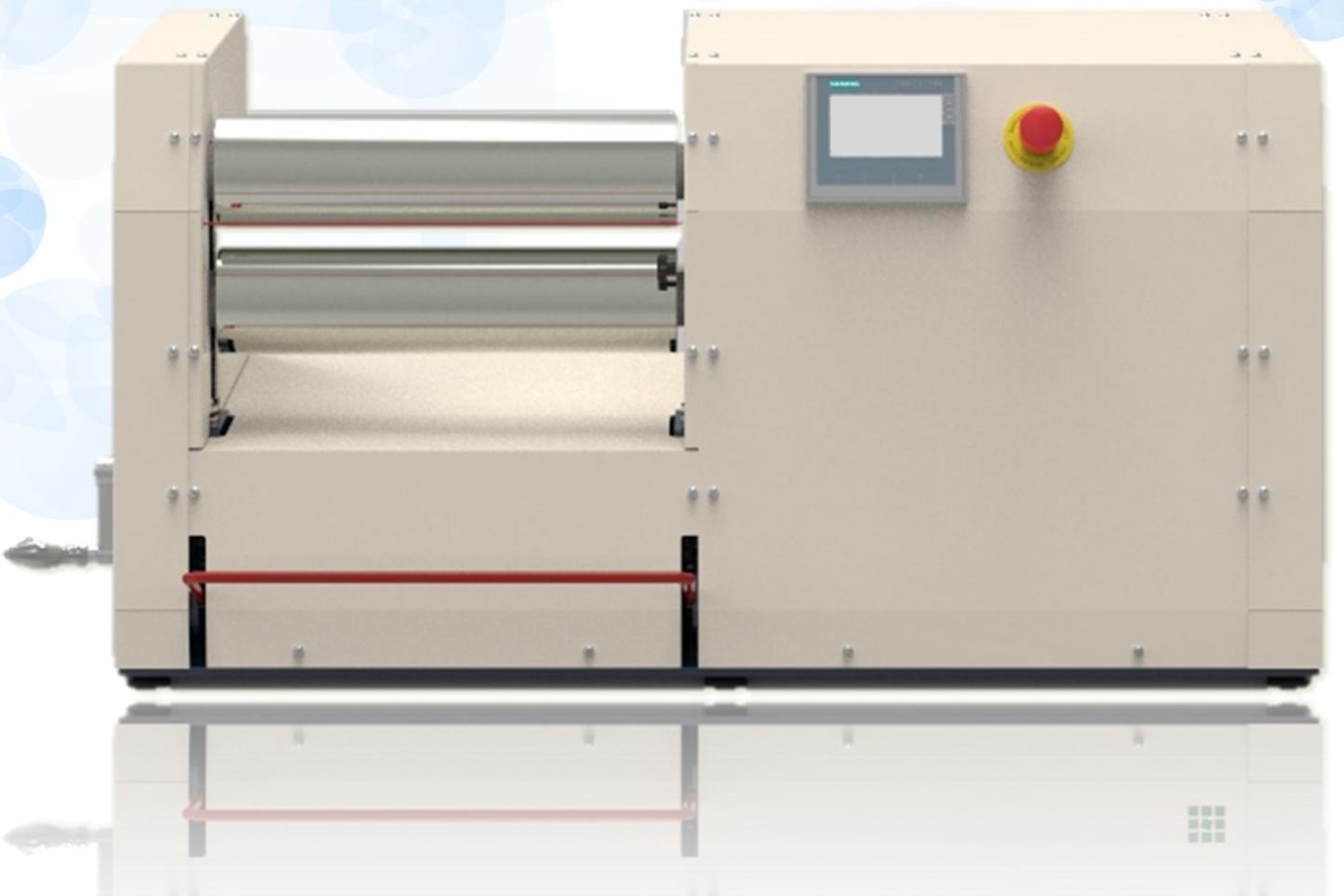


PolymerSystems

Technology Limited



Milling & Calendering

Hand Operated

Two Roll Mill

With this small lightweight, hand operated two roll mill you are able to carry your tool to most alternative workspaces when needed. The gears are on one side of each roll see to a smooth run, the gap between the rolls can be adjusted between 0.2mm and 5mm. This machine is perfect for mixing small amounts of HCR and rolling into thin layers.



PST-HR

Technical Details:

- Standard work height: work bench height + 32 cm
- Roller length: 30 cm
- Roll diameter: 10 cm
- Distance between rolls/min-max: 0.2 - 5.0 mm
- Machine weight: 27kg
- Measurements: L x W x H (min/max): 38 x 25 x 38 cm

Colour/Appearance:

- Frame colour: Dark blue metallic, powder coated
- Operating lever : steel
- Other colours are available for this machine on request (additional charge)

Polymer Systems Technology Limited

Tel: +44 (0) 1494 446610

Web: www.silicone-polymers.co.uk

Electric Bench Top Standard

Two Roll Mill

The Electric Bench Top Two Roll Mill for the mixing of silicones and polymers. All HCR's up to 90° Shore A can be mixed with this machine. Maximum mass is approximately 0,5 kg. for this machine, depending on the hardness of the HCR. This machine is developed to be used on a workbench. In front of the Gap between the two mixing rolls, a wire is situated that will cause the machine to stop when pressed. All functional buttons are hold to run executed.



PST-EBR-1

TechnicalDetails:

- Electrical connection: 230 Volt, 1 phase and ground
- Installed power rating: 0,5 kW
- 0 Volt safety
- Standard workheight: workbench height + 58 cm
- Width of the rolls: 40
- Diameter of the rolls: 10 cm
- GAP minimum/maximum: 0 – 12 mm
- Rotation speed: variable from 1 to 15 RPM
- Machine weight: 150 kg
- Dimensions: DxWxH: 53x78x58 cm

StandardEquipment:

- Foot pedal
- Stop wire
- Unique safety feature
- Double chain drive
- All functions 'hold to run'
- Machine standing on levellers

Electric Bench Top PRO

Two Roll Mill

PRO model with extra features

The completely new two roll mill MW-10 pro will be equipped with some special features. It will have lighting behind the roller opening, touch screen control and a digital thickness gauge.

- Improved visibility roll drop system
- Full touch screen control
- Lighting behind Roller opening
- Simplified & improved safety wire control
- Measurement of milling thickness



PST-EBR-2

TechnicalDetails:

- Electrical connection: 230 Volt, 1 phase and ground
- Installed power rating: 0,5 kW
- 0 Volt safety
- Standard work height: workbench height + 58 cm
- Width of the rolls: 40
- Diameter of the rolls: 10 cm
- GAP minimum/maximum: 0 – 12 mm
- Rotation speed: variable from 1 to 15 RPM
- Machine weight: 150 kg
- Dimensions: DxWxH: 53x78x58 cm

StandardEquipment:

- Foot pedal
- Stop wire
- Unique safety feature
- Double chain drive
- All functions 'hold to run'
- Machine standing on levellers
- Touch screen interface
- Multi lingual (Dutch, English, German, French, Spanish)
- Digital milling thickness gauge
- Lighting behind roller opening

Full Access Electric Bench Top

Two Roll Mill

Available in Single or Dual Motor

The new full access bench top electric rollers are available with a single motor (PST-EBR-3) and dual motor options (PST-EBR-4). Each of the two machines have an electronic measuring gauge and improved bottom roll drop system making the machine easier to use.

The dual motor version has the ability of changing the roll speed independently for upper and lower roll.



PST-EBR-3 & 4

Technical Details:

Size of machine.
Width = 1050 mm
Depth = 500 mm
Height = 450 mm

Machine Weight: 220kg

Electric Power Supply.
230 Volt, 1 Ph and earth (50/60 Hz).

Standard Equipment:

Both machines have:

- Stainless Steel Rollers
- Electronic measuring gauge.
- Improved bottom roll drop system (making it easier to use)

Floor Standing

Two Roll Mill

The Floor Standing Two Roll Mill (PST-FS-1) is developed to be used in a standing position. It's open on the front and back side so that feeding HCR's to the machine is quite easy. In front of the Gap between the two mixing rolls, a wire is situated that will cause the machine to stop when pressed, and starts the roller again when released.



PST-FS-1

Technical Details:

- Electrical connection: 230 Volt, 1 phase and ground.
- Installed power rating: 1,6 kW
- Standard Workheight: 1 mtr
- Roll width: 75 cm
- Roll diameter: 0,2
- GAP minimum/maximum: 0 – 25 mm
- Rotation speed: variable 5 to 30 rpm
- Machine weight: 280 kg
- Dimension : L x W x H : 0,6 x 1,1 x 1,1 (excluding wheels) mtr

Standard Equipment:

- Stainless Steel Rollers
- Foot pedal
- Stop wire in front of the rolls
- Instruction manual
- EU power supply cord

Electric Height Adjustable

Floor Standing Two Roll Mill



ERGONOMIC DESIGN

All ductile polymers that cannot be mixed in a mixer may be mixed in this two roll mill. This big machine is capable of mixing up to 1,25 kg of material depending on the hardness. This machine has been developed to be able to work both standing or sitting. This machine offers the option of mixing large quantities of material in a standing position as well as colouring small amounts of material when sitting. The large space under the bottom roll offers a wide degree of freedom to the operator around the mixing rolls. This machine will be delivered with a desired safety device. All controls are 'hold to run'.



HIGH QUALITY CHROME FINISH



VARIABLE WORKING



PST-HV

Technical Details:

Electrical connection: 230 Volt,
1 Ph and earth (50/60 Hz).
Power consumption: 1,8 kW
Zero volt safety
Electrical height adjustment system
Standard work height: variable
from min. 1 to max. 1,35 mtr
Roll length: 60 cm
Roll diameter: 20 cm

GAP minimum - maximum: 0 – 25 mm
Rotation speed: variable 5 to 30 RPM
Machine weight: 350 kg
Dimensions: LxWxH (min/max): 0,6x1,2x1,1/1,45 mtr

Colour/Appearance:

The standard frame of this machine is powdercoated in RAL 5026 (dark blue metallic). Plating of the machine is powdercoated in RAL 9001. The machines can be delivered in any colour of your own preference (additional charge).

Horizontal Mobile Floor Standing Electric

Two Roll Mill

This horizontal model design is for mixing and homogenising and can be supplied with single motor or a dual motor. Typical mixing batches are between 500 gm to 5 kg. Custom versions with water cooling can be provided. This model is the entry level, low cost, powered by single phase or 3 phase. Silicone materials can be left to mix and remove air with the safety lid down. Access can be made to the silicone at a jog speed when the safety lid is open.



HIGH QUALITY CHROME FINISH



BIGGER QUANTITIES



PST-MHR

Technical Details:

- Electrical connection: 400 Volt, 3 phase and ground.
- Installed power rating: 2,2 kW
- 0 Volt safety
- Standard workheight: 1,2 mtr
- Roll width: 75 cm
- Roll diameter: 20 cm
- Thickness minimum/maximum: 0 – 15 mm

- Rotation speed: variable 1 - 30 RPM
- Machine weight: 420 kg
- Dimensions: L x W x H : 1,2 x 0,85 x 1,45 mtr

Colour/Appearance:

The standard frame of this machine is powdercoated in RAL 5026 (dark blue metallic). Plating of the machine is powdercoated in RAL 9001. The machines can be delivered in any color of your own preference (additional charge).

HIGH CONSISTENCY RUBBERS (HCR)

PLATINUM CARE

PRODUCT NUMBER	DUROMETER TYPE A	TENSILE psi (MPa)	ELONGATION %	TEAR ppi (Kn/m)	WORK TIME @ 25°C	MIX RATIO	CERTIFIED CURE TIME / °C
MED-2045	40	1525 (10.5)	800	200 (35.3)	N/A	3 PART	10m / 171
MED-4014	15	675 (4.6)	1450	140 (24.7)	>72 h	1:1	10m / 116
MED-4020	25	1400 (9.7)	1200	180 (31.7)	>72 h	1:1	10m / 116
MED-4025	30	1500 (10.3)	900	140 (24.7)	1.5 h	1:1	10m / 171
MED-4027	30	2300 (15.9)	1050%	235 (41.2)	2.5 h	1:1	10m / 171
MED-4035	35	1500 (10.3)	1000	200 (35.3)	3.5 h	1:1	10m / 116
MED-4050	50	1450 (10.0)	1000	250 (44.1)	3.5 h	1:1	10m / 116
MED-4065	65	1150 (7.9)	950	250 (44.1)	6 h	1:1	10m / 116
MED-4080	80	1100 (7.6)	700	215 (37.9)	8 h	1:1	10m / 116

ULTRA HIGH PERFORMANCE

MED-4055	55	1575 (10.9)	900	300 (52.5)	2.5 h	1:1	10m / 138
MED-4070	70	1325 (9.11)	700	285 (50.3)	2 h	1:1	10m / 138

PEROXIDE CURE

MED4-4115	50	1500 (10.3)	450	100 (17.6)	N/A	1 PART	5m / 116
MED4-4116	70	1350 (9.3)	400	125 (22.0)	N/A	1 PART	5m / 116
MED-4120	25	1300 (9.0)	925	130 (22.9)	N/A	1 PART	5m / 116
MED-4128	25	1035 (7.1)	800	70 (12.3)	N/A	1 PART	10m / 116
MED-4135	35	1250 (8.6)	800	110 (19.4)	N/A	1 PART	5m / 116
MED-4150	50	1450 (10.0)	700	180 (31.7)	N/A	1 PART	5m / 116
MED-4165	65	1200 (8.3)	500	200 (35.3)	N/A	1 PART	5m / 116
MED-4174	50	1200 (8.3)	775	225 (39.7)	N/A	1 PART	5m / 116

USP CLASS VI HCRs

- For a wide variety of fabrication techniques for the healthcare industry including: moulding, calendaring and extruding.
- Two-part, high consistency elastomers design for optimal performance in a wide range of applications.
- Produces a tough, durable, translucent elastomer when thermally cured
- Has a non-tacky surface and no volatile by-products or peroxide residues
- Advantages include lot-to-lot consistency and cost effectiveness
- Can be used with NuSil's Healthcare colour masterbatches for applications requiring coloured silicones.

PRODUCT NUMBER	DUROMETER TYPE A	TENSILE psi (MPa)	ELONGATION %	TEAR ppi (Kn/m)	WORK TIME @ 25°C	MIX RATIO	CERTIFIED CURE TIME / °C
SIL2-5020	21	1620 (11.2)	1185	195 (34.3)	8h	1:1	15m / 165
SIL2-5030	31	1690 (11.7)	1140	215 (37.8)	5h	1:1	15m / 165
SIL2-5040	39	1510 (10.4)	1115	220 (38.7)	4h	1:1	15m / 165
SIL2-5050	50	1350 (9.3)	940	245 (43.1)	4h	1:1	15m / 165
SIL2-5060	60	1295 (8.9)	920	255 (44.9)	11h	1:1	15m / 165
SIL2-5070	68	1330 (9.2)	855	260 (45.8)	2h	1:1	15m / 165
SIL2-5080	80	1140 (7.9)	615	210 (37.0)	>24h	1:1	15m / 165

High Consistency Rubbers, or HCRs, can be used for extrusion of tubing and profiles (rod or ribbon), in calendared sheeting for die-cutting, or in compression or transfer moulded parts such as balloons, gaskets or O-rings. HCRs are clay-like in the uncured state and primarily formulated in a one or two part system (peroxide and platinum catalysts respectively).

POST CURE TIME / °C	STRESS @ STRAIN psi (MPa) @ %	CURE RATE (T90 (m) @ 138 °C)	CURE RATE SCORCH (m) @ 138°C	MASTER ACCESS FILE	COMMENTS
2h / 148	200 (1.4) @ 200	2.35	0.70	YES	Designed for dissolving in solvents
-	35 (0.2) @ 200	2.50	1.25	YES	Low durometer, low modulus
-	80 (0.6) @ 200	2.30	0.95	YES	High tear, low modulus
-	110 (0.9) @ 200	2.80	0.75	YES	Low tension set
-	100 (0.69) @ 200	-	-	YES	High tensile strength, low modulus
-	200 (1.4) @ 200	2.70	1.00	YES	High tear strength
-	300 (2.1) @ 200	2.60	1.10	YES	High tear strength
-	300 (2.4) @ 200	2.65	0.85	YES	High tear strength
-	475 (3.3) @ 200	2.75	0.80	YES	High tear strength

4h / 177	490 (3.4) @ 200	2.85	1.00	YES	Ultra-high tear strength
4h / 177	605 (4.2) @ 200	2.70	0.90	YES	Abrasion / Fatigue Resistant

2h / 249	450 (3.1) @ 200	2.20	0.65	YES	Non-vinyl specific peroxide precatylyzed
2h / 249	600 (4.1) @ 200	2.05	0.50	YES	Non-vinyl specific peroxide precatylyzed
2h / 177	100 (0.7) @ 200	2.10	0.55	YES	Uncatlyzed
2h / 200	90 (0.6) @ 200	1.65	0.55	YES	Low-tension set, Uncatlyzed
2h / 177	185 (1.3) @ 200	2.10	0.55	YES	Uncatlyzed
2h / 177	300 (2.1) @ 200	1.90	0.50	YES	Uncatlyzed
2h / 177	450 (3.1) @ 200	1.70	0.50	YES	Uncatlyzed
4h / 205	325 (2.2) @ 200	1.70	0.55	YES	Uncatlyzed

- NuSil Technology's Class VI (C6) products meet the requirements defined in ISO-10993 for Surface Devices with "limited" (<24 hours) or "prolonged" (1 to 30 days) contact duration.
- After post-cure, material meets or exceeds the extraction requirements for FDA regulation 21 CFR 177.2600 "Rubber Articles Intended for Repeated Use (Food Contact)". NuSil Technology's SIL2-5030 shall not be considered for use in human implantation for a period of greater than 29 days.

POST CURE TIME / °C	STRESS @ STRAIN psi (MPa) @ %	CURE RATE T10 (m) @ 165°C	CURE RATE T90 (m) @ 165°C	MASTER ACCESS FILE	COMMENTS
-	65 (0.5) @ 200	0.15	0.29	NO	Designed for high-volume extrusion or moulding
-	120 (0.8) @ 200	0.15	0.26	NO	Designed for high-volume extrusion or moulding
-	140 (1.0) @ 200	0.15	0.29	NO	Designed for high-volume extrusion or moulding
-	320 (2.2) @ 200	0.15	0.34	NO	Designed for high-volume extrusion or moulding
-	380 (2.6) @ 200	0.15	0.20	NO	Designed for high-volume extrusion or moulding
2h / 150	360 (2.5) @ 200	0.15	2.80	NO	Designed for high-volume extrusion or moulding
2h / 150	460 (3.2) @ 200	0.15	1.55	NO	Designed for high-volume extrusion or moulding

VERSASIL³

HIGH CONSISTENCY SILICONE ELASTOMERS

DESCRIPTION

- A unique three-part system, VersaSil³ offers the flexibility of adjustable cure rate and table life for various fabrication requirements
- High tear strength, wide processing parameters, and translucent, non-tacky surfaces
- Developed to be compounded with the inhibitor CAT-40 and the platinum catalyst CAT-55. Advantages include: no volatile by-products, lower cure temperature, and optional post-cure
- 100: 1.0: 1.0 Mix Ratio

NuSil Technology's VersaSil³ Series shall not be considered for use in human implantation for a period of greater than 29 days.

APPLICATION

- For mass production with maximum flexibility
- For a wide variety of fabrication techniques for the healthcare industry including: moulding, calendaring and extruding

PLATINUM CURE

VersaSil³ 30, 40, 50, 60, 70, and 80 are a family of versatile high-consistency elastomers developed for volume-users who demand maximum flexibility. VersaSil³ can be used for silicone extrusion, moulding, and calendaring. This unique 3-part system allows flexibility to adjust the cure rate and the table life to various fabricating requirements. The VersaSil³ series produces tough, durable elastomers with nominal Type A durometers of 30, 40, 50, 60, 70, and 80. Additionally, the base stocks may be blended to produce elastomers of intermediate durometer and other physical properties. This brochure can be used as a guide for anticipated physical and chemical properties from the vulcanized VersaSil³ elastomer system.

MILLING INSTRUCTIONS

Always soften the components before mixing together. If it is a 1:1 mix ratio silicone product, always soften part A and then soften part B separately, if heat is generated, allow to cool to ambient conditions, before combining the 2 components.

Versasil is unique as there is only one component to soften and always do this before adding the Inhibitors Cat-40 and Catalyst, Cat-55.

Add entire calculated quantity of CAT-40 and mill until homogenous. While the base/CAT-40 mixture is turning on the mill, add the CAT-55 in small increments until the entire calculated amount is added. Finally, mill in the remaining base stock. Take caution to avoid overmilling. Note: CAT-40 and CAT-55 are supplied in highly concentrated masterbatches. These masterbatches are provided at a consistency that can be easily cut with a spatula or knife. Be certain that the instrument used is thoroughly cleaned between contact with CAT-40 and CAT-55.

The following table displays typical properties of the unvulcanised VersaSil³ base stocks and typical properties after vulcanization using CAT-40 and CAT-55 platinum catalyst masterbatches.

NUSIL PRODUCT NUMBER	UNCURED PHYSICAL PROPERTIES			CURED PHYSICAL PROPERTIES				
	PLASTICITY	APPEARANCE	WORK TIME (HOURS)	SPECIFIC GRAVITY	DUROMETER (TYPE A)	TENSILE STRENGTH	ELONGATION %	TEAR STRENGTH ppi (Km/N)
Platinum Cure—Press Cured with 100 : 1.0—(Base Stock : CAT-40 : CAT-55)								
MED-4032	60	Translucent	7.7	1.1	30	1200 (8.3)	1100	165 (29.1)
MED-4042	63	Translucent	1.8	1.11	40	1475 (10.2)	950	180 (31.7)
MED-4052	80	Translucent	9.0	1.16	50	1325 (9.1)	1100	230 (40.6)
MED-4062	85	Translucent	10.7	1.16	60	1300 (9.0)	875	250 (44.1)
MED-4072	85	Translucent	4.0	1.22	70	1100 (7.6)	875	240 (42.3)
MED-4082	115	Translucent	16.0	1.22	80	1050 (7.2)	800	240 (42.3)

BIOLOGICAL DATA:

Each lot of material is tested for cytotoxicity and emission spectroscopy, as per ISO-10993 and ASTM E 305 respectively. Master Files for the VersaSil³ series have been filed with the U.S. Food and Drug Administration.

Customers interested in authorization to reference the Master Files must contact NuSil Technology LLC.

After being cured with CAT-40 and CAT-55, these elastomers are compliant with USP Class VI (Systemic Toxicity, Intracutaneous Toxicity, and 7-Day Muscle Implant Study) requirements and applicable ISO 10993 requirements. The following table summarizes the biological testing conducted on the formulation components of the VersaSil³ series of elastomers.

Standard FDA Class	Test	Tested Per USP	Tested Per ISO 10993	Test Results
Cytotoxicity	Cytotoxicity Test Using The ISO Elution Method In The L-929 Mouse Fibroblast Cell Line	Yes	Yes	A-Noncytotoxic B-Noncytotoxic C-Noncytotoxic
Hemolysis	In Vitro Hemolysis Study (Extraction Method)	Yes	No	Nonhemolytic
Systemic Extracts	USP Systemic Toxicity Study In The Mouse (Extracts)	Yes	Yes	Nontoxic
Intracutaneous Extracts	Acute Intracutaneous Reactivity Study In The Rabbit (Extracts)	Exceed	Yes	Nontoxic
Implantation One Week	USP Muscle Implantation Study In The Rabbit With Histopathology (One Week)	Yes	No	Nonirritant
Salmonella Mutagen	Ames Salmonella / Mammalian Microsome Mutagenicity Assay	Yes	Yes	Nonmutagenic
Rabbit Pyrogen	Rabbit Pyrogen Study - Material Mediated	Yes	Yes	Nonpyrogenic
Sensitization	Delayed Contact Sensitization Study (A Maximization Method) In The Guinea Pig (Saline Standard Cure)	Yes	No	No Sensitization

RHEOMETRY:

Rheometry is an extremely useful tool for determining the flow properties and cure profiles of silicones.

Rheometry is determined by comparing the relationship between stress, strain, temperature and time. By minimizing the amount of CAT-40 masterbatch, a faster cure rate and quicker scorch time can be achieved. If a longer work time is desired, the CAT-40 ratio can be increased in order to yield the optimal table life for custom applications. (Temperatures of the work environment should be taken into account when determining table life values. Work times will be cut in half with every 10°C temperature increase. Work time values are measured at ambient conditions, which are defined at 25°C and 30%-70% relative humidity as per NTTM-008). Typical rheometry properties can be expected by varying CAT-40 concentrations.

CURED PHYSICAL PROPERTIES							RHEOMETRY DATA			
STRESS AT STRAIN 100% (psi)	STRESS AT STRAIN 200% (psi)	STRESS AT STRAIN 300% (psi)	% SHRINK	TENSILE SET @ 300% ELONGATION	COMPRESSION SET @ 25% (Method B)	POROSITY	CURE TIME T90 (min.)	SCORCH TIME (min.)	MIN TORQUE (in. lbs)	MAX TORQUE (in. lbs)
Platinum Cure—Press Cured with 100 : 1.0—(Base Stock : CAT-40 : CAT-55)										
85	150	230	2.6	9	7	0	4.0	1.0	6.0	35
145	226	270	1.3	9	5	0	5.0	0.4	6.0	47
190	275	360	2.6	14	9	0	4.0	0.8	9.0	48
282	450	360	2.6	16	6	0	2.0	0.7	8.0	33
370	450	420	2.5	31	12	0	4.0	0.6	12.0	90
380	450	460	1.5	13	7	0	2.0	0.6	10.0	87

SILICONE SALES & TECHNICAL SERVICE SPECIALISTS

When you have Research, Design, Production or Manufacturing problems, it's important to look at the application in depth. PST solve problems when Silicones are paramount.



NUSIL

PST are the authorised representative for NuSil within the UK, Ireland and Benelux regions.



POLYMER SYSTEMS TECHNOLOGY LIMITED

Unit 2, Network 4,
Lincoln Road
Cressex Business Park
High Wycombe
Buckinghamshire
HP12 3RF

QUALITY

Accreditation from 1997 and proud to hold the latest revision of ISO:9001 essential to our ongoing commitments we sought and achieved registration to the environmental standard ISO:14001.



sales@silicone-polymers.co.uk

www.silicone-polymers.co.uk

Tel: +44 (0) 1494 446610