



## SOVEREIGN CHEMICAL COMPANY

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# Ribetak<sup>®</sup> 7559 Pastilles

<b>Manufacturer:</b>	SI Group
<b>Classification:</b>	Modified phenol formaldehyde novolak reinforcing resin
<b>Chemical Composition:</b>	Nonylphenyl, phenol, formaldehyde polymer

### Specification Data

<b>Specification Properties</b>	<b>Values</b>	<b>Test Method</b>
Softening point	90-105°C	03660 Ring & Ball
Free phenol	< 1%	03600
<b>Typical Properties</b>		
Physical Form	Pastilles	Visual
Color	Brown	Visual
Insoluble in acetone:	< 0.1%	Typical
Ash (800°C)	< 0.1%	02241(800°C)
Specific Gravity	0.95 - 1.00	Typical

Schenectady test methods are available upon request.

### Applications:

**Use:** Ribetak<sup>®</sup> 7559 Pastilles is used in synthetic and natural rubber based compounds as a reinforcing resin in many applications that require high hardness compounds that processes easily. Some products in which the Ribetak<sup>®</sup> 7559 Pastilles is used are: tires, bead area compounds, low hysteresis high performance subreads, sidewalls, shoe soles, co-extruded window profiles, weather-stripping.

**Solubility:** Ribetak<sup>®</sup> 7559 Pastilles is soluble in ketones and alcohols.

**Description:** Synthetic modified phenol formaldehyde reinforcing resin that is more consistent in performance than cashew modified resins.

**Resin Crosslinking:** The addition of 7 to 10 parts of HMT (hexamethylene tetramine) to 100 parts of Ribetak<sup>®</sup> 7559 Pastilles resin is needed to make it thermosetting. HMT can be replaced by other formaldehyde methylene donors such as hexamethoxymethylomelamine (HMMM).

(HMMM). In order to achieve the best reinforcing effect the resin should be incorporated in a second mix stage and at a temperature around the softening point of the resin. The methylene donor should be added at a later stage and at low temperature, along with the accelerators and sulfur, in order to avoid scorching.

### Compound Effects:

**Processing:** The Ribetak<sup>®</sup> 7559 Pastilles resin due to its thermoplastic nature has plasticity at compound processing temperature but, crosslinks with a methylene donor when the compound is cured forming a hard compound.

**Physical Properties:** The Ribetak<sup>®</sup> 7559 Pastilles resin when used with a methylene donor increases hardness, tear resistance, abrasion resistance, tensile strength and modulus. Elongation is reduced slightly.

**Aging Properties:** Ribetak<sup>®</sup> 7559 Pastilles increases the aging, chemical, solvent, and oil resistance of compounds (particularly NBR based compounds).

**Polymer Compatibility: Nitrile (NBR):** Phenolic resins are very compatible with NBR polymers allowing large amounts (25 to 100+ phr) of resin to be used to form very hard ebony type compounds. Lesser amounts (10 to 20 phr) of resin in NBR form vulcanizates that are softer and flexible.

**EPDM:** Phenolic resins are fairly compatible with EPDM polymers and can be used up to the 30 phr level. Phenolic reinforcing resins are often used in a very hard portion of dual hardness EPDM profiles for automobile weather stripping.

**SBR, BR and Natural Rubber:** Phenolic resins are not as compatible with SBR, BR and NR polymers. However, levels of 10 to 20 phr can be use to increase hardness and abrasion resistance. Use of a high-styrene resin copolymer with the phenolic resin can increase the flex-fatigue life of compounds based on SBR, BR and NR or blends of these polymers. NBR rubber (15-25 phr) is often used in combination with SBR, BR or NR rubber to increase the compatibility of the resin allowing for resin phr levels above 20.

**Neoprene (CR):** Phenolic resins have least compatibility with CR polymers. Levels of 5 to 10 phr are recommended. NBR rubber (15-25 phr) is often used in combination with CR rubber to increase the compatibility of the resin allowing for resin phr levels above 15.

### **Packaging and Storage**

**Packaging:** 25 (55.1 Lb.) Kg bags on 1000 Kg net polyethylene-wrapped pallet.s

**Shelf Life:** 1 year from date of manufacture if stored as indicated below.

**Storage:** Store in cool, dry storage area in original packaging.

Specification Date: December 18, 1997 (Supersedes 9/29/97)