



LIQUID SILICONE RUBBER | ELASTOSIL® LR 5040

# NEW LIQUID SILICONE RUBBER ELIMINATES POST-CURING

In order to fulfill regulatory requirements, articles made from liquid silicone rubber must be post-cured if they are intended for sensitive applications. With ELASTOSIL® LR 5040 series liquid silicone rubber, this expensive, time-consuming and labor-intensive step can be eliminated.

### Higher Productivity without Post-Curing

To achieve the properties required for sensitive applications, vulcanizates made from conventional liquid silicone rubber must generally be post-cured (thermal post-treatment) for several hours. This treatment improves the mechanical properties and reduces the volatile content to the required level. On the one hand side, this extra step costs time and energy, on the other hand, it interrupts the highly automated production process, since the post-curing ovens are generally manually loaded and emptied. Therefore, fabricators would highly appreciate to avoid this complicated and cost-intensive procedure.

### Innovative Compound Formulation

It was precisely for this reason that WACKER developed the ELASTOSIL® LR 5040 series of liquid silicone rubber. Even without post-curing, rubber goods manufactured from these new grades show a property profile that already satisfies the requirements for baby-care, foods-contact and medical applications.

### ELASTOSIL® LR 5040

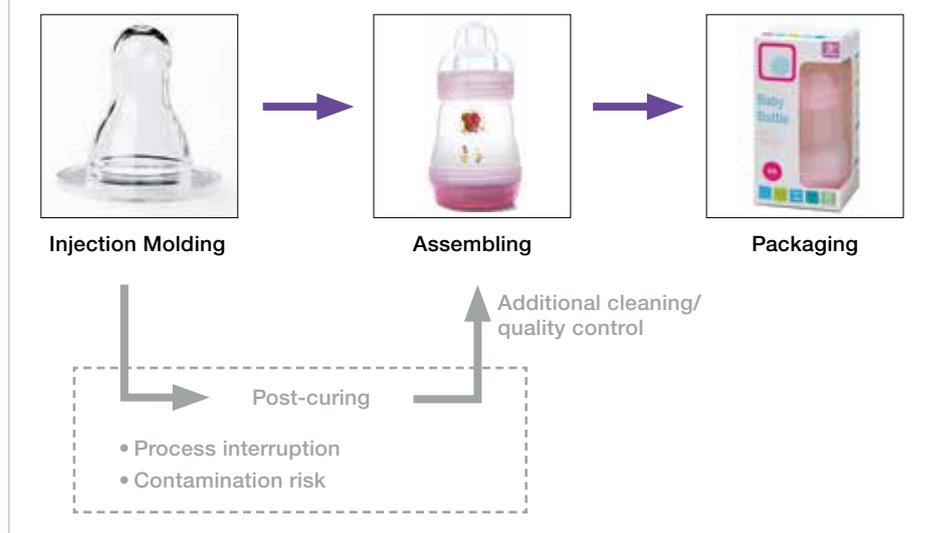
ELASTOSIL® LR 5040 are fast-curing liquid silicone rubber grades. After curing, they have excellent properties even without post-curing:

- Very low content of volatiles
- Meet requirements of BfR, FDA, EN 1400 and EN 14350
- Compliant with core requirements of ISO 10993 and USP Class VI
- Excellent tear resistance
- Narrow tolerance of  $\pm 3$  Shore A

### Advantages of Using ELASTOSIL® LR 5040

- Time and energy saving, since no thermal post-treatment is required
- Higher productivity thanks to fully automated manufacturing chains
- More effective quality assurance since manual production steps are eliminated

### How ELASTOSIL® LR 5040 Helps to Simplify the Production Process

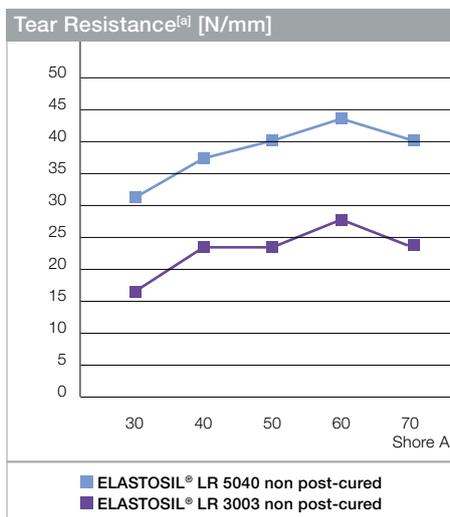


The process steps shown in grey, are obsolete when ELASTOSIL® LR 5040 is used



### Improved Mechanical Properties

The ELASTOSIL® LR 5040 product series is currently available in hardness levels between 30 and 70 Shore A, including a 45-Shore A grade best suited for numerous applications in the baby-care sector. These hardness levels are achieved even without post-curing, with a particularly narrow tolerance of ± 3 Shore A points. In addition, the cured rubber products already exhibit tear resistances of up to 45 Newton per millimeter in their non post-cured state (measured as per ASTM D 624 B). This is particularly important for manufacturing of baby-care articles, such as feeding teats and pacifiers or teething rings.



<sup>®</sup> acc. to ASTM D 624 B

In a non post-cured state, ELASTOSIL® LR 5040 (blue curve) features significantly higher tear resistance than standard liquid silicone rubber (violet curve).

### Low Volatile Content

For sensitive applications, the weight loss is often used as a measure of the volatile content. Typical examples include the European Standard EN 14350-2 for baby and infant drinking equipment and EN 1400 for pacifiers, recommendation "XV. Silicones" of the German Federal Institute for Risk Assessment (BfR), and legal requirements in other European countries. On heat treatment (typically 4 h at 200 °C), the silicone article must show a weight loss of no more than 0.5%. Standard tests show that non post-cured parts made of ELASTOSIL® LR 5040 lie well below this limit.

### Product Table ELASTOSIL® LR 5040

ELASTOSIL®	LR 5040/30	LR 5040/40	LR 5040/45	LR 5040/50	LR 5040/60	LR 5040/70
<b>Product Data</b>						
Appearance	Slightly bluish					
Viscosity (D = 1 s <sup>-1</sup> ) [mPa·s]	800,000	1,200,000	1,000,000	1,000,000	1,400,000	2,000,000
Viscosity (D = 10 s <sup>-1</sup> ) [mPa·s]	350,000	450,000	450,000	450,000	500,000	800,000
<b>Product Properties in the Crosslinked and Non-Cured State</b>						
Density [g/cm <sup>3</sup> ]	1.13	1.13	1.12	1.13	1.14	1.14
Hardness [Shore A]	30	40	45	50	60	70
Tensile strength [N/mm <sup>2</sup> ]	8.5	8.5	8.5	9.0	8.5	9.0
Elongation at break [%]	780	570	530	460	450	350
Tear resistance ASTM D 624 B [N/mm]	32	38	38	40	44	36
Tear resistance ISO 34-1 A [N/mm]	12	11	11	12	11	11
Weight loss acc. to BfR [%]	≤ 0.4	≤ 0.4	≤ 0.4	≤ 0.4	≤ 0.4	≤ 0.4



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