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Adhesive Technical Support Europe

Comparison of Araldite[®] 2014-1
(Araldite[®] AW 139-1 / Hardener HW 5323)
&
Araldite[®] 2014-2
(Araldite[®] AW 139-1 / Hardener HW 5323-1)

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® 2014-2, which is equivalent in performance to the Araldite® 2014-1.

The following side by side report was issued to compare directly performances of the standard Araldite® 2014-1 with the new system Araldite® 2014-2. Processing parameters like density, mix ratios in weight & volume are the same with exception of slightly reduced reactivity.

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 condition was 16h at 40 °C.

Functional properties

	Araldite® 2014-1	Araldite® 2014-2
Aspect	Grey paste	Grey paste
Viscosity	Thixotropic	Thixotropic
Mix Ratio	100:50 weight 100:50 volume	100:50 weight 100:50 volume

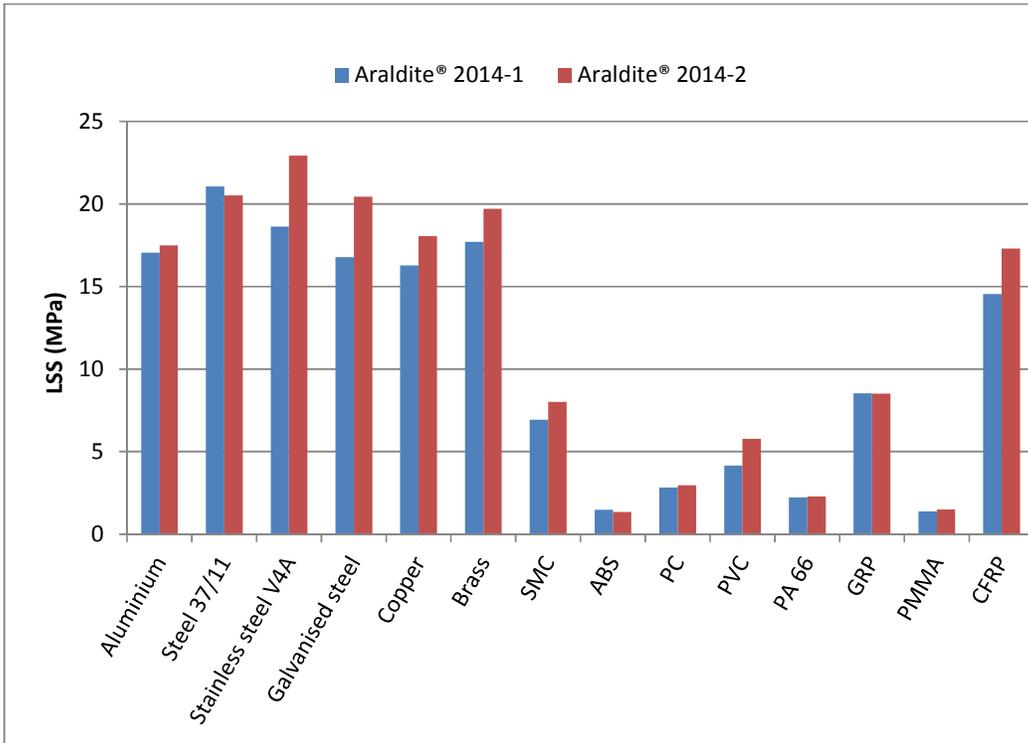
Reactivity

	Araldite® 2014-1	Araldite® 2014-2
Pot life	75 min.	110 min.

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

Time to reach Lap Shear Strength	Araldite® 2014-1	Araldite® 2014-2
1 MPa @ 15°C	8 hours	10 hours
10 MPa @ 15°C	14 hours	15 hours
1 MPa @ 23°C	4 hours	5 hours
10 MPa @ 23°C	7 hours	8 hours
1 MPa @ 40°C	70 min.	90 min.
10 MPa @ 40°C	100 min.	120 min.

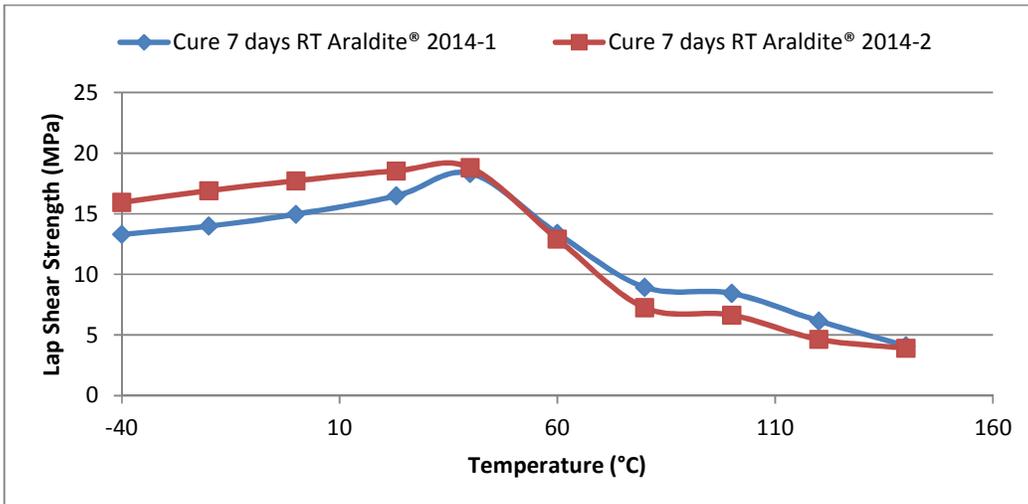
Lap Shear Strength (LSS) on different substrates (ISO 4587) at RT



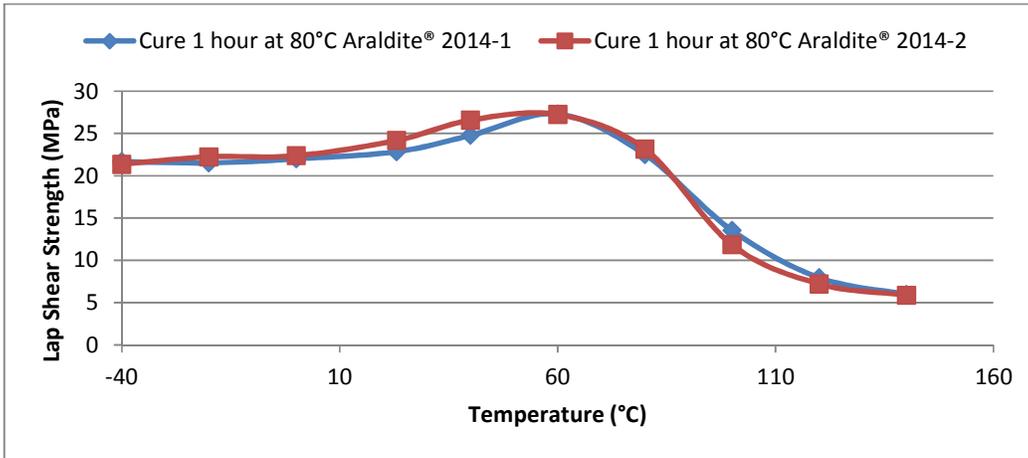
*Metal substrates : sandblasted & degreased with acetone
Plastic substrates : abraded & degreased with isopropanol*

Lap Shear Strength vs temperature (ISO 4587)

Cure 7 days at RT



Cure 1 hour at 80°C

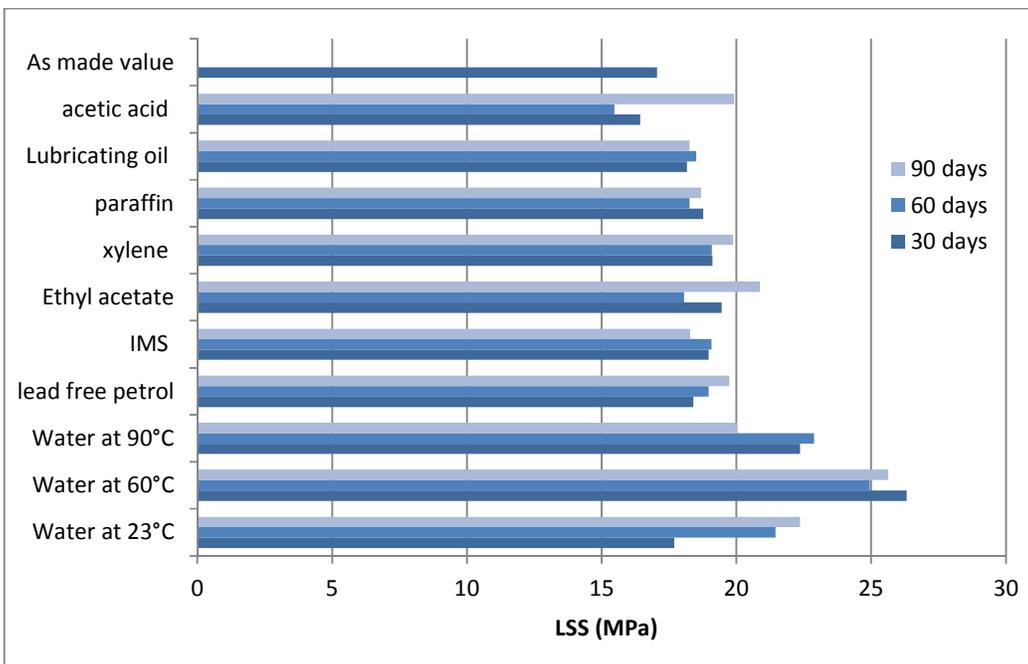


Tg measurement (24h at RT + 1h at 80°C curing)

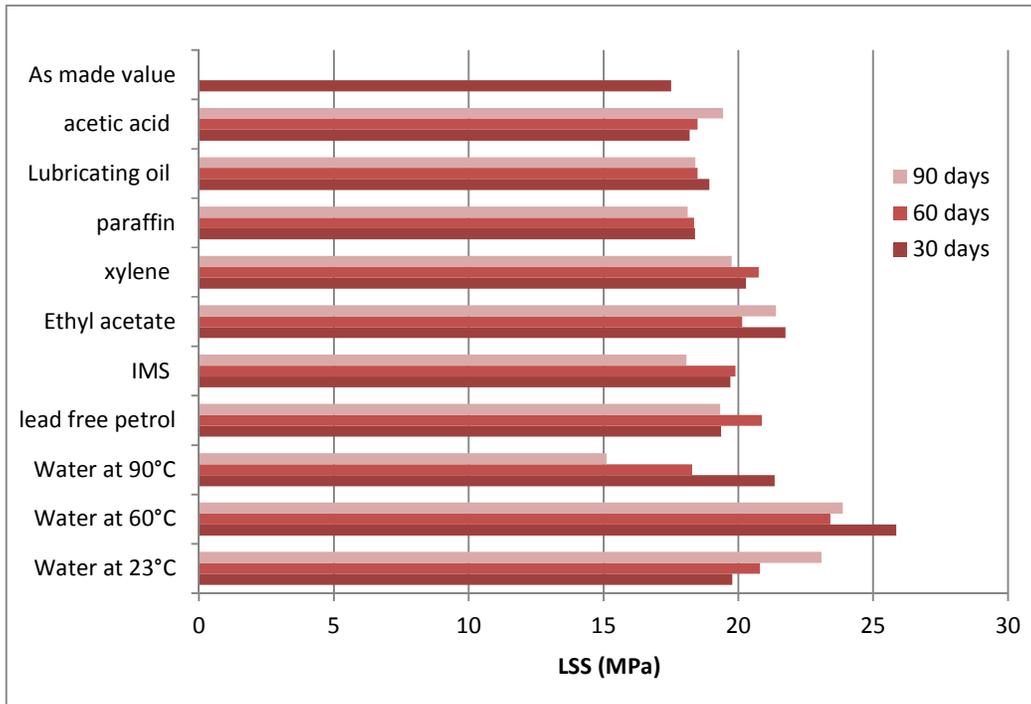
	Araldite® 2014-1	Araldite® 2014-2
DSC (midpoint)	86°C	86°C

Chemical resistance : ageing tests - immersion in different media

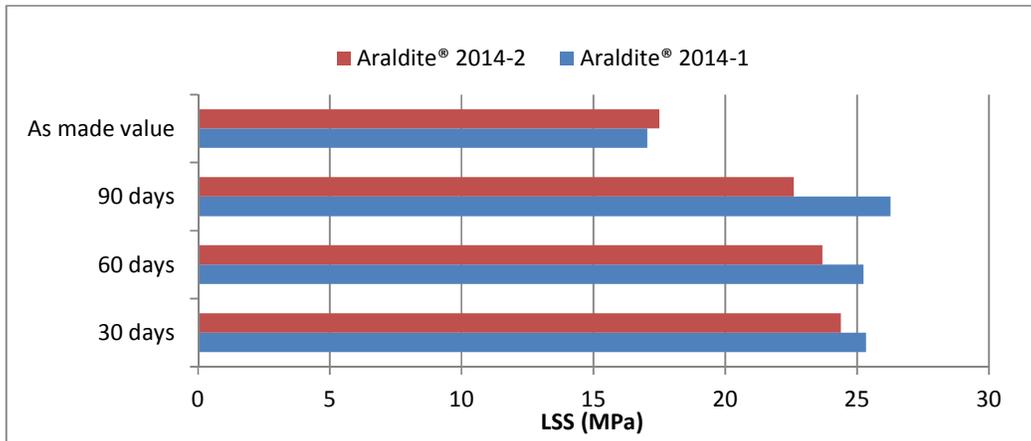
Araldite® 2014-1



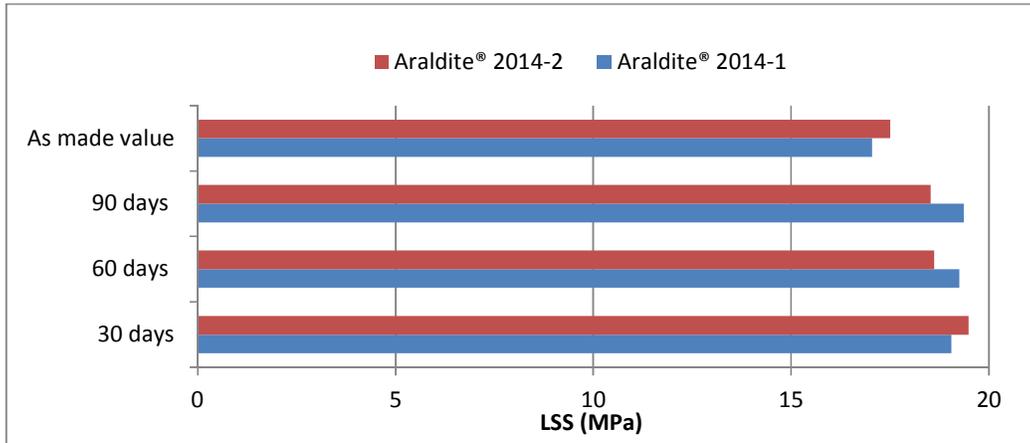
Araldite® 2014-2



Climatic testing : tropical weathering (40 °C/100% humidity)



Thermal resistance : heat ageing at 70°C



Tensile properties (ISO 527)

	Tensile modulus (MPa)	Tensile strength (MPa)	Elongation at break (%)
Araldite® 2014-1	3500	28	0.8
Araldite® 2014-2	3100	30	1

Flexural properties (ISO 178)

	Flexural modulus (MPa)	Flexural strength (MPa)
Araldite® 2014-1	3800	57
Araldite® 2014-2	3500	59

CONCLUSION & RECOMMENDATIONS

We can conclude that Araldite® 2014-2 is directly equivalent to Araldite® 2014-1, 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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