

## BULK LIQUID CHEMICALS

### Typical end products

Refined petroleum products, basic and specialized chemicals

### Introduction

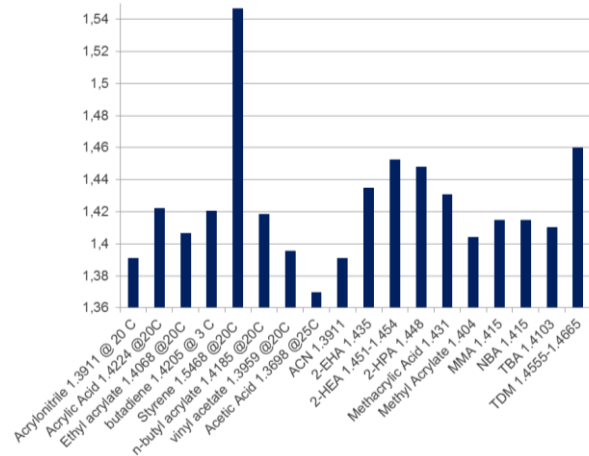
Chemical plants load and unload different chemical solutions from trucks or railcars to receiving or storage tanks. A plant may deal with multiple unloading stations, thus, fast and reliable interface detection is necessary for product identification and safe unloading operation.

Combining an interface detection device with automatic controls can minimize transmix of products, reduce waste, reduce the filling/ unloading times, decrease safety risks, reduce sampling and minimize operator errors.

### Application

Refractive index can be a reliable method for identifying a chemical before unloading it into receiving tank. This refractive index is a property inherent to each chemical, and can be used to “fingerprint” the product for identification. This “fingerprint” can be applied to a scale to achieve the proper controls.

An example of product identification is chlorite and hypochlorite unloading operation. Each of these chemicals has a distinctive refractive index. The difference in refractive index is wide enough to accurately and reliably distinguish between these two products. K-Patents can provide an accurate and repeatable refractive index measurement to +/- 0.0002. This refractive index number may also be applied to the Brix or other engineering scale for ease of use.




Picture 1. Refractive Indexes of different chemicals

### Installation

K-Patents process refractometer is typically installed in main supply line and in the inlet of the product storage. This provides adequate timing for interface detection and double assurance of the liquid bulk chemical being delivered to its intended storage.

Due to the digital sensing technology small amounts of entrained air or gas will not affect the measurement. Standard wetted parts are stainless steel 316L and higher alloys are available. Hazardous and intrinsic safety approvals are also available.

<b>Instrumentation</b>	<b>Description</b>
 A photograph of the K-Patents Process Refractometer PR-23-GP. It consists of a white rectangular electronic display unit with a small screen showing the number '25.33'. Attached to the front of the unit is a large, cylindrical stainless steel probe with a red-colored top section and a threaded end.	K-Patents Process Refractometer PR-23-GP is an industrial refractometer for large pipe sizes and tanks. Installation through a flange or clamp connection.
Area classification:	Intrinsic safety and hazardous area approvals available.
Measurement range:	Refractive Index (nD) 1.2600 – 1.4700.