

PRODUCT CATALOGUE / / / CAT-001

Beyond reach. Within *spec.*

Three formulation platforms for aerospace, defence, semiconductor and lunar programmes.

MANIFESTO

What can't be made is where we *begin*.

VISION

To be the first call when the future runs out of materials.

MISSION

Some frontiers cannot be visited before the mission: the lunar surface, the fire of re-entry, the heat inside next-generation chips. We formulate the materials that bring those frontiers within reach, to test against, to build with, to fly. Where fixed materials end, ours begin.

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Three platforms

CAT-001

ALPHA ALUMINA POWDER / / / ADAPTIVE GLASS-CERAMIC / / / REGOLITHIA

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Strocera formulates advanced ceramics against a specification, not from a grade list.

Every number in this catalogue is copied from the technical data sheet named on the page. Data were obtained on development batches and describe typical values; a Certificate of Analysis ships with every delivery.

SUPPLY

- / Netherlands-based European supply
- / ITAR-free across all three platforms
- / Custom formulation, not catalogue grades
- / Sample quantities on request

01

The platforms.

Three formulation platforms: a sinter-active alumina, a glass-ceramic with a negative, adjustable expansion coefficient, and an Apollo-traceable lunar simulant.



STR-TDS-AAP-99 / / / AAP-99

Alpha Alumina Powder

Full density, *fewer* degrees.

SINGLE-PHASE α - Al_2O_3 / / / SUBMICRON / / / SINTER-ACTIVE / / / ITAR-FREE

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PLATFORM / / / STR-TDS-AAP-99

Alpha Alumina Powder AAP-99

SINGLE-PHASE α - Al_2O_3 / / / SUBMICRON / / / SINTER-ACTIVE / / / ITAR-FREE

A high-purity, single-phase, submicron α - Al_2O_3 produced by calcination and controlled comminution. Under the reference schedule, pressureless sintering in air at 1550 °C, it reaches 98.05% of theoretical density without sintering additives or pressure assistance.

STATUS

Data from development batches. Sintered properties measured on specimens pressureless-sintered at 1550 °C characterise the sintered ceramic, not the as-supplied powder.

ASTM C20 / / / ASTM C1327 / / / ASTM C1322

KEY DATA

PURITY	99.5% Al_2O_3 min.
PHASE	α - Al_2O_3 , single phase
D10 / D50 / D90	0.49 / 1.34 / 3.20 μm
SPAN (D90 - D10) / D50	2.02
SINTERED DENSITY	98.05% theoretical
BULK DENSITY, SINTERED	approx. 3.91 g/cm ³
VICKERS HARDNESS	14.20 GPa

SINTERED PROPERTIES AT 1550 °C, PRESSURELESS, AIR

APPLICATIONS

- / Modular ballistic armour
- / Direct bonded copper substrate feedstock
- / Cutting tool inserts
- / Wear-resistant components
- / Refractory crucibles
- / Dental ceramic components

SPECIFIED PER CUSTOMER PROCESS

- / Median particle size and distribution width
- / Specific surface area, reported on the batch Certificate of Analysis
- / Agglomerate state and flow behaviour

FULL SPECIFICATION / / / STR-TDS-AAP-99



STR-TDS-AGC-01 / / / AGC-01

Adaptive Glass-Ceramic

The material *adapts*. Your design doesn't.

NEGATIVE THERMAL EXPANSION / / / READY-TO-FIRE POWDER BLEND / / / CUSTOMER-FORMED / / /ITAR-FREE

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PLATFORM / / / STR-TDS-AGC-01

Adaptive Glass-Ceramic AGC-01

NEGATIVE THERMAL EXPANSION / / / READY-TO-FIRE POWDER BLEND / / / CUSTOMER-FORMED / / / ITAR-FREE

An alumina-based glass-ceramic that contracts continuously over the entire 100 to 800 °C range. The negative expansion offsets the positive expansion of alumina, so the net coefficient of the fired body is set by blend proportion, from continuous negative to near-zero. Delivered as a ready-to-fire powder blend; you form and sinter the final geometry on your own tooling.

STATUS

Development material. Repeated 800 °C to 20 °C water quench survived with structural integrity retained; recorded video published. Programme qualification is pending.

PUSH-ROD DILATOMETRY / / / WATER-QUENCH TEST / / / GRAVIMETRIC

KEY DATA

EXPANSION	Negative, 100 to 800 °C
STRAIN AT 780 °C	approx. -4.4×10^{-3}
MEAN CTE 25 TO 780 °C	approx. $-5.8 \times 10^{-6}/K$
MEAN CTE 25 TO 300 °C	approx. $-12 \times 10^{-6}/K$
MEAN CTE 300 TO 780 °C	approx. $-2.3 \times 10^{-6}/K$
THERMAL SHOCK	800 to 20 °C, repeated
COMPOSITION	$\alpha\text{-Al}_2\text{O}_3$ + boron-based additive
MEAN (SECANT) CTE, PUSH-ROD DILATOMETRY ON SINTERED SPECIMEN	

APPLICATIONS

- / Smallsat optical bench
- / Satellite thermal stability
- / Ring laser gyroscope cavity
- / Inertial navigation components
- / Advanced packaging substrate
- / RF substrate
- / Silicon photonics interconnect
- / Power electronics substrate

SET PER CUSTOMER PROCESS

- / Target net expansion coefficient and its sign
- / Operating window within the measured 100 to 800 °C range
- / Ready-to-fire blend, or standard blend for in-house adjustment
- / Firing schedule, issued per project

FULL SPECIFICATION / / / STR-TDS-AGC-01



STR-TDS-RGS-H1 / / / STR-TDS-RGS-M1 / / / RGL-16

Regolithia

Test the Moon, *before* the Moon.

APOLLO-TRACEABLE / / / HIGHLAND AND MARE / / / SUB-75 μm / / / ITAR-FREE

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PLATFORM / / / STR-TDS-RGS-H1 • STR-TDS-RGS-M1

Regolithia RGL-16

APOLLO-TRACEABLE / / / HIGHLAND AND MARE / / / SUB-75 μm / / / ITAR-FREE

Two mineral-based lunar regolith simulants, each formulated to reproduce the modal mineralogy and bulk chemistry of a named Apollo return sample: Highland RGS-H1 against Apollo 16 soil 64501, Mare RGS-M1 against Apollo 17 soil 72501. Supplied as a dry, free-flowing sub-75 μm silicate powder.

STATUS

Every modelled phase and every oxide is reported against its target value with the deviation stated. Bulk chemistry and modal composition calculated from the SEM-EDS and XRD compositions of the feedstocks and the optimised blend.

XRD / / / LASER DIFFRACTION / / / SEM-EDS

KEY DATA

REFERENCE, HIGHLAND RGS-H1	Apollo 16 / 64501
REFERENCE, MARE RGS-M1	Apollo 17 / 72501
PHASE MATCH, H1 / M1	96.4% / 99.2%
MODAL RMSE, H1 / M1	0.79 / 0.23 wt%
CHEMICAL RMSE, H1 / M1	4.90 / 1.96 wt%
DV(50), H1 / M1	8.84 / 10.4 μm
SIZE CUT	< 75 μm mesh
REFERENCE BATCH	100 g

FIDELITY AGAINST THE NAMED APOLLO SOIL

APPLICATIONS

- / Landing gear and touchdown testing
- / Rover wheel soil interaction
- / In-situ resource utilization research
- / Lunar dust mitigation
- / Lunar construction research
- / Excavation and drilling validation

ON REQUEST

- / Alternative particle size fractions
- / Compositions matched to other reference soils
- / Quantities beyond the 100 g reference batch

FULL SPECIFICATION / / / STR-TDS-RGS-H1 • STR-TDS-RGS-M1

02

In service.

Where the three platforms are specified: four sectors, and the use cases behind them.

SECTORS / / / AN-001 TO AN-004

Four sectors

CAT-001

DEFENCE / / / SPACE / / / AI INFRASTRUCTURE / / / AEROSPACE

A sector flyer exists for each of the four. It maps the requirement to the material response, with the number or the standard attached.

SECTOR	TYPICAL REQUIREMENTS	PLATFORMS	FLYER
Defence	Ballistic protection at a controlled areal density. Wear life in abrasive service. Survival of a severe thermal transient.	ALPHA ALUMINA POWDER, ADAPTIVE GLASS-CERAMIC	AN-001
Space	Test beds matched to the landing site. Optical alignment held through orbital thermal cycling. Element availability for extraction yield.	REGOLITHIA, ADAPTIVE GLASS-CERAMIC	AN-002
AI infrastructure	Expansion mismatch between die, substrate and frame. Direct bonded copper feedstock at a specified particle distribution.	ADAPTIVE GLASS-CERAMIC, ALPHA ALUMINA POWDER	AN-003
Aerospace	Cavity length stability in inertial navigation. Dimensional stability under a temperature swing.	ADAPTIVE GLASS-CERAMIC	AN-004

SECTOR FLYERS / / / AN-001 DEFENCE • AN-002 SPACE • AN-003 AI INFRASTRUCTURE • AN-004 AEROSPACE

APPLICATIONS / / / SELECTED

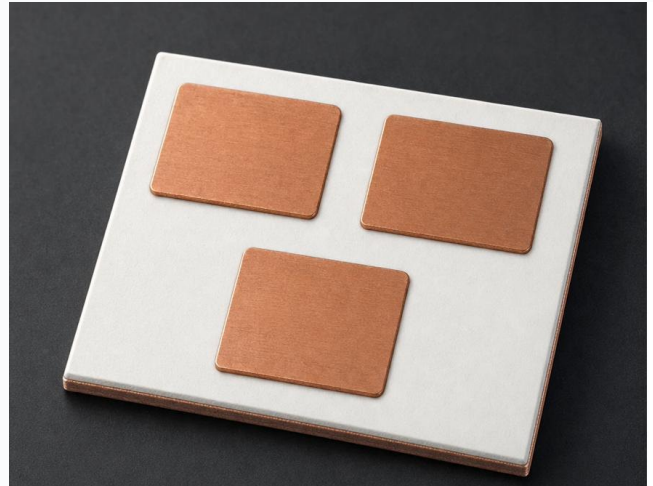
In service

CAT-001



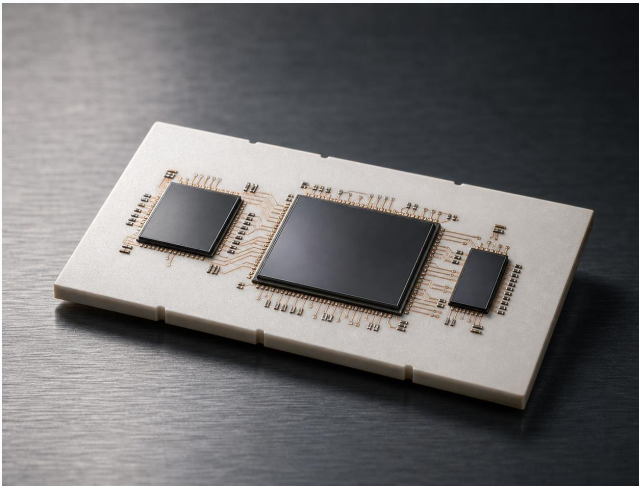
MODULAR BALLISTIC ARMOUR

DEFENCE / / / ALPHA ALUMINA POWDER



DIRECT BONDED COPPER SUBSTRATE

AI INFRASTRUCTURE / / / ALPHA ALUMINA POWDER



HETEROGENEOUS INTEGRATION CARRIER

AI INFRASTRUCTURE / / / ADAPTIVE GLASS-CERAMIC



DENTAL CERAMIC COMPONENTS

INDUSTRY / / / ALPHA ALUMINA POWDER



ROVER WHEEL SOIL INTERACTION

SPACE / / / REGOLITHIA



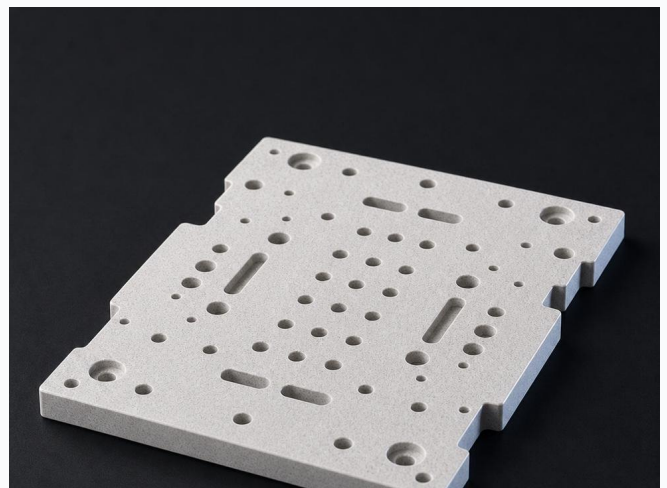
IN-SITU RESOURCE UTILIZATION

SPACE / / / REGOLITHIA



LUNAR DUST MITIGATION

SPACE / / / REGOLITHIA



SMALLSAT OPTICAL BENCH

SPACE / / / ADAPTIVE GLASS-CERAMIC

TEST THE MOON, BEFORE THE MOON

Regolithia is supplied to mobility, dust-mitigation, excavation and resource-extraction programmes. Each variant is matched to a named Apollo return sample, and every modelled phase and oxide is reported against its target before the batch leaves.

03

How we work.

Four steps from a specification to a delivered lot, with the evidence attached at every one.

PROCESS / / / CAT-001

Specification first

CAT-001

FORMULATION / / / CHARACTERIZATION / / / VALIDATION / / / DELIVERY

01 / / / FORMULATION

Formulation

Your specification is the starting point. Composition, particle distribution and thermal behaviour are set against your process, not selected from a grade list.

02 / / / CHARACTERIZATION

Characterization

Every formulation is measured before it ships: phase by X-ray diffraction, particle size by laser diffraction, morphology by SEM, to the methods named on the datasheet.

03 / / / VALIDATION

Validation

Sintered and thermal properties are tested to the ASTM method where one applies. Where a test is documented on video, the record travels with the material.

04 / / / DELIVERY

Delivery

Powder blend or simulant in a sealed, lined container, batch and revision on the label. A Certificate of Analysis and a Safety Data Sheet ship with every delivery. ITAR-free across the supply chain.



Bring your *specification*.

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