Sodium Chloride Refractometer

For the Food industry

ISO 9001:2000 CERTIFIED

2 YEAR WARRANTY

Salad Dressings
Cheeses
Pickles
Canned Foods
Jarred Foods
Condiments
Energy Drinks
Milk
Juices
Soups
Brines
Whey
Easy Operation

HANNA offers the HI 96821 digital sodium chloride refractometer to meet the requirements of the food industry. This optical instrument that employs the measurement of the refractive index to determine sodium chloride concentration in aqueous solutions used in food preparation. It is not intended for sea water salinity measurements.

The measurement of refractive index is simple and quick and provides the user an accepted method for NaCl analysis. Samples are measured after a simple user calibration with deionized or distilled water. Within seconds the instrument measures the refractive index of the solution. The digital refractometer eliminates the uncertainty associated with mechanical refractometers and is easily portable for measurements where you need them.

The instrument utilizes internationally recognized references for unit conversion and temperature compensation. It can display the measurement of NaCl concentration 4 different ways: g/100 g, g/100 mL, Specific Gravity, and °Baumé.

Temperature (in °C or °F) is displayed simultaneously with the measurement (on 3 of the ranges) on the large dual level display along with icons for Low Power and other helpful message codes.

**Start-up Screens**
When the HI 96821 is turned on, test screens followed by the percentage of battery life remaining is shown followed by the ready status.

**Unit Selection**
Just press the RANGE key to cycle through the HI 96821’s units of measurement. g/100 g, g/100 mL, Specific Gravity and °Baumé. Temperature selection can also be easily changed.

**Calibration**
Perform a quick and easy calibration after start-up:

1. Using a plastic pipette, completely cover the prism in the sample well with distilled or deionized water.
2. Press the ZERO key

**Measurement**
Achieve fast, professional results:

1. Using a plastic pipette, drip sample onto the prism surface until the well is full.
2. Press the READ key and the results are display in the selected units.

Refactometers for Accurate Sodium Chloride Analysis

Designed to Meet Your Requirements

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Principal of Operation

Aqueous NaCl determinations are made by measuring the refractive index of a solution. Refractive Index is an optical characteristic of a substance and the number of dissolved particles in it.

Refractive Index is defined as the ratio of the speed of light in empty space to the speed of light in the substance. A result of this property is that light will "bend," or change direction, when it travels through a substance of different refractive index. This is called refraction.

When passing from a material with a higher to lower refractive index, there is a critical angle at which an incoming beam of light can no longer refract, but will instead be reflected off the interface.

The critical angle can be used to easily calculate the refractive index according to the equation:

$$\sin (\theta_{\text{critical}}) = \frac{n_2}{n_1}$$

Where $n_i$ is the refractive index of the lower-density medium; $n_i$ is the refractive index of the higher-density medium.

In the HI 96821 refractometer, light from an LED passes through a prism in contact with the sample. An image sensor determines the critical angle at which the light is no longer refracted through the sample.

Specialized algorithms then apply temperature compensation to the measurement and convert the refractive index to: g/100 g (% by mass), g/100 mL, Specific Gravity (S.G. 20/20), or °Baumé.

Professional Features

**Dual Level LCD**

The dual-level LCD displays the measurement as well as the temperature readings simultaneously.

**Automatic Temperature Compensation**

**Easy Measurement**

Place a few drops of the sample in the well and press the READ key.

**B.E.P.S.**

B.E.P.S. (Battery Error Protection System) alerts the users in the event that low battery power could adversely affect readings.

**IP 65 Waterproof Protection**

**Quick, Precise Results**

Readings are displayed in approximately 1.5 seconds.

**Single Point Calibration**

With distilled or deionized water.

**Small Sample Size**

Sample size can be as small as 2 metric drops.

**Automatic Shut-off**

**Stainless Steel Sample Well**
## Technical, Ordering and Accessory Information

### SPECIFICATIONS

<table>
<thead>
<tr>
<th></th>
<th>HI 96821</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Range</strong></td>
<td></td>
</tr>
<tr>
<td>g/100 g</td>
<td>0 to 28</td>
</tr>
<tr>
<td>g/100 mL</td>
<td>0 to 34</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.000 to 1.216</td>
</tr>
<tr>
<td>°Baumé</td>
<td>0 to 26</td>
</tr>
<tr>
<td>Temperature</td>
<td>0 to 80°C (32 to 176°F)</td>
</tr>
<tr>
<td>g/100 g</td>
<td>0.1</td>
</tr>
<tr>
<td>g/100 mL</td>
<td>0.1</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.001</td>
</tr>
<tr>
<td>°Baumé</td>
<td>0.1</td>
</tr>
<tr>
<td>Temperature</td>
<td>±0.1°C (0.1°F)</td>
</tr>
<tr>
<td><strong>Accuracy (@20°C)</strong></td>
<td></td>
</tr>
<tr>
<td>g/100 g</td>
<td>±0.2</td>
</tr>
<tr>
<td>g/100 mL</td>
<td>±0.2</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>±0.002</td>
</tr>
<tr>
<td>°Baumé</td>
<td>±0.2</td>
</tr>
<tr>
<td>Temperature</td>
<td>±0.3°C (0.5°F)</td>
</tr>
<tr>
<td><strong>Temperature Compensation</strong></td>
<td>Automatic between 10 and 40°C (50 to 104°F)</td>
</tr>
<tr>
<td><strong>Measurement Time</strong></td>
<td>Approximately 1.5 seconds</td>
</tr>
<tr>
<td><strong>Minimum Sample Volume</strong></td>
<td>100 μL (to cover prism totally)</td>
</tr>
<tr>
<td><strong>Light Source</strong></td>
<td>Yellow LED</td>
</tr>
<tr>
<td><strong>Sample Cell</strong></td>
<td>Stainless steel ring and flint glass prism</td>
</tr>
<tr>
<td><strong>Auto-off</strong></td>
<td>After 3 minutes of non-use</td>
</tr>
<tr>
<td><strong>Enclosure Rating</strong></td>
<td>IP 65</td>
</tr>
<tr>
<td><strong>Battery Type / Battery Life</strong></td>
<td>9V / Approx 5000 readings</td>
</tr>
<tr>
<td><strong>Dimensions / Weight</strong></td>
<td>192 x 102 x 67 mm (7.6 x 4 x 2.6&quot;) / 420 g</td>
</tr>
</tbody>
</table>

### ORDERING INFORMATION

HI 96821 is supplied with battery and instruction manual.

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**ANALYZE**

- Salad Dressings
- Cheeses
- Pickles
- Canned Foods
- Juices
- Soups
- Brines
- Whey
- Jarred Foods
- Condiments
- Energy Drinks
- Milk

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Hanna Instruments

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