

Ethyl Maltol

1 Nonproprietary Names

USP–NF: Ethyl Maltol

2 Synonyms

2-Ethyl pyromeconic acid; 3-hydroxy-2-ethyl-gamma-pyrone; 3-hydroxy-2-ethyl-4-pyrone; *Piromatol E*; *Veltol Plus*.

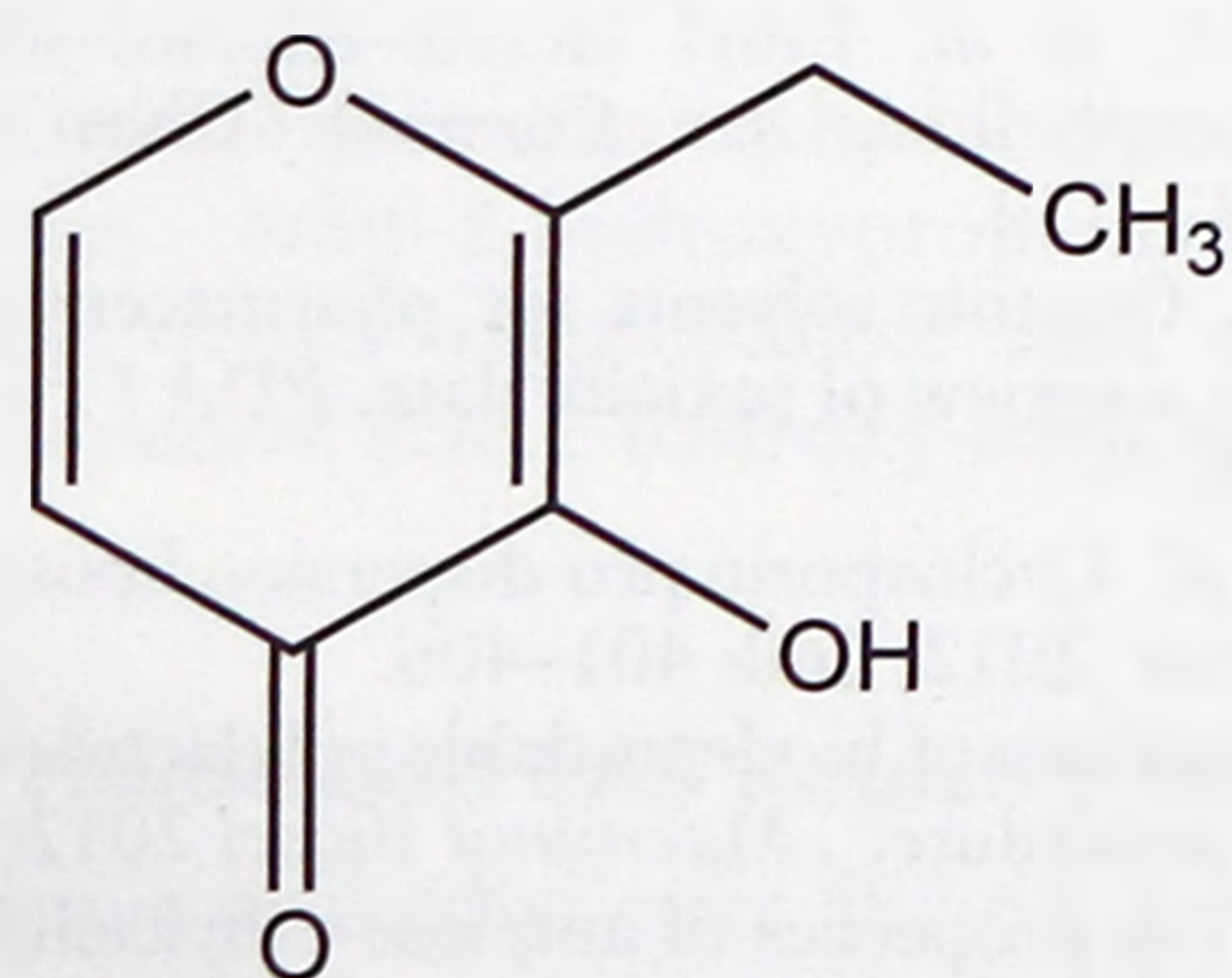
3 Chemical Name and CAS Registry Number

2-Ethyl-3-hydroxy-4*H*-pyran-4-one [4940-11-8]

4 Empirical Formula and Molecular Weight

C₇H₈O₃ 140.14

5 Structural Formula



6 Functional Category

Flavor enhancer; flavoring agent.

7 Applications in Pharmaceutical Formulation or Technology

Ethyl maltol is used in pharmaceutical formulations and food products as a flavoring agent or flavor enhancer in applications similar to maltol. It has a flavor and odor 4–6 times as intense as maltol. Ethyl maltol is used in oral syrups at concentrations of about 0.004–0.61 % and also at low levels in perfumery.

8 Description

Ethyl maltol occurs as a white crystalline solid with a characteristic, very sweet, caramel-like odor and taste. In dilute solution it possesses a sweet, fruitlike flavor and odor.

9 Pharmacopeial Specifications

See Table I.

Table I: Pharmacopeial specifications for ethyl maltol.

Test	USP 40–NF 35 S1
Identification	+
Residue on ignition	≤0.2%
Water	≤0.5%
Assay (anhydrous basis)	≥99.0%

10 Typical Properties

Melting point 85–95°C

Solubility see Table II.

Table II: Solubility of ethyl maltol.

Solvent	Solubility at 20°C
Chloroform	1 in 5
Ethanol (95%)	1 in 10
Glycerin	1 in 500
Propylene glycol	1 in 17
Water	1 in 55

Spectroscopy

IR spectrum see Figure 1.

NIR spectrum see Figure 2.

Raman spectrum see Figure 3.

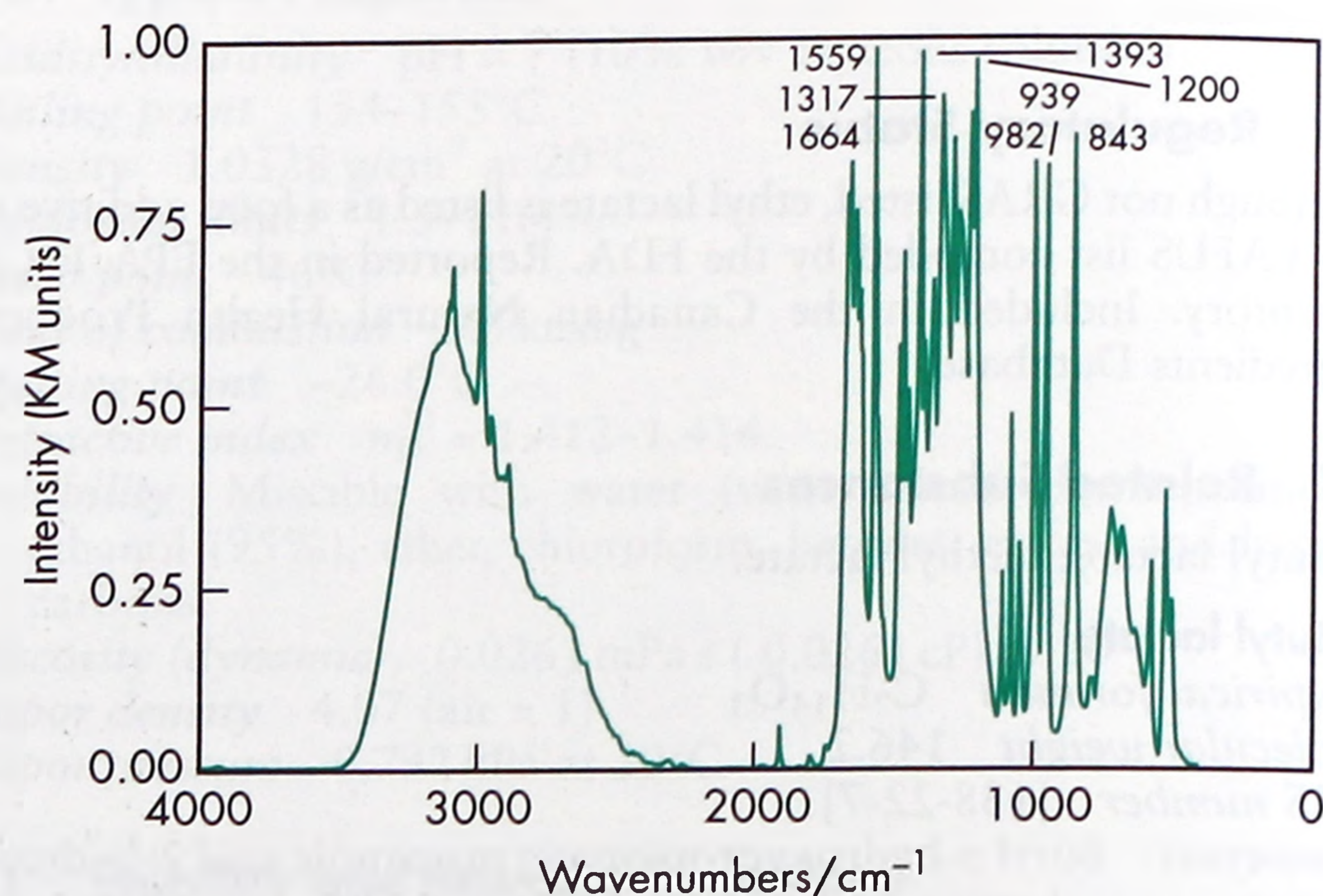


Figure 1: Infrared spectrum of ethyl maltol measured by diffuse reflectance. Adapted with permission of Informa Healthcare.

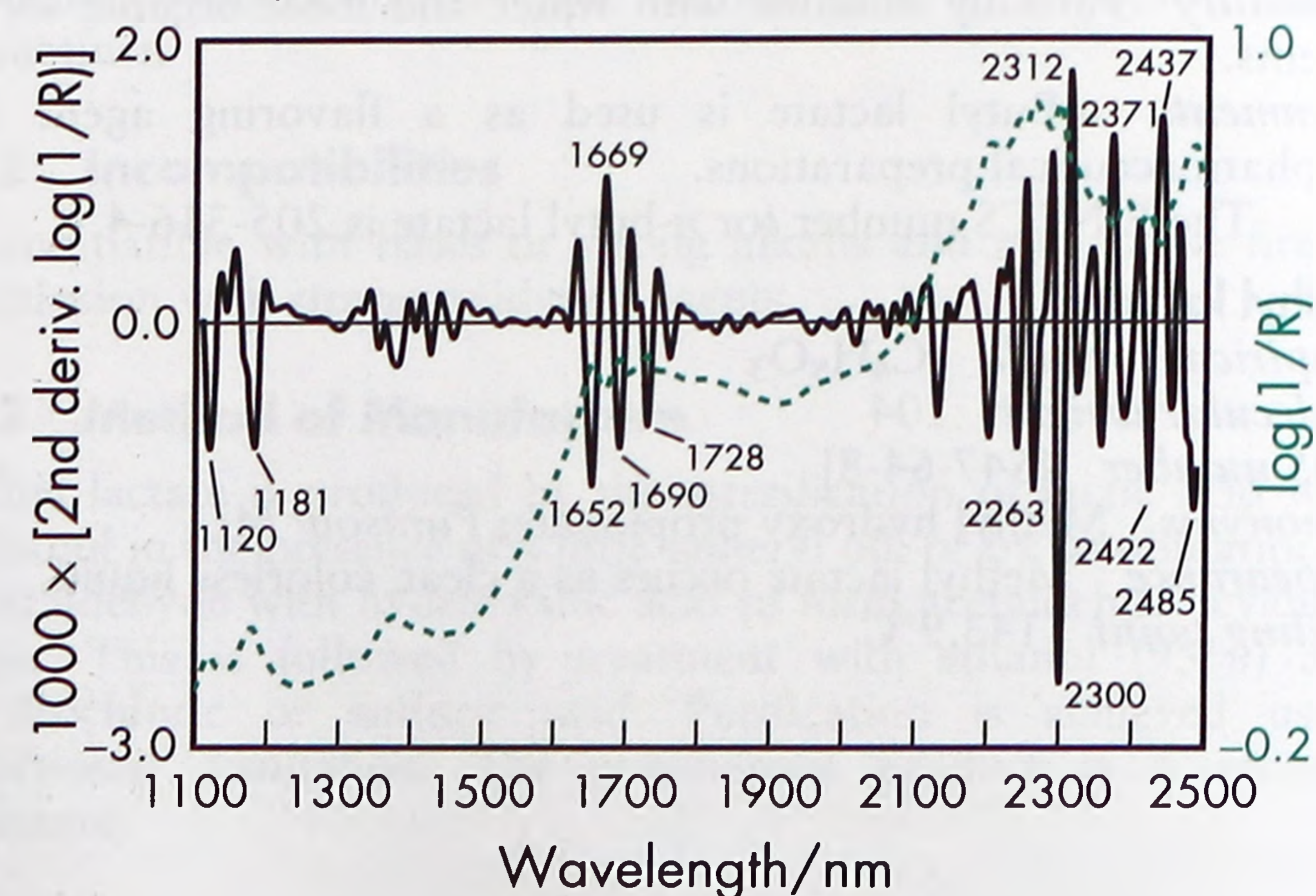


Figure 2: Near-infrared spectrum of ethyl maltol measured by reflectance.

11 Stability and Storage Conditions

Ethyl maltol forms complexes with iron and therefore should not be stored in iron containers. Solutions may be stored in glass or plastic containers. The bulk material should be stored in a well-closed container, protected from light, in a cool, dry, well-ventilated place, and away from sources of heat or ignition. Store at temperatures