# GLYCEROL ESTER OF WOOD ROSIN
(TENTATIVE)

*Tentative specifications prepared at the 74th JECFA (2011) and published in FAO JECFA Monographs 11 (2011), superseding tentative specifications prepared at the 71st JECFA (2009), published in FAO JECFA Monographs 7 (2009). A temporary group ADI of 0-12.5 mg/kg bw for glycerol ester of gum rosin and glycerol ester of wood rosin was established at the 74th JECFA (2011).*

*Updated information required:*

- *Composition of the refined wood rosin currently used as the source rosin with regard to the levels of resin acids and "neutrals" (non-acidic saponifiable and unsaponifiable substances)*
- *Composition of the glycerol ester of wood rosin with regard to the levels of:*
  - *a) glycerol esters;*
  - *b) free resin acids; and*
  - *c) neutrals (non-acidic saponifiable and unsaponifiable substances)*
- *Composition of the total glycerol ester of resin acids with regard to the levels of:*
  - *a) monoglycerol esters;*
  - *b) (1,2) diglycerol esters;*
  - *c) (1,3) diglycerol esters;*
  - *d) triglycerol esters; and*
  - *e) dimeric esters*
- *Composition of the neutrals, including identification of the major classes of compounds and the concentration of the major constituents within the classes*

*NOTE:*
*Validated methods should be used for the analysis of substances considered in the specification. Detailed information on the methods used, including sample preparation and validation parameters should be provided. It is recommended that representative samples of commercially available glycerol ester of gum rosin be analysed by independent laboratories.*

**SYNONYMS**

INS No. 445(iii)

**DEFINITION**

Glycerol ester of wood rosin is a complex mixture of tri- and diglycerol esters of resin acids from wood rosin, with a residual fraction of monoglycerol esters. Besides these esters, up to x % resin acids (data on percentage required) and up to x % non-acidic saponifiable and unsaponifiable substances (data on percentage required) are present. It is obtained by the solvent extraction of aged pine stumps (*Pinus palustris* (longleaf) and *Pinus elliottii* (slash) species) followed by a liquid-

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| | liquid solvent refining process. The refined wood rosin composed of x% resin acids (data on percentage required) and x% neutrals (non-acidic saponifiable and unsaponifiable substances) (data on percentage required). The resin-acid fraction is a complex mixture of isomeric diterpenoid monocarboxylic acids having the typical empirical formula $C_{20}H_{30}O_2$, of which the main component is abietic acid. The substance is purified by steam stripping or by countercurrent steam distillation.<br><br>These specifications do not cover substances derived from gum rosin, an exudate of living pine trees, and substances derived from tall oil rosin, a by-product of kraft (paper) pulp processing. |
| C.A.S. number | 8050-30-4 |
| Assay | Sum of tri- and diglycerol esters: information required |
| **DESCRIPTION** | Hard, yellow to pale amber-coloured solid |
| **FUNCTIONAL USES** | Emulsifier, density adjustment agent (flavouring oils in beverages), stabilizer, chewing gum base component |

## CHARACTERISTICS

IDENTIFICATION

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| Solubility (Vol. 4) | Insoluble in water, soluble in acetone |
| Infrared absorption (Vol. 4) | The infrared spectrum of a thin film of the sample (potassium bromide disc) corresponds with the typical infrared spectrum below |
| Sulfur test | Negative<br>Weigh 40-50 mg of sample into a test tube and add 1- 2 drops of a 20% (w/v) solution of sodium formate. Place a strip of lead acetate test paper over the mouth of the test tube. Heat the tube until fumes are formed that contact the test paper. Continue heating for 2-5 min. The formation of a black spot of lead sulfide indicates the presence of sulfur-containing compounds. (Detection Limit: 50 mg/kg sulfur) |

PURITY

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| Monoglycerol esters | Information required |
| Neutrals (non-acidic saponifiable and unsaponifiable substances) | Information required |
| Specific gravity (Vol. 4) | $d^{20}_{25}$: Not less than 0.935 (50% solution in d-limonene) |
| Ring and ball softening point (Vol. 4) | Not less than 82° (see “Specific Methods, Glycerol Esters of Rosins”) |

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| Acid value (Vol. 4) | Between 3 and 9 (see "Specific Methods, Fats, Oils, and Hydrocarbons") |
| Lead (Vol. 4) | Not more than 1 mg/kg<br>Determine using an AAS/ICP-AES technique appropriate to the specified level. The selection of sample size and method of sample preparation may be based on the principles of the method described in Volume 4 (under "General Methods, Metallic Impurities"). |

## TESTS

PURITY TESTS

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| Monoglycerol esters: | Information required |
| Neutrals (non-acidic saponifiable and unsaponifiable substances) | Information required |

## METHOD OF ASSAY

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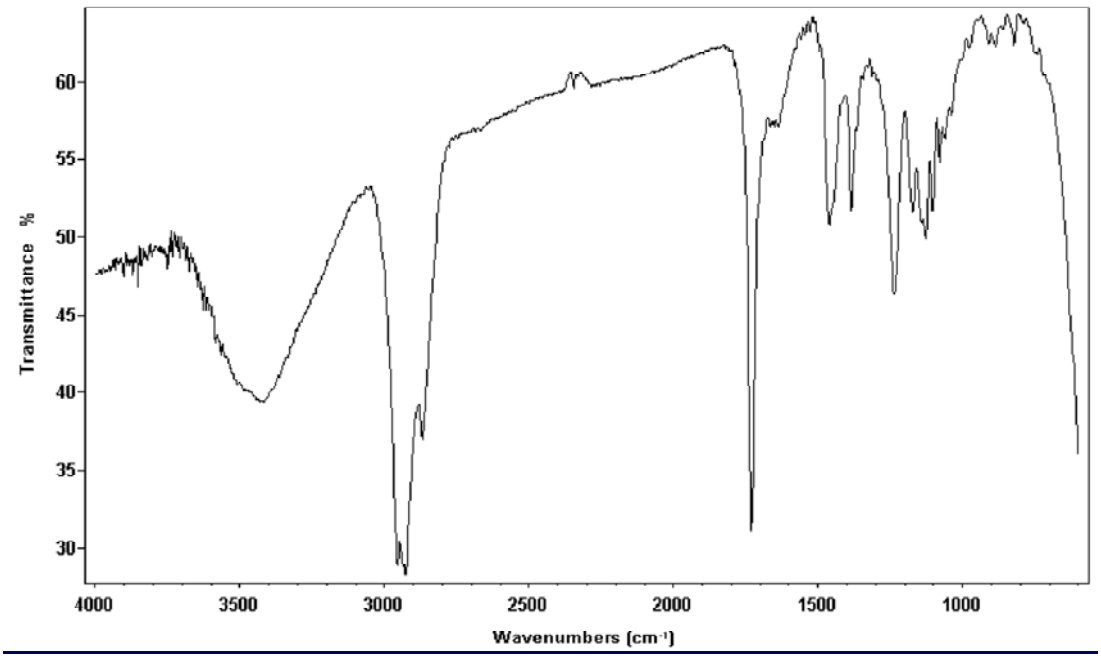
| Tri- and diglycerol esters | Information required |

Infrared spectrum




NOTE: The IR spectrum for glycerol ester of wood rosin is referenced from the Food Chemicals Codex, 7th Edition, 2010, p. 449. Reprinted with permission from the US Pharmacopeial Convention, 12601 Twinbrook Parkway, Rockville, MD USA 20852.