ceramaret

HIGH PRECISION PARTS IN **ADVANCED CERAMICS:**

MATERIALS DEVELOMENT
3D-CAD/CAM
3D-CERAMIKPRINTING
CNC MACHINING GREENSTATE
PROTOPING
LOWPRRESSUREINJECTIONMOLDING
HIGHPRESSUGEINJECTIONMOLDING
CNC HARD MACHONING
SURFACE FINISHING
QUALITYMANAGEMENT

SMALL COMPONENTS FOR **GRANDIOSE SOLUTIONS**

The company, **Ceramaret Meissen GmbH**, is based in Meissen and acts as an innovative and flexible manufacturer on the growth market of technical ceramics. The range includes **oxide ceramics** such as **Al2O3** and **ZrO2**, as well as **oxide ceramic** composites.

The **development of appropriate material for individualized applications** as well as designs particularly suitable for ceramics are among our services just like rapid **prototyping, small and medium scale production** and efficient **large-scale manufacturing.**

Components for medical technology

In medical technology ceramics are characterized by a high biocompatibility. Ceramics are also resistant against body fluids.

Watch industry and jewelry

A luxurious look and an extremely high scratch resistance as they are provided by technical ceramics, are qualities being strongly in demand for watch components as well as for chain links, bezels, rings and pendants.

Components for analytical technology

Excellent resistance against thermal influences and aggressive media are advantageous features of our ceramics.

HIGH PERFORMANCE **CERAMICS** MADE IN MEISSEN

Technical ceramics offers properties that are needed especially for many devices, machines and production plants. They meet specifi c mechanical, chemical and electrical requirements which make them more appropriate to use than conventional materials.

INNOVATIVE **CERAMIC** SOLUTIONS

A wide range of processing techniques ensures optimum accuracy of our high-performance ceramic components for application fields such as electronics, chemistry, sensor- and analysis technology, medical technology, any technology requiring high temperature- and wear resistance and research.

Our range includes the following ceramics:

- Alumina and zirconia
- Machining of hard materials, e.g. glass ceramics, technical glasses and crystals
- Special materials with special compositions

Components for injector technology

In injector technology, ceramics play a major role thanks to their excellent properties in terms of wear resistance, hardness, toughness and heat resistance.

Sensor technology

Good electrical insulation, high strength and chemical resistance throughout the entire pH range are the advantages of ceramic materials in the fi eld of sensor technology.

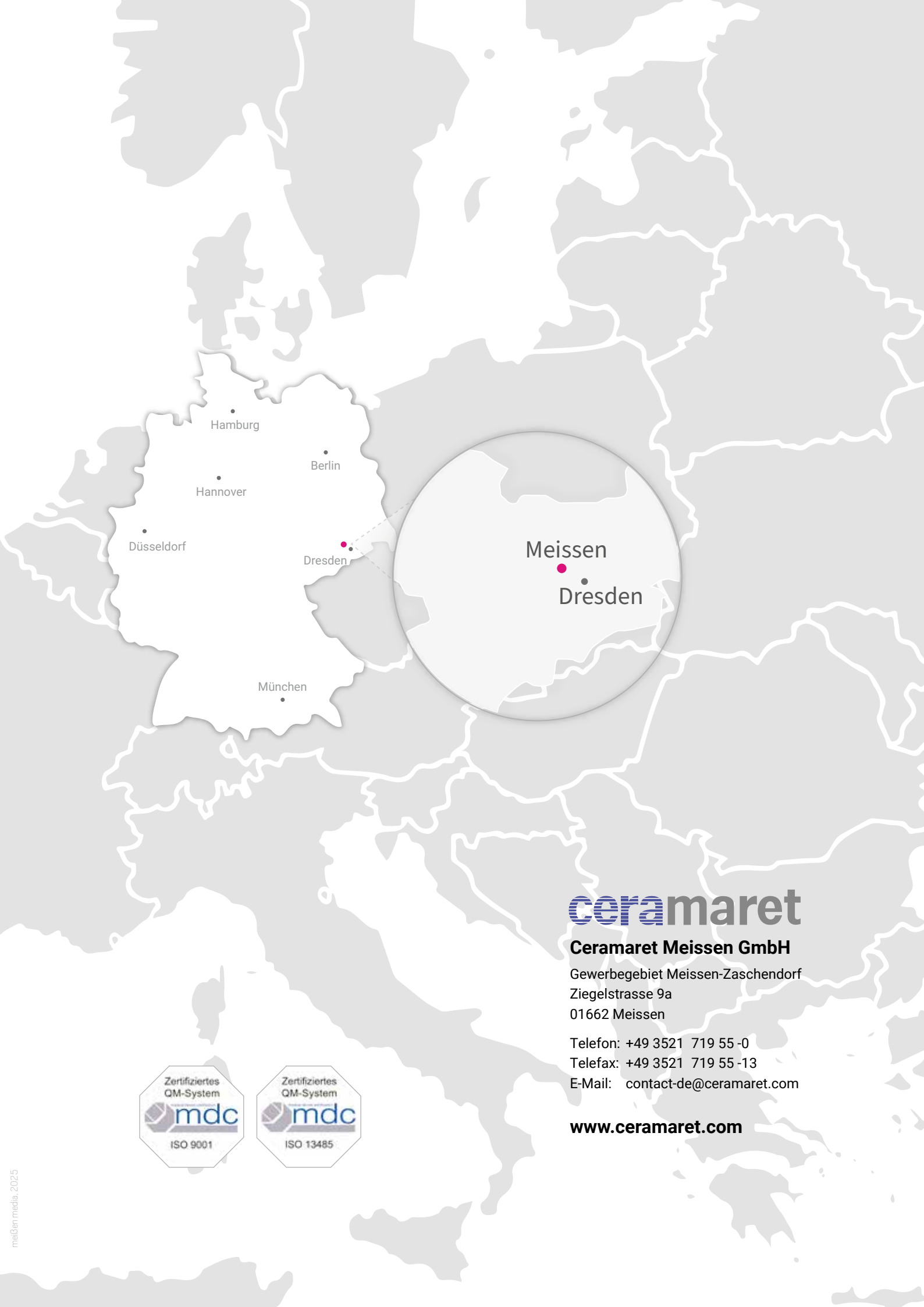
Laser technology

Its high dielectric rigidity and its high resistance against optical radiation make ceramic a material which is very well suited for laser technology.

Material characteristics

Material		Alumina Al_2O_3 99,7 %	Zirconia Y-TZP 3mol % Y_2O_3	ATZ 80 % ZrO_2 / 20 % Al_2O_3	ZTA 80 % Al_2O_3 / 20 % ZrO_2	Aluminium-nitrid ALN
Color		white, slightly yellow	white (slightly translucent)	white	white	light grey
Structural Properties						
Density	g/cm³	> 3,9	> 6,0	5,5	4,1	3,2
Open porosities	%	0	0	0	0	0
Average crystallite size	µm	4	0,4	0,7	0,5	n/a
Mechanical properties						
Vickers hardness (HV_{10})	GPa	19	12	14	17	11
Compressive strength	MPa	3000	2200	2100	2600	1900
Flexural strength (4 points)	MPa	350	1200	1395	600	350
Toughness	$MPam^{1/2}$	4,3	10	5	7	3
Modulus of elasticity	GPa	370	210	220	360	320
Weibull modulus	-	10	10	10	10	12
Poisson's ratio	-	0,22	0,3	0,27	0,24	0,23
Thermal properties						
max. operating temperature under protective inert gas	°C	1650	1200	1200	1000	1000
max. operating temperature in air	°C	1650	1200	1200	1000	800
Specific heat (20 °C)	J/kgK	900	400	600	700	780
Thermal conductivity (100°C)	W/mK	30	2,5	6	25	130/170
Coefficient of expansion	$10^{-6}K^{-1}$	7,6	10,5	9	9	4,5
Thermal fatigue resistance	K	180	300	300	250	> 300
Electrical properties						
Specific resistance (20 °C)	Ohm*cm	10^{14}	10^{9}	10^{9}	10^{9}	10^{12}
Specific resistance (1000 °C)	Ohm*cm	10^{7}	10^{3}	10^{2}	10^{5}	n/a
Dielectric strength	kV/mm	25				17
Relative permittivity / Dielectric constant (20 °C / 1 GHz)	-	9	>20	>20		> 8
Dissipation Factor (20 °C / 1 GHz)	-	$2*10^{-4}$				
Dissipation Factor (20 °C / 10 kHz)	-	10^{-4}				

Zulässige Maßabweichungen nach DIN 40680. Technische Werte nach IEC 672 bzw. DIN VDE 0335.



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Zertifiziertes QM-System mdc ISO 9001

Zertifiziertes QM-System mdc ISO 13485