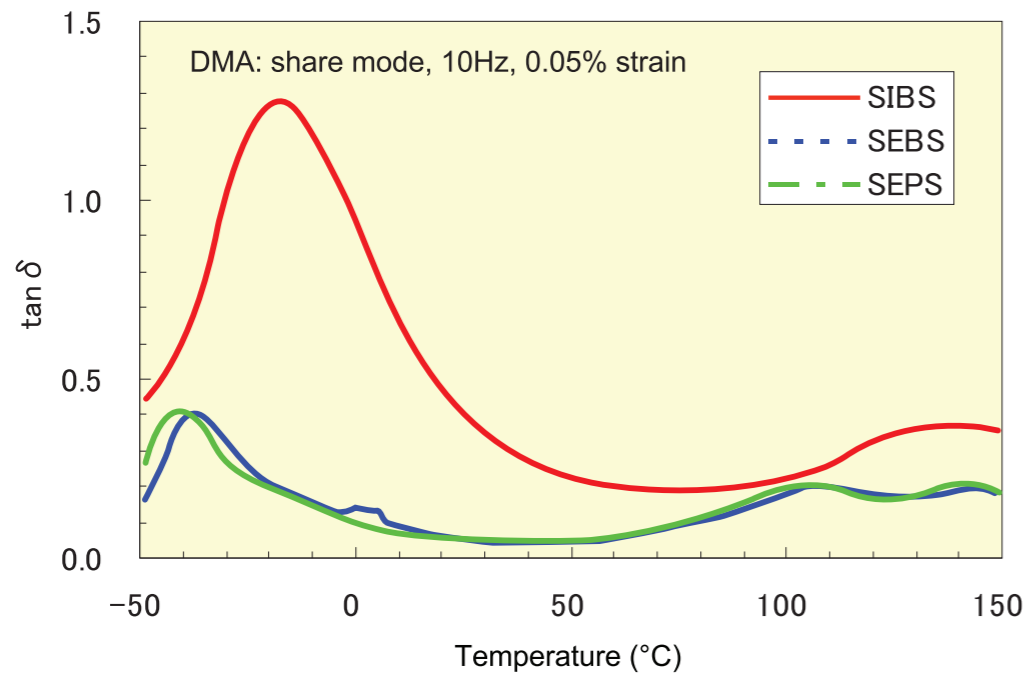


Vibration Damping Properties of SIBSTAR®

- SIBS performs well over a wider range of temperature in terms of vibration attenuation, compared to other SBCs.
- With the help of tackifier, the peak temperature of $\tan \delta$ curve can be controlled arbitrarily.



SIBS: SIBSTAR® 103T.
 SEBS and SEPS: commercially available products (M.W.=100,000, St content=30%)
 Test method: JISK6394 (Testing method of dynamic properties)

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NOTE:

The properties of this brochure are typical values and are not intended as product specifications.

Restriction on Medical/Healthcare Applications

Please be noticed that the SIBSTAR® products are NOT manufactured in accordance with any legislative requirements/guidance for medical/healthcare applications. Users should inquire or contact authorities or organizations at own risk before any proposed use of SIBSTAR® in manufacture of medical device or other special indications.

Without the suitable regulatory assessments, Kaneka Corporation nor its subsidiaries may NOT provide or supply the SIBSTAR® products to the users.

SIBSTAR®

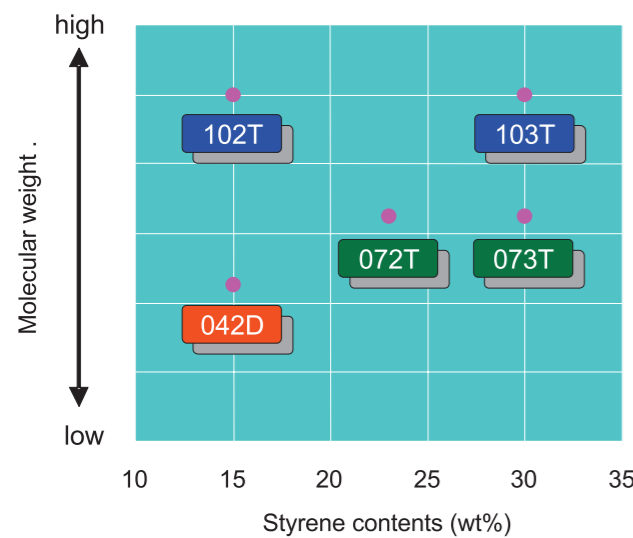
“ Wholly Saturated” Styrene-Isobutylene Block Copolymer

The novel “Isobutylene-based”
 thermoplastic elastomer offers:

- Good heat aging resistance
- Excellent gas barrier properties
- High vibration damping performance
- Flexibility without liquid plasticizers

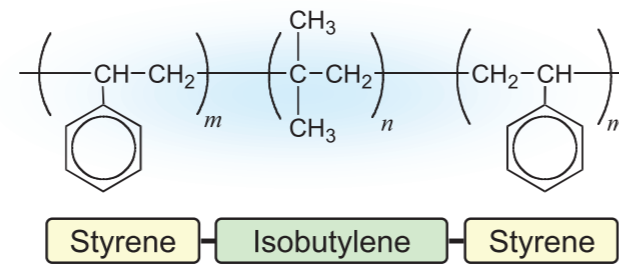
Primary Structure of SIBSTAR®

- SIBSTAR® is constituted of Triblock type "SIBS" and Diblock type "SIB".
- SIBS varies in molecular weight and Styrene contents, and their hardness depends on Styrene contents.
- SIBS is more flexible than other SBCs, and less- or non-oil plasticizer system can be designed.

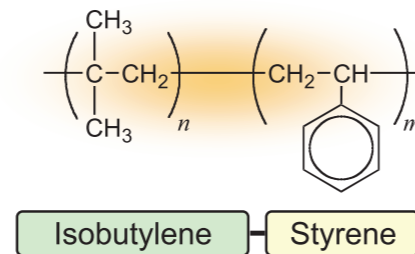


Test method: KANEKA method
102T, 103T, 072T, 073T: SIBS
042D: SIB

Styrene-Isobutylene-Styrene Triblock Copolymer (SIBS)

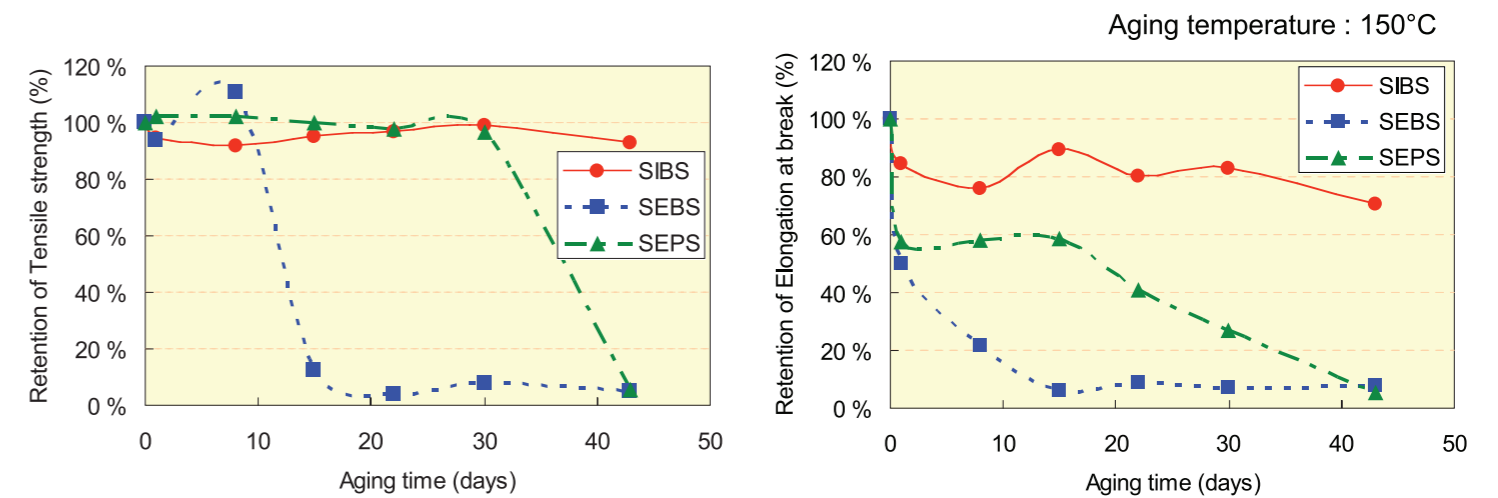


Styrene-Isobutylene Diblock Copolymer (SIB)



Heat Aging Resistance of SIBSTAR®

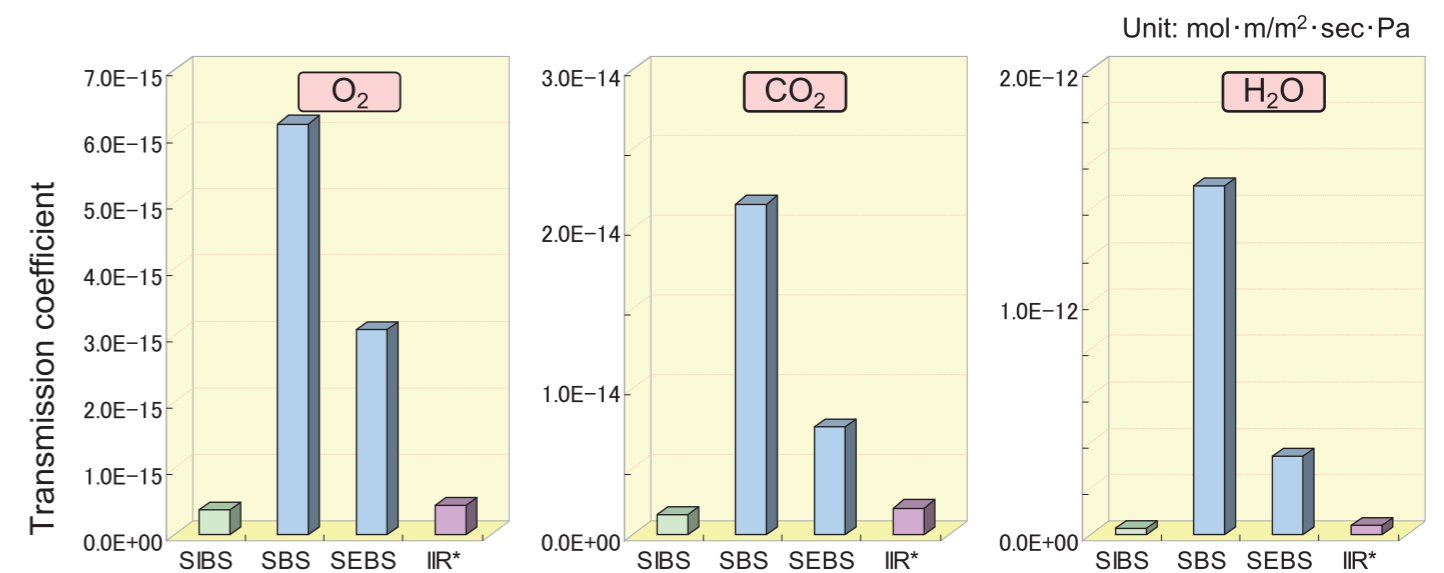
- SIBS has a "wholly saturated" soft segment, therefore SIBS is highly stable against heat aging.
- SIBS has a better heat aging resistance than hydrogenated SBCs, such as SEBS and SEPS.



SIBS: SIBSTAR®103T
SEBS and SEPS: Commercially available products (M.W.=100,000, St content=30%)
Test method: JISK6257(Determination of heat ageing properties)

Gas Barrier Performance of SIBSTAR®

- SIBS has lower gas permeation characteristics than those of other SBCs.
- SIBS has similar gas permeability to that of Butyl rubber (IIR) and Polyolefins (such as PP, PE).



SIBS: SIBSTAR®103T
SBS and SEBS: Commercially available products (M.W.=100,000, St content=30%)
Test method (O₂, CO₂): JISK7126 (Testing method for gas transmission rate)
Test method (H₂O): JISZ0208 (Testing method for water vapor transmission rate)
* The data of IIR is a book value. (reference: Polymer Handbook 4th Edition)

Basic Properties of SIBSTAR®, SIBS Grades

| Properties | | Method & Condition | Unit | SIBSTAR 073T | SIBSTAR 072T | SIBSTAR 103T | SIBSTAR 102T |
|--------------------|--------------------|---|-------------------|--------------|--------------|--------------|--------------|
| Specific Gravity | Specific Gravity | JIS K6268 | g/cm ³ | 0.954 | 0.946 | 0.954 | 0.942 |
| Flexibility | Hardness | JIS K6253 (15sec) | JIS-A | 45 | 33 | 46 | 25 |
| Flow | Melt Flow Rate | JIS K7210 230°C, 2.16kgf | g/10min | 7 | 6 | 0.1 | 0.6 |
| | Apparent Viscosity | JIS K7199 230°C, 1,220sec ⁻¹ | Poise | 2,000 | 2,000 | 4,000 | 3,000 |
| Tensile Properties | Strength @Break | JIS K6251 No.3 Dumbbell 23°C | MPa | 14 | 13 | 18 | 15 |
| | Elongation @Break | | % | 650 | 670 | 620 | 870 |
| | Modulus @100% | | MPa | 0.9 | 0.7 | 1.0 | 0.5 |
| Permanent Set | Compression Set | JIS K6262 70°C, 22hrs | % | 70 | - | 50 | 65 |