

Prospecting the Utility of Bio-based Coatings as Sustainable Materials in the Manufacturing Sector



Market Situation

Coating is one of the key protective specialty chemicals in various application segments, namely, automotive, construction, consumer goods, and healthcare sectors. Growth in automotive and construction segments on a global level due to increasing demand for finished products among the buyers has promoted the scope of coatings. This rise in demand for coatings has increased the amount of various chemicals derived from petrochemical feedstock.



It is well known that emissions from petrochemical feedstock during the production of coatings are responsible for the generation of large amount of carbon emissions. Furthermore, specialty chemicals are also about the uncertainty associated with the supply and access of petrochemicals as feedstock because of geopolitical crisis and growing demand in other applications. As a result, industry participants and various regulatory bodies have been shifting their focus towards promoting the use of bio-based or natural raw materials for the production of coatings.

For instance, in July 2016, the government of the Netherlands implemented a sustainable procurement catalog for public tenders, which stated that the value of tender will be increased if the quantity of bio-based or recycled raw materials used is high. The catalog will apply to all road building, marine projects, landscaping, and construction sectors.

On the other hand, Switzerland implemented a label named "Umweltetikette", which ensures the spread of paints and varnishes on the basis of renewable raw materials. Such initiatives are expected to force the coatings industry value chain participants to increase the incorporation of bio-based materials. However, the strong market presence of conventional coating brands and high price associated with bio-based coatings is expected to limit the utility bio-based product forms soon.

Challenges Faced by Client

The predominant consumption of synthetic-derived paints and coatings resulted in not only excessive carbon emission but also induced hazardous effects to the workers who are executing the coating process. Having said this, the excessive carbon emission resulted in increasing the count of VOC in the manufacturing facility and thus, it increased cost for the buyers to utilize technologies or practices to limit such challenges. Furthermore, the buyers in the coatings industry are also facing challenges such as maintaining properties such as adhesion, water repellence, and corrosion protection. Therefore, the buyers are looking for the solutions which will act as a dual solution to reduce carbon emissions and induce improved mechanical properties to the product where coatings is applied.

Our Approach

Working closely with the leading manufacturing companies of the coating industry, we have identified the following opportunities to increase the use of bio-based coatings among buyers:-

Identification of application segments that are adaptable for using bio-based coatings



The majority of companies have been implementing sustainability initiatives which encompasses the responsibility and respect for the environment through the use of biodegradable raw materials derived from renewable and sustainable resources. Application segments, particularly decorative and wood segments in developed economies of North America and Europe market pull for bio-based technologies as the buyers are increasing spending on natural-based products as concerns for the health of the planet.

Identification of cost-effectiveness associated with bio-based coatings as compared to conventional coatings

With the declining prices of conventional crude oil-based chemicals in the last few years, it has become challenging to achieve well-versed adoption of renewable raw materials. Increasingly, the ingredients processed from these green materials must be more than bio-based as they typically provide performance advantages, if are labelling as premium-priced product forms as compared to the petrochemical derivatives which they are replacing, whether as direct substitutes or novel alternatives.

Improvement of purchase capability and ensuring the continuous product supply

Development of regional sourcing organizations and improve training and negotiating skills.



Our Recommendations

Based upon the indicators obtained from our research study, we proposed the companies following series of initiatives which will promote the use of bio-based coatings among buyers:-

Increasing number of awareness programs with buyers

More seminars and awareness programs should be organized with buyers who are using conventional coatings so that they could be familiar with the USP of bio-based coatings

Increasing R&D for inclusion of enhanced features including UV protection and antibacterial prevention

Over the past few years, the durability has become one of the key buying criteria from the consumers' standpoint. Furthermore, post COVID-19 outbreak, the end-users have been focusing on preferring products based on anti-bacterial features. The coating industry participants should increase spending on incorporating ingredients or additives capable of inducing UV protection and antibacterial protection features in bio-based coatings.

Delivery of products with value-added services

The bio-based coating manufacturing companies should deliver the products with full-fledged engineering support and other value-added services. Having said this, during the formulation of offer, the prospecting buyers should be well-familiar with the total cost of ownership associated or USP associated with the bio-based coatings. Furthermore, the coatings manufacturers should offer condition-based monitoring or preventive maintenance services to the buyers so that customers' requirements can be linked with the demand projection from the companies' end. This kind of approach will not only help in retaining the continuous feedback so that the shortcomings should be fulfilled.

Business Impact

The effective use of bio-based coatings resulted in reduced savings in terms of trimming expenses for the deployment of environmental protection services. Furthermore, such coating solutions have helped induce the best qualities in the finished products where the coating was applied. Having said this, the product acted as a dual solution for inducing value-added attributes to the finished goods and reducing the amount of VOC emissions.



Conclusion

Bio-based coatings accounted for less than 5% of the global coatings industry output for 2022. The potential of these bio-based products cannot be ignored due to rising awareness towards reducing carbon emissions coupled with shifting inclination towards utilizing sustainable materials. Furthermore, the growing importance of reducing the total cost of ownership in the manufacturing sector is expected to prompt buyers to prospect for bio-based coatings as next-generation consumables over the next few years. However, the extensive visibility of synthetic-derived coatings

