Silicon Carbide

Lightweight
The low density of Duocel® makes it a lighter susbstitute for established applications

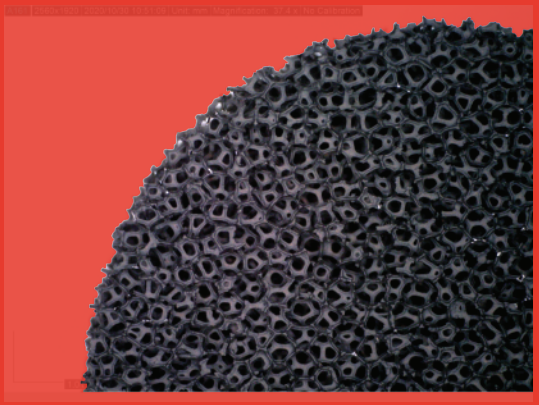
High Surface Area to Volume Ratio
The surface area of a 65" TV screen fits within the volume of a 2" cube of Duocel® foam

Open Celled
Fluids can easily flow through the entire structure of Duocel®

Custom Performance
We customize Duocel® to meet your system requirements

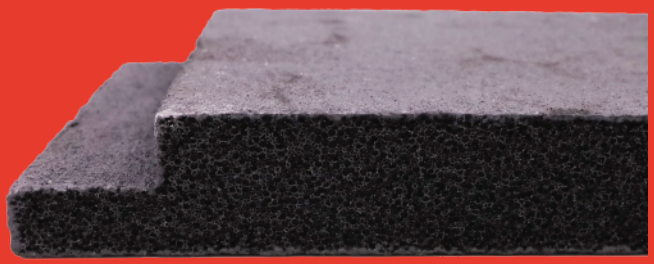
Duocel® Silicon Carbide (SiC) Foam

- Great for high temperature applications
- Excellent chemical compatibility
- Stable in corrosive environments
- Very low coefficient of thermal expansion
- Resistant to thermal shock
- Made into almost any custom shape
- Composed of stoichiometric beta-phase silicon carbide



Skinned Duocel® Silicon Carbide

Skinning creates a sandwich structure with solid SiC facesheets on one or both sides of the SiC foam, providing additional structural support



MAX Phase Duocel® Silicon Carbide

Impregnation of the SiC foam with Ti_3SiC_2 MAX Phase material further increases working temperature

Applications

Hypersonic leading edges

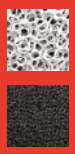
Thermal Protection Systems

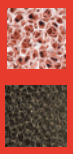
High temperature filters/diffusers

More About Duocel®

Duocel® is an open-celled rigid foam with solid ligaments and optimized properties for your design.

Base material

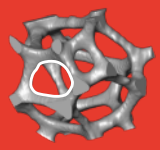

Aluminum


Copper

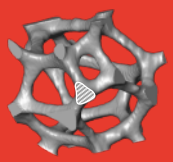
Carbon

Silicon Carbide

Pore Size

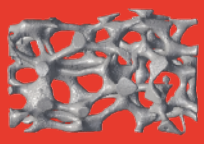


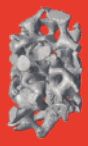
Ligament cross-section



Relative Density

Compression


Uncompressed

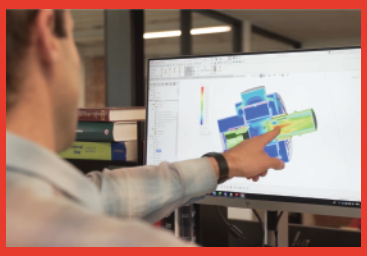

Compressed

ERG Engineering

With over 50 years of expertise designing and manufacturing foam components, we tailor Duocel® to your design for maximum performance.

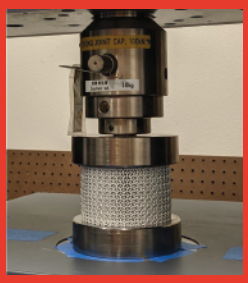
Design Optimization

- Thermal conductivity
- Crush strength
- Pressure drop
- Surface area
- Operating temperature
- Electrical conductivity
- Corrosion resistance

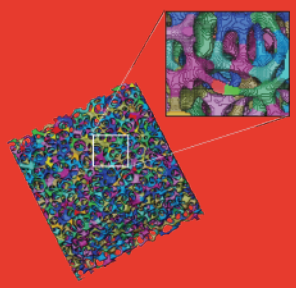


Testing

- Compressive and tensile testing
- Shock and random vibration
- Proof and burst pressure
- Thermal cycling
- microCT scanning
- Single and two-phase heat transfer

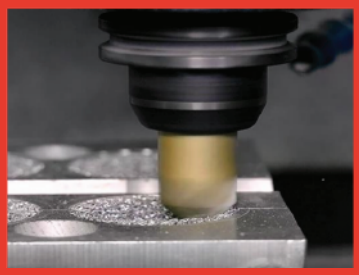


Manufacturing Advantage



Better strength and conductivity

Unlike metal foam produced through other methods, Duocel® has solid ligaments with fully developed grain boundaries.



Flexible fabrication

Duocel® metal foam can be machined, formed, brazed, soldered, anodized, and coated.

Flight Proven

ERG Aerospace produces TRL-9 Duocel® components for various applications, including Mars landers, satellites, and commercial and military aircraft.

- 2019 UTC Supplier Gold
- 2019 Pratt & Whitney Most Innovative Supplier
- 2018 IHI Supplier of the Year
- 2017 Pratt & Whitney Service-Disabled Veteran Owned Supplier of the Year

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RoHS compliant

ERG Aerospace
Made in the USA since 1967