PART I

FABRIC PREPARATION

The term "Preparation" has two implications in textile processing. In greige manufacturing, it is used to describe the processes which prepare yarns for weaving and knitting. Mostly, it is used to describe slashing operations that ready warp yarns for weaving. In dyeing and finishing, the term is used to describe those processes that ready fabrics for the steps that follow, coloration and finishing. Fabric preparation is the first of the wet processing steps where greige fabric is converted into finished fabric. The steps that follow, dyeing or printing and finishing, are greatly influenced by how the fabric is prepared. Improper preparation is often the cause of problems encountered in the dyeing and finishing steps. Wet processing technical conferences nearly always have sessions that stress the importance of fabric preparation, seldom is there a conference without topics on how to prepare specific fabrics. There are many different fabrics, many different plant set-ups and many different machines used in wet processing. There is no universally accepted best method for each of the wet processing steps. Nonetheless every set-up is expected to, and more often than not, accomplish the same goals. To deal with this seemingly infinite number of permutations, a fundamental understanding of what happens at each step and how to control the chemical and physical parameters becomes paramount.

The discussions that follows will deal with all of the specific steps that encompass fabric preparation. Fundamental chemical and physical concepts will be stressed. It is important for the reader to understand that not all fabrics undergo each of the steps: however, a specific fabric will be routed through those steps that are necessary to end up with a thoroughly prepared fabric. Chapter 1 will discuss the equipment used to prepare warp yarns, and the equipment used to prepare fabrics for dyeing and finishing, Chapter 2. will cover the chemistry. In wet processing it is generally recognized that the steps encompassing preparation are:

- Singeing: A process where loose fibers and fuzz is burned away to yield a clear and clean fabric surface.

- Desizing: A process where warp size is removed.

- Scouring: A process where mill and natural dirt, waxes and grease are removed.

- **Bleaching:** A process where color bodies are destroyed and the fabric is whitened.

- **Mercerizing:** Caustic treatment of cellulosic fabrics improving luster, water absorbance, dye yield and fiber strength.

- **Carbonizing:** Acid treatment of wool for removing vegetable matter.

- **Heat Setting:** Heat treatment of fabrics containing thermoplastic synthetic fibers. Stabilizes fabric by reducing shrinkage and distortion.

CHAPTER 1

PREPARATION PROCESSES

Various types of equipment can be used for preparing fabric. The ultimate goal of any preparation process is to produce fabric that is clean and rid of all impurities that interfere with dyeing and finishing. The preparation steps can be carried out as either batch or continuous processes. The fabric may be transported as a rope or as an open sheet through the equipment. The choice is often predicated on the dye-house itself. The distinguishing feature of batch equipment is that all of the fabric is simultaneously submerged in the liquor. The fabric is agitated by moving it through the liquor. In continuous processes, the fabric passes non-stop through compartments and/or stages so that the fabric is incrementally subjected to the action of the chemicals. The equipment used for dyeing fabrics is also suitable for preparing fabric. In this section, the equipment used to perform fabric preparation will be described.

I. YARN PREPARATION EQUIPMENT

Slashing is the process where ***Size*** is applied to warp yarns for weaving. The purpose of size is to protect the yarn from the abrasive action of the loom. The process is carried out on a ***Slasher*** and the application procedure is called ***Sizing*** or ***Slashing.*** While technically this process is not considered as a step in preparing