Technical Information

TI/ES 1462 e
April 2001 (DFC)

Lugalvan® DC

Ingredient of transparent protective coatings for use in the electroplating industry

BASF

Chemical nature

Aqueous emulsion of an ethylene copolymer

Properties

Physical form	Aqueous, opalescent emulsion
Concentration (ISO 3251, 2 h at 120 °C)	20 – 22 %
Viscosity (ISO 2431, 4 mm cup, 23 °C)	25 – 170 s
Density (DIN 51757, Part 1, 23 °C, ASTM D 1298)	0.98 – 1.00 g/cm^3
pH (ISO 976)	8.5 – 9.5

The above information is correct at the time of going to press. It does not necessarily form part of the product specification.

A detailed product specification is available from your local BASF representative.

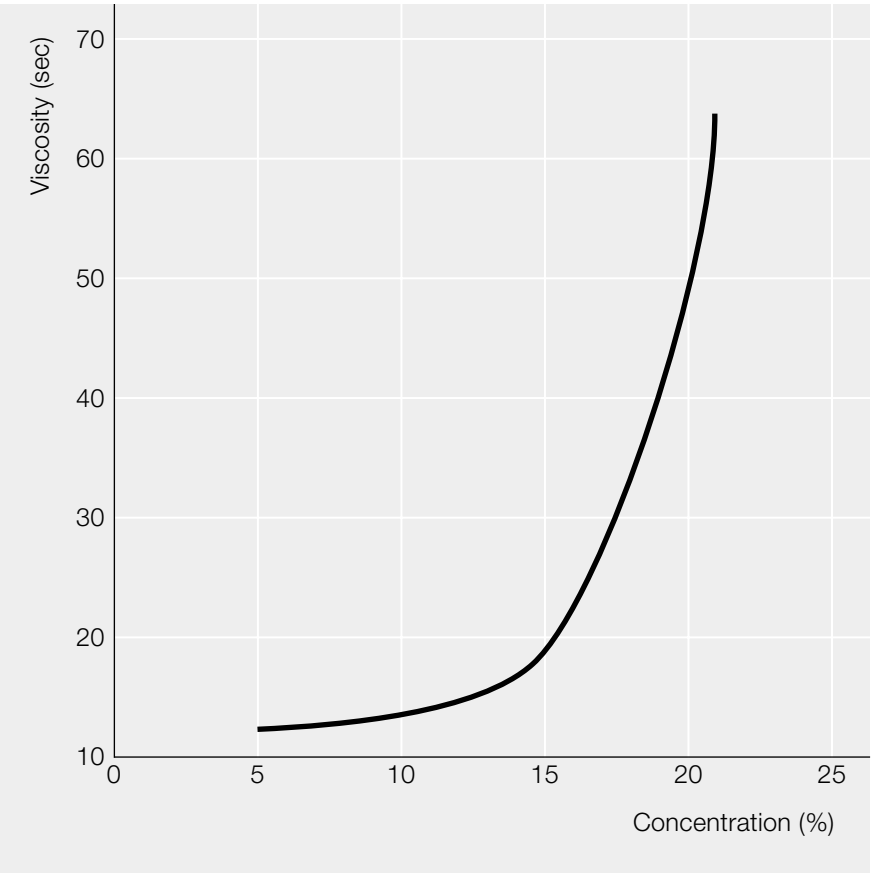
Storage

The freeze-thaw stability of Lugalvan DC is very good. Its viscosity can undergo a slight, gradual increase during storage. We would recommend filtering it if it has been stored for a long time or if a crust has formed. Lugalvan DC has a shelf life of one year, provided it is stored properly.

Applications

Lugalvan DC is applied to metal surfaces to improve their resistance to corrosion and their aesthetic appearance. It forms films which adhere well to metal. It is especially effective on chromated, zinc-plated parts. It also reduces the tendency of chromium(VI) ions to be leached out. It can be used to prevent nickel and other metals from tarnishing, and it can be applied as a decorative coating to non-ferrous metals.

Lugalvan DC does not contain an emulsifier. It is miscible with water in all proportions, provided the pH does not fall below 8.5. Experience has shown that it can be advisable to add ammonia or amines such as dimethylethanolamine to maintain the pH at around 9 in order to prevent precipitation.



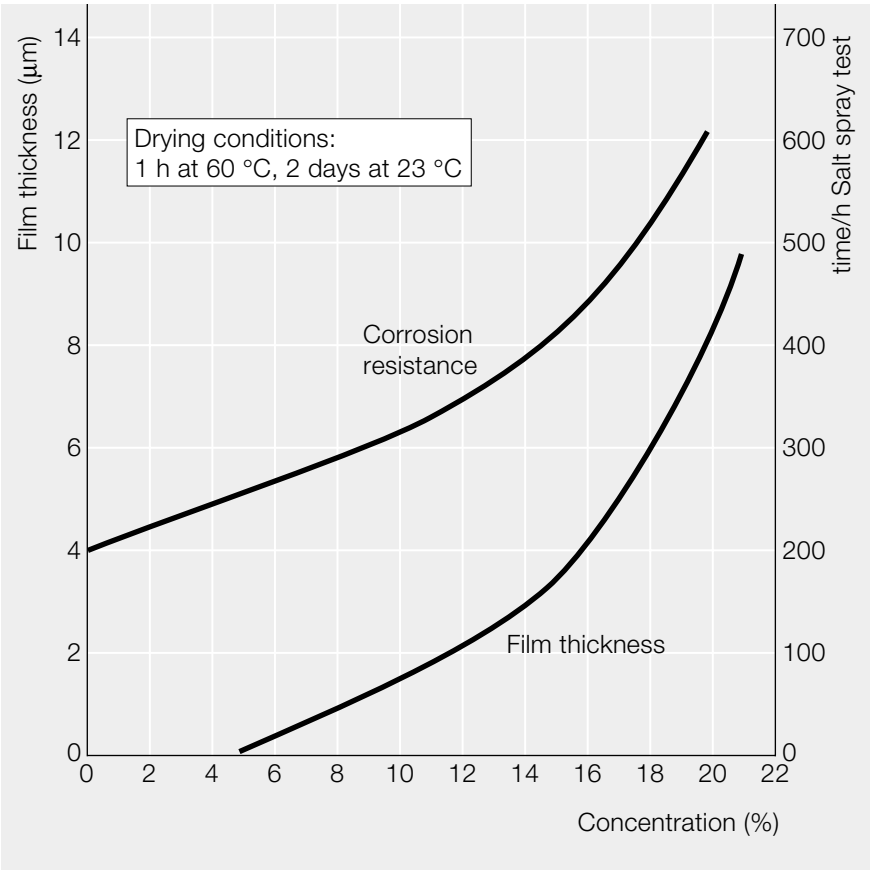
Viscosity according to ISO 2431, 4 mm cup, 23 °C

Lugalvan DC can be applied by dipping, spinning or spraying. The thickness of the film can be controlled by adjusting the viscosity of the emulsion. The viscosity of the coating bath depends to a large extent on its solids content, but the pH also plays an important part. Lugalvan DC tends to become less viscous at pH values above 9.5.

Normally, coatings with a solids content of 5 % will form a film approximately 1 µm thick. Thicker films can be obtained by increasing the solids content, or multiple coats can be applied. The latter is the best method from the point of view of ensuring that pigmented coatings are applied homogeneously.

It can be advisable to dry coatings at elevated temperatures, depending on the thickness of the film. Coatings can be removed from coating equipment, etc., with an alkaline stripper if they have not been cured. The stripping process takes much longer if the coating has been cured.

Films formed from Lugalvan DC have a tensile strength of ca. 15 N/cm^2 and an elongation at break as high as up to 400 %.



Chromated, zinc-plated steel is much more resistant to corrosion if it is coated with Lugalvan DC. Double the time was required for white corrosion to be observed on the coated metal compared to the uncoated metal in the DIN 50021 SS salt spray test on typical acid-zinc plated and yellow chromated steel parts dipped in a 5 % emulsion of Lugalvan DC, which were dried for 30 min at 60 °C and left to cure for one week. The corrosion resistance can be increased by prolonging the curing time. The corrosion resistance and heat resistance of coatings can be improved even further by adding silicates.

We would recommend adding a small amount of benzotriazole when Lugalvan DC is applied to copper or copper alloys.

Alkaline stripper (Outline formulation)

30 g	Sodium hydroxide (solid)
40 g	Sodium gluconate
10 g	Lutensol® TO 15
30 g	Lutensol GD 70
890 g	Water

Safety

We know of no ill effects that could have resulted from using Lugalvan DC for the purpose for which it is intended and from processing it in accordance with current practice.

According to our information and experience, Lugalvan DC does not exert any harmful effects on health, provided that it is used properly, due attention is given to the precautions necessary for handling chemicals, and the information and advice given in our Safety Data Sheet are observed.

Handling

Lugalvan DC should be prevented from coming into contact with the eyes and skin. Safety glasses should be worn when handling this product in its undiluted form.

Further information is given in our Safety Data Sheet.

Disposal

Lugalvan DC can be cleaned from coating equipment with aqueous, alkaline cleaners after it has dried.

The polymer can be removed from waste water by adjusting its pH so that it is slightly acid. The precipitate can then be filtered out.

Note

The information submitted in this publication is based on our current knowledge and experience. In view of the many factors that may affect processing and application, these data do not relieve processors of the responsibility of carrying out their own tests and experiments; neither do they imply any legally binding assurance of certain properties or of suitability for a specific purpose. It is the responsibility of those to whom we supply our products to ensure that any proprietary rights and existing laws and legislation are observed.

BASF Aktiengesellschaft
Marketing Spezialchemikalien I
67056 Ludwigshafen, Germany

BASF

Printed in Germany