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HUNTSMAN ADVANCED MATERIALS

Adhesive Technical Support Europe

Comparison of ARALDITE® 2015-1 (ARALDITE® AV 5308 / Hardener HV 5309-2) & ARALDITE® 2015-2 (ARALDITE® AV 5308-1/ Hardener HV 5309-2)

NEW PRODUCT DEVELOPMENT REPORT

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INTRODUCTION

ARALDITE® 2015-2 is a new adhesive which has been developed to replace ARALDITE® 2015-1. This is due to a change in hazard classification of a raw material used in the resin component (ARALDITE® AV 5308). The composition, characteristics and properties of the ARALDITE® 2015-2 remain similar to the existing ARALDITE® 2015-1 product.

The ARALDITE® 2015-2 comprises a new resin component (ARALDITE® AV 5308-1) together with the existing hardener component (Hardener HV 5309-2).

The following comparative report shows data obtained from laboratory testing of the new ARALDITE® 2015-2 against the existing ARALDITE® 2015-1 system.

TEST RESULTS

Unless otherwise stated, the figures given below were determined by testing standard specimens made by lap-jointing 100 x 25 x 1.6 mm strips of sandblasted aluminium alloy. The bond area was 12.5 x 25 mm, with bonded specimens cured under light clamping pressure. Lap shear testing was carried out at 23°C at 10mm/min unless otherwise stated.

Liquid properties

	ARALDITE® 2015-1 (ARALDITE® AV 5308/ Hardener HV 5309-2)	ARALDITE® 2015-2 (ARALDITE® AV 5308-1/ Hardener HV 5309-2)
Mix Ratio (resin : hardener)	100:100 by weight 100:100 by volume	100:100 by weight 100:100 by volume
Appearance (mix)	Beige paste	Beige paste
Viscosity (mix)	Thixotropic	Thixotropic
Working time (10g) 23°C	25-30 minutes	30-35 minutes

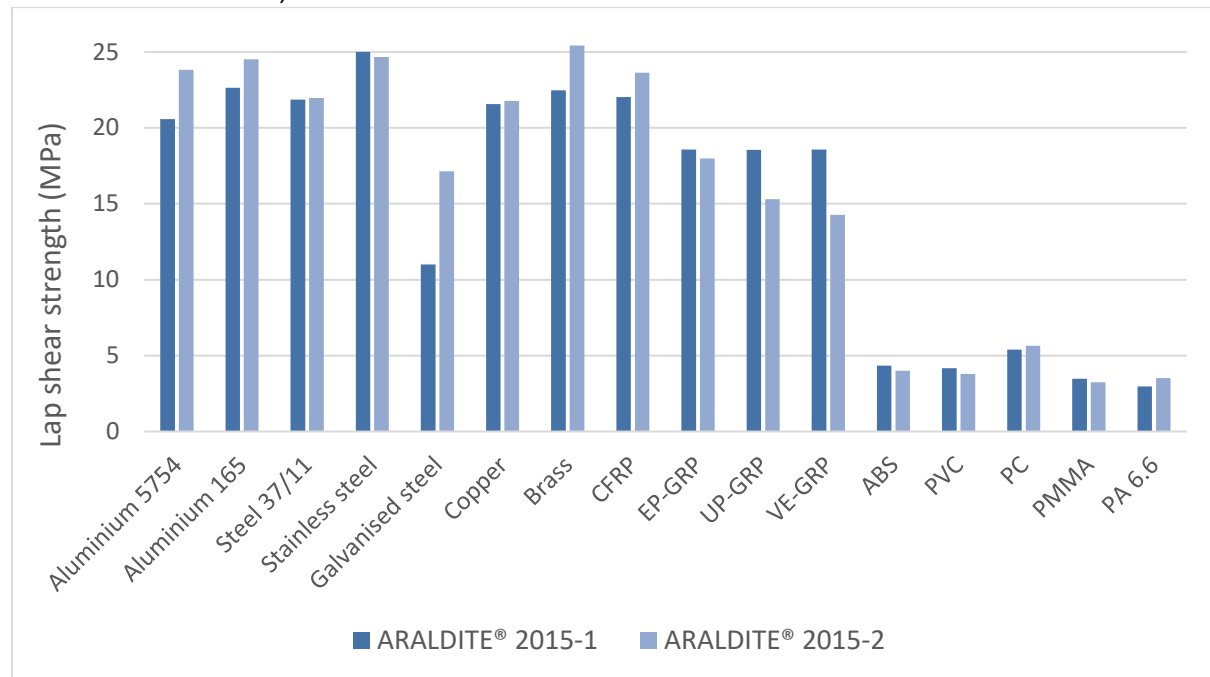
Handling/working strength

Time to reach handling strength (1 MPa) and working strength (10 MPa) on bonded specimens cured at different temperatures.

Cure temperature	Time to reach lap shear strength	ARALDITE® 2015-1	ARALDITE® 2015-2
Curing at 15°C	Time to 1 MPa	6 hours	6 hours
	Time to 10 MPa	15 hours	12 hours
Curing at 23°C	Time to 1 MPa	4 hours	4 hours
	Time to 10 MPa	8 hours	7 hours
Curing at 40°C	Time to 1 MPa	60 min.	65 min.
	Time to 10 MPa	180 min.	120 min.

Lap shear strength (LSS) on different materials (ISO 4587)

Cure: 16 hours at 40°C, tested at 23°C

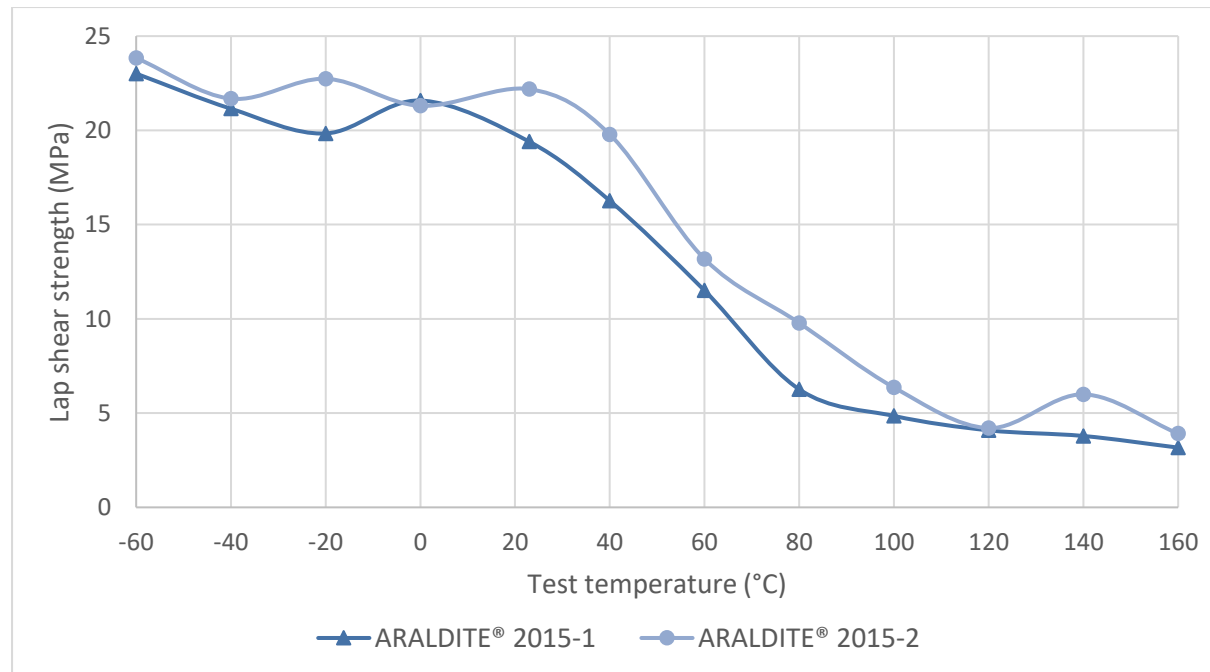


Metal substrates: sandblasted & degreased with acetone

Plastic substrates: abraded & degreased with isopropanol

Lap shear strength versus temperature (ISO 4587)

Cure 16 hours at 40°C



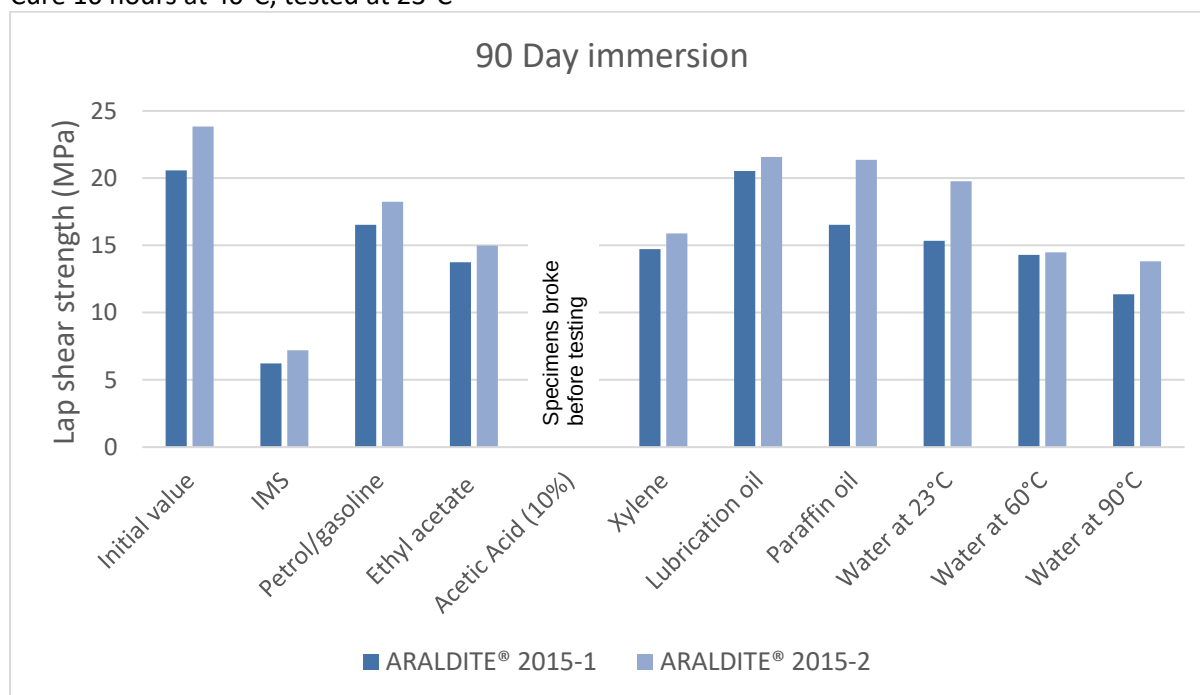
DMA measurement (ISO 6721)

Cure 16 hours at 40°C

	ARALDITE® 2015-1	ARALDITE® 2015-2
Tg (Tanδ)	78°C	75°C
Shear modulus (23°C)	848	861

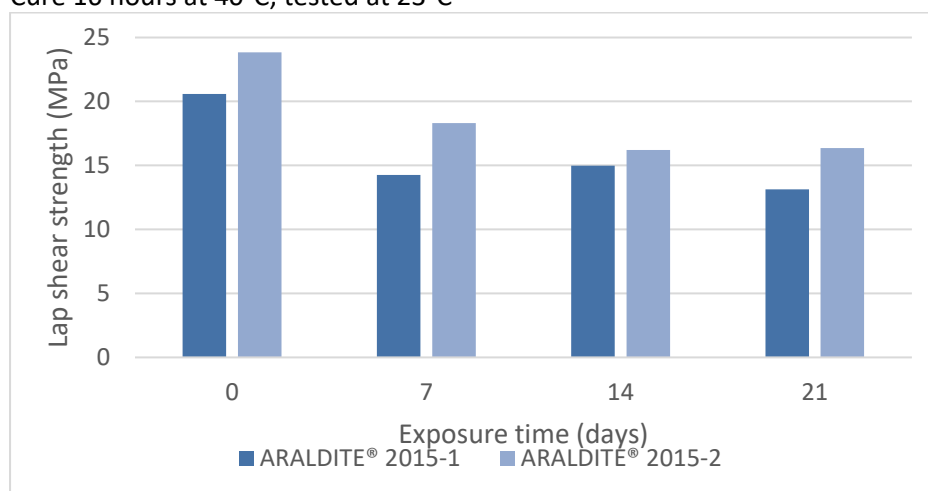
Chemical aging - immersion in different media

Cure 16 hours at 40°C, tested at 23°C



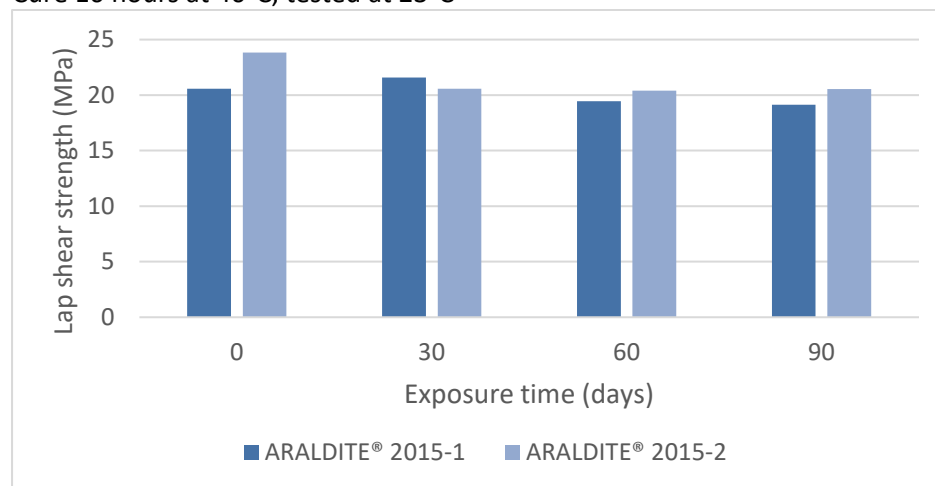
Cataplasma aging (ISO 9142 E2)

Cure 16 hours at 40°C, tested at 23°C



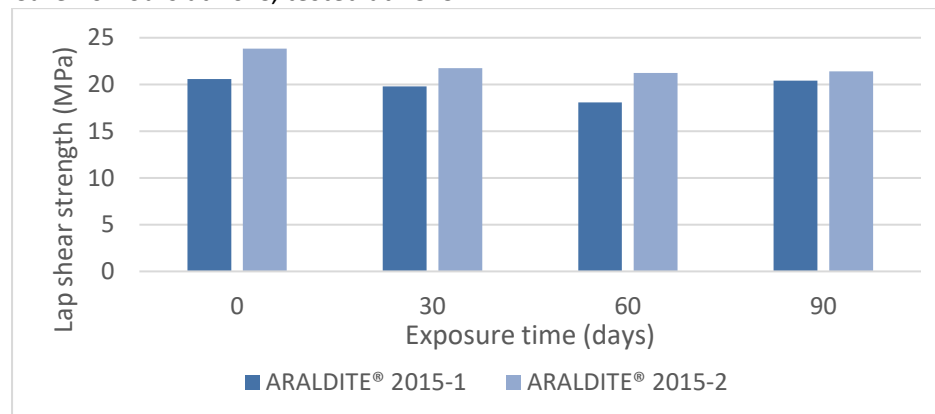
Heat aging at 70°C

Cure 16 hours at 40°C, tested at 23°C



Tropical weathering (40°C / 92% relative humidity)

Cure 16 hours at 40°C, tested at 23°C



Tensile properties (ISO 527)

Cure 16 hours at 40°C, tested at 23°C

	Tensile modulus (MPa)	Tensile strength (MPa)	Elongation at break (%)
ARALDITE® 2015-1	1438	27.1	11.6
ARALDITE® 2015-2	1720	29.3	8.5

CONCLUSION

Testing indicates that the ARALDITE® 2015-2 offers similar handling and properties to the ARALDITE® 2015-1. For many applications, it may be possible to replace the ARALDITE® 2015-1 with ARALDITE® 2015-2 without a change of process conditions or part design. However, it is always recommended to check the suitability of the product for the intended application.

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