



Development of a Carpet Treatment

Consumer Product Formulation R&D

Summary

Cambridge Polymer Group (CPG) helped a client develop a carpet treatment process that allowed users to add colors and patterns to already installed carpeting.

Client Request

The client wanted a sprayable formulation to refresh the appearance of faded carpets. The formulation needed to be durable to handle normal foot traffic, be safe for use in households, maintain their color, and could be used with a variety of carpet types, including older soiled and damaged carpets.

Development Process

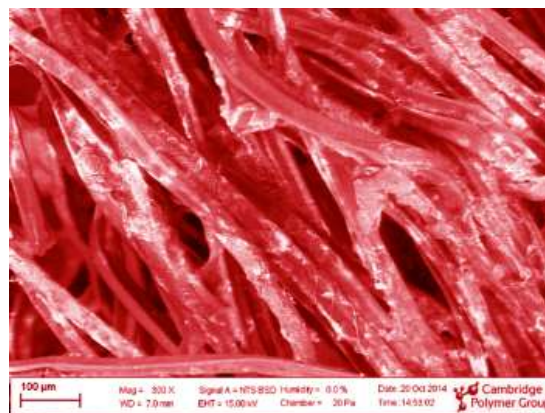
CPG pursued two paths in the development of a solution for the client. The first path focused on formulations that met the minimum client requirements (safety and spray ability) and had the possibility of meeting the other requirements (durability and color-fastness). The second path focused on test methods that would allow rapid screening of formulations based on the product specifications. Due to the multiple components used in the formulations, a design of experiment process was used for screening formulations.

Testing methods

Multiple testing methods were developed to test the formulations at different stages of use. For initial application, wetting analysis by tensiometry and scanning electron microscopy was used to assess formulation coating of carpet fibers. After cure, durability testing was determined by drum testers and a custom-designed tread wear tester. Optical techniques coupled with accelerated aging were used to assess color fastness. Final formulations were subjected to vacuuming and tread wear tests.

Formulations

Custom formulations were developed that showed individual suitability for polypropylene, nylon, and PET carpets, which differ according to their polarities. The most favorable carpets showed good durability with little color fading or smearing even after thousands of cycles of foot tread traffic.



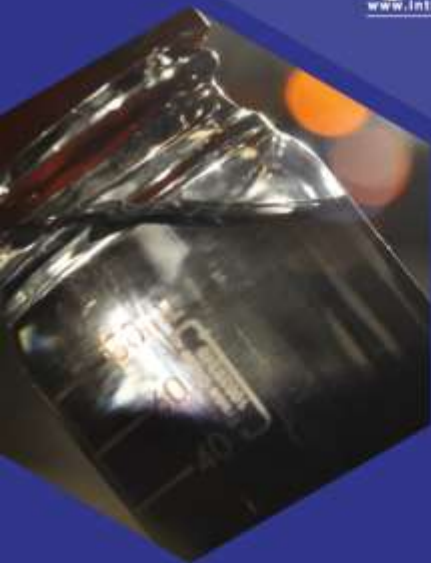
Markets

Consumer products, coatings

Key Points

Custom coating development

ANALYTICAL TESTING
BIOMEDICAL MATERIALS
MATERIALS CONSULTATION
RESEARCH & DEVELOPMENT



Cambridge Polymer Group, Inc. is a contract research laboratory specializing in materials. We partner with our clients to solve the world's toughest polymer problems utilizing our multi-disciplinary research team and full service laboratory.

We work with clients throughout the product life cycle to:

- Develop new materials
- Design prototypes for proof-of-concept studies
- Create and execute experimental design
- Validate and verify manufacturing processes
- Perform root-cause analysis in product failures

Cambridge Polymer Group, Inc. was founded in 1996 to provide a cost-effective resource for testing, research and development to clients who need periodic access to Ph.D.-level scientists and their support structure. We have developed a host of testing methods and materials for our clients, which number more than 1,000.

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