

Two questions, two answers:

1 What technical trends do you see in the DTM coatings market in the next five years?

2 In your opinion, what are the key challenges to formulate a modern DTM coating?

1 We see several trends in DTM coatings related to sustainability and the environment, including the focus on reducing VOC emissions. New technologies such as water-borne, solvent-free and high solids epoxies are replacing standard solvent-borne coating options. In the next five years, we expect a very significant increase in water-borne DTM binders based on two-component epoxies. In Europe, these systems are already the reference in applications such as transportation (e.g. railway) and OEM automotive parts and accessories. In 2017, very large markets, e.g. container coatings in China, will adopt and convert to water-borne, and this trend is expected to extend to transportation and protective coatings in that region no later than 2018. In other applications, e.g. marine coatings, high solids solvent-borne systems, as well as, water-borne to a lesser extent, will replace solvent-borne coatings.

To summarise, we expect lower VOC options, especially water-based epoxy systems, to grow very significantly in the coming years in DTM applications. In addition to solvent-related concerns, local legislation, labeling, safety, and sustainability will drive the new technical developments in the coming years. Addressing environmental concerns must be accomplished at equal or improved performance levels. DTM coatings should dry faster, protect the substrates longer, adhere to various metal and non-metal substrates, provide improved chemical protection and resistance to higher temperatures, etc. The main role of DTM coatings is corrosion protection, but there are many performance and application requirements and they can vary significantly depending on the end use. Of course, new requirements will also arise for DTM coatings over this five year time period. Last but not least, overall cost should be comparable to current coatings, even if some increases can be compensated for by other

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Source: ake1150 - Fotolia

advantages. This is not only about raw material cost, because there are many ways to improve the economics of coatings: longer service life, faster application and drying, longer pot life and reduced waste, less insurance and taxes, etc. Cost by itself does not sound technical, but the solutions are technical: raw material design, but also process and formulation developments.

2 The main challenge is complexity: formulating DTM compliant coatings with low to very low VOCs, while retaining high performances at an acceptable cost is a complicated task. It requires significant design and application work. Collaboration between formulators and raw material suppliers is increasingly needed to reach challenging targets with the new binder systems.

Some additional challenges are related to robustness and application conditions. Solvent-borne DTM technologies are intrinsically more forgiving than other coatings: they more easily tolerate poorly cleaned metal substrate; they can be applied at freezing temperatures or can cure in a highly humid environment, and in some cases, even underwater. Water-borne coatings, as an example, often require the applicators to learn how to use them properly: thixotropic behaviour, different cleaning and handling, storage conditions. Developing robust formulations with lower VOC technologies, such as 2K water-borne epoxies, is very critical and probably requires the collaboration to be extended to equipment suppliers.



Source: alke1150 - Fotolia

1 For the industrial sector, DTM coatings are the paint system of the future. The market wants shorter application times, less material consumption and energy savings, all of which can be achieved with these modern coating systems.

This market is set to grow continuously over the next five years. All kinds of coatings will be affected. Conventional, high-solids, water-borne and solvent-free coatings will eventually be applied directly to the metal substrate. Of course, in the years ahead, materials with a low solvent content will have the edge because of requirements to permanently lower VOC content.

The requirements imposed on the systems are increasing, and so it won't just be coloured "primers" that will be accepted as DTM coatings. These systems, too, will offer a good appearance, lasting gloss and high UV stability. The goal is always to achieve high corrosion protection with thin layers. This will yield further additional savings with regard to the criteria mentioned above.

Existing DTM systems will be improved over the next five years and will become firmly established on the market.

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2 This question can be answered succinctly in one sentence: A single coating material must offer high adhesion of the primer, very good corrosion protection across several layers and an amazing appearance. To this end, it is essential to be highly specific when selecting the raw materials. Other issues such as environmental and health protection must be considered as well. Provision should also be made for some key aspects of coating systems for daily use, such as:

- > a low tendency to sag combined with a reasonable application viscosity
- > fast curing at high layer thicknesses

The less solvent used, the more difficult it will be to achieve the required properties. All in all, DTM coating systems offer significant advantages over multi-layer systems as described above, and so the range of applications will increase in many major industries.

Book tip

Anticorrosive Coatings

Fundamentals and
New Concepts

216 pages, Jörg Sander

www.european-coatings.com/Publications



Event Tip

European Coatings Show Conference 2017

3-4 April 2017, Nuremberg

www.european-coatings.com/Events

