

Genable® 1000 Series

 MARINE

 PROTECTIVE

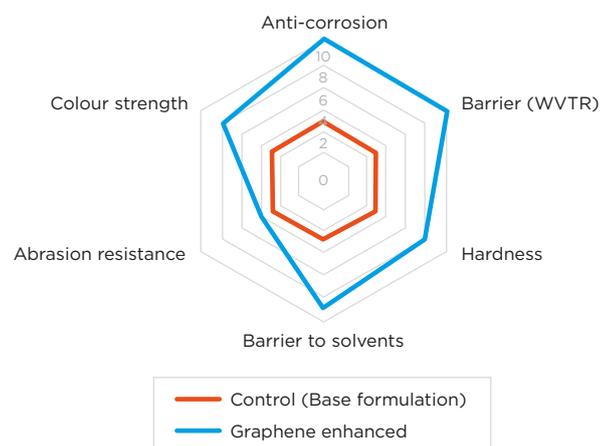
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 AUTOMOTIVE

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Outstanding barrier properties that significantly enhance the performance of existing anti-corrosion additives and coating systems

- very low addition levels
- C1 to CX corrosion environment application
- provides cost savings in coat life, film thickness and system build optimisation
- formulation-ready stable dispersions



Genable® 1000 dispersions are designed to be delivered easily into existing manufacturing processes, enabling industry formulators to access, consistently, the exciting performance attributes of AGM's A-GNP graphene nanoplatelets.

Available from stock, Genable® 1000 series dispersions are supplied in epoxy resins, a range of industry standard carrier solvents (butyl acetate, xylene, MEK, ethyl acetate), as well as water.

Genable® 1000 series dispersions are also supported by application guidelines, extended performance datasets and considerable formulation know-how within AGM's Technical Group.

Standard Genable® 1000 series dispersions

Genable® 1000 series dispersions have been prepared to a set viscosity and particle size via a controlled manufacturing process.

CARRIER MEDIUM	% WT/WT A-GNP10	STANDARD DISPERSIONS	% WT/WT A-GNP35	STANDARD DISPERSIONS
Epoxy EEW (190 g/eq.)	10	Genable®1000	1	Genable®1200
Epoxy EEW (190 g/eq.)	10	Genable®1001	1	Genable®1201
Butyl Acetate	10	Genable®1030	0.5	Genable®1230
Xylene	10	Genable®1031	0.5	Genable®1231
MEK	10	Genable®1032	0.5	Genable®1232
Ethyl Acetate	10	Genable®1033	0.5	Genable®1233
Water	10	Genable®1050	0.5	Genable®1250

- Typical addition levels of 5-10% depending on application
- Typical storage life 3-6 months at ambient temperature
- Set of Technical Application Notes to support formulators

Customised dispersions

Our customised dispersions are developed to meet customer-specific processing, performance and application needs. Example systems include:

- Epoxy
- Saturated Polyester
- Polyester Polyol
- Acrylic Polyol
- Alkyd (Short, Medium, Long Oil)
- Acrylic
- Alkyd Acrylic
- Alkyd emulsion
- Ethyl Silicate

FOR MORE INFORMATION

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EXAMPLE

Outstanding Genable® 1000 performance with zinc phosphate in a C3 industrial epoxy primer system

Recent testing delivered in excess of a 3 times extension to coating lifetime, based on the addition of Genable® 1000 to a primer formulation that was typical of a standard industrial C3 zinc phosphate based epoxy primer system. Corrosion testing was performed under cyclic salt spray (ASTM G-85-94 Prohesion).



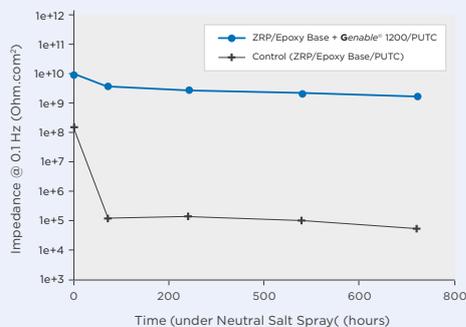
Substrate: SA 2.5 Sandblasted Steel
 Coat thickness: 60 microns
 Mechanical: No adverse performance and good adhesion to substrate and PU top coat

EXAMPLE

Potential for Genable® 1200 application into C4 (high level) tie-coats

A prototype Genable® 1200 enhanced tie-coat developed by AGM (available to customers) and deployed into a typical three coat system, with zinc rich primers and PU topcoats, has demonstrated exceptional anti-corrosion performance under impedance and neutral salt spray testing at C4 high level. Full coating life trials are anticipated to exhibit significant extension to coating system performance and time to corrosion onset

Coatings with a graphene enhanced tie-coat also showed significant reduction in water uptake against a zinc rich primer (ZRP)/epoxy base tie-coat*/PU topcoat (PUTC) control. (*An industry typical tie coat without the addition of graphene)



Impedance values indicating higher corrosion protection for the test piece containing Genable® dispersion.

EXAMPLE

James Briggs Ltd, graphene enhanced anti-corrosion automotive paint primer

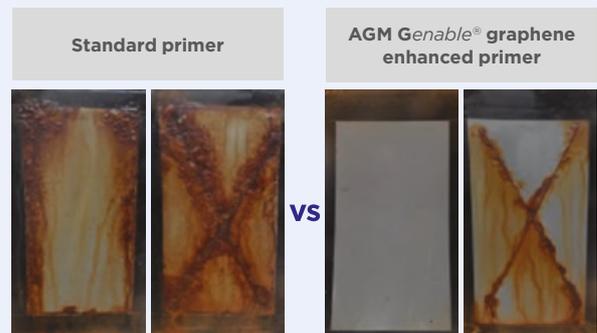
James Briggs Ltd (Oldham, UK) are bringing to market a new range of aerosol graphene anti-corrosion paint primers, under their Hycote primer banner.



Within a joint development programme the technical teams of JBL and AGM worked to optimise the impact that Genable 1000 series dispersions can have in delaying the onset of corrosion within certain coatings.

The results are best explained by Jim Miller, JBL's Commercial Director who noted,

“The two year development collaboration between JBL and AGM has resulted in our first products coming to fruition. The programme has encompassed both processing and formulation optimisation studies and ultimately demonstrated that AGM’s graphene, applied using Genable® dispersion technology, can deliver a significant extension to coating life against environmental corrosion effects while remaining cost viable to JBL.



EXAMPLE

Development with HMG Paints moving to commercialisation and “real world” success with Brit Tipp trucks

AGM continue to work with HMG Paints (Manchester, UK) in the development and commercialisation of graphene containing anti-corrosion coatings. Initial formulation development focused on representative laboratory testing and then, working exclusively with an innovative commercial vehicle company, Brit Tipp (Warrington, UK) this extended to field testing through a number of commercial tipper-truck contracts.

HMG and AGM have continued to expand their understanding of how to further optimise graphene performance and their combined focus is now on bringing a new product to the broader market within 2019.



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