

# Ail Arian Ltd

www.ailarian.co.uk

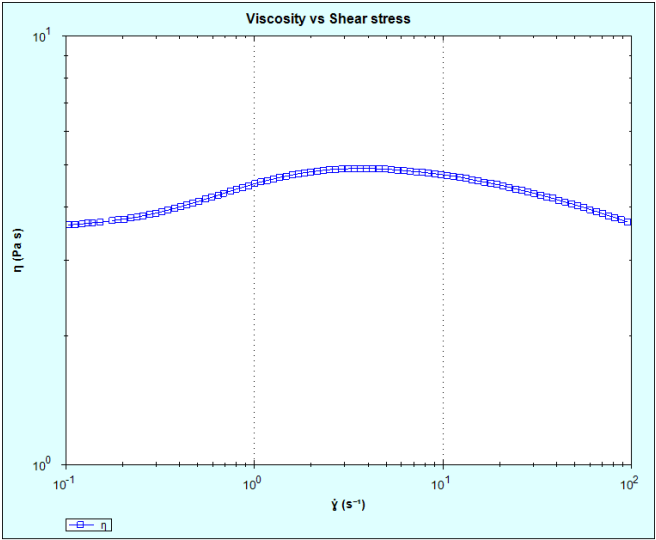
Bay Technology Centre, Port Talbot, SA12 7AX, UK



# AilArian

## Ink Technical Data Sheet

### Summary

<b>Ink Reference</b>	AgFe/CA2
<b>Description</b>	Solvent based recyclable silver conductive ink for screen printed electronics
<b>Features</b>	Only truly circular high conductivity ink Patented recyclable silver system with unique recycling stream Biodegradable polymer system Non-toxic and non-flammable solvent
<b>Viscosity at 100s<sup>-1</sup></b>	3.8 Pa.s
<b>Shear Viscosity Profile</b>	 <p>The graph, titled 'Viscosity vs Shear stress', is a log-log plot. The y-axis represents viscosity <math>\eta</math> (Pa s) ranging from <math>10^0</math> to <math>10^1</math>. The x-axis represents shear rate <math>\dot{\gamma}</math> (s<sup>-1</sup>) ranging from <math>10^{-1}</math> to <math>10^2</math>. The data points, shown as blue squares, form a curve that starts at approximately 3.8 Pa.s at <math>10^{-1}</math> s<sup>-1</sup>, rises to a peak of about 5.5 Pa.s at <math>10^0</math> s<sup>-1</sup>, and then gradually decreases back towards 3.8 Pa.s at <math>10^2</math> s<sup>-1</sup>.</p>
<b>Phase Angle</b>	88°
<b>Processes</b>	Screen printing, stencil printing, coating
<b>Storage</b>	Store in a cool, dry location away from direct sunlight in the original container with lid on.



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Shelf life	TBC
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## Screen Printing

<b>Substrates</b>	
Fibre/paper/card	Adhesion checked by tape test
Plastic	Adhesion checked by tape test
Other	
<b>Print settings*</b>	
Mesh size	54/70 polyester 45° 13um emulsion
Speed	TBC
Pressure	TBC
Snap-off	4mm
<b>Drying</b>	
Method	Air convection
Temperature	120°C
Time	3 mins
Sintering	Not required
<b>Cleaning</b>	Acetone or similar solvent
<b>Thinner</b> (if required)	Dibasic Ester or Acetone
<b>Usage Notes</b>	
The ink will need to be mixed well for 5 mins before use as settling will occur. Ensure that all sedimented material is fully mixed in before printing to maintain conductivity. The ink has been formulated to be a suitable viscosity for screen printing; however, this can be reduced by the addition of a thinner if require.	

\* These are a guide only based on lab testing using an ATMA AT-45PA semiautomatic printer



## Expected Print Properties

<b>Physical</b>	
Flexibility	TBC
Single layer print thickness	50um
Roughness	TBC
Hardness	TBC
Thinnest feature	200um
<b>Electrical</b>	
Resistivity	1.08 $\mu\Omega\text{m}$
Sheet Resistance	300 m $\Omega$ /sq/mil
Conductivity	921 kS/m



## Sustainability

<b>Sustainability</b>	<p>This ink has been designed for recycling using our patent process that allows the separation of the silver material without the destruction of the substrate or electrical components.</p> <p>This ink uses non-toxic and non-flammable solvents along with biodegradable polymers to further reduce environmental impact.</p>
<b>Embedded Carbon Estimate**</b>	14 kg/kg CO <sub>2</sub>
<b>Disposal</b>	<p>Separate cleaning cloth/rags, unused prints, and left over ink can be recycled through our process.</p> <p>Collection can be arranged for recycling and recovery of the silver conductive material in an environmentally friendly way for reuse</p> <p>A % of the value of the recovered material will be returned – value TBC</p>

\*\*Estimated embedded carbon is based on a combination of estimates for the mining processes associated with the metal components. These contribute the largest percentage. A more accurate number will be created once we have more information from our suppliers.