



## SeRM™ Elastomer Series

The world's first thermosetting polymer  
with rubber hardness 0 and  
compression set 0~1%.  
SLIDE RING MATERIAL® achieves  
this performance with its  
cross-link point mobility

## SeRM Elastomer is made from “Slide-Ring Material”®

Slide-Ring Material is the world’s first molecular structure with the feature of cross-link point mobility. SeRM Elastomer shows very unique physical properties by pulley effect, although SeRM is thermosetting polymer with chemical cross-linking.

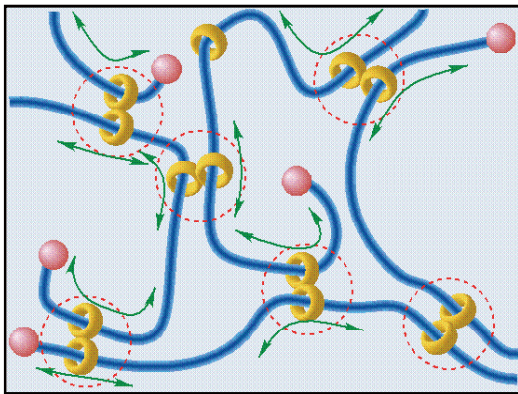
### Structure of Slide-Ring Material (SRM)



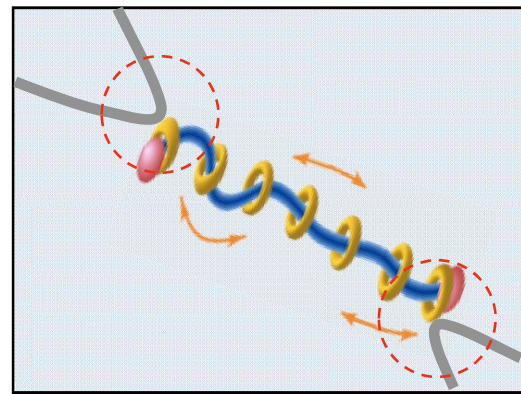
Axis polymer and freely moving ring molecules

SRM creates network in which cross-link points move

【Figure 8 – link (among SRMs)】



【Figure 9 – link (SRM and other polymer)】



Pulley effect (free movement of cross-link points) and air spring like effect (mutual repulsion of ring molecules) give unique physical properties like no existing polymers.

For further details, please refer to <http://www.asmi.jp>

SeRM Elastomer is solventless one part thermosetting polymer.

SeRM Elastomer is designed for the following applications

- Protective material from vibrations
- Protective material from noises
- Shock absorbers
- Protective material for precision parts
- Sealing material with fatigue strength
- Material that requires repetitive movements
- Material for optical parts
- Material for heat radiation and electric conductive sheets

#### <Usage>

- SeRM Elastomer cures at 150°C (302F) in 5 hours.
- Can be used as modifier by adding to other thermosetting resins such as rubber.
- Can be heat cured after dilution with solvents.
- A two part-type that requires solvents can be provided per customer request.

### <Distinctive Features of SeRM>

#### 1. Very soft material, rubber hardness 0 to 30

- Can be used in a wider temperature range (from -20°C(-4F) to 120°C(248F)) than urethane gel.

#### 2. Very small deterioration

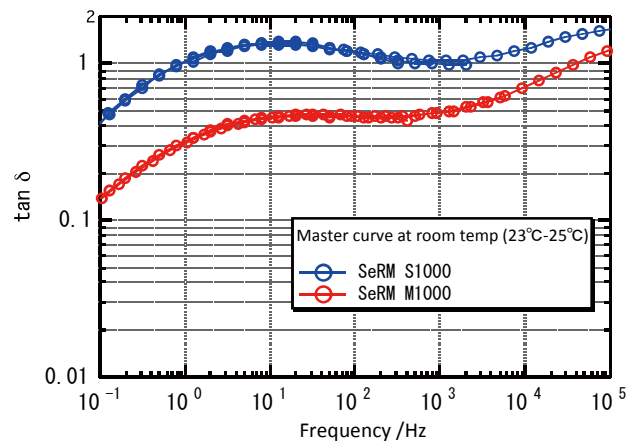
- Compression set for both S1000 and M1000 is below 1%
- Low stress relaxation. Tensile strength changes little under long sustained transformation.

#### 3. Excellent vibration absorbency for wide frequencies

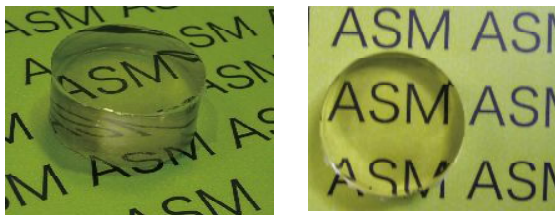
- Absorb both vibration and noise
- $\tan\delta=1$  level vibration absorbency from 1Hz to 100,000Hz

“Tan $\delta$ ” is loss coefficient. The greater this value, the more energy is absorbed from vibrations and shocks. Material with a greater value is The better for absorbers.

【SeRM Tan $\delta$  Test Data】

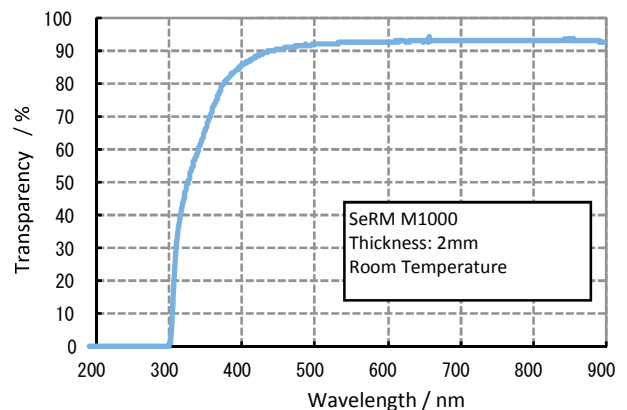


#### 4. Excellent optical transparency



Photos of M1000 12.5mm thick sample

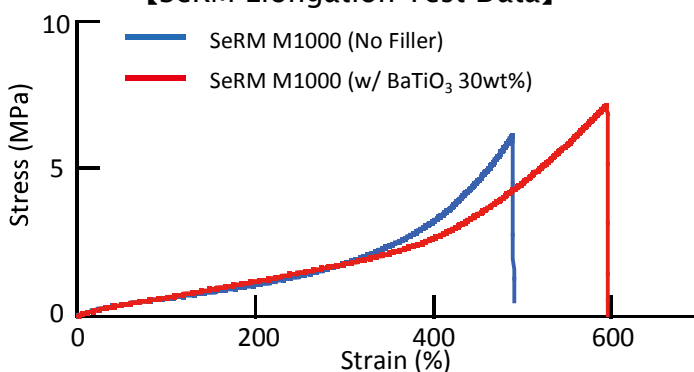
【SeRM Optical Transparency Test Data】



#### 5. Physical properties with fillers

- Smaller changes in properties than other existing polymers with fillers

【SeRM Elongation Test Data】



Fillers may add features to SeRM such as strength



Advanced Softmaterials Inc. (ASM)  
Kashiwanoha 5-4-6-403 Kashiwa Chiba 277-0882 Japan  
<http://www.asmi.jp>  
E-mail: [sales@asmi.jp](mailto:sales@asmi.jp)  
Phone: 04-7133-6151, Fax: 04-7133-6145



## SeRM™ Elastomer Physical Properties

05-Oct-11

Physical Properties (unit)		S1000	M1000	Condition	Remark
Appearance		Transparent	Transparent		
Specific Gravity		1.14	1.13		ISO 2781
Temperature Range		-20~100°C	-20~120°C		
Hardness		0	30	Durometer Type AO	ISO 7619-1
Tensile Strength (MPa)		0.50	0.97		ISO 37
Elongation at Break (%)		305	197		ISO 37
Tear Strength (kN/m)		1.43	6.01		ISO 34-1
Compression Set (%)		0.7	0.5	70°C, 24hrs	ISO 815
		12.5	13.8	100°C, 24hrs	
Compressive Stress (kPa)	10%	3.5	87	Room Temperature	JIS K 7312
	20%	8.4	200		
Compression Modulus (kPa)	10%	37	870	Room Temperature	ISO 7743
	20%	44	990		
Tensile Stress Relaxation (%)		-	3.2	40°C, 72hrs	JIS K 6263
Chemical Resistance	Toluene	Poor	Poor	23°C 24hrs 168hrs	ISO 1817
	Acetone	Poor	Poor		
	Methanol	Good	Good		
	Distilled Water	Excellent (opaque)	Excellent (opaque)		
	Isooctane	Excellent	Excellent		
	Liquid Paraffin	Excellent	Excellent		
	HCl(10%)	Good / Poor	Excellent / Good		
	NaOH(10%)	Fair / Poor	Fair / Poor		
TR Test	TR10	-22°C	-38°C	S1000: 6mm×70mm rectangular specimens	ISO 2921
	TR50	-13°C	-23°C		
Volume Resistivity ( $\Omega \cdot \text{cm}$ )		$1.5 \times 10^{10}$	$1.5 \times 10^9$	23°C	JIS K 6271
Surface Resistivity ( $\Omega$ )		$3.3 \times 10^{12}$	$5.1 \times 10^{11}$	23°C	
Total Luminous Transmittance (%)		93	91	D <sub>65</sub> , thickness: 2mm	ISO 13468-1
Refractive Index		1.48	1.48	589nm, 26°C	ISO 489
Flammability		HB	HB		UL-94
Heat Capacity (J/gK)		2.04	2.04	27°C	DSC
Gas Permeability Coefficient	O <sub>2</sub> (23°C)	-	$2.21 \times 10^{-13}$	cm <sup>3</sup> ·cm/(cm <sup>2</sup> ·s·Pa)	ISO 15105-1

Data herein is typical and not to be construed as specifications.