

DensiCheck TX

In-line determination of Sodium Chloride (NaCl) concentration

Industries: Chemical production, pulp & paper, textiles, soaps & detergents, scrubbing processes.

Data sheet : DENSI_TX_NaCl/2012

Introduction

Sodium Chloride, commonly known as salt, is currently mass-produced by evaporation of seawater or brine from other sources, such as brine wells and salt lakes, and by mining rock salt, called halite.

Uses

As well as the familiar uses of salt in cooking, salt is used in many applications, from manufacturing pulp and paper, to setting dyes in textiles and fabric, to producing soaps, detergents, and other bath products. It is the major source of industrial chlorine and sodium hydroxide, and used in almost every industry.

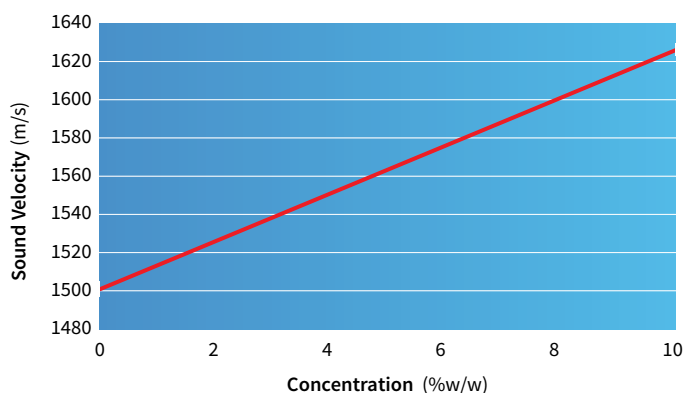
Measurement Precision

In the range 0..10%wt, DensiCheck TX delivers an accuracy $\pm 0.05\%$ wt and a resolution of 0.005% NaCl. This superb accuracy is possible due to the linear change in sound velocity across the concentration range.

Measurement Issues

Good mixing is required to remove the possibility of concentration gradients in NaCl solutions. In some concentration/temperature ranges, the effect of entrained gas can cause issues with the measurement. In this case, pressure should be increased at the measurement point.

Sodium Chloride (25 Deg C)



Scrubbing Applications

In scrubbing applications DensiCheck TX can be used with other sensors (e.g. conductivity) to monitor three-component liquids. So by measuring three physical values (sound velocity, temperature and conductivity) the system can display concentration levels of two parameters (e.g. NaOH and NaCl).

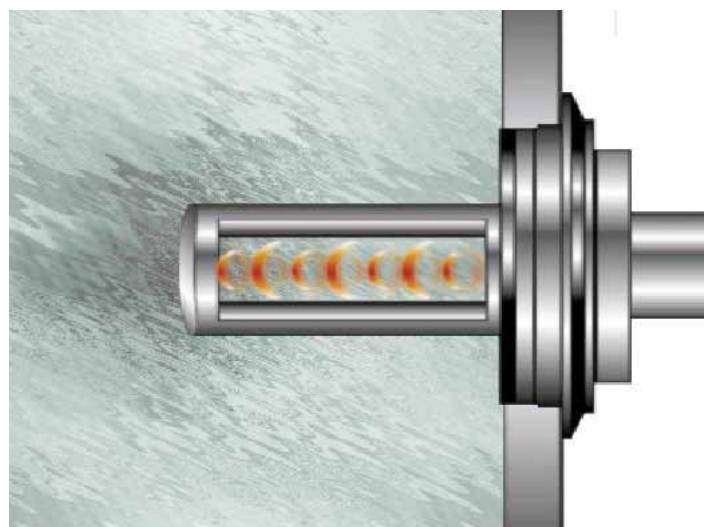


Benefits of Ultrasound

Ultrasound offers many benefits when compared to other measurement technologies when monitoring NaCl solutions. As can be seen, there is a massive change in the velocity across a small concentration range with unrivalled precision in terms of speed if sound measurement, DensiCheck TX is the unit of choice.

Other benefits include:

- Unaffected by line pressure
- In-line measurement meaning no recirculation or by-pass lines
- Wetted parts available in many different materials
- Maintenance-free so low cost of ownership



Other Liquids

DensiCheck TX is being used in many different industries to measure the concentration of numerous different liquids including:

Substance	Chemical Formula	Substance	Chemical Formula
Acetone	C_3H_6O	Hydrogen Peroxide	H_2O_2
Ammonia	NH_3	Nitric Acid	HNO_3
Ammonium Sulphate	$(NH_4)_2SO_4$	Phosphoric Acid	H_3PO_4
Calcium Chloride	$CaCl$	Sodium Chloride	$NaCl$
Ethanol	C_2H_6O	Sodium Hydroxide	$NaOH$
Ethylene Glycol	$C_2H_6O_2$	Sodium Nitrate	$NaNO_3$
Fluorine	F	Sulphuric Acid	H_2SO_4
Glycerin C3H8O3 Toluene C7H8	$C_3H_8O_3$	Toluene	C_7H_8
Hydrochloric Acid	HCl	Tryptophan	$C_{11}H_{12}N_2O_2$



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