

### DOEs in the Food Industry

## Laser Optics Keep Fruit and Vegetables Fresh

Diffractive optical elements (DOEs) allow laser beams to be split, bundled, or formed into almost any shape and are used in multiple applications. The food industry, for instance, uses them for laser perforation, when it comes to applying micro holes into packaging for fruit or vegetables. These allow the food to “breathe” and thus extend its storage life. The holes have diameters of between 50 µm and 300 µm depending on the type of food and material.

Only lasers can achieve the required consistency of perforation at these sizes. Using multispot DOEs for this application, the required number of identical laser beams can be generated with one single optical element. Almost the entire energy of the original beam is preserved.

Modified Atmosphere Packaging (MAP) is used to prolong the storage time of fresh food. Instead of air, the packaging contains one or several gases – mostly nitrogen or carbon dioxide. While oxygen is considered undesirable for most other groceries, fruit and vegetables need it for respiration. Micro-holes allow for the necessary exchange of gases, but keep the protective atmosphere inside the packaging.

### More Information

[www.lasercomponents.com/de-en/optics/optical-components/diffractive-optical-elements/](http://www.lasercomponents.com/de-en/optics/optical-components/diffractive-optical-elements/)

### Trade Shows

**EuroExpo**, March 21 - 22, 2018, Trondheim, Norway, **Hall E**  
**analytica**, April 10 - 13, 2018, Messe München, Germany, **Booth A2.500**  
**The Vision Show**, April 10 - 12, 2018, Boston, MA, USA, **Booth 410**  
**Photonex London**, April 18, 2018, Imperial College London, UK, **Booth S14**  
**SPIE Defense & Commercial Sensing**, April 17 - 19, 2018, Orlando, FL, USA, **Booth 1029**  
**SPIE PHOTONICS Europe**, April, 24 - 25, 2018, Strasbourg, France, **Booth G325**  
**Scandinavian Electronics Event**, April, 24 - 26, 2018, Kistamässan, Sweden, **Booth C08:49**  
**LaSys**, June 05 - 07, 2018, Messe Stuttgart, Germany, **Booth 4C33**  
**ANGACOM**, June 12 - 14, 2018, Messe Köln, Germany, **Booth 7.B09**  
**Photonex Schottland**, June 14, 2018, Edinburgh, UK, **Booth S5**  
**automatica**, June 19 - 22, 2018, Messe München, Germany, **Booth B5.501**  
**Sensor+Test**, June 26 - 28, 2018, Messe Nürnberg, Germany, **Booth 1.256**  
**Sensors Expo & Conference**, June 27 - 28, 2018, San Jose, CA, USA, **Booth 225**  
**SPIE Optics+Photonics**, August 19 - 23, 2018, San Diego, CA, USA, **Booth 527**  
**Photonex Europe**, October, 10 - 11, 2018, Ricoh Arena, Coventry, UK, **Booth D15**  
**Vision**, November 06 - 08, 2018, Messe Stuttgart, Germany, **Booth 1G31**  
**electronica**, November 13 - 16, 2018, Messe München, Germany

### The Company

LASER COMPONENTS specializes in the development, manufacture, and sale of components and services in the laser and optoelectronics industry. At LASER COMPONENTS, we have been serving customers since 1982 with sales branches in five different countries. We have been producing in house since 1986 with production facilities in Germany, Canada, and the United States. In-house production makes up approximately half of our sales revenue. A family-run business, we have more than 220 employees worldwide.