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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 729

OIL 2

~~OLEAGINOUS~~ SEEDS

DETERMINATION OF ACIDITY OF OILS

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 729, *Oleaginous seeds – Determination of acidity of oils,* was drawn up by Technical Committee ISO/TC 34, *Agricultural food products,* the Secretariat of which is held by the Magyar Szabványügyi Hivatal (MSZH).

Work on this question by the Technical Committee began in 1961 and led, in 1963, to the adoption of a Draft ISO Recommendation.

In March 1966, this Draft ISO Recommendation (No. 902) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Argentina	Hungary	Romania
Australia	India	South Africa, Rep. of
Belgium	Iran	Turkey
Bulgaria	Ireland	U.A.R.
Chile	Israel	United Kingdom
Colombia	Italy	U.S.S.R.
Czechoslovakia	Netherlands	Yugoslavia
Finland	New Zealand	
France	Norway	
Germany	Poland	

No Member Body opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council which decided, in May 1968, to accept it as an ISO RECOMMENDATION.

ISO Recommendation R 729 May 1968

OLEAGINOUS SEEDS

DETERMINATION OF ACIDITY OF OILS

1. SCOPE

1.1 This ISO Recommendation describes a method for the determination of the acidity of oil present in oleaginous seeds. The acidity can be expressed as an acid value or as conventional acidity.

1.2 **Field of application**

The present ISO Recommendation does not apply to cotton seed with adherent linters.

2. DEFINITIONS

2.1 *Acid value.* Number of milligrammes of potassium hydroxide required to neutralize the free fatty acid in 1 g of the oil.

2.2 *Acidity.* Conventional expression of the percentage of free fatty acids (see clauses 7.2 and 7.3).

3. PRINCIPLE

3.1 Solution, in a mixture of ethanol and diethyl ether, of the oil extracted in the determination of the oil content of the seeds, followed by titration of the free fatty acids present with an ethanolic solution of potassium hydroxide.

3.2 The oil for the determination of acidity should be extracted as soon as the seeds concerned are ground, and analysed as soon as the last weighing of the extraction flasks has been made.

3.3 The acidity may be determined on the oil from the product as received (pure seed + impurities) or, if required, on the pure seed.

4. REAGENTS

4.1 *Mixture,* 1 + 1 v/v of ethanol 95 % v/v and diethyl ether. Neutralize exactly, just before use, by means of the ethanolic potassium hydroxide solution (4.2), in the presence of 0.3 ml of indicator (4.3) per 100 ml of this mixture (phenolphthalein or alkali blue 6 B, as the case may be, see clause 8.2).

4.2 *Potassium hydroxide,* approximately 0.1 N, or if necessary, approximately 0.5 N solution in ethanol 95 % v/v. The exact concentration should be known, and checked immediately before use. Use a solution prepared at least five days previously and decanted into a bottle of brown glass, provided with a rubber stopper. The solution should be colourless or straw yellow.

NOTE. – It is recommended that the ethanol should be purified by adding 5 to 10 g of potassium hydroxide to 1 litre of the ethanol, boiling for 1 hour under reflux and finally distilling over.

4.3 *Indicator*, phenolphthalein, 10 g per litre solution in ethanol 95 % v/v or, if necessary, alkali blue 6 B, 20 g per litre solution in ethanol 95 % v/v.

5. APPARATUS

Burette, graduated in 0.1 ml, complying with the specification for class of accuracy A of ISO Recommendation R 385, *Burettes*.

6. PROCEDURE

6.1 Test portion

Carry out the determination, immediately after the extraction, on the whole of the extracted oil obtained in accordance with ISO Recommendation R 659, *Oleaginous seeds – Determination of oil content*, and whose weight is known.

6.2 Determination

Dissolve the test portion in about 150 ml of the 1 + 1 mixture of ethanol and diethyl ether (4.1), previously neutralized.

If the solution obtained is not perfectly clear, add a further quantity of solvent (4.1).

Titrate, with shaking, with the 0.1 N ethanolic solution of potassium hydroxide (4.2) up to the end-point of the indicator (pink colour of phenolphthalein persisting for at least 10 seconds). If the quantity of the 0.1 N ethanolic solution of potassium hydroxide (4.2) required exceeds 20 ml, use a 0.5 N solution (see clauses 8.1, 8.2 and 8.3).

Carry out two determinations on the same sample.

7. EXPRESSION OF RESULTS

7.1 It is recommended that the results of the analysis should be expressed as the acid value (see clause 2.1). Since 1 ml of N potassium hydroxide solution corresponds to 56.1 mg of potassium hydroxide,

$$\text{acid value} = \frac{V \times 56.1}{M}$$

where

V is the volume, expressed in millilitres of N solution, of ethanolic potassium hydroxide solution used.

M is the mass, in grammes, of the test portion.

Take as result the arithmetic mean of the two determinations.