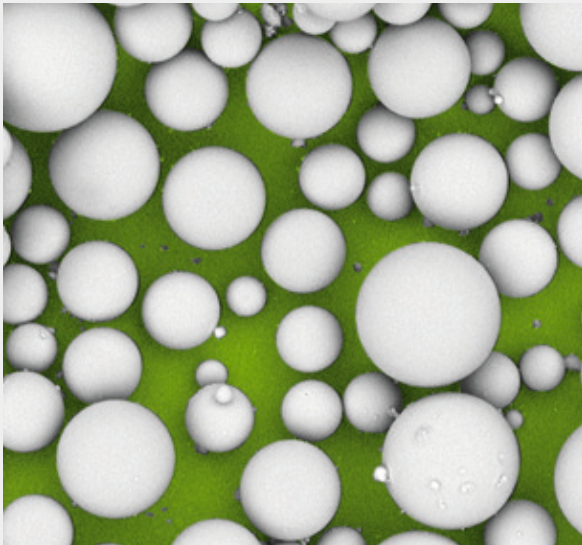


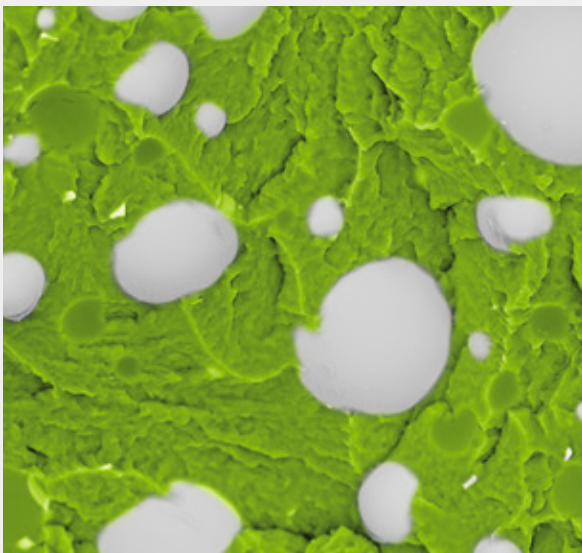
# C-Spheres

Hollow Glass Spheres  
filled with opportunities

## C-Spheres CS 60



C-Spheres CS 60 non-coated



C-Spheres CS 60 in PA6-Matrix

### Composition

Borosilicate glass, chemical and water resistant.

### Application

- Light-weight filler for thermoplastics
- Injection moulding: aerospace, automotive
- Solid surface – artificial marble, etc.

The only limitation is imagination



**SPAETER** raw materials  
A company of the SPAETER Group

# C-Spheres

## Carl Spaeter Functional Fillers

C-Spheres are a product line of micro-sized, thin-walled hollow glass spheres (HGS). The perfect spherical shape, the low density, the high mechanical compression strength, chemical resistance and high temperature stability allow the application in a wide range of polymers, particularly thermoplastics and rubber compounds.

C-Spheres are suitable for extrusion and injection molding as well as batch and continuous mixing/kneading processes.

C-Spheres not only help to reduce the weight, but also ease the processing and enhance the material properties of final plastic and rubber products.

The application of C-Spheres covers the full replacement and combination with conventional fillers to upgrade the material performance.

### Advantages and benefits

- High compatibility with thermoplastics, thermoplastic elastomers, silicone rubber
- Weight reduction of extruded and injection molded parts
- Cycle-time reduction in injection molding, cooling time reduction
- Reduction of shrinkage and warping, preventing of sink marks
- Improved rheology, higher mold flow
- Reduced resin demand due to lowest surface/volume-ratio of the filler
- Improved thermal insulation and noise reduction performance
- Enhanced fire resistance and smoke reduction
- Improvement of dielectric properties

### General product series description

Properties	C-Spheres
Chemical composition	Soda-lime-borosilicate
Shape	Thin-walled, monocellular, hollow spheres
Wall thickness	1 – 2 µm
Appearance	White powder, good fluidity
Softening point	650 °C
pH value	8.0 – 9.5
Thermal conductivity	0.04 – 0.09 W/mK (depending on Mean Diameter)
Oil absorption	0.2 – 0.6 g/cc
Moisture	< 0.5 %

### Processing recommendations

Compounding process conditions with high shear forces and/or point contact should be avoided to prevent fracture of C-Spheres, e. g., roll mills or gear pumps. If TSE's are applied, C-Spheres should be added into the molten polymer after the kneading section by top or preferably side feeding. After addition, high channel depth conveying and only few mixing elements are recommended. Conditions are similar to the addition of glass fibers.

### Customization

C-Spheres may be tailored to meet the specific needs of the final application of the polymer system. The excellent basic properties will be further enhanced by the precise selection of silane surface treatments. Standard amino-, epoxy- and vinyl-functionalized treatments are available as well as any other treatment on request.

### Storage

C-Spheres tend to agglomerate at high humidity and temperature levels. As such, they should be stored dry and tightly closed. Opened bags should be sealed again. Under controlled conditions C-Spheres will have a shelf life of 12 months.

### Typical properties by grade

Grade	Mean particle Size d50 (µm)	True density (g/cc)	Bulk density (g/cc)	Compressive strength (MPa/psi)
CS 40	50	0.38 – 0.42	0.20 – 0.24	28/4,000
CS 55	45	0.53 – 0.57	0.29 – 0.32	69/10,000
CS 60	35	0.58 – 0.63	0.33 – 0.37	125/18,000

## About SPAETER Raw Materials

Carl Spaeter is an independent group of trading firms which are mainly active in the fields of steel, aluminium, plastics and raw materials. The company is family-owned and has been founded in Duisburg in 1875.

The founder of the company, Carl Spaeter, has also established "Veitscher Magnesitwerke" in Austria, after discovering a huge magnesite deposit in 1881. This was at the same time the beginning of our activities in raw materials.

Today Carl Spaeter includes, besides the Headquarter in Duisburg, 16 subsidiaries in Germany with own warehouses and transport vehicles and a great number of agencies abroad. With a headcount of approx. 2,000 employees the group generates a turnover of over 1.5 billion Euro. For our customers we are a reliable partner for more than 100 years. We supply them as an independent trader with raw materials of high-class producers from all over the world. We maintain and value close and long-term relationships to our suppliers.

### Functional Fillers

#### Mineral Flame Retardants

- Aluminium Trihydroxide, fine precipitated and milled
- Aluminium Mono Hydrate (Boehmite)
- Magnesium Hydroxide, fine precipitated
- Magnesium Hydroxide, natural, milled

#### Light Weight Fillers

- Micro Glass Hollow Spheres, synthetic

#### Heat Conductive Fillers

- Mineral Spheres

#### Others

- Aluminium Oxide
- Magnesium Carbonate, natural, milled
- Magnesium Oxide, natural, milled
- Magnesium Oxide, synthetic
- Magnesium Silicate

We keep regular stocks in EU warehouses as well as we have received REACH registrations for all our products.

### Contact

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