

Internship Report

Intern Name: Ifra Naz

Internship Period: 2 Weeks

Internship Organization: Archroma Pakistan Limited

Location: 1-A/1, Sector 20, Korangi Industrial Area, Karachi, Sindh, 74900

Degree Program: Industrial and Manufacturing Engineering (Third-year)

University: NED University of Engineering and Technology

Supervisor: Miss Afshan



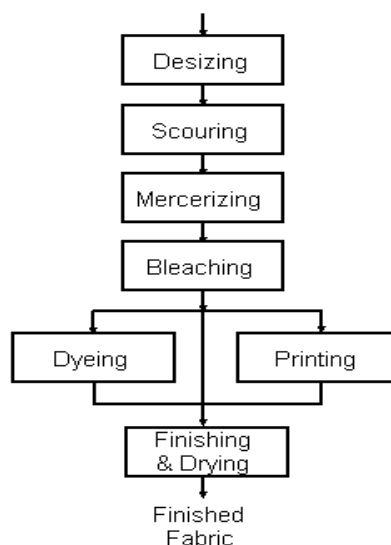
Company Overview

Archroma Pakistan Limited is a prominent producer and supplier of synthetic dyes and specialty chemicals. The company is known for its advanced solutions in the textile, paper, adhesives, coatings, and construction materials industries. Archroma Pakistan is a subsidiary of Archroma, a leading global producer of color and specialty chemicals based in Switzerland.

The company has been operational in Pakistan since its incorporation in 1996. Archroma Pakistan operates from its various locations, including its production plant in Jamshoro, scientific center in Korangi, and sales offices in Islamabad. The firm's focus is on innovative, sustainable, and high-performance solutions that enhance the quality of the end-products.

Internship Overview

As part of my third-year Industrial and Manufacturing Engineering program at NED University of Engineering and Technology, I had the opportunity to undertake a two-week internship at Archroma Pakistan Limited. The objective of the internship was to gain practical knowledge and hands-on experience in the textile and fabric finishing industry, with specific focus on dyeing, printing, and chemical applications. The experience was instrumental in bridging the gap between theoretical concepts and their real-world applications.



Internship Objectives:

The main objectives of my internship at Archroma Pakistan Limited were:

- To gain an in-depth understanding of textile finishing and dyeing processes.
- To learn about different types of synthetic dyes and chemicals used in textile manufacturing.
- To develop hands-on experience in various textile testing procedures, including color fastness and water analysis.
- To understand the processes involved in fabric coating, printing, and treatment for enhancing textile properties.
- To acquire technical knowledge related to sustainable textile production and finishings.

Tasks and Responsibilities

During my internship, I was actively involved in several key areas of production and laboratory work. Below is a detailed description of the tasks and responsibilities that I undertook:

1. Pigment Printing and Dyeing

One of the primary tasks I participated in was pigment printing and dyeing. I was introduced to different types of pigment printing processes and the application of reactive dyes to various textile fabrics. This involved:

- Pigment Printing: Involved preparing the textile for pigment application and ensuring that the print adhered properly to the fabric.
- Pigment Dyeing: I assisted in the process of dyeing fabrics with pigment dyes, particularly focusing on 100% polyester fabrics.
- Reactive Printing: I learned the techniques of reactive dye printing, applying dyes to fabrics to achieve specific color tones and designs.

2. Fabric Finishing Processes

I was exposed to various fabric finishing processes designed to improve the performance and aesthetics of textile materials. Some of the key finishes I worked on included:

- **Wrinkle-Free Finish:** I learned about the chemical treatments used to create wrinkle-free finishes, making fabrics more durable and easier to care for.
- **Water-Repellent and Stain-Repellent Finish:** This process is essential for creating fabrics with water-resistant qualities, often used in outdoor clothing or upholstery.
- **Flame Retardant Finish:** I worked on semi-durable flame retardant finishes applied to textiles for safety and fire resistance, a critical feature in industrial and safety applications.
- **Soft Absorbent Finish:** I participated in the application of soft finishes to enhance the absorbency of fabrics, such as 100% cotton towels, through an exhaust process.

3. Pre-Treatment and Dyeing on Polyester

I worked on pre-treatment processes for 100% polyester knit fabrics, which involved using exhaust processes to prepare the fabric for dyeing. Additionally, I was involved in dyeing 100% polyester and cotton fabrics with Foron dyes, employing various methods including pad-dry-cure and chemical pad-steam techniques.

4. Quality Testing Procedures

Throughout the internship, I gained significant exposure to various textile testing methods aimed at ensuring the quality and durability of finished products. These included:

- **Color Fastness Testing:** I conducted tests to assess the color fastness of fabrics, specifically their resistance to dry heat (sublimation fastness) and to domestic laundering (ISO 105-C06). This helped ensure that the colors remained vibrant after washing and exposure to heat.
- **Rubbing Fastness Testing:** I participated in the color fastness to rubbing test (ISO X-12), where fabric specimens were rubbed against a standard cloth to assess the resistance of the fabric's color to abrasion. The test was conducted under both dry and wet conditions using a crockmeter.

5. Water Analysis

Water quality plays a critical role in the dyeing and finishing processes, as it directly affects the color and quality of the final product. During my internship, I assisted in performing various water analyses, such as measuring:

- **Hardness:** I helped test the hardness of water to determine its impact on textile processing.
- **Total Dissolved Solids (TDS):** I measured TDS to assess water purity.
- **pH Levels:** I monitored the pH levels of water to ensure they were within the ideal range for fabric processing.

Key Learnings and Achievements

Dyeing and Printing Techniques: I gained practical knowledge in different dyeing and printing methods, learning how various dyes (such as Foron, DRimaren HF) react with different fabrics. Understanding how to apply these techniques to achieve desired results was one of the key highlights of my internship.

Fabric Finishing: I learned about various fabric finishing techniques that contribute to the functionality and appearance of textiles. These finishes are essential for making fabrics more durable, water-resistant, fire-resistant, and soft.

Quality Control and Testing: Engaging in various quality control measures like color fastness, rubbing fastness, and water analysis was a valuable learning experience. These tests are critical in ensuring that the fabric meets industry standards and performs well in different environments.

Chemical Application and Sustainability: My exposure to chemical applications in textile finishing gave me insight into the role of specialty chemicals in enhancing fabric properties. I also became aware of the importance of sustainability in textile production, as many of these chemicals help reduce environmental impact.

Team Collaboration: I had the opportunity to work closely with skilled professionals, learning from their expertise and contributing to ongoing projects. This experience taught me the value of collaboration, problem-solving, and communication in a professional setting.

Feedback and Evaluation

My supervisor provided valuable feedback throughout the internship, commending my enthusiasm, attention to detail, and proactive approach. She appreciated my willingness to learn and take initiative in performing various tasks. My ability to collaborate with team members was also noted as a strength. The feedback indicated that I was successful in applying theoretical knowledge to practical tasks and contributed positively to the workflow.

Conclusion:

My internship at Archroma Pakistan Limited was an invaluable experience that enriched my academic learning with practical insights into the textile industry. The skills and knowledge I gained, particularly in dyeing, fabric finishing, and quality control, have significantly broadened my understanding of textile production processes. This experience has reinforced my interest in the textile and manufacturing sectors and provided me with a solid foundation for my future career.

I am grateful for the opportunity to work with such a reputable company and for the guidance and support provided by my colleagues and supervisor. I look forward to continuing my professional development in this field.