

# Increased Cream Savings in Ice Cream Production



## Introduction

Ice cream is a staple of many US and European diets, and is one of the fastest growing industries in developing countries as a premium luxury food. Ice cream producers are constantly developing ways to stay ahead of the market with new flavors, packaging, and healthy alternatives to reach more customers. One of the easiest ways to increase profits is to improve process control through more accurate fat testing equipment. With cream as the primary ingredient, and one of the most expensive, finding ways to reduce daily cream use, while still manufacturing a quality product, is critical to keeping costs down. Even better is using equipment that can not only test incoming milk and cream, but can also test in-process ice cream mixes, additives, finished flavorings, and any other sample at every stage of production. The ORACLE™ is capable of providing solids and fat results for these products and more, all without the hassle and cost of recalibration, frequent maintenance, and service issues, such as tubes clogging or requiring dilutions. Using AOAC approved methods, the ORACLE is able to provide the most accurate results for a rapid analyzer, saving hundreds of thousands of dollars a year in production costs.

## Key Benefits

- No fat method development or calibrations required
- Rapid analysis of moisture, fat, and SNF content
- AOAC approved technology
- Better reproducibility than reference techniques leading to global unit to unit consistency
- Largest potential for cost savings of any rapid or reference fat testing method
- Winner of numerous awards, including:
  - › 2016 WOTS Innovation Award
  - › 2017 IFT Innovation Award
  - › 2016 & 2017 Pittcon Best New Product Awards

## ORACLE and SMART 6

The ORACLE is the first and only system that is able to accurately test the fat content of any food product in 30 seconds with no method development, calibration, or sample validation necessary. As one of the most expensive ingredients, and a large contributor to the quality and mouthfeel many consumers base their purchases on, ice cream manufacturers have always required fast and accurate fat analysis. Historically there have been two types of fat analysis; reference extraction methods and rapid technologies. While each provides various benefits, both are flawed. Reference extraction methods, such as mojonner, gerber, and babcock, have been approved for decades as an accurate, primary fat analysis. However, these extractions take hours to perform, involve handling hazardous solvents, and require a highly trained technician to correctly execute the testing procedure. Even with trained technicians, independent studies have shown extraction repeatability from user to user can be unacceptable, questioning results from any non-duplicate testing. Rapid technologies, such as NIR and FT-IR, provide a faster, safer, and simpler testing alternative to extractions, but are limited to specific sample matrices and require frequent method development and recalibration. Even with constant maintenance, the margins of accuracy are less than reference techniques and worsen over time.

Using a recent breakthrough in NMR technology, developed by CEM in 2016, the ORACLE applies the benefits of both reference extraction and rapid testing, while overcoming their flaws. The ORACLE has proven its ability to achieve accuracy comparable to standard extraction methods, with better repeatability, and does so for any known or unknown food product, a previously impossible feat.

Paired with the SMART 6™ moisture/solids analyzer, the most accurate rapid system available, the ORACLE can provide solids and fat results in under 5 minutes. The SMART 6 and ORACLE are also capable of testing any product regardless of matrix or consistency. Therefore, samples such as milk, heavy cream, ice cream mix, powders, and even additives can all be analyzed on a single paired system.

The ORACLE's accuracy and repeatability is achievable across multiple systems, guaranteeing results from plant to plant. By maintaining better control of their production, these manufacturers can also improve product formulation and increase yields, leading to huge potential cost savings and increased profitability. As the first and only universal rapid fat analyzer, the ORACLE is the biggest breakthrough in fat testing technology, and will greatly benefit every food manufacturing plant in the world and the consumers that rely on them.

			ORACLE Average*	ORACLE St Dev*	Mojonnier Result
Customer A	Vanilla 1	Fat	10.09	0.04	10.16
		Solids	33.90	0.07	33.81
	Vanilla 2	Fat	10.09	0.08	10.11
		Solids	34.01	0.06	33.94
	Sweet Cream	Fat	14.11	0.02	14.18
		Solids	41.20	0.17	41.31
Customer B	Low Fat Mix	Fat	2.35	0.04	2.37
		Solids	32.01	0.12	32.06
	Choc Low Fat Mix	Fat	2.32	0.05	2.33
		Solids	28.45	0.06	28.45
	White Low Fat Mix	Fat	1.98	0.06	1.90
		Solids	29.11	0.10	29.01
Customer C	Fudge Ice Cream	Fat	0.59	0.08	0.66
		Solids	28.54	0.11	28.52
	Chocolate Mix	Fat	3.38	0.06	3.33
		Solids	37.16	0.14	37.14
	Chocolate Ice Cream	Fat	9.52	0.04	9.43
		Solids	38.80	0.15	38.78
White Mix	Fat	5.68	0.02	5.59	
	Solids	35.65	0.16	35.75	
Customer D	10% Ice Cream	Fat	10.19	0.02	10.10
		Solids	35.93	0.03	35.95
	12% Ice Cream	Fat	12.94	0.09	13.04
		Solids	38.42	0.12	38.64
	Choc Mousse	Fat	15.46	0.17	15.36
		Solids	48.59	0.10	48.49
White Mousse	Fat	15.09	0.04	15.05	
	Solids	43.26	0.09	43.25	
CRMs	Low Fat Cream	Fat	9.35	0.01	9.39
		Solids	17.76	0.02	17.79
	Low Fat Cream	Fat	13.43	0.01	13.49
		Solids	21.54	0.03	21.49
	High Fat Cream	Fat	30.61	0.12	30.73
		Solids	37.16	0.04	37.12
High Fat Cream	Fat	42.46	0.08	42.53	
	Solids	47.88	0.04	47.89	

\*ORACLE data a result of 5 or more replicates

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