HYDROGEN PEROXIDE, H₂O₂

**Typical end products**
Chemical synthesis, metals, alloys, printed circuit board cleaning, etching, brightening, textile bleaching, paper pulp bleaching, aseptic packaging, water filtration, ink removal from waste paper.

**Chemical curve:** Hydrogen peroxide R.I. per Conc. % b.w. at Ref. Temp. of 20˚C

**Introduction**
Hydrogen peroxide is a clear, colorless and slightly viscous liquid.

**Application**
Hydrogen peroxide is manufactured almost exclusively by the autoxidation (AO) process. The process is based on a reduction of anthraquinone, followed by oxidation resulting in the formation of H₂O₂.

Hydrogen peroxide is separated from water by extraction and is concentrated to produce grades at standard commercial strengths of 35-65 %. The main purpose of concentration is to decrease storage and the transportation costs of hydrogen peroxide. Moreover, the concentration removes some amounts of impurities, such as organic solvents in hydrogen peroxide.

**Instrumentation and installation**
The K-Patents Process Refractometer PR-43-G can be installed at different points in a H₂O₂ plant. The refractometer measures the concentration after peroxide extraction to ensure maximum efficiency. At this point the concentration is 30-40 %.

After extraction, H₂O₂ is purified and concentrated by distilling it to the specified concentration. The K-Patents refractometer is ideally suited for distillation control. The refractometer provides Ethernet and 4-20 mA output signals that can be used for real-time control of the distillation column. The instant measurement of the refractometer can be used to adjust reflux and boil-up in distillation in order to enhance separation and reduce energy costs.

Hydrogen Peroxide often contains large quantities of hydrogen gas bubbles, which can cause measurement errors in density meters. Due to its digital sensing technology, the K-Patents refractometer is not subject to measurement errors caused by bubbles, color or particles, and the measurement is selective to the liquid phase. Moreover, the refractometer can be mounted directly in the main line, thus eliminating the need for sampling and off-line tests.
### Instrumentation Description

**K-Patents Process Refractometer PR-43-GP**

The 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**

The 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.