



GLOBAL SOLUTIONS FOR
YOUR HEAT TREATMENT
APPLICATIONS

From materials to
thermal engineering

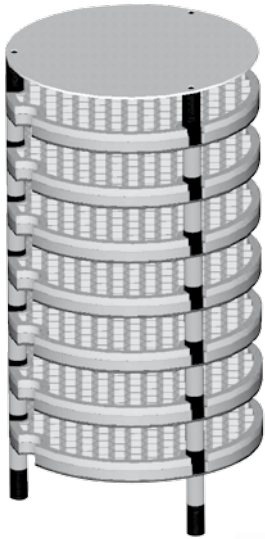
MERSEN

MERSEN

worldwide specialist in carbon and graphite, has developed a complete range of materials and complementary products for high temperature furnaces. Depending on your own specifications multi-products solutions are available:



- An extensive range of graphites from fine grain isostatically moulded to large grain extruded grades,
- 2D and 3D carbon fibre composite structural grades (for plates, walls, channels, nuts and bolts, ...),
- Rigid carbon insulation CALCARB® and ISOLOR®,
- A comprehensive machining service available for manufacture to customer drawing or specifications.



Whatever your thermal applications:

- atmosphere controlled furnace,
- brazing furnace,
- heat treatment furnace.

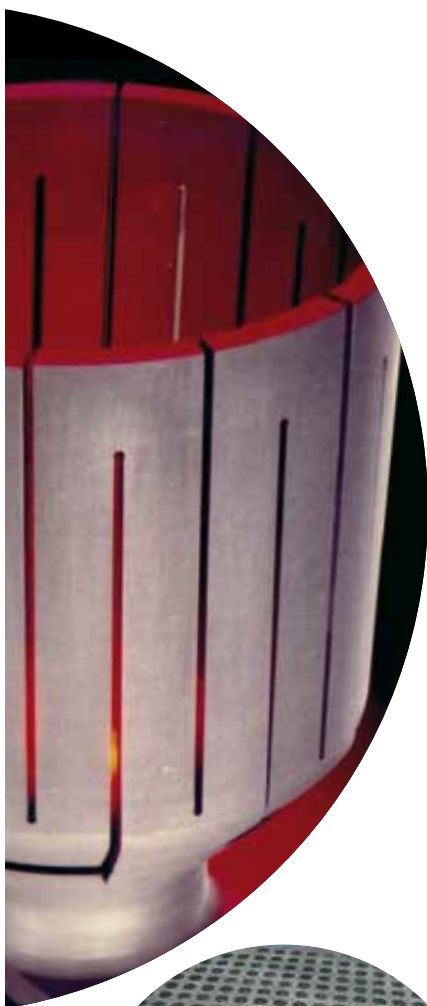


Mersen can offer you custom designed solutions which perfectly meet your unique technical requirements.

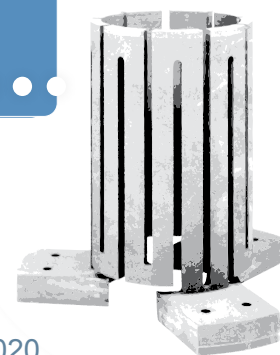
Our specialized workshops are all ISO 9001: 2000 and 14001 certified and will machine your parts according to your own specifications (drawings or CAD-files).



A COMPLETE RANGE OF HIGH PERFORMANCE MATERIALS



- ◀ Graphite,
- ◀ Carbon / Carbon composites AEROLOR[®],
- ◀ Rigid carbon insulation CALCARB[®],
- ◀ Flexible graphite POPYEX[®],
- ◀ Carbon Foam Insulation ISOLOR[®],



GRAPHITE

- Iso-moulded fine grain grades 2191 and 2020,
- Extruded grade 6503,
- Or grades according to your own specifications. Please consult us.

CARBON / CARBON COMPOSITES

3D Grades

Grades A252 and AM252:

Standard 3D composites, structural, densified through pyrocarbon CVI:

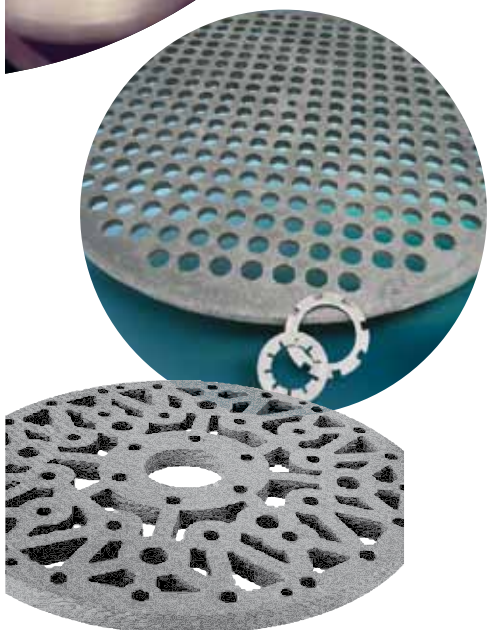
- Standard size: 900 x 600 mm up to 30 mm in thickness,
- up to 2200 mm, whatever thickness,
- Main uses: Loading trays, columns, separators,...

Grade A412:

Standard 3D composite, woven and random fibre, fine structure, densified through pyrocarbon CVI Woven fibre = better mechanical resistance, fine structure = allows precision machining (bolts, nuts):

- Available size: 400 x 300 x 15 to 35 mm,
- On request: up to 1,000 x 500 x 50 mm.

This grade can often be replaced by grade AM252.

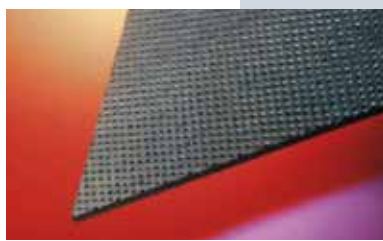


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Our materials are in conformity with the RoHS-Directive (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment).

Besides Mersen guarantees the application of the European Community REACH-Regulation (Registration, Evaluation, Authorisation and Restriction of Chemical substances) to all its plants located in Europe.





2D Grades

Standard 2D composite grades, long fibre, structural. Thin foils (1.2 to 3 mm), flexible, made with continuous carbon strands, woven and densified with a carbon matrix:

- Available sizes: 1,000 x 1,000 x 1.2 mm,
1,000 x 1,000 x 3.0 mm,
- Main uses: Protective layers mounted above thermal insulation materials (CALCARB® or ISOLOR®). They provide abrasion and oxidation protection to expensive insulating materials. These grades are also produced in more complex shapes: "U", "L", cylinders...
- Standard size: 60 x 40 x 60 x 1,000 mm.



INSULATION MATERIALS

Rigid carbon insulation CALCARB®

CALCARB® CBCF is made up from short cut carbon fibres, interconnected in a matrix produced by the carbonisation of phenolic resin. Its strong reputation of reliability and efficiency, combined with mentioned benefits, is making it the preferred insulation material among experienced thermal process engineers. Mersen has developed a complete range of processes designed to reinforce the resistance of CALCARB® CBCF in aggressive environments.

- Pyrocarbon protection by infiltration and deposition: calcoat CVD & CVI,
- Calfoil external protection with POPYEX® flexible graphite,
- Innovative silicon carbide protection,
- Maximum size: 1,500 x 1,500 x 160 mm,
- Standard sides with foil protection on one side:
 - 1,500 x 1,000 x 30 mm,
 - 1,500 x 1,000 x 40 mm,
- Larger parts are produced with assembled boards.



Flexible graphite POPYEX®

Protection foils and plates for furnace walls.

Flexible graphite is especially recommended for high temperatures and fast vacuum conditions.

It is also adapted to high purity installations:

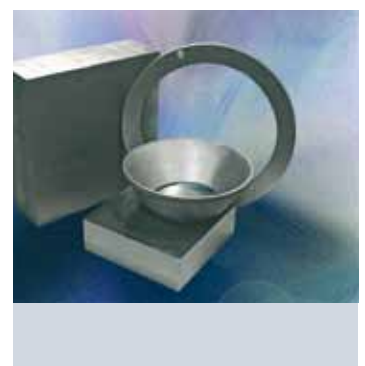
- Very low thermal inertia,
- No coupling with medium frequency induced current.

Flexible graphite is an ideal material, which can be used on its own or to complement other conventional materials.



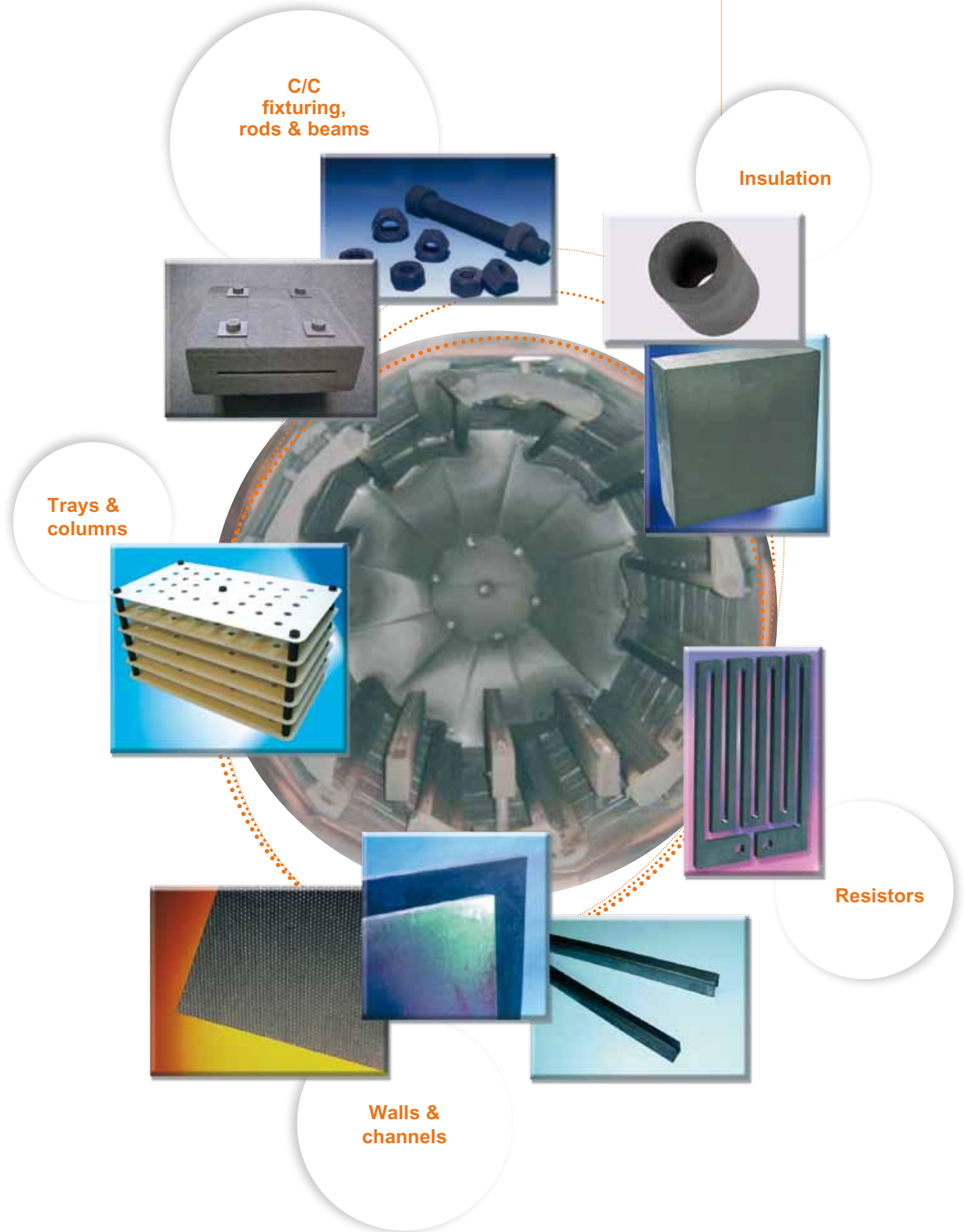
ISOLOR®

ISOLOR® is a patented product designed for long duration in extreme temperature and vacuum environments. It is a sandwich material with inside layers made from flexible graphite and core with low density carbon foam. Carbon foam allows lower thermal conductivity at temperature above 1,000°C. Outside layers allow high resistance to chemical reaction and low particle emission.



HEAT TREATMENT PROCESS

RESISTORS - INSULATION - PROTECTION



C/C
fixturing,
rods & beams

Insulation

Trays &
columns

Resistors

Walls &
channels