

## GLYCEROL ESTER OF GUM ROSIN (TENTATIVE)

*Prepared at the 77th JECFA (2013) and published in FAO JECFA Monographs 14 (2013), superseding tentative specifications prepared at the 74th JECFA (2011), published in FAO JECFA Monographs 11 (2011). A temporary group ADI of 0-12.5 mg/kg bw for glycerol ester of gum rosin and glycerol ester of wood rosin was withdrawn at the 77th JECFA (2013).*

*Updated information required:*

- *Composition of the refined gum 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 gum 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 esters of resin acids with regard to the levels (%) of:*
  - a) glycerol monoesters;*
  - b) Sum of glycerol di- and tri- esters (assay)*

**NOTE:**

*Detailed data and information using the validated methods including sample preparation 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(i)

### DEFINITION

Glycerol ester of gum rosin is a complex mixture of glycerol di- and tri-esters of resin acids from gum rosin, with a residual fraction of glycerol monoesters. Besides these esters, up to x % free resin acids (data on percentage required) and up to x % other non-acidic saponifiable and unsaponifiable substances (data on percentage required) are present. It is obtained by the esterification of refined gum rosin under a nitrogen atmosphere with food-grade glycerol, and purified by countercurrent steam distillation. Refined gum rosin is obtained by extracting oleoresin gum from living pine trees (*Pinus oocarpa* Schiede) and refining it through washing, filtration and distillation. It is 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.

These specifications do not cover substances derived from wood rosin, obtained by the solvent extraction of aged pine stumps, and substances derived from tall oil rosin, a by-product of kraft (paper) pulp processing.

Assay

Sum of glycerol di- and tri- esters: information required

### DESCRIPTION

Hard, yellow to pale amber-coloured solid

**FUNCTIONAL USES** Emulsifier, density adjustment agent (flavouring oils in beverages)

## CHARACTERISTICS

### IDENTIFICATION

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>Solubility</u> (Vol. 4)          | Insoluble in water; soluble in acetone                                                                                                                                                                                                                                                                                                                                                                                                |
| <u>Infrared absorption</u> (Vol. 4) | The infrared spectrum of a thin film of the sample (potassium bromide disc) corresponds to the typical infrared spectrum below                                                                                                                                                                                                                                                                                                        |
| <u>Sulfur test</u>                  | 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

|                                                                         |                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>Glycerol monoesters:</u>                                             | Information required                                                                                                                                                                                                                                                                   |
| <u>Neutrals (non-acidic saponifiable and unsaponifiable substances)</u> | Information required                                                                                                                                                                                                                                                                   |
| <u>Specific gravity</u> (Vol. 4)                                        | $d_{25}^{20}$ : Not less than 0.935 (50% solution in d-limonene)                                                                                                                                                                                                                       |
| <u>Ring and ball softening point</u> (Vol. 4)                           | Not less than 82° (see "Specific Methods, Glycerol Esters of Rosins")                                                                                                                                                                                                                  |
| <u>Acid value</u> (Vol. 4)                                              | Between 3 and 9 (see "Specific Methods, Fats, Oils, and Hydrocarbons")                                                                                                                                                                                                                 |
| <u>Lead</u> (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

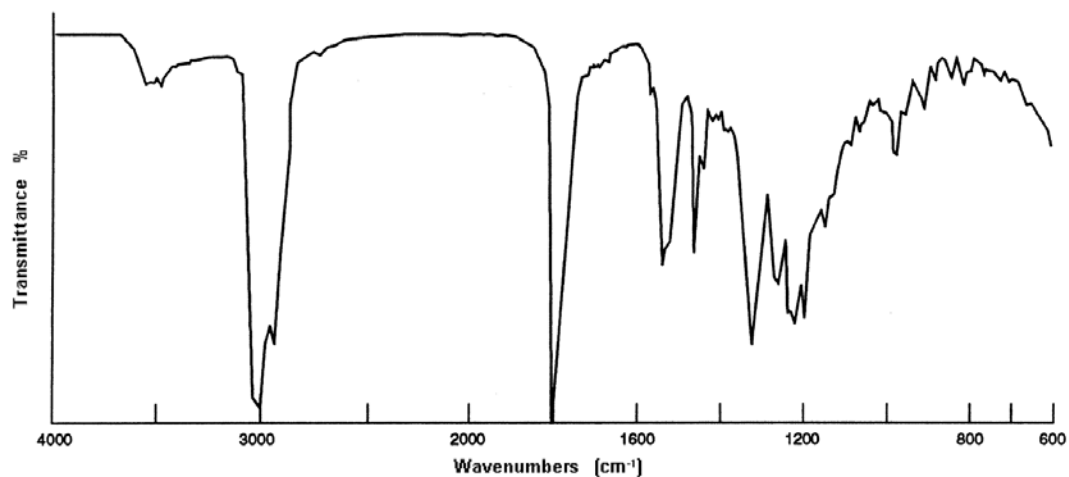
### PURITY TESTS

|                                                                         |                      |
|-------------------------------------------------------------------------|----------------------|
| <u>Glycerol monoesters</u>                                              | Information required |
| <u>Neutrals (non-acidic saponifiable and unsaponifiable substances)</u> | Information required |

## METHOD OF ASSAY

Sum of glycerol di- and tri- esters      Information required

Infrared spectrum



NOTE: The IR spectrum for glycerol ester of gum rosin is referenced from the Food Chemicals Codex, 8<sup>th</sup> Edition, 2012, p. 501. Reprinted with permission from the US Pharmacopeial Convention, 12601 Twinbrook Parkway, Rockville, MD USA 20852.