



Engineered Plastics Solutions Group, Inc.

DuraFlex®



Low Temperature Rise, High Abrasion Resistance Rubber

Compound DF2040 NR/SBR

Description:

DuraFlex® is a line of rubber compounds that exhibit low temperature rise when flexed. The material was invented by EPSG Inc. (Engineered Plastics Solutions Group) in 2010 to be a high fatigue life, high abrasion resistance, low temperature rise rubber for use in tire applications.

Properties:

DuraFlex® is unique from other rubber materials in that it builds up very little internal heat while being flexed. Other rubber materials exhibit higher heat rise when flexed which leads to a shorter life. DuraFlex® accomplishes this with its proprietary ingredients. Notable properties include:

- Achieves a 3.8°C (7°F) temperature rise on the Goodrich Flexometer Test
- High Abrasion Resistance
- Can be Compression Molded, Transfer Molded, or Injection Molded
- Available in different pre-forms

DF2040 Specification, page 1 of 2

Original Physical Properties, ASTM D 412-98a(02)^{E1}, D2240-05

Die C dumbbells tested at 50.8 cm/min (20 in/min) at 40.6°C (73°F)

Shore A Durometer, Points	40 +/- 5	Tensile Strength	22.80 MPa (3307 psi)
Ultimate Elongation	709%		
50% Modulus	0.60 MPa (87 psi)		
100% Modulus	0.97 MPa (141 psi)		
200% Modulus	1.81 MPa (263 psi)		
300% Modulus	2.79 MPa (440 psi)		

Rheometer Data @ 150°C

Scorch Time	3 min	Maximum Torque	63.72 Nm (47.0 ft lbs)
Time to 50% Cure, tc50	4.7 min	Minimum Torque	10.22 Nm (7.54 ft lbs)
Cure Time, tc90	6.48 min		



Engineered Plastics Solutions Group, Inc.

DF2040 Specification page 2

DuraFlex®

Compound DF2040

NR/SBR

**Low Temperature Rise, High
Abrasion Resistance Rubber**

Cure Time @ 150°C (302°F)

Slabs	9 minutes	DIN Abrasion	12 minutes
Buttons	4.7 minutes	Goodrich Flexometer	12 minutes

Heat-Aged Properties, ASTM D 573-04

Specimen aged 70 hours at 70°C (158°F) in a forced air oven.

Shore A Durometer, Points	+4	Tensile Strength	+0.062 MPa (+ 8.9 psi)
Ultimate Elongation	+3.1%		

Compression Set, ASTM D 395-03, Method B

Specimen aged 22 hours at 100°C (212°F), 25% deflection, 1/2 hour recovery 20.2%

Ozone Resistance, ASTM D 1171, Method B

20% elongation, specimen exposed 70 hours at 50 pphm at 50°C No Cracks

Din Abrasion

Range	109-184	Median	166
-------	---------	--------	-----

Goodrich Flexometer, ASTM D 623-07, Method A

Stroke 4.44 mm (0.175 in), Speed 1800cpm, Load 0.986 MPa (146 psi)

Shore A Durometer, Points	40	<u>Temperature Rise</u>	<u>3.8°C (7°F)</u>
Static Deflection	31.3%		
Dynamic Deflection	20.4%		
Set	5.0%		