

HSM applications for the paint industry

Special properties, reports and calculations

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In principle the requirements to a hazardous substance management system like HSM NAV by manufacturers of paints do not differ from those posed by other manufacturers of chemical products.

In many cases, their products are subjected to the legislation on hazardous substances and dangerous goods. Normally these products are mixtures, which have to be classified and labelled in accordance with chemicals- and transport legislation and be placed on the market accompanied with the required documents, i. e. Safety Data Sheets and various kinds of transport documents like ADR Transport document, delivery note, IMO Declaration, etc.

Even the standard tasks mentioned above are characterised by a high complexity in general, coming along with numerous national variations (which furthermore are subjected to permanent changes). This already shows that HSM NAV is a both powerful and flexible tool, predestined for tasks going far beyond hazardous substance management in the narrower sense.

Special requirements for paint manufacturers

There are paints for a variety of substrates and in many basic types, such as powder coatings, radiation curing, solvent- and water-based systems. Coatings are subject to numerous other legal provisions apart from on hazardous substances legislation depending on the application, when it comes for example to building coatings, coating of toys or daily use articles.

Moreover, customers often ask for specific certificates and declarations of conformity, which they in turn require for the obtaining of certain seals of approval, and that go beyond legal requirements. Such certificates do not only cope with product safety issues but may also include compliance with standards in terms of application technology and coating quality. They may also refer to voluntary standards ("eco seals") and recommendations of various institutions and associations.

Data structures

In HSM NAV the required data structures can be built and modified if necessary, without the need to alter the table structures existing in the database. Thus it is possible to create and modify new properties anytime and to arrange them in so-called views, i. e. specially configured input- and output structures (output structures = reports).

Special properties for the paint sector are e. g.

- Processing: application dosages, minimum film forming temperature, pot life etc.
- Coating properties: block resistance, gloss, etc.
- Contents:
 - Solids, pigments

- VOC as defined by different kind of regulations
- Elements (metals, heavy metals, halogens, etc.)
- Substance- and functional groups (residual monomers, plasticizers, OH groups, etc.)
- Shelf life information
- Releases: Toy standard EN 71-3, "CONEG", "Decopaint", etc.
- ID numbers: Colour Index, RAL colour, etc.

These and other pieces of information can be grouped for data input in views and chapters in accordance with the users' own requirements and can be configured for output on various reports like product informations (technical data sheets) or special declarations of conformity, certificates of analysis etc.

Evaluations and calculations

By means of the FCC (Flow Chart Calculator), a special Prosisoft module, any kind of evaluation and calculation, stored as configuration in rule tables, can be carried out without the necessity of programming on the level of NAV Code Units. Thus for this purpose data structures and program code of a NAV installation may remain unchanged.

FCC configurations ¹ can represent complicated classifications and calculations like e. g. the classification of mixtures according to GHS or the determination of the Danish MAL Code for paints and varnishes. Apart from that, a big number of evaluations and matchings with listings for all kinds of products can be defined, e. g. in order to safeguard and document that all ingredients are listed in a substance inventory such as TSCA, IECSC, DSL etc., that certain components are listed in certain positive lists or that none of the components is member of a negative list such as the ECHA Candidate List.

The FCC allows evaluations with regard to the different definitions of volatile organic compounds (VOC) and the relevant regulations. Calculated and put out in reports (e. g. in the Safety Data Sheet) are VOC levels in accordance with the Swiss VOC incentive tax or with the Decopaint Directive, followed by a check whether the limit of a given product category will be respected. The FCC can be used also for the creation of the solvent balance sheet according to the VOC Directive (Solvent Directive).

Formulation levels

In principle these evaluations can be carried out on different recipe levels (formulation levels), and it is also possible to combine such evaluations. In the first place formulation levels are raw materials and the basic chemical substances (identified by CAS -, EC -, REACH Registry Number, etc.) contained in these raw materials.

A raw material may contain certain elements as constitutional components. Example: Phthalocyanine green, C.I. Pigment Green 7, CAS No. 1328-53-6 contains copper and chlorine. But it can also happen that heavy metal or halogen contents result from traces depending on manufacturing processes and specifications, which are assigned to these raw materials and may be evaluated on this formulation level.

¹ On the multitude of readily available FCC configurations you can inform yourself in our module description. In principle customer specific configurations can be realized by Prosisoft or even by trained customers.