

AN APPLICATION
IN THE ENOLOGY FIELD

LM 03

MULTIPARAMETRIC
LABORATORY

The LM-03 unit is a multiparametric analyzer designed for enological use.

With this instrument it is possible to carry out different kind of analysis:

- 1. Analysis on musts**
- 2. Analysis on wine/must - wine**
- 3. Analysis on distillate**
- 4. Conductivity measurements**
- 5. Analysis on musts during fermentation**

The LM-03 unit can be used into two different ways:

- as specific analyser for determining the parameters usually measured in the enological laboratories
- as interactive system for the global control of the fermentation process using a specific dedicated software.





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1. Analysis on must.

Determination of the sugar degree on must: the determination of the sugar degree is direct and it is carried out on not treated product. The result may be expressed in Brix, Babo, Baumé, Volumic Mass, Oechsle and probable Alcohol.

2. Analysis on wine/must – wine.

Determination of Sugars and not reductive Extract (NRE): this determination is indirect and therefore the unit requires some information before the analysis: the type of product to be analysed, the amount of alcohol if already present, and the conductivity of the product (the conductivity is automatically measured by the instrument). Once these data have been introduced the analysis is carried out.

Alcohol determination: a special function allows the alcohol measurement on not treated product, without the alcohol measurement on the distillate. In this case, before carrying out the measurement it is necessary to know the density of the product to be analysed. This value is quickly obtained with an hydrostatic balance or with a densimeter (also with a simple aerometer). The more accurate the density measurement the more precise it will be the alcoholic measure of the instrument. The accuracy of the alcohol titration with the LM-03 is better than through the Malligand method with the ebulliometer which similarly does not require any distillation.

Determination of the total Extract: also in this case, as for the other official methods, it is necessary to introduce the value of the alcohol content of the product to be analysed (if not known it is possible to measure it with the LM-03 unit). After the introduction of the alcohol content value, the determination of the total Extracts can be carried out.

3. Analysis on alcoholic distillate.

Determination of the alcoholic strength expressed in % v/v of ethanol: in this case the measurement is directly carried out on the distillate. The software of the unit translates the refractometric value in % v/v of ethanol using the internationally recognized table. The necessary amount of sample is 2 ml and the time for analysis is very quick (few seconds).

4. Conductivity measurement.

It is possible to carry out the conductivity measurement on any liquid solution using the conductivity probe of the instrument.

5. Analysis on musts during fermentation.

Control of the fermentation cycles:

The LM-03 unit is provided with an interactive software for controlling many fermentation processes, following the trend of different parameters, stocking the data, elaborating graphics, etc... The parameters being automatically read or calculated are the following:

- Sugars
- Alcohol
- Extracts

The unit can memorize and treat also the other data manually introduced such as: pH, Total Acidity, SO₂ and so on, according to the operator's needs. To start with a fermentation cycle, it is necessary to set-up the unit creating a "specific lot" and introducing the identification data of the fermenting product (a sort of electronic ticket in which they are present the name of the product and some features that may be useful for the analysis).

During the fermentation cycle they will be sampled some samples from fermentators at different times defined by the enologist which will be measured with the LM-03 unit.

After the analysis the system will show the results, automatically updating all the database values, thus elaborating graphics and historical reports. The software is able to manage also the enrichments and the mixing of some lots.

What are the advantages compared to alternative methods:

- very quick analysis
- analysis on not treated product
- free cost of analysis (no use of reagents).
- possibility to manage and stocking data of fermentation processes

To whom is intended for:

- Agro/enological consultants
- Wineries
- Chemical Enological laboratories