KIM TECHNOLOGIES

CERAMIC TECHNOLOGIES

BALLISTIC CERAMICS

YOUR SOLUTION PARTNER

We produce the most advanced ceramic plates that provide ballistic protection with our superior production capabilities.

We are developing

ADVANCED CERAMICS

for you

in compliance with the **GEOMETRY** *you desire*,
with the *required* **SPECIAL PROPERTIES.**

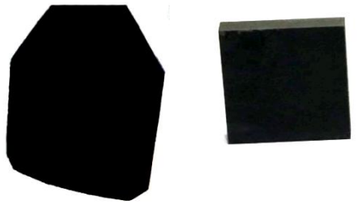
Our company was established in 2019, under the leadership of Kayseri Chamber of Commerce and Kayseri Chamber of Industry, with the participation of many investors from Kayseri, to become an international company that produces for the application areas of **advanced materials** and offers **high value-added products.** Our vision is to offer solutions to the important problems of the 21st century with *OUR UNIQUE MATERIALS*.

Al_2O_3

TiB_2

B_4C

Si - B_4C



SiC

Si - SiC

WE PRODUCE
1ST CLASS
CERAMICS

- LOW WEIGHT
- HIGH HARDNESS
- ANY COMPLEX GEOMETRY YOU NEED
- CONTROLLED - UNIFORM MICROSTRUCTURE
- DIMENSIONAL STABILITY OVER WIDE TEMPERATURE RANGE
- COMPATIBILITY FOR USE IN FINISHED ARMOR SYSTEMS

high tech

CERAMIC MANUFACTURING

Our diversified and completely traceable ceramic manufacturing capability allows to serve our customers with nearly endless solutions based on technical, performance and budgetary criteria's.

CERAMIC TYPE	SPECIAL MANUFACTURING METHOD	DIFFICULTY
B4C	HOT PRESS	☆☆☆☆☆
Si - B_4C	REACTION BONDING	☆☆☆☆
SiC	SINTERING or HOT PRESS	☆☆☆☆
Si - SiC	REACTION BONDING	☆☆☆
Al_2O_3	SINTERING	☆☆
TiB_2	HOT PRESS	☆☆☆☆☆

QUALITY
Moisture determination
Grain size analysis
XRD
Bulk density
Tap density
Hausner Ratio

LQC

RAW MATERIALS

carefully selected

We take care that ceramic raw materials are *INDIGENOUS* and of *high quality.*

B_4C

SiC

TiB_2

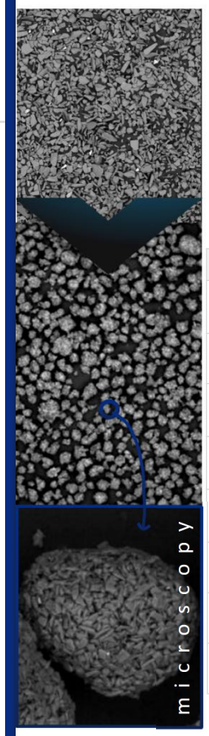
Al_2O_3

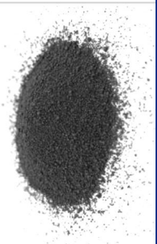
LQC

GRANULATION

our formulations

Our granulation process is carried out in our *HIGH-TECH* infrastructure, with *SPECIAL recipes.*





QUALITY
Moisture determination
TG-DTA
Powder rheology
Morphology and grain size
Compression and strength
Bulk density
Tap density
Hausner Ratio

QUALITY
Thickness
Weight
Visual Control
Green Density

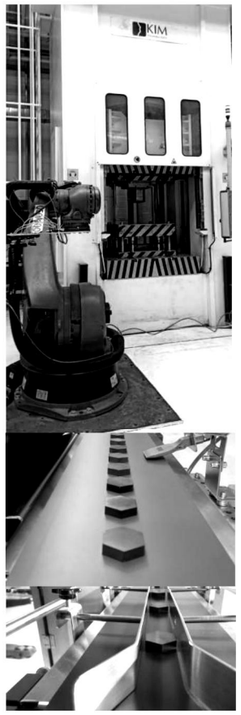
IQC

LQC

COLD PRESS

desirable geometries

A wide range of *dimensions* and *curvatures* are available upon **YOUR REQUEST.**



STARTING

INLINE QUALITY CONTROL

Thanks to the inline quality control system, micron precision thickness measurement, weight measurement and visual control are applied to the ceramics without human touch, and only *%100* high-qualified products are delivered to the next production line.

QUALITY
Weight
Thickness
Visual Control

IQC : inline quality controlled

LQC : laboratory quality controlled

IQC

LQC

DEBINDING

huge furnaces

Debinding, also called pre-sintering is applied to ceramics.

Every ceramic materials have their own furnace conditions and we provide all of them.

IQC

LQC

SINTERING

huge furnaces

The ceramic green body is heated in a process called sintering to remove the porosity and *densify* the material.

QUALITY
Density
Thickness
Weight
Elastic modulus
Hardness
Fracture toughness
Visual inspection
Radiography

IQC

LQC

HOT PRESS

unique process

The use of an applied pressure at the sintering temperature increases the *densification rate* and the ability to reach near-theoretical density in a reasonable time. Ceramics produced in hot presses have high strength and hardness values.

QUALITY
Density
Thickness
Weight
Elastic modulus
Hardness
Fracture toughness
Visual inspection
Radiography

IQC

LQC

REACTION BONDING

special method

Reaction bonding is an *innovative technology* to provide the energy required to form a stable bond without heating of the whole substrates.

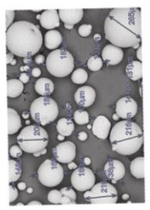
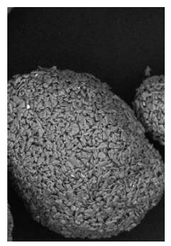
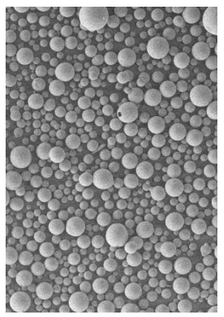
PERFECTIONIST

%100 QUALITY TRACEABILITY

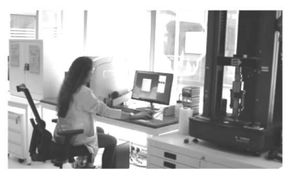
MATERIAL BASED TESTS

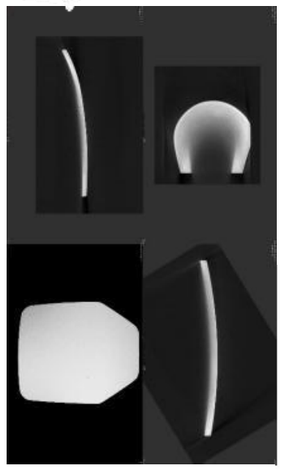
Grain size distribution
Particle shape distribution
Microstructure analysis
Crystallography
Radiography
TG-DTA

By examining the internal structure of our ceramics, we provide 100% quality products to our valued customers.

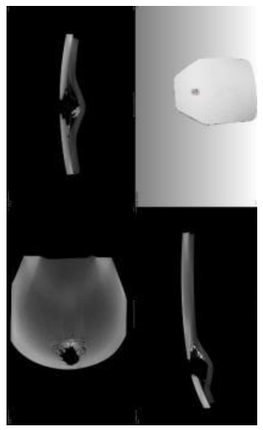




MICROSCOPY

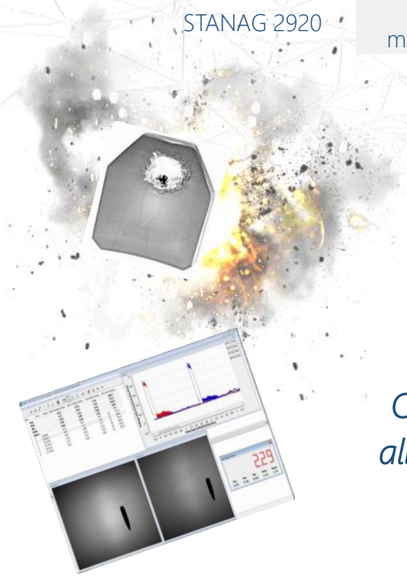


RADIOGRAPHY

Standard	Data Available
NIJ 0101.06 NIJ 0101.04 NIJ 0108.01 MIL-PRF-46103E TS EN 1063 TS EN 1522 STANAG 4569 STANAG 2920	Core analysis of the ammunition to be used in the test
	Tomography of the test sample before and after the test
	Measurement result of the ammunition yaw angle by computer-controlled system during the test
	In tests where trauma measurement value is required, non-destructive measurement result with 3D scanning
	Fast camera views

BALLISTIC TEST



With our in-house ballistic test center, we are ready to support our customers with any development project or requirement.

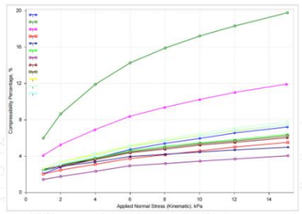
Our wide range of ceramic products allows multiple solutions for the same threat level.

FUNCTIONALITY TESTS

Hardness
Density
Young's modulus
Fracture toughness
Flexural strength
Ultrasonic velocity
Bulk density
Tap density
Hausner ratio
Powder rheology analysis

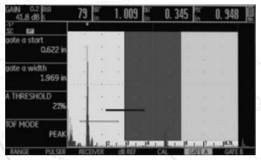
XRD

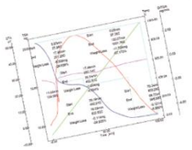
RHEOLOGY



All KIM products, are fully compliant with standards and have been re-tested numerous times.

ULTRASONIC VELOCITY






ENVIRONMENTAL TESTS

Besides all, KIM products are furthermore compliant with MIL-STD-810 Standards for temperature cycling, moisture, liquid penetration, vibration and low/high temperature criterias. Full detailed test results can be provided upon request.

Low Temperature Tests

- IEC 60068-2-1, Test A
- ISO 16750-4, Low temperature test
- ETSI EN 300019-2-4, Test Ab/Ad
- MIL-STD-810 G, Meth. 502.5
- JESD22-A119

High Temperature Tests

- IEC 60068-2-2, Test B
- ISO 16750-4, High-temperature test
- ETSI EN 300019-2-4, Test Bb/Bd
- MIL-STD-202 G, Meth. 108A
- MIL-STD-810 G, Meth. 501.5
- MIL-STD-883 J, Meth. 1010.2
- JESD22-A103D

Variable Heat Tests

- IEC 60068-2-14, Test Nb
- ISO 16750-4, Temp. steps
- ISO 16750-4, Temp. cycling
- ETSI EN 300019-2-4, Test Nb
- MIL-STD-331 C, Test C6

In Variable Climates

- IEC 60068-2-30, Test Db, Var. 1
- IEC 60068-2-30, Test Db, Var. 2
- IEC 60068-2-38
- ISO 16750-4, Damp heat cyclic
- ISO 16750-4, Temp/Humid. cyclic
- ETSI EN 300019-2-4, Test Db
- VG 95210, Blatt 7, Meth. 106C
- MIL-STD-202 G, Meth. 106D
- MIL-STD-331 C, Test C1
- MIL-STD-750-1, Change 3
- MIL-STD-810 G, Meth. 507.5
- MIL-STD-883 J, Meth. 1004.7
- JESD22-A100D

In Stable Climates

- IEC 60068-2-67
- IEC 60068-2-78
- ISO 16750-4, Damp heat steady
- ETSI EN 300019-2-4, Test Cab
- MIL-STD-202 G, Meth. 103B
- JESD22-A101C

We ensure that we provide 100% quality products by viewing all quality results from the raw material to the end.

KIM TECHNOLOGIES

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