Introduction

Spandex is the generic name for the synthetic fiber, whose fiber-forming substance is a long chain of a synthetic polymer. It comprises of at least 85 % of segmented polyurethane. Common trade names for these fibers are LYCRA (DuPont), DORLOSTAN (Bayer), SPANZELLE (Acordis) and VYRENE (US Rubber).

Application

Typically, the spandex fiber structure is achieved by reacting di-isocyanates with long chain glycols, which are usually polyesters or polyethers.

Next, the polymer is dissolved into dimethyl acetamide (DMAC) and then chain-extended or coupled through the use of glycol, diamine or water. Other solvents can also be used, for example, dimethylformamide (DMF) and nitric acid (HNO₃). The final polymer is converted into fibers by a spinning process.

DMAC is an excellent solvent for a large variety of organics and is widely used as such for fibers, adhesives and dyes.

Instrumentation and installation

The K-Patents Process Refractometer PR-43-G is perfectly suited to control the spinning bath concentration.

The refractometer measures continuously the concentration of the bath in order to keep it at the optimum level and avoid a decrease in product quality.

Typical measurement range in this application is 40-60 %.
Instrumentation | Description
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K-Patents Process Refractometer PR-43-GP is a general industrial refractometer for pipes and vessel installations. The PR-43-GP can be installed with 2, 3 and 4 inch flange and 3 inch Sandvik L coupling process connections and a variety of flow cells for pipe sizes of 1 inch and larger.

K-Patents Process Refractometer PR-43-GC is a compact refractometer for smaller pipe sizes in general industrial applications. Available in 2 inch and 2.5 inch process connections and via reducing ferrule in 1.5 inch process connection. The refractometer is installed directly in a pipe elbow by an L coupling connection or in a straight pipe via a Wafer flow cell or a Pipe flow cell.

User Interface
Selectable multichannel MI, compact CI or a web-based WI user interface options allow the user to select the most preferred way to access and use the refractometer measurement and diagnostics data.

Measurement range
Refractive Index (nD) 1.3200 – 1.5300, corresponding to 0-100 % by weight.