

CAROTENOID ADDITIVES

E160 Carotenoids

E160a

**Carotene (beta-),
β-carotene,
Provitamin A**

C.I. 40800

C.I. 75130

C.I. Food Orange 5

E160a (I) synthetic trans β-carotenes

E160a (ii), carotenes extracted from plants carrots (*Daucus carota*), palm oil (*Elaeis guineensis*), or sweet potato

E160a(iii): obtained by the fermentation of *Blakeslea trispora*. It contains mostly βE160a(iv): carotenes extracted from algae. They are extracted from *Dunaliella salina* (or *D. bardawil* and *D. Kone*). They contain trans β-carotenes and trans cis-carotenes

E160b

Roucou extract (*Bixa orellana*),

Annatto,

E160b(i) Bixin,

E160b(ii) Norbixin

Used in : dessert, cheese (Red Leicester, Double Gloucester, Cheddar, Mimolette), surimi

E160c

Paprika extract (*Capsicum annum*),

Capsanthein,

Capsorubin

Used in : soups, sauces, meat and fish preserve.

E160d Lycopenes

E160d(i), synthetic

E160d(ii), Tomato extract

E160d(iii) mould extract (*Blakeslea trispora*)

Found in: tomatoes, red fruits, watermelon, grapefruit.

E160e

apocarotenal Beta-apo-8'-carotenal (C30),

Carotenal (beta-apo-8'-)

C.I. 40820

C.I. Food Orange 6

pharmaceutical and cosmetic colorant

found in : spinach

Used in : pharmaceutical and cosmetic products

E160f Beta-apo-8'-carotenoic acid ethyl ester (C30)

C.I. Food Orange 6

Ethyl ester of apocarotenic acid

prohibited EU permitted US AUS NZ

E161 Xanthophylls

E161a Flavoxanthin

found in : many plants

prohibited USA EU permitted AUS NZ

E161b Lutein

E161b(i) purified molecule from *Tagetes*

E161b(ii) extracted from marigold (*Tagetes erecta*)

found in : green leafy vegetables (kale, spinach, sorrel), yellow vegetables (corn, carrot), egg yolk and edible flowers such as marigold.

Used in : Flavored yogurt, chutney, chicken feed.

Lutein is often used in chicken feed to color its skin yellow, which pleases consumers [ref. needed]. This lutein intake also results in a darker egg yolk.

E161c Cryptoxanthin

found in : *Physalis*, orange and satsuma mandarin peel, papaya, egg yolk, butter, apple and bovine blood serum.

prohibited USA EU permitted AUS NZ

E161d Rubixanthin

(3R)-beta, psi-caroten-3-ol

CI 75125

CI natural yellow 27

extracted from rose hip (*Rosaceae*)

prohibited USA EU permitted AUS NZ

E161e Violaxanthin

precursor of neoxanthin in the carotenoid biosynthetic pathway. In peppers, it is also the precursor of capsorubin responsible for coloring.

prohibited USA EU authorized AUS NZ

E161f Canthaxanthin

Orobronze

Carophyll Red C.I. 40850

C.I. Food Orange 8

found in : chanterelle (*Cantharellus*), trout, salmon

tanning agent⁵

E161i Citranaxanthin

synthetic

(3R)-beta, psi-caroten-3-ol

Natural yellow 27

Used in chicken feed to color the skin yellow

E161j Astaxanthin

Yeast extract (*Xanthophyllomyces dendrorhous*)

found in : *Euphausia pacifica* (Pacific Krill), *Euphausia superba* (Antarctic Krill), *Haematococcus pluvialis* (Microalgae), *Pandalus borealis* (Arctic shrimp),

Astaxanthin is a carotenoid that does not convert in the human body to vitamin A (retinol).

additive for salmon and trout feed.