

# SILICONE RUBBERS and ALGINATES

for industrial applications

**Zhermack**   
*Industrial*

Zhermack, a partner you can trust.

Progress, constantly. Creating value, to make the quality of the products accessible to the world. With creativity, and especially with the ability to transform every challenge into a development opportunity. To dynamically seize the market trends and understand the needs of partners, clients and customers. To make our solutions accessible worldwide. All this is the basis of Zhermack's growth and since its foundation, 40 years ago, the company has never ceased to develop and grow.

The Zhermack Group is represented on the international market by three divisions, Dental, Wellbeing and Industrial, all served by an extensive and competent distribution network.

Zhermack has always supplied customers all over the world, and knows that it is essential to understand the unique characteristics of each country in order to offer solutions in line with customers' expectations (which can differ radically from one market to another).

Our international vocation allows us to make full use of innovative processes and to share our know-how with our customers. We believe that teamwork allows us to achieve even the most ambitious objectives.

Our experience in offering specialist solutions is also an effective guarantee of quality for our customers. We maintain full control over the entire production process, from the selection of raw materials to the packaging of finished products. We also manage our own product development, closely supervising every phase in order to act as a unique and reliable partner to our customers.

**Fulfilling your needs**





## WE UNDERSTAND OUR PRODUCTS

One of our strengths is our ability to control the development, production and quality of all our products. We have our own plant for synthesising raw materials, our own highly structured system for controlling and validating production processes and our own R&D department to customise products to meet specific needs. As a result we can optimise our entire production system and supply materials that offer truly high performance.

Our expertise in addition and condensation silicone rubbers and alginates allows us to develop solutions capable of satisfying even the most demanding customers.

We serve a wide range of sectors that use silicone rubber, including mould making, rapid prototyping, vacuum bagging, jewellery, ceramics, construction and even cinematic special effects.

## WE ARE ALWAYS CLOSE TO OUR CUSTOMERS

Our vast product know-how enables us to respond rapidly to the needs of users and customers, to identify the best possible solutions and to select the most suitable products, whatever the application.

Willing collaboration and open sharing of competence are two of our basic principles, and help us to optimise our production process and ensure the best possible end results. After all, our own success depends on that of our customers.

# ADDITION SILICONE

## MOLD MAKING

Zhermack supplies RTV2 poly addition silicone rubbers (with platinum catalyst) for a wide range of industrial applications: mold making, jewellery, rapid prototyping, vacuum infusion process, special effects & body casting, master mold and pad printing.

The RTV2 silicones are available in 1:1 mixing ratio (weight), on demand could be supplied also in a 10:1 ratio.

### PRODUCT BENEFITS

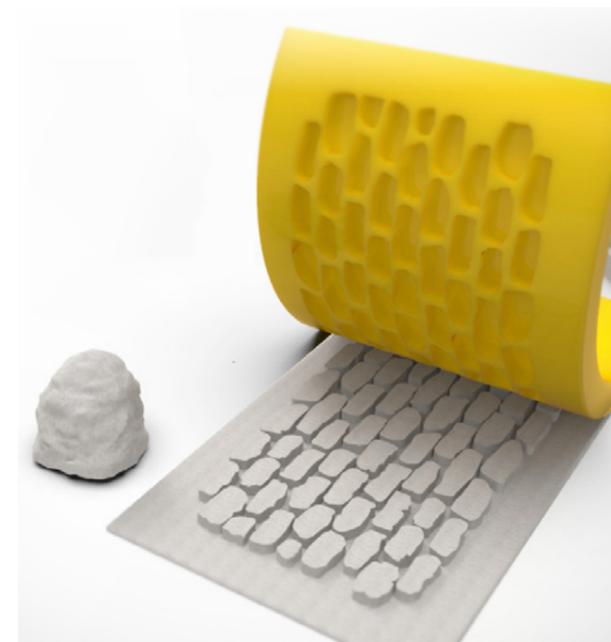
- Dimensional stability
- Ease of use
- High mechanical properties
- High ability to reproduce the details
- Not dangerous for the operator's health
- Durability
- Outstanding resistance to gypsums, to common casting resins and coatings.

The reproduction of any object, especially one with a complex shape, is a process that has to be thoroughly understood and also demands suitable materials if a satisfactory end result is to be guaranteed.

Once an original model is available, the next step is to create a flexible silicone rubber mold that can be used to reproduce the object repeatedly. **Time and precision are both of the essence at this stage.**

Zhermack's silicone rubbers for mold making guarantee **high accuracy in the reproduction of details, easy release from the mold** and an **extended working life**, thanks to high dimensional stability and broad-spectrum chemical compatibility.

In particular, our RTV2 poly addition silicone rubbers are **highly elastic**, have **high mechanical properties**, and **high dimensional stability**. Oil free version is available for a greater dimensional stability.



# VACUUM INFUSION PROCESS



Zhermack range of silicone rubbers is specially formulated for use in the vacuum bagging processes now common in many areas of industry (automotive, marine, etc.).

Vacuum bagging is an increasingly common process in composite production. It uses an RTV2 poly addition silicone rubber bag to press elements into shape against the surface of a mould. Vacuum is used both to form the composite material and to draw in the resin that impregnates it. Molds for vacuum bags in silicone rubber can be reused several times without compromising a perfect fit surface finish to the formed part.

## PRODUCT BENEFITS

- High mechanical characteristics
- High dimensional stability
- Self bonding properties (a second layer can be cast within 24 h after casting the first layer)
- Good chemical resistance against polyester, vinylester, etc

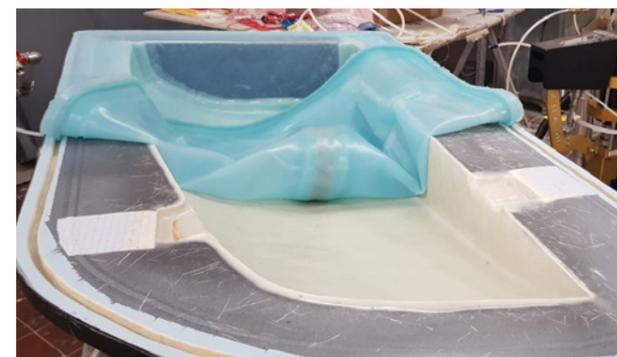
## THE RANGE

### 1:1 mixing ratio

- **Liquid silicone rubber** with a hardness of 25 shA and a viscosity that allows to use it with a mixersprayer
- **Thixo silicone rubber** with a hardness of 25 shA as well and is slightly thixotropic and therefore ideal for application by spray and brush

### 10:1 mixing ratio

- **Selfbonding** 29 ShA of hardness



## MOLD MAKING

	Colour	Hardness
ZA 13 Mould WT45	translucent	13 ShA
ZA RTV 20-45 YELLOW	●	20 ShA
ZA 22 Mould	●	22 ShA
ZA RTV 30-45 GREEN	●	30 ShA
HT 33 Transparent	translucent	33 ShA
ZA RTV 40-45 BLUE	●	40 ShA
HT 45 Trasparent	translucent	43 ShA
ZA 50 LT	●	50 ShA



## VACUUM INFUSION PROCESS

	Colour	Hardness
ZA 25-6 SPRAY SELF BOND (mixing 1:1)	●	25 ShA
ZA 26 WT 10 Spray Thixo Self Bonding (mixing 1:1)	●	25 ShA
ZAX 29-5 Spray Self Bonding (mixing 10:1)	●	29 ShA

Photos courtesy of MVP

# JEWELLERY

Zhermack RTV2 poly addition silicone rubbers are particularly suited to the lost wax casting process commonly used in the jewellery sector. Silicone rubbers can be used to reproduce a large number of copies from an original master.

They allow the tiniest details to be copied faithfully, facilitate finishing and are highly compatible with the materials typically used in jewellery.

The **high dimensional stability** of Zhermack silicone rubbers' makes them the ideal solution for luxury jewellery artifact, where the highest standards of quality are demanded. **Moulds can be used for over 20 years** if properly preserved.

Zhermack silicone rubbers are available in a choice of colours: clear (for users who prefer to see the master object inside the silicon rubber during the cutting phase) and coloured (for more expert users).

## PRODUCT BENEFITS:

- Low viscosity for very precise details
- Molds ready in 3h30' at 23 °C
- High dimensional stability
- High mechanical properties that allow a high number of copies
- Durability
- Precision in reproduction



## JEWELLERY

	Colour	Hardness
HT 33 Transparent	translucent	33 ShA
HT 33 Rosso	●	33 ShA
HT 42 Grigio	●	41 ShA
HT 45 TRASPARENT	translucent	43 ShA
ZA 50 LT	●	50 ShA

# RAPID PROTOTYPING

Zhermack's offer for rapid prototyping applications is the dedicated transparent materials with appropriate hardness of 42 shA in DRY and OIL BLEEDING versions (for increased resistance to particularly aggressive substances like PU resins). Furthermore, is available a translucent silicone rubbers with low viscosity and high tear resistance for the prototyping of small, precision parts.

Silicone rubber moulds are often used to make prototypes of new products. Stereolithographic masters are used to create silicone rubber moulds, using suitable thermosetting resins. The mechanical and thermal properties of these resins are similar to those of the thermoplastic materials used in the production

of the finished part.

This means that prototypes are not only **faithful reproductions of the original master**, but can also be used for **functional tests**, and provide a valid **basis for preliminary sample testing**.

## RAPID PROTOTYPING

	Colour	Hardness
XTX 45 DRY (Mixing ratio 10:1)	transparent	41 ShA
XTX 45 OIL BLEEDING (Mixing ratio 10:1)	transparent	41 ShA
HT 45 TRANSPARENT (mixing 1:1)	translucent	43 ShA

# SPECIAL EFFECTS & BODY CASTING

Zhermack supplies the cinema industry with the silicone rubbers and alginates to reproduce parts of the body and facial features for special effects (masks, wounds, the application of special effects to actors, baby reborn, etc.) and to reproduce special scenery and settings.

**Easy working, ductility**, and the possibility of using a **wide range of specific colour pigments** are the key benefits we offer to users in the film industry.



Example of burning skin effect.



Baby Reborn - Photos courtesy of Jennifer Reborn Dolls

## SPECIAL EFFECTS & BODY CASTING

	Colour	Hardness
ZA OF1	transparent	gel
ZA SFX 0020	translucent	20 Sh00
ZA SFX 0030	translucent	30 Sh00
ZA 00 TRASLUCIDO	translucent	40 Sh00
Silskin 10	translucent	10 ShA
ZA SFX 10 WT 10	translucent	10 ShA
ZA 22 THIXO BODY	●	20 ShA
HT 24 WT 5 Transparent	translucent	24 ShA
ZA 35-15 GLASS	transparent	25 ShA
HT 38 PUTTY FAST	●	36 ShA

# CONDENSATION SILICONE

## MOLD MAKING

Zhermack condensation silicone allow to create a flexible silicone rubber mold (tin catalyst) that can be used to reproduce the object accurately and repeatedly.

### PRODUCT BENEFITS

- Self-degassing
- High mechanical properties
- High details reproduction
- Durability

Condensation silicones can be cured with a non-inflammable tin catalyst that can be shipped as sea or air freight, without extra cost.



Zhermack's silicone rubbers for mold making guarantee high accuracy in the reproduction of details, easy release from the clamp and an extended working life, thanks to high dimensional stability and broad-spectrum chemical compatibility.

Polycondensation silicones are also used in the art foundry and restoration sectors.

### THE RANGE

**FLUID:** for applications with casting or with brush, with the addition of thixo agent to be used on vertical surfaces.

**PASTE:** for application on vertical surfaces.



### MODUL MAKING

	Colour	Hardness
ZC 10 BASE	○	12 ShA*
ZC 20 BASE	○	20 ShA*
ZC 30 BASE	○	27 ShA*
ZC PUTTY 2528	○	30 ShA**

\* Hardness after 72 h @ 23 °C, with the ZC P CURING AGENT  
\*\* Hardness after 72 h @ 23 C with the ZC 2528

Photo courtesy of Navi Arte by Marco Veronese

# BODY CASTING ALGINATES

## SPECIAL EFFECTS & BODY CASTING



Zhermack experience in the sector allowed the development of **high quality body casting alginates**, originated by **natural raw materials like brown seaweeds**, that ensure also the **accurate reproduction of details** thanks to their high mechanical properties.

### PRODUCT BENEFITS

- Optimal "creaminess"
- High reproduction of detail
- Different setting time
- Self bonding property
- Good mechanical properties

### ADVANTAGES

- Silica free
- Cruelty free
- Original nature

### TECHNICAL FEATURES

- Natural raw materials
- Skin PH compatibility
- Water/powder mixing ratio (weight): 2:1

Zhermack alginates were designed for the cinema industry, to reproduce parts of the body and facial features for special effects (masks, wounds, the application of special effects to actors, etc.) and to reproduce special scenery and settings.

**Easy working, ductility** and the possibility of using a **wide range of specific colour pigments** are the key benefits we offer to users in the film industry.



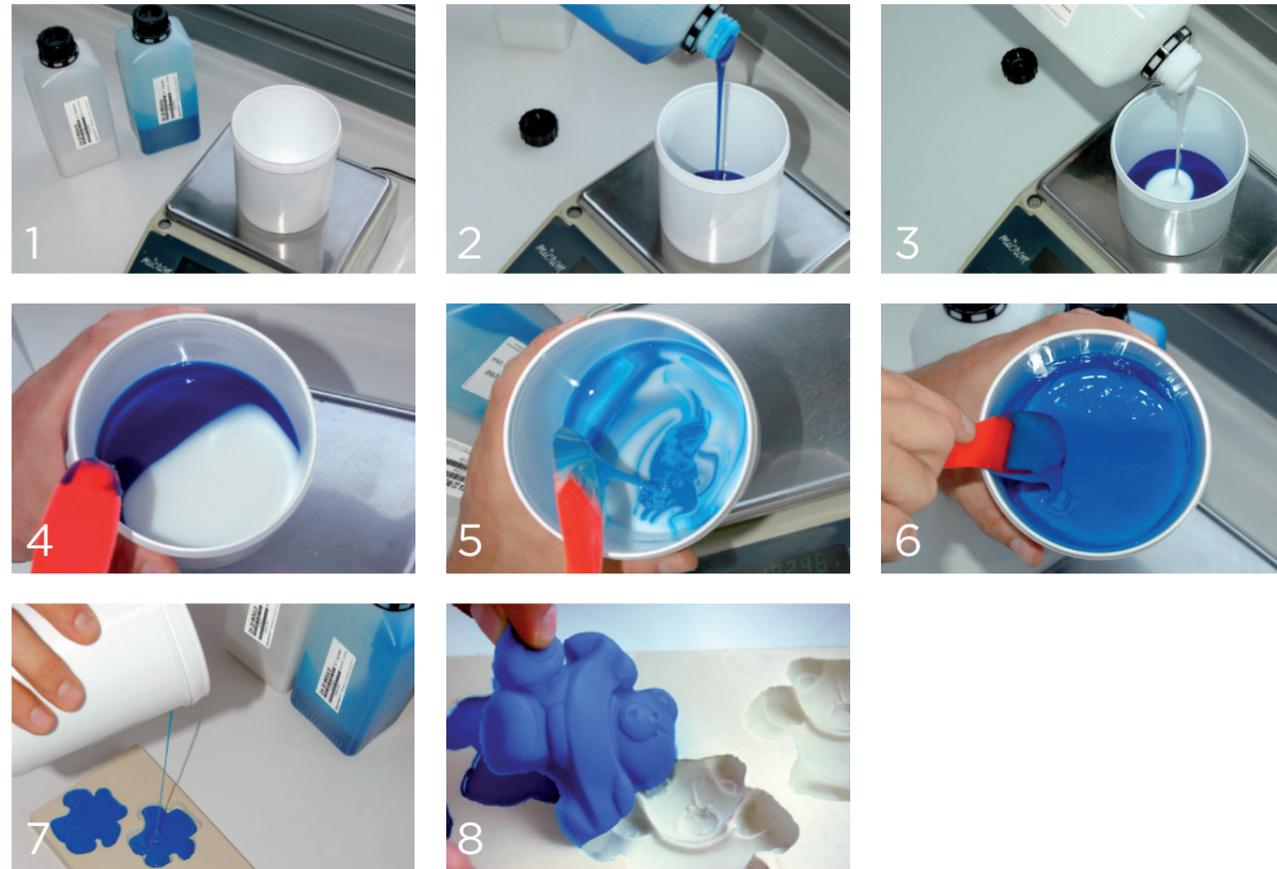
### SPECIAL EFFECTS & BODY CASTING

	Colour	ST (@ 23°C)
AL Silica Free PR (Mixing ratio 2:1)	●	3' - 4'
AL Silica Free MT (Mixing ratio 2:1)	○	9' - 13'

## Zhermack's RTV2 poly addition silicone rubbers deliver:

- High mechanical characteristics (flexibility, tear resistance)
- High dimensional stability (shrinkage of addition silicone rubbers < 0.1%; shrinkage of condensation silicone rubbers < 1%)
- Extra-long working life
- High precision in the reproduction of details and undercuts
- Compatibility with a wide range of materials (resins, plastics, waxes, cements, metals, etc.) and biocompatibility
- Resistance to extreme temperatures (-40° C / 210° C)
- Ease of use (no heat needed as Zhermack silicone rubbers vulcanise at room temperature)

## ISTRUCTIONS FOR USE OF ADDITION SILICONES\*



Weigh out an equal quantity of base and catalyst (e.g. 100 g of catalyst and 100 g of base; the end result is not affected by errors of up to 5%) mix vigorously until the product assumes a uniform color. Once the product is thoroughly mixed, pour it, preferably from 30 cm above the container, on to the one spot (this makes it easier for air to escape from the mix).

**These instructions apply only to RTV2 poly addition silicone rubbers.**

\*Except XTX 45 which requires a mixing ratio of 10:1.

Zhermack products are available in the following packs, to meet the needs of different users:

ADDITION SILICONE RUBBERS		CONDENSATION SILICONE RUBBERS	
PACKS	PACKAGING	PACKS	PACKAGING
200 kg + 200 kg		200 kg + 10 kg	
25 kg + 25 kg		20 kg + 1 kg	
5 kg + 5 kg		5 kg + 250 g	
1 kg + 1 kg		1 kg + 50 g	

## BODY CASTING ALGINATES

### PACKS

25kg bag

10kg bag

carton box containing 20x 500g bags (10kg)

## ACCESSORIES

NAME	COLOUR	DESCRIPTION
Primer MM4	transparent	Primers for bonding poly addition silicone rubbers to steel and aluminium
Delayer	transparent	Retardants for extending the working time of addition silicone rubbers
Silicone Oil 50 cPs	transparent	Silicone oils
Separator	transparent	Release agent
Deadner	transparent	Deadener for SFX addition products to modulate hardness and consistency
Thixo Agent Addition	transparent	Thixotropizing agents for addition
Thixo Agent Cond.	transparent	Thixotropizing agents for condensation
Color pigments		Concentrated coloring pigments

# TECHNICAL DATA

## ADDITION SILICONES (Platinum Curing Agent)

	Colour	Hardness	WT (@ 23 °C)	ST (@ 23 °C)	"Tear B Metric system (N/mm)"	"Tear B USA system (psi)"	Visc (cP)
<b>MASTER MOLD</b>							
ZA 11-45 RED	●	11 ShA	40'	3 h	11,0	62,0	4.500
Za 35 MOULD	●	35 ShA	15'	1 h	8,0	45,0	4.000
<b>MOLD MAKING</b>							
ZA TT 1240	●	12 ShA	40'	3 h	17,0	96,0	5.500
ZA 10 ORANGE	●	13 ShA	15'	2 h	14,0	79,0	4.500
ZA 13 Mould WT45	translucent	13 ShA	45'	8 h	12,0	68,0	4.500
ZA RTV 20-45 YELLOW	●	20 ShA	50'	4 h	15,0	85,0	4.500
ZA TT 2240	●	21 ShA	40'	2 h 30'	20,0	113,0	8.000
ZA 22 Mould	●	22 ShA	15'	1 h 30'	20,0	113,0	4.500
HT 24 Transparent	translucent	24 ShA	20'	3 h	14,0	79,0	4.500
ZA 28 Mould	●	28 ShA	15'	1 h	9,0	51,0	4.000
ZA RTV 30-60	○	30 ShA	1 h 10'	6 h	18,0	102,0	6.000
ZA RTV 30-45 GREEN	●	30 ShA	50'	4 h	15,0	85,0	5.000
ZA TT 3040	●	30 ShA	40'	4 h	21,0	119,0	10.000
HT 33 Transparent	translucent	33 ShA	20'	3 h 30'	20,0	113,0	7.500
ZA 35 Mould	●	35 ShA	15'	1 h	8,0	45,0	4.000
ZA 35 Mould Fast	●	35 ShA	7'	40'	8,0	45,0	4.000
MARK Plus	●	37 ShA	10'	2 h 30'	6,0	34,0	Putty
ZA RTV 40-45 BLUE	●	40 ShA	50'	4 h	15,0	85,0	5.500
HT 45 Transparent	translucent	43 ShA	12'	2 h 30'	15,0	85,0	8.000
ZAX 60 (Mixing ratio 10:1)	●	60 ShA	1 h	24 h	10,0	57,0	230.000
<b>MOLD MAKING JEWELLERY</b>							
HT 33 Transparent	translucent	33 ShA	20'	3 h 30'	20,0	113,0	7.500
HT 33 Rosso	●	33 ShA	20'	3 h 30'	20,0	113,0	7.500
HT 42 Grigio	●	41 ShA	25'	8 h	16,0	91,0	25.000
HT 45 Transparent	translucent	43 ShA	12'	2 h 30'	15,0	85,0	8.000
ZA 50 LT	●	50 ShA	18'	4 h	6,0	31,0	18.000
<b>PAD PRINTING</b>							
ZA 12 LT	●	12 ShA	20'	1 h 30'	10,0	57,0	3.500
ZA 12 PAD ANTISTATICO	●	12 ShA	45'	3 h	10,0	57,0	3.000
ZA PAD 32-20	●	32 ShA	20'	2 h	10,0	57,0	6.000
<b>VACUUM INFUSION PROCESS</b>							
ZA 25-6 SPRAY SELF BOND	●	25 ShA	6'	30'	26,0	147,0	8.000
ZA 26 WT 10 Spray Thixo Self Bonding	●	25 ShA	10'	1 h	20,0	113,0	Thixo
ZAX 29-5 Spray Self Bonding (mixing 10:1)	●	29 ShA	5'	30'	25,0	142,0	16.000

## ADDITION SILICONE (Platinum Curing Agent)

	Colour	Hardness	WT (@ 23 °C)	ST (@ 23 °C)	"Tear B Metric system (N/mm)"	"Tear B USA system (psi)"	Visc (cP)
<b>RAPID PROTOTYPING</b>							
XTX 45 DRY (Mixing ratio 10:1)	transparent	41 ShA	1 h 15'	13 h	21,0	119,0	50.000
XTX 45 OIL BLEEDING (Mixing ratio 10:1)	transparent	41 ShA	1 h 15'	13 h	21,0	119,0	50.000
HT 45 TRANSPARENT	translucent	43 ShA	12'	2 h 30'	15,0	85,0	8.000
<b>SPECIAL APPLICATION</b>							
ZA 00 TRASLUCIDO	translucent	40 Sh00	6'	1 h	2,0	8,0	1.500
ZA 4 LT	●	4 ShA	11'	1 h 30'	5,0	25,0	1.800
ZA 8 LT	translucent	8 ShA	15'	2 h 30'	5,0	28,0	1.200
ZA 15 PODOS	●	13 ShA	1'10"	3'	-	-	Putty
ZA 25 PODOS	●	23 ShA	1'10"	3'	-	-	Putty
<b>SPECIAL EFFECTS &amp; BODY CASTING</b>							
ZA OF1	transparent	gel	10'	1 h 15'	-	-	1.000
ZA SFX 0020	translucent	20 Sh00	25'	1 h 10'	4,0	23,0	5.200
ZA SFX 0030	translucent	30 Sh00	25'	1 h 50'	4,0	23,0	6.000
ZA 00 TRASLUCIDO	translucent	40 Sh00	6'	1 h	1,5	8,0	1.500
Silskin 10	translucent	10 ShA	7'	30'	11,0	62,0	4.500
ZA SFX 10 WT 10	translucent	10 ShA	12'	40'	14,0	79,0	10.000
ZA 22 THIXO BODY	●	20 ShA	10'	25'	14,0	79,0	Thixo
HT 24 WT 5 Transparent	translucent	24 ShA	5'	1 h 20'	14,0	79,0	4.500
ZA 35-15 GLASS	transparent	25 ShA	1 h 15'	8 h	-	-	200
HT 38 PUTTY FAST	●	36 ShA	1'30"	3'30"	-	-	Putty
ZA 45 PUTTY FAST	●	45 ShA	2'30"	10'	6,0	-	Putty

## CONDENSATION SILICONE (Tin curing agent)

	Colour	Hardness	WT (@ 23 °C)	ST (@ 23 °C)	"Tear B Metric system (N/mm)"	"Tear B USA system (psi)"	Visc (cP)
<b>MODUL MAKING</b>							
ZC 10 BASE	○	12 ShA*	1 h	24 h	18,0	102,0	33.000
ZC 20 BASE	○	20 ShA*	1 h	24 h	18,0	102,0	25.000
ZC 30 BASE	○	27 ShA*	1 h	24 h	18,0	102,0	30.000
ZC PUTTY 2528	○	30 ShA**	1 h 30'	24 h	good	good	Putty

\* Hardness after 72 h @ 23 °C, with the ZC P CURING AGENT \*\* Hardness after 72 h @ 23 °C with the ZC 2528

## BODY CASTING ALGINATE

	Colour	ST (@ 23°C)	Packaging
<b>SPECIAL EFFECTS &amp; BODY CASTING</b>			
AL Silica Free PR (Mixing ratio 2:1)	●	3' - 4'	20 x 500 g bags 10 kg bags 20 kg bags
AL Silica Free MT (Mixing ratio 2:1)	○	9' - 13'	20 x 500 g bags 10 kg bags 20 kg bags

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