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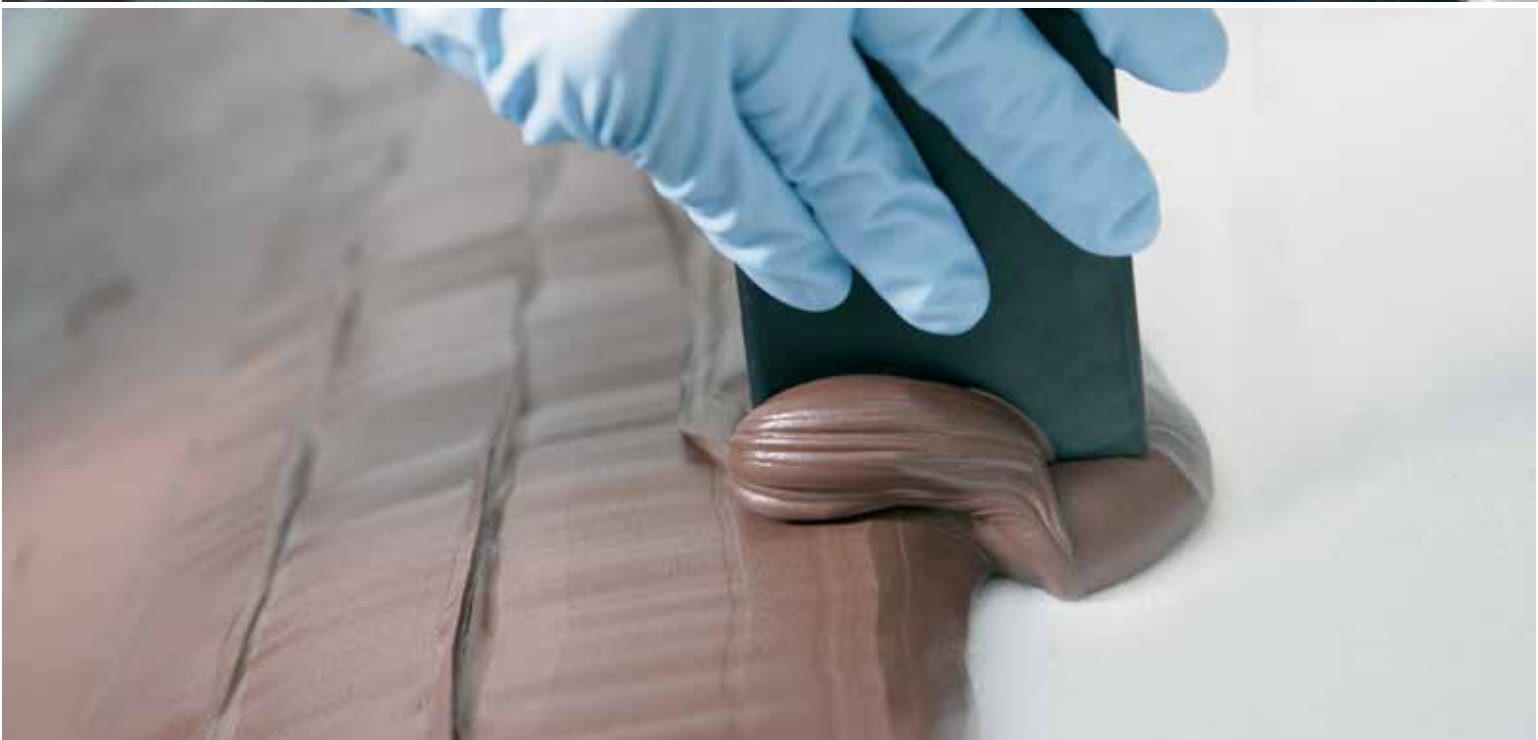
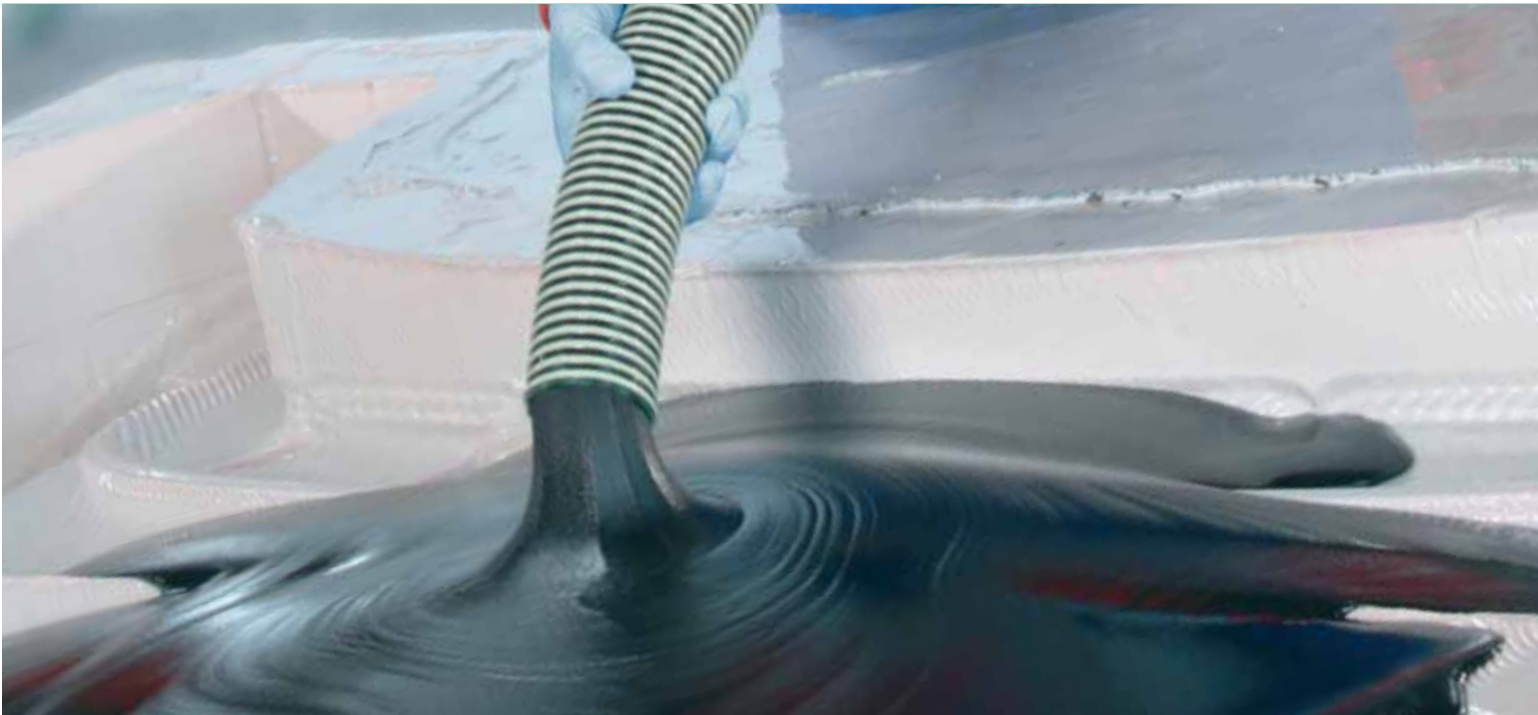
RAKU-TOOL® Customized Products.

Every job is different. So are our solutions.



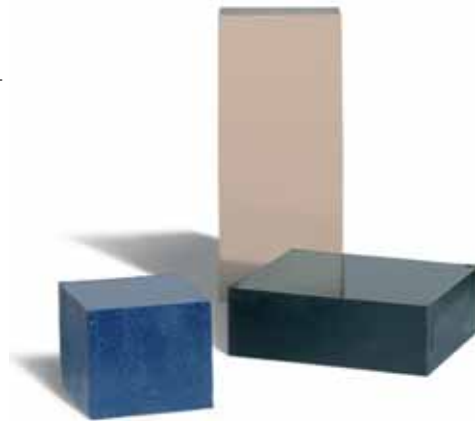
RAMPF®
discover the future

Every job is different –
So are our solutions with RAKU-TOOL.



Customized Products: Close Contour Castings, Close Contour Pastes and Boards. High performance products are the result of our innovative product development. Our customized products are tailored to meet your needs and applications. You provide us the dimensions and we supply you with the casting ready for machining.

Castings in various shapes and sizes customized to meet your needs.



» Customer Specific Castings

According to your specifications we apply RAKU-TOOL Close Contour Paste seamlessly unto an undersized supporting structure to generate a close contour model. We supply you with the close contour model ready for machining. Large models are therefore easy and quick to produce, saving you money and time. You have no investment for meter mixing and dispensing equipment.



» Close Contour Models with Close Contour Paste

Board material is bonded together to form a close contour model. Since we use the original board material matrix to bond the boards, joints are less visible. Our board materials can be supplied in any size individually cut to meet your requirements.



» Bonded Boards and Customized Board Sizes

From 3C* to 3D

Close Contour Casting with RAKU-TOOL®.



Your benefits

Reduce time and costs

- » Quicker machining, less tool wear and less wastage through close contour casting.
- » Less manual finishing required due to our vacuum casting process. The surface is seamless, smooth and very dense.
- » No bonding necessary, seamless surface of castings.

- » No handling of liquid chemistry.
- » No investment for meter mixing and dispensing equipment.
- » Quick delivery
- » Easy transport as the material is relatively light when compared to conventional materials. (e.g. Zamak)

Gain quality

- » Castings are of highest quality standard
- » Excellent mechanical properties
- » Excellent dimensional stability

* Close Contour Casting

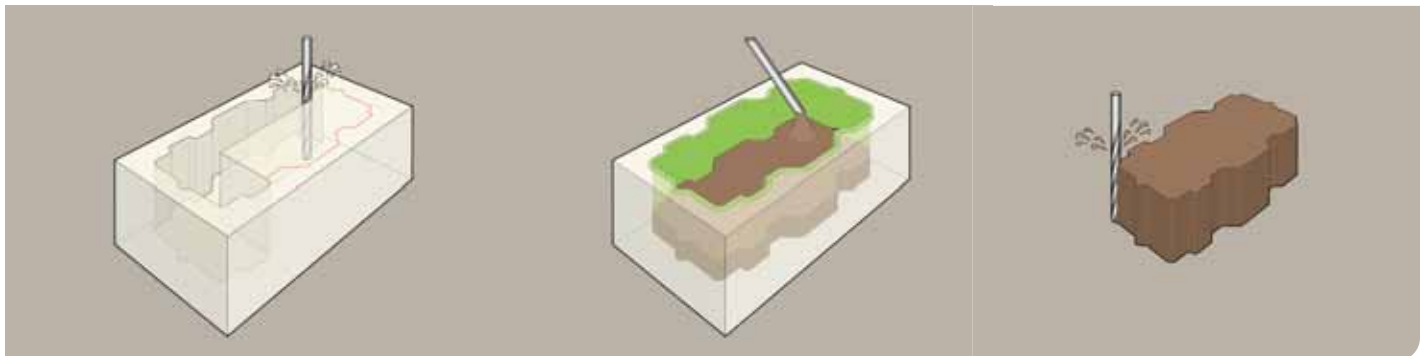
3C stands for Close Contour Casting and is the new innovative concept from RAMPF Tooling to produce close contour models through vacuum casting. 3C turns into 3D and your idea takes shape. The product properties are fine tuned to meet your requirements – your 3C Casting is therefore of highest quality.

Close Contour Casting

» Using the surface data, the light material, e.g. EPS or RAKU-TOOL SB-0080 is machined to create a close contour mold.

» A release agent is applied and the cavity is filled through vacuum casting.

» Demolding and post curing of casting, then milling.



» Working days

Finishing time for castings out of machined molds

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|----|----|
| Machining the mold out of RAKU-TOOL SB-0080/EPS | █ | █ | █ | █ | █ | | | | | | |
| Preparation of the mold with release agent, casting and post cure | | | | | | █ | █ | █ | █ | █ | █ |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

Project completion with only 10 days advance notice.

» EPS » SB-0080

RAKU-TOOL material choice

| | » EPS | » SB-0080 |
|---------|-------|-----------|
| CC-6010 | □ | ■ |
| CC-6011 | □ | ■ |
| CC-6501 | □ | ■ |
| CC-6502 | ■ | ■ |
| CC-6503 | ■ | ■ |
| CC-6504 | ■ | ■ |
| CC-6505 | ■ | ■ |
| CC-6506 | □ | ■ |

■ suitable □ not suitable

RAKU-TOOL® Close Contour Casting

Mechanical and physical properties.

» RAKU-TOOL CC-6010

» RAKU-TOOL CC-6011

Modeling with RAKU-TOOL

| | | |
|---|--|--|
| Color | Brown | Light brown |
| Density (ISO 1183) g/cm ³ | 0.80 | 0.82 |
| Applications | Master Models, Cubing Models, Patterns | Master Models, Cubing Models, Patterns |
| Key properties / Advantages | <ul style="list-style-type: none"> » Fine surface structure » Easily machined » Similar properties to RAKU-TOOL modeling boards | <ul style="list-style-type: none"> » Fine surface structure » Easily machined » Similar properties to RAKU-TOOL modeling boards |
| Hardness (ISO 868) Shore D | 65 – 70 | 70 – 75 |
| Coefficient of thermal expansion (ISO 11359) 10 ⁻⁶ K ⁻¹ | 65 – 70 | 55 – 60 |
| Deflection temperature (ISO 75) °C | 75 – 80 | 75 – 80 |
| Compressive strength (ISO 604) MPa | 35 – 40 | 35 – 40 |
| Compressive modulus (ISO 604) MPa | 700 – 800 | 700 – 800 |

» RAKU-TOOL CC-6501

» RAKU-TOOL CC-6502

Tool making with RAKU-TOOL

| | | |
|---|---|--|
| Color | Dark gray | Light gray |
| Density (ISO 1183) g/cm ³ | 1.62 | 1.68 |
| Applications | Hammer forms, Metal sheet forming, Molds and Jigs | Jigs |
| Key properties / Advantages | <ul style="list-style-type: none"> » Easily machined » Good mechanical properties » Good abrasion resistance | <ul style="list-style-type: none"> » Easily machined » Low coefficient of thermal expansion » High compressive strength » Good abrasion resistance |
| Hardness (ISO 868) Shore D | 85 – 90 | 85 – 90 |
| Coefficient of thermal expansion (ISO 11359) 10 ⁻⁶ K ⁻¹ | 65 – 75 | 45 – 55 |
| Deflection temperature (ISO 75) °C | 75 – 80 | 75 – 80 |
| Compressive strength (ISO 604) MPa | 70 – 80 | 90 – 100 |
| Compressive modulus (ISO 604) MPa | 4,500 – 5,500 | 7,000 – 8,000 |

Our recommendations on the use of the material are based on many years of experience and current scientific and practical knowledge. They are, however, provided without any obligation on our part and do not relieve the buyer of the need for suitability tests. They do not constitute a legal relationship, nor are any protected third party rights whatsoever affected thereby. No liability accepted for misprints.

» RAKU-TOOL CC-6503

» RAKU-TOOL CC-6504

Tool making with RAKU-TOOL

| | | |
|---|--|--|
| Color | Blue | Beige |
| Density (ISO 1183) g/cm ³ | 1.85 | 1.87 |
| Applications | Galvanobath Models, Lay up tools, RIM tools | Metal sheet forming, Jigs, Stretch dies |
| Key properties / Advantages | <ul style="list-style-type: none"> » Very dense structure » Very homogeneous, fine surface and as a result, very good surface of nickel bowl, i.e. little finishing required and therefore large cost savings » Easily machined** » Low coefficient of thermal expansion » Good abrasion resistance | <ul style="list-style-type: none"> » Very dense structure » Easily machined** » Low coefficient of thermal expansion » High compressive strength / stiffness » Good abrasion resistance » Tools do not need to be polished = time saving » Tools weigh less (vs Zamak) = easy handling and transport » Changes are easily possible |
| Hardness (ISO 868) Shore D | 85 – 90 | 85 – 90 |
| Coefficient of thermal expansion (ISO 11359) 10 ⁻⁶ K ⁻¹ | 40 – 45 | 40 |
| Deflection temperature (ISO 75) °C | 80 | 80 |
| Compressive strength (ISO 604) MPa | 95 – 105 | 90 – 100 |
| Compressive modulus (ISO 604) MPa | 9,500 | 10,000 |

» RAKU-TOOL CC-6505

» RAKU-TOOL CC-6506

Tool making with RAKU-TOOL

| | | |
|---|--|--|
| Color | Light gray | Dark gray |
| Density (ISO 1183) g/cm ³ | 1.87 | 1.90 |
| Applications | Metal sheet forming, Jigs, RTM tools | Molds for ceramic pressure casting Metal sheet forming, Vacuum forming tools, Lay up tools |
| Key properties / Advantages | <ul style="list-style-type: none"> » Very dense structure » Easily machined** » Low coefficient of thermal expansion » High compressive strength / stiffness » Good abrasion resistance » Tools do not need to be polished = time saving » Tools weigh less (vs Zamak) = easy handling and transport » Changes are easily possible | <ul style="list-style-type: none"> » Very dense surface structure » Can be polished » Good heat resistance » High compressive strength » Good resistance to chemicals » Time savings through direct milling of mold via surface data » Better pressing of sheet metal parts |
| Hardness (ISO 868) Shore D | 85 – 90 | 90 – 95 |
| Coefficient of thermal expansion (ISO 11359) 10 ⁻⁶ K ⁻¹ | 40 | 35 |
| Deflection temperature (ISO 75) °C | 80 | 110 |
| Compressive strength (ISO 604) MPa | 85 – 90 | 120 – 130 |
| Compressive modulus (ISO 604) MPa | 10,000 | 13,000 |

RAMPF Tooling world-wide.



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