



ANTHOCYANINS

Structure

Major Sources	Shade	E.E.C.No.	Stability	Properties
Grape Skins Elderberry Red Red Cabbage Hibiscus	Red to purple to Blue depending on pH.	E 63	Light Good Heat Good	Anthocyanins are water-soluble colours. They are natural indicators being red in acidic conditions where they are most stable and becoming bluer as pH increases

Anthocyanin (R)	Substitution	Pattern
Pelargonidin (Pg)	3' H	5' H
Cyanidin (Cy)	OH	H
Delphinidin (Dp)	OH	OH
Petunidin (Pt)	OCH3	OH
Malvidin (Mv)	OCH3	OCH3



Beetroot Red

Structure

Major Sources	Shade	E.E.C.No.	Stability	Properties
Red beetroot (Beta Vulgaris)	Pink to Red	E 162	Light Poor Heat Poor	A water-soluble colour with limited stability to heat, light and oxidation. Most stable between pH 3.5-5.0. Most suited to frozen, dry or short shelf-life products not subjected to prolonged heating.



Annatto

Structure

Major Sources	Shade	E.E.C.No.	Stability	Properties
Seeds of the Annatto Shrub (Bixa Orellana)	Orange	E 160(b)	Light Fair Heat Good Below 125° C	Bixin is oil soluble. Norbixin is water soluble in alkaline conditions. Norbixin solutions will precipitate at acid ph but versions stabilised to about pH3 are available.

R = Me-Cis-bixin	Molecular Wt. 394.5
R = H-Cis -norbixin	Molecular Wt. 380.5



Natural Carotene

Major Sources	Shade	E.E.C.No.	Stability	Properties
Carrots Algae Palm	Yellow to Orange	E 160(a)	Light Fair Heat Good	Oil soluble colour, sensitive to oxidation. Shade is dependant on concentration used. Water dispersible versions are available.



Paprika

Structure

Major Sources	Shade	E.E.C.No.	Stability	Properties
Red Pepper (Capsicum Annum)	Orange to Red	E 160(c)	Light Fair Heat Good	Paprika is an oil soluble colour, sensitive to oxidation. Water dispersible versions are available.

Capsanthin



Lutein

Major Sources	Shade	E.E.C.No.	Stability	Properties
Tagetes erecta (Aztec Marigold)	Yellow	E 161(b)	Light Good Heat Good	An oil soluble egg yellow colour with good stability. The xanthophyll lutein is a commonly consumed carotenoid colour occurring in green leaves, vegetables, eggs and some flowers.



Curcumin

Major Sources	Shade	E.E.C.No.	Stability	Properties
Curcumin	Yellow	E 100	Light Poor Heat Good	Turmeric is a spice, the purified colour, Curcumin, is not soluble in water but water dispersible systems are available.



Chlorophylls

Structure

Major Sources	Shade	E.E.C.No.	Stability	Properties
Green leafed Plants	Green	E 140 E141	Light Poor Light Poor Heat Good Heat Good	Natural chlorophyll is oil soluble but water dispersible forms are available. Copper chlorophyll is oil soluble the Chlorophyllin is water soluble. These are chemically modified natural extracts.

Chlorophyll 'a', R = CH₃
Chlorophyll 'b', R = CHO



Titanium Dioxide

Structure

Major Sources	Shade	E.E.C.No.	Stability	Properties
Ilmenite and Rutile Ores	White	E 171	Light Excellent Heat Excellent	Manufactured from the ores ilmenite or rutile. A brilliant white pigment with many uses.

TiO₂