BATCHMASTER®
Process Manufacturing Software

Accelerating Product Development

"Another Shade of Yellow Please!"

When my oldest daughter left for college, her younger sister was sad to see her go but was ecstatic to hear that she could take over her bedroom and its attached bathroom. But with a change in room ownership came a request for a new bathroom color – a bright yellow like her sun dress or the daisies in our front yard. With these visualizations firmly implanted in my mind, I went to my local home improvement store to find myself faced with over three dozen yellow shades from four different paint companies. Bright and bold or soft and subdued? Metallic, shade, denim and weathered rocks – very cool, but impractical. After reviewing all of the paint swatches and a lot of metaphoric reasoning by my daughter, we finally narrowed the choices down to three. Back at the store, I was now faced with various paint types and prices that reflected different brand positions and technical characteristics. Flat, matte, eggshell, satin, semi gloss or high-gloss? Added primer, exceptional durability, superior stain resistance, and an easy-to-clean finish – all a must for this bathroom. Low-odor paints, great! Zero-VOC formula, what? Does the average consumer even know what VOC stands for? I called my cousin, a paint contractor in New York, for his advice, and was lectured on paint adhesion, chemical resistance, additives, binders and VOC levels. What I did remember was not to buy on the basis of price alone, so I ended up buying the paint priced in the middle of the pack. Although my cousin supplied me with a lot more information than I needed to purchase two gallons of paint, our talk did motivate me to learn about how companies develop new paint shades and types.

In this document, I address the essential software features used by leading paints and coatings manufacturers to help bring their products to market, faster and cheaper, specifically from the product developer's perspective. After a number of interviews, I discovered that many paint manufacturers use spreadsheets to manage their formulas today, and surprisingly, even those who have advanced formulation software at their disposal. Why? One reason is that many product developers don't trust that their equations can be accurately replicated in a software vendor's application. And that's a great point to address first…

Effectively Managing Equations

Product developers rely on their equations to calculate pigment %, volatile %, organic solvent %, solid %, density, specific gravity, bulking factor, PVC %, % volume, P/B ratio, spread @ 1mil, CPSFA @ 1 mil, and coating and material VOC. It is imperative that all of an item's physical property fields, including HazMat and HMIS parameters, and industry-standard equations, are definable in one's software solution for formulation and SDS reporting purposes. In fact, many leading ERP applications are delivered with these industry-standard fields and templates, and provide users with the ability to create their own parameters and equations to ensure one's equations can be replicated and validated within the formulation module.

What happens when one of these values are found to be out of tolerance? Advanced formulation modules will immediately bring this situation to the product developer's attention by highlighting out-of-tolerance values in a property display table, generating an onscreen alert or even an email. The power of a formulation module is in its ability to dynamically change ingredient values to meet specific target property values and even prevent users from including certain ingredients in formulas based upon the presence of other ingredients. For manufacturers who ship across state lines or to other countries, the formulation module must highlight those ingredients that are not permitted or not allowed in certain amounts.

I should point out that formula and packaging bill of materials (BOM) specifications are managed as separate entities within software applications built specifically for formula-based process manufacturers. Product developers can focus all their attention on developing formula specifications rather than dealing with packaging BOM specifications. And when multiple product developers are modifying or creating their own formulas, one can always roll back to a prior version if needed.

Gaining Visibility to Actionable Costing Data

So management asks what the expected costs are for that formula you are developing right now. It's a common request that can easily be provided when the formulation module has real-time access to accurate purchasing and inventory information. The estimated cost of a finished good or intermediate (e.g. base paint) is a roll up of ingredient, consumable and labor costs. With an integrated formulation module, ingredient costs are based upon average, standard, last purchased or actual costs of the ingredients. The cost of any item in development or not currently available can be defined as a theoretical cost. Any consumables used on the production line are typically noted in the formula, along with their fixed costs. Some formulation modules allow the user to embed both indirect and direct labor costs within the formula specification. Various setup and fixed costs, overhead costs by % and dollar figures, and variable costs by units, weights and volumes are definable and linked to configured labor types and rates.

Industry-specific software manages QC testing for hardness, gloss, transparency, adhesion, viscosity, DOI, color and other measurements. In some formulation modules, these QC tests are selected from a prepopulated QC test library, which can be embedded directly into one's formula, along with OSHA PPE instructions and other special instructions from its own instructional library. Embedded QC tests and instructions add value for product developers and management in terms of visibility and costs, since performing these tests and instructions is a labor-related activity.

As I mentioned, leading process manufacturing software applications manage formula and packaging BOM specifications separately, allowing multiple packaging designers to develop a variety of packaging configurations that will be linked to formulas at the time of production. These BOM packaging transactions roll up raw material, consumable and labor costs in a similar fashion to formula costs.

Comparing and Analyzing Specifications

Need to know how your new or modified formula stacks up against another formula or the current baseline formula? Wondering how that new additive or binder impacts the formula? It may lower the VOC level, but at what cost?

The answer to these types of questions can be found using the formulation module's comparison inquiry. On a line item basis, multiple formulas are compared by their property values and costs, and in fact, some modules allow you to drill down into the estimated costs on a stage-by-stage basis (i.e. make, fill and package). Should one decide to employ a substitute or alternative item within a given formula, the resulting property target values and costs will dynamically change.

When comparing formulas, there may be an opportunity to create an intermediate that can be used across multiple formulas. Advanced formulation modules give users the ability to identify these shared ingredients. The creation of intermediates can simplify the administration of formula specifications, as well as help optimize the planning and scheduling of batch jobs. Any change to an intermediate formula will impact all finished good formulas employing that intermediate item.

Similar to formula specifications, different packaging configurations can be compared in terms of raw materials and costs, and subsequently modified using packaging BOM transactions supported by an industry-specific software solution.

Gaining Management Approval of Specifications

Concerned over the time and effort it will take to get your formulas approved by management? Well you are in luck; many software applications employ multilevel work flows to gain management approval of formulas. Leading applications associate specific managers to specific formula attributes, such as ingredients, physical properties, costs, QC tests and special instructions. When a formula is submitted for approval, one or more managers in the approval chain will be notified via an alert message within their active desktop transaction or an email. Clicking on the link within the notification message, a manager is directed to the specific formula attributes requiring their review and approval. In terms of GHS compliance, some formulation modules can directly forward approved formula specifications to third-party service providers for the generation of SDS documents, which can be attached to the formula records.

Similar to gaining formula approvals, industry-specific software solutions give packaging designers the same controls over gaining approval for their packaging BOM specifications.

Justifying New Software Capabilities

There are plenty of articles written on why coatings manufacturers are looking to provide their customers with safe and sustainable products. Replacing lead compounds, formaldehyde, MIT and VOCs with alternates that can reduce environmental impact, energy costs and health risks, while ensuring quality, sustainability and durability is a common theme.

As the paints and coatings industry moves forward with these initiatives, forward-thinking manufacturers are running industry-specific software applications that more effectively manage their formulas and packaging specifications. With an investment in an industry-specific software solution that integrates product development, production, quality and compliance processes as well as inventory and financials, these manufacturers are able to quickly and accurately evaluate new ingredients, formulas and finished goods in order to make better business decisions and meet changing customer demands. Looking at the big picture, these manufacturers have taken a large step towards making large-scale production of environment-friendly chemical products economically feasible.

As for my daughter's bathroom, it looks great! My reward? Now my wife wants me to upgrade the kitchen, which includes a coat of new paint – something that reminds her of a warm, sunny day at the beach. I am on the hunt once again for the perfect yellow color.

About BatchMaster Software

BatchMaster Software is a leading provider of ERP solutions that help formula-based process manufacturers streamline their operations and scale production, while reducing costs and complying with changing customer demands and ever more stringent regulatory mandates. BatchMaster applications are seamlessly integrated with SAP Business One, Microsoft Dynamics GP, QuickBooks, and Sage 100 & 300 ERP, and are available on premise and in the cloud. BatchMaster Software has been serving the process manufacturing industry for over 30 years and supports thousands of customers worldwide. www.batchmaster.com

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