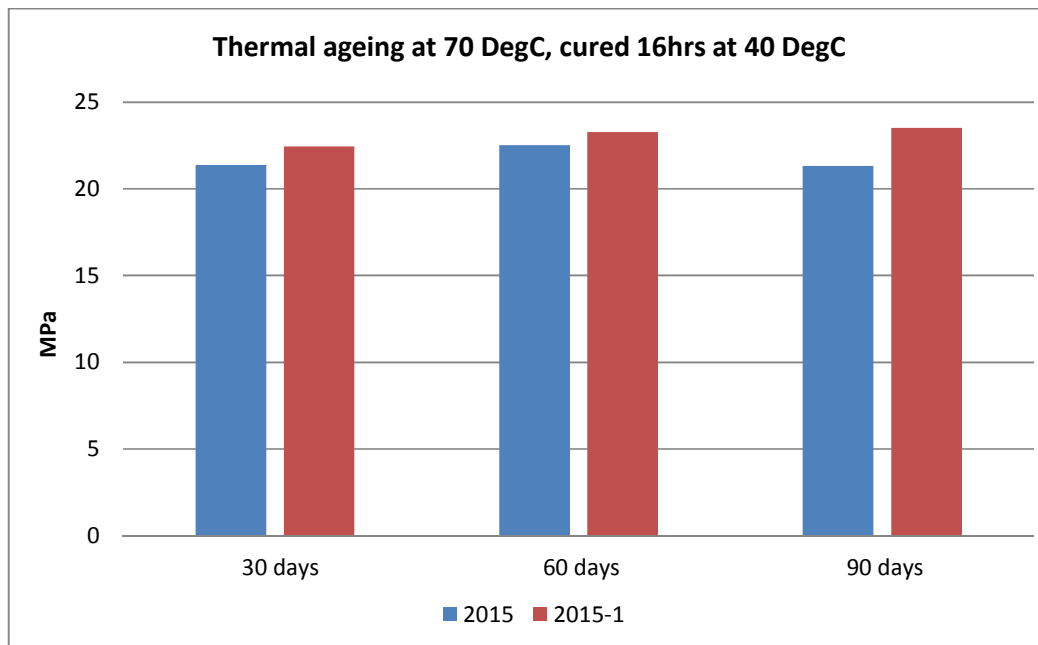
Chemical resistance : ageing tests - immersion in different media

Araldite® 2015
Cure 16 hours at 40 °C



Araldite® 2015-1
Cure 16 hours at 40 °C



Climatic testing : tropical weathering (40 °C/92% humidity)**Thermal resistance : heat ageing at 70 °C**

CONCLUSION & RECOMMENDATIONS

We can conclude that Araldite® 2015-1 is directly equivalent to Araldite® 2015, in terms of performance and mechanical properties. However we recommend to our customers to check that the product is suitable for their specific application.



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