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Nestlé Quality Assurance Center  
Dublin

# Technical Datasheet

**Analysis Name:** Milk Powders - Osmolality by freezing point depression

**Method Number:** LI-08.066 WI

**Scope of Application:** This in-house procedure can in principle be applied to most food products in liquid or reconstituted powder form. It has been validated for reconstituted milk, nutritional powders, liquid milks and liquid nutritional products.

**Description:** The sample is placed in a chamber with thermistor immersed in the sample. The chamber is then supercooled so rapidly, that it does not freeze even though it is below the freezing point. Crystallization is initiated by automatic entering of a needle (slight stirring). As ice-crystals are formed, heat is released during the freezing process and the solution warms to its freezing point temperature. The difference in freezing point between sample solution and pure water is directly related to the solution's osmolality.

**Sample Weight Required:** 50g

**Method Reference:** NA

**Analytical Platform:** Freezing Point Osmometer

**Special Information:** The measurement range of freezing point osmometry is about <100 – 500 mOsmol/kg. This method is recommended for measurement of product containing substantial amounts of volatiles (e.g. ethanol) or for osmolalities <100 mOsmol/kg and products with low viscosities similar to water [1]. For example, in clinical nutritional products, the empirical range of measurement is about 50 –300 mOsmol/kg. This method can not be used for viscous products (about >2 mPa\*s) and high osmotic products (> 500 mOsmol/kg) or for those, containing particulate matter that can act as crystallization nuclei. In this case the osmolality should be measured by vapour pressure methodology by LI-08.067.

mOsmol/kg = mmol/kg



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Analyte Reported	Alias	Unit of Measure	Limit of Quantification	Reproducibility
Osmolality		mOsm/kg	50 mOsmol/kg	+/- 5mOsm/kg