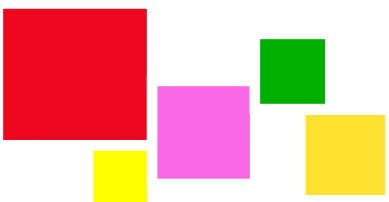


**We Colour
the World Around You**



**Application Specialist at
Sensient Colors Europe**



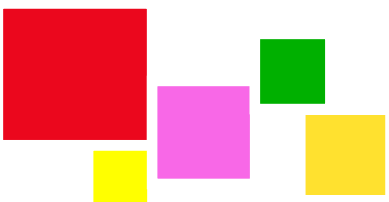
Sensient – Your Strong Global Partner



Sensient Technologies

- Corporate office in Milwaukee, USA
- Employees 4.000
- 71 locations in 37 countries



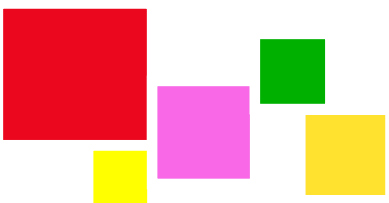


We bring life to your products



Sensient is your leading global developer, manufacturer and marketer of colours, flavours and fragrances.



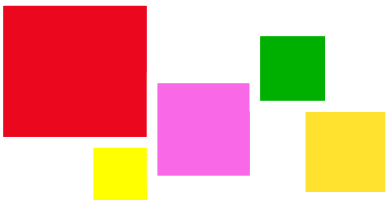


Application Service Team



- located near Hamburg (Geesthacht), Germany
- dedicated application team (11 people)
- responsible for the European, Middle East, North and South Africa markets





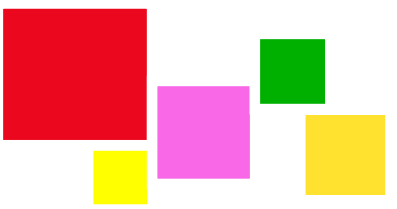
Application Service Team



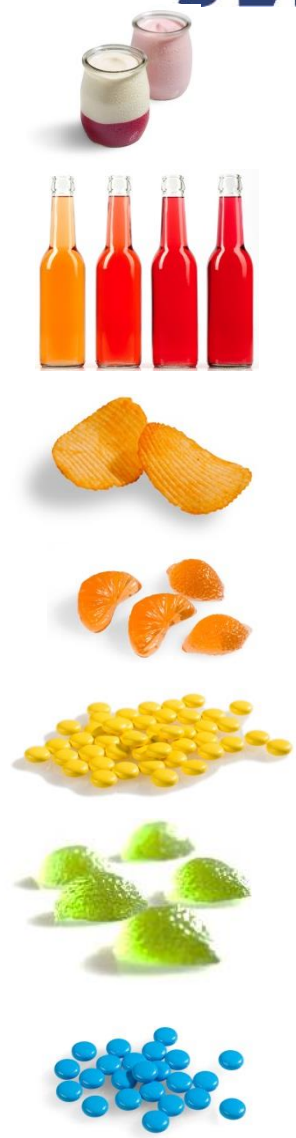
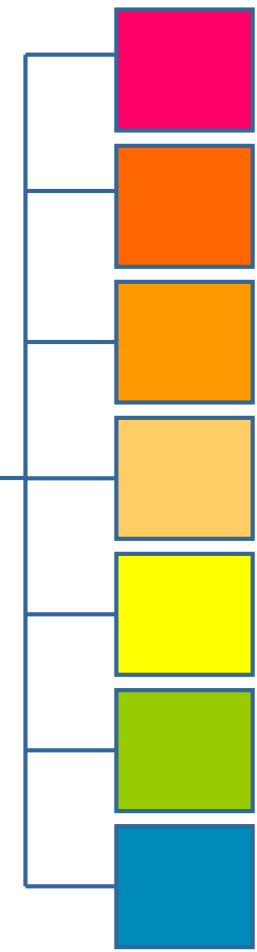
We transfer your individual needs into colouring solutions by

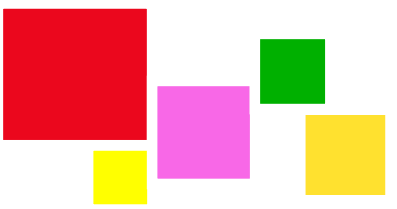
- In-house stability testing
- Numerous application systems
- Process support
- Scale up assistance
- Customer training and seminars





Colours from nature for your products

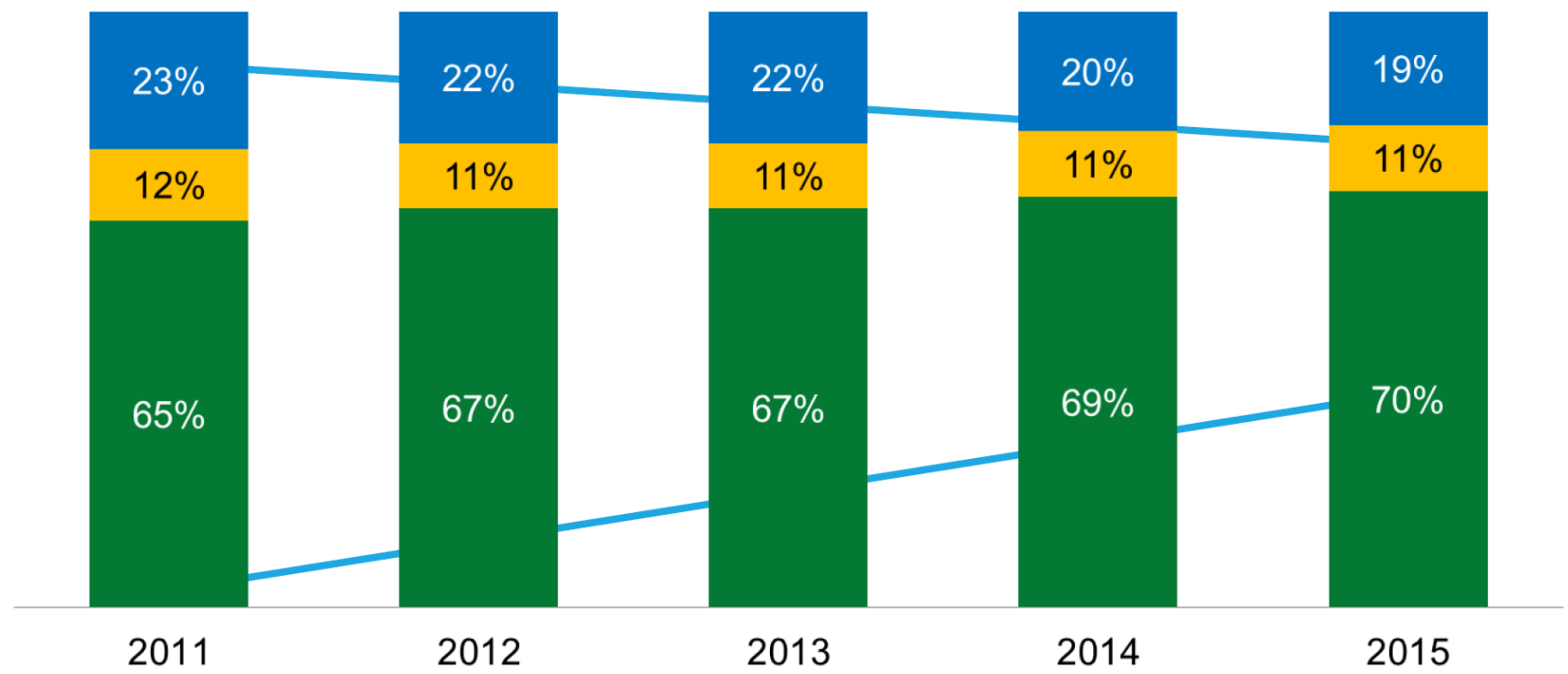


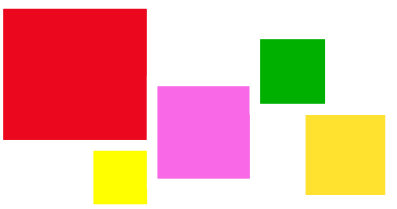


Natural colours are winning the colour battle

Use of colors in global food and drink launches containing natural and/or artificial colors, 2010-15

■ Natural colors ■ Both natural and artificial ■ Artificial colors





Natural food colour options for orange shade in confectionery

artificial colour:

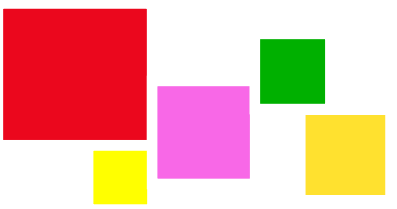


Sunset Yellow E110

natural colour:



Paprika Extract E160c

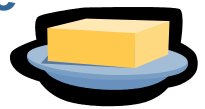


How do we choose the right colour preparation?

Solubility



- Water soluble
- Oil soluble



Colour Shade

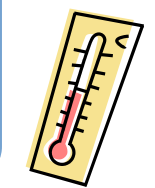
- Yellow
- Orange
- Red
- Green
- Others

Processing pH

- 3 - 4
- 4 - 5
- 5 - 6
- Others



Processing Temperature and Time



- 20 - 30 °C
- 70 - 90 °C
- 120 - 140 °C
- Others



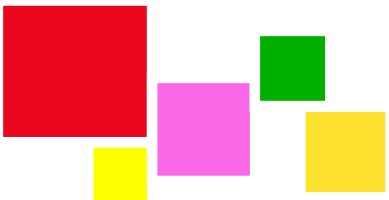
A cluster of five colored squares: a large red square, a small yellow square, a medium pink square, a small green square, and a medium yellow square.

How to measure colour? Methodologies of colour description



Ready to Drink

- application laboratory
 - visual evaluation
 - L*a*b* values
 - Spectrophotometer



Light Box – Visual Evaluation

- colour evaluation under standardized light conditions of final applications
- various light sources possible:
 - Artificial daylight
 - Point of Sale (EU)



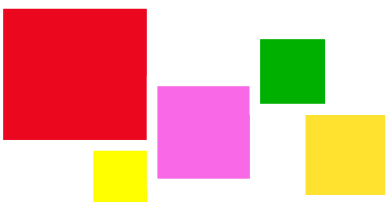
What is key for stability testing? Accelerated test methods + original base / packaging

- global implemented stability test protocol includes:
 - discriminative testing of the following samples:
 - ambient, incubator (40°C) and window vs. STANDARD (4°C)
 - accelerated testing (suntest from ATLAS)
 - standardized testing times

- original base material and packaging is used whenever possible

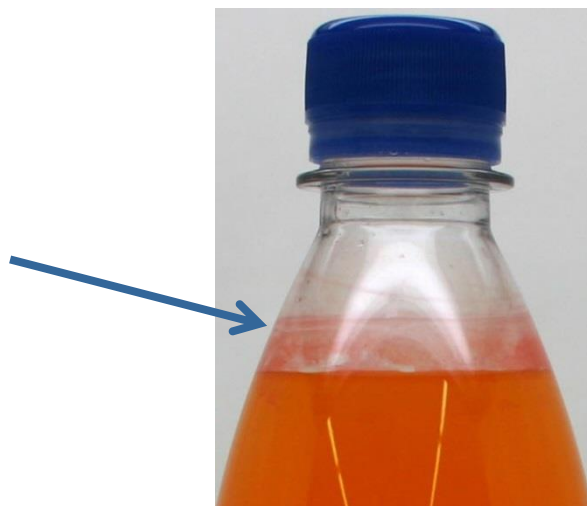
- still and carbonated versions are prepared and tested

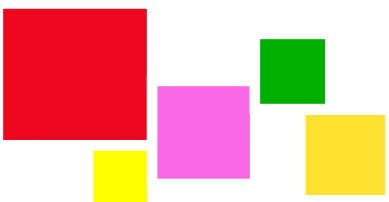




Stability is key! Shaking test

- IKA Laboratory Shaker
- Stability trials for emulsions include now:
 - shaking tests towards performance against staining





Latest investment in application equipment

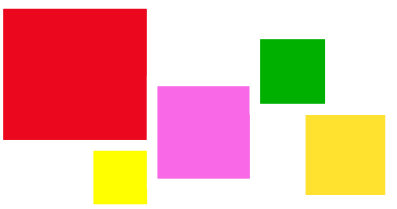
- Heat treatment system on miniature scale:
 - robust design
 - maximum flexibility in processing various products



Latest investment in application equipment

- Extruder
- pilot scale:
 - twin screw (co-rotating)
 - six temperature zones
 - gravimetric feeder
 - various expanded products possible such as breakfast cereals, savoury snacks and pet food

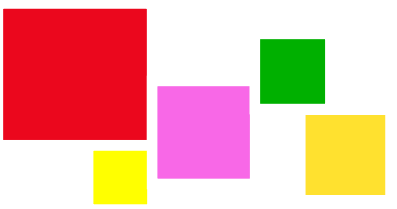




Why Sensient?



Team Work



Why Sensient?





We colour the world
around **YOU**