

# Applications Note

DAIRY PRODUCTS

October 1994

Automatic refractometers are a useful tool for the quality control of dairy products such as milk and yoghurt. With the standard GPR refractometer these samples can generally be measured without any sample preparation, but care is needed to ensure that the samples (which are usually at or near 5°C (41°F) are allowed to come to the temperature of the instrument before the measurement is taken. The time delay feature of the GPR 12-70 refractometer is ideal for this analysis. Any time delay up to 999 seconds (16 minutes, 39 seconds) can be selected. The exact time required must be found by experimentation, but 30 seconds is suggested as a useful starting point. The following samples were all read on a standard GPR 12-70 with an FC1 hinged sample cover. Constant temperature control was provided by an LTD 6 Thermocirculator, (an alternative to the GPR 12-70 and Thermocirculator would be the PTR 46 refractometer with Peltier cell internal temperature control). All the measurements were made at 20°C using the 'emulsion' scale.

	Refractive Index	% Brix
'Whole' pasteurised milk	1.3485	10.5
	1.3485	10.5
	1.3485	10.5
	1.3485	10.5
	Average 1.3485	10.5

'Semi-skimmed' and 'Skimmed' milk give the same result as the 'Whole' sample.

Natural Low Fat Yoghurt	1.3525	13.0
	1.3525	12.9
	1.3525	13.0
	1.3523	12.7
	1.3523	12.7
	Average 1.3524	12.9

The sample needs to be stirred well to ensure an even consistency before measuring. Being thick, it takes longer to come to stability Suggested wait time – 60 seconds.

Extra thick flavoured yoghurt	1.3682	22.6
	1.3679	22.4
	1.3680	22.5
	1.3680	22.5
	1.3678	22.4
	Average 1.3680	22.5

Being very thick, this sample had excellent consistency however, stirring is still recommended. The wait time is suggested as for the previous sample.

Condensed milk                      This sample is easily measure. Typical value being 70.4 Brix, corrected to 20°C

Sometimes it is difficult to measure single and double cream on the refractometer. This is probably due to the high scattering nature of the sample.