Turmeric Oleoresin

Definition	This is a pigment obtained by extracting ginger and dried rootstock of turmeric (Curcuma longa L.) of zingiberaceae with ethyl alcohol, oil, or organic solvent (extraction solvents for spices and oleo resin s). The major pigment is curcumin (C21H20O6 = 368.37). Dilutant, stabilizer, or solvent can be adde d for the purpose of color value adjustment and quality preservation.
[Compositional Specifications of Turmeric Oleoresin]	
Content	Color value (E 10%, 1cm) of Turmeric Oleoresin should not be more than the indicated value.
Description	Turmeric Oleoresin is yellow ~ dark reddish brown liquid, lump, powder, or paste with a slight charact eristic scent.
Identification	Turmeric Oleoresin is dissolved in ethyl alcohol (if it is water soluble, it is dissolved in small amount of water and then ethyl alcohol is added). The concentration is adjusted so that it has almost same tone of color as potassium bichromate solution (1→1,000) (Test Solution). (1) Test Solution shows yellow color and green fluorescence.. (2) Test Solution turns red when 2 ml of sulfuric acid is added and stirred. (3) A piece of filter paper is wetted with Test Solution and dried. A few drops of hydrochloric acid, follo wed by a few drops of boric acid solution (1→100) are dropped onto the piece of filter paper. Upon dry ing by heating, it turns cherry red. When a few drops of ammonia solution is added, it turns blue.
Purity	(1) Arsenic : 0.25 g of Turmeric Oleoresin is placed in a platinum, quartz, or porcelain crucible. 10 ml of magnesium nitrate in ethyl alcohol(1→50) is added to the crucible and then alcohol is ignited. It is th en reduced to ash by heating at 450~550°. If carbonaceous substance persists, it is wetted with minut e amount of nitric acid, which is further heat treated at 450~550°. After cooling, 3 ml of hydrochloric a cid is added to the residue, which is then dissolved by heating in a water bath. When test for arsenic i s carried out with this test solution, it should not be more than 4ppm. (2) Heavy Metals : 0.5 g of Turmeric Oleoresin are carbonized by heating mildly in a quartz or porcela in crucible. After cooling, add 2 ml of nitric acid and 5 drops of sulfuric acid, it is heated until white sm oke disappears, which is then reduced to ash by further heating at 450~550°. After cooling, 2 ml of hy drochloric acid is added, which is then evaporated to dryness in a water bath. 3 drops of hydrochloric acid and 10 ml of hot water are added to the resulting residue, which is then heated for 2 minutes. Aft er cooling, 1 drop of phenolphthalein indicator solution is added, then ammonia solution is added until the color of the solution becomes pale red. The resulting solution is transferred into a Nestler cylinder by rinsing with water. 50 ml of test solution is prepared by adding 2 ml of diluted acetic acid (1→20) an d water. When this solution tested for heavy metals, the content should not be more than 40ppm. Col or standard solution is prepared by the following procedure. 2 ml of nitric acid, 5 drops of sulfuric acid, and 2 ml of hydrochloric acid are added and evaporated to dryness in a crucible that is made of the s ame material used for test solution preparation. 3 drops of hydrochloric acid are added to the residue, which is then transferred into another Nestler cylinder as described above. Finally, 2 ml of lead stand ard solution, 2 ml of diluted acetic acid (1→20), and water are added to bring the total volume to 50 m l. (3) Lead : 0.8 g of Turmeric Oleoresin (if it is liquid, it is concentrated by evaporation in a water bat h) is slowly carbonized by heating, which is reduced ash by further heat treatment at a temperature b elow 500°. Carefully 20 ml of dilute nitric acid is added to the ash, which is then gently boiled for 5 mi nutes. It is then filtered (if necessary), the residue is washed with water, which is then added to the filt rate. Water is added so that total volume of this solution becomes 50 ml. This test solution is tested fo r lead. The detected amount of lead should not be more than 10ppm.

	(4) Residual Solvents : When Turmeric Oleoresin is tested by Purity (4) for [Paprika Extract Pigments], the content of methylene chloride, trichloro ethylene, or the sum of both (if used together) should not be more than 30ppm. Acetone Not more than 30ppm Isopropyl alcohol Not more than 50ppm Methyl alcohol Not more than 50ppm Hexane Not more than 25ppm
Assay(Color Value)	Appropriate amount of Turmeric Oleoresin is precisely weighed so that the absorption is within 0.3 ~ 0.7 and dissolved in ethyl alcohol (total volume 100 ml). 1 ml of this solution is diluted to 100 ml with ethyl alcohol (Test Solution). If necessary, the solution is centrifuged and the supernatant is used. Using ethyl alcohol as a reference solution, absorption A is measured at the maximum absorption near 425 nm with 1cm path length. Color value is obtained using the following equation. $$\text{Color Value (E 10\%, 1cm)} = \frac{A \times 1{,}000}{\text{Weight of sample(g)}}$$
Permitted Use Level of Turmeric Oleoresin (Curcumin)	Should not be used for the food items listed below. 1. Natural food [Natural food[meat, seafood (whale meat included), vegetables, fruits, marine algae, bean, and their simply processed food (peeled or cut)] 2. Tea 3. Hot pepper powder, red pepper powder or shredded red pepper 4. Kimchi 5. Fermented hot pepper soybean paste 6. Vinegar