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**Cosmetics — Calculation of organic  
indexes of hydrolates — Supplemental  
information for ISO 16128-2**

*Cosmétiques — Calcul de l'indice biologique des hydrolats —  
Informations complémentaires à utiliser avec l'ISO 16128-2*

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Published in Switzerland

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 217, *Cosmetics*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

This document provides calculations of organic indexes of hydrolates.

The purpose of this document is to help hydrolates manufacturers, particularly SMEs, apply ISO 16128 calculations for their products.

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# Cosmetics — Calculation of organic indexes of hydrolates — Supplemental information for ISO 16128-2

## 1 Scope

This document describes additional information to use with ISO 16128-2 for the special situation of hydrolates. It clarifies the method of determining the organic index in the absence of measurement of the quantity of water introduced.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

### 3.1

#### essential oil

product obtained from a natural raw material of plant origin, by steam distillation, by mechanical processes from the epicarp of citrus fruits, or by dry distillation, after separation of the aqueous phase, if any, by physical process

### 3.2

#### herbal distillates

aqueous products of hydrodistillation

Note 1 to entry: They are colloidal suspensions of essential oils as well as water-soluble components obtained by steam distillation or hydrodistillation from plants/herbs.

Note 2 to entry: Also known as floral waters, hydrosols, hydrolates, herbal waters, and essential waters.

## 4 Hydrolates in cosmetic ingredients

There are two different ways to produce hydrolates.

- a) Floral waters (or plant waters) are produced by distillation with water of a plant, which is frequently non-aromatic and frequently dried (cornflower, lime blossom, green tea, hamamelis).
- b) Hydrolates per se, which are a by-product of the distillation of an aromatic plant with a view to obtain an essential oil.

## 5 Organic index calculation

### 5.1 Case of floral waters

Floral waters are most frequently manufactured by heating a defined quantity of dried plants in water. In rare cases, steam extraction is performed.

Where a water or steam meter is available at the inlet, the formula from ISO 16128-2 is used.

The quantity of water taken into account is that which is in contact with the plant.

The organic index is given by the formula described in ISO 16128-2:2017, 4.4.1.

If there is no steam meter at the inlet, the water losses in the production tool should be estimated, given that the greatest proportion of water lost is found in the plant which is saturated with water at the end of the extraction process.

By default, a 20 % water loss (determined on the basis of a pilot) is applied. See [Formula \(1\)](#):

$$m_{H_2O} = FWW \times 1,25 \quad (1)$$

where

$m_{H_2O}$  is the weight of total water introduced;

$FWW$  is the weight of floral water obtained.

### 5.2 Case of hydrolates

Essential oils are produced by injecting steam which concomitantly carries the hydrosoluble substances (hydrolate) and the essential oils, both being subsequently recondensed. The difference in density makes it possible to separate the essential oil and the hydrolate.

The OI of essential oils is 1, as there is no more water, which is a process solvent in this case.

It is very important to note that the quantity of plant introduced is weighed before entering the tank.

Where a water or steam meter is available at the inlet, the formula from ISO 16128-2 can be applied for the hydrolate without difficulty (see ISO 16128-2:2017,4.4.1).

If there is no steam meter at the inlet, the water losses in the production tool should be estimated, given that the greatest proportion of water lost is found in the plant which is saturated with water at the end of the extraction process.

By default, a 20 % water loss (determined on the basis of a pilot) is applied. See [Formula \(2\)](#):

$$m_{H_2O} = HW \times 1,25 \quad (2)$$

where

$m_{H_2O}$  is the weight of total water introduced;

$HW$  is the weight of hydrolate obtained.

A special case deals with the hydrolates of fresh organic plants. See [Formula \(3\)](#):

$$\text{If } CW > HW \times 1,25, \text{OI} = 1 \quad (3)$$

where

CW is the amount of constitutive water;

HW is the weight of hydrolate obtained.

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