



# Sarlink® TPE ML-1650N NAT (PRELIMINARY DATA)

Teknor Apex Company - Thermoplastic Elastomer

## General Information

### Product Description

Sarlink ML-1600 series is a high performance, high flow thermoplastic elastomer series, available in NAT and BLK designed for automotive interior applications. Sarlink ML-1650N NAT is a medium hardness, medium density grade with excellent surface appearance suitable for injection molding.

### General

|                   |   |  |  |
|-------------------|---|--|--|
| Material Status   | • Preliminary Data  |  |  |
| Availability      | • Africa & Middle East<br>• Asia Pacific  | • Europe<br>• Latin America  | • North America  |
| Features          | • Chemical Resistant<br>• Filled<br>• Good Adhesion<br>• Good Flexibility<br>• Good Moldability | • Good Surface Finish<br>• Good Tear Strength<br>• Good Toughness<br>• Medium Density<br>• Medium Flow | • Medium Hardness<br>• Resilient<br>• Sunlight Resistant |
| Uses              | • Automotive Applications<br>• Automotive Interior Parts<br>• Flexible Grips                    | • Grommets<br>• Knobs<br>• Rubber Replacement  | • Soft Touch Applications                                |
| RoHS Compliance   | • RoHS Compliant  |  |  |
| Appearance        | • Natural Color   |  |  |
| Forms             | • Pellets   |  |  |
| Processing Method | • Injection Molding   |  |  |

## ASTM & ISO Properties <sup>1</sup>

| Physical                                  | Nominal Value | Unit              | Test Method |
|---|---------------|-------------------|-------------|
| Density                                   | 0.990         | g/cm <sup>3</sup> | ISO 1183    |
| Melt Mass-Flow Rate (MFR) (190°C/2.16 kg) | 13            | g/10 min          | ASTM D1238  |
| Elastomers                                | Nominal Value | Unit              | Test Method |
| Tensile Stress <sup>2</sup>               |               |                   | ISO 37      |
| Across Flow : 100% Strain                 | 171           | psi               |             |
| Flow : 100% Strain                        | 248           | psi               |             |
| Tensile Stress <sup>2</sup>               |               |                   | ISO 37      |
| Across Flow : Break                       | 914           | psi               |             |
| Flow : Break                              | 725           | psi               |             |
| Tensile Elongation <sup>2</sup>           |               |                   | ISO 37      |
| Across Flow : Break                       | 920           | %                 |             |
| Flow : Break                              | 780           | %                 |             |
| Tear Strength <sup>3</sup>                |               |                   | ISO 34-1    |
| Across Flow                               | 110           | lbf/in            |             |
| Flow                                      | 120           | lbf/in            |             |
| Compression Set <sup>4</sup>              |               |                   | ISO 815     |
| 73°F, 22 hr                               | 20            | %                 |             |
| 158°F, 22 hr                              | 37            | %                 |             |
| 194°F, 70 hr                              | 63            | %                 |             |
| 257°F, 70 hr                              | 92            | %                 |             |
| Hardness                                  | Nominal Value | Unit              | Test Method |
| Shore Hardness                            |               |                   | ISO 868     |
| Shore A, 1 sec, Injection Molded          | 52            |                   |             |
| Shore A, 5 sec, Injection Molded          | 50            |                   |             |
| Shore A, 15 sec, Injection Molded         | 49            |                   |             |

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| Aging   | Nominal Value        | Unit        | Test Method        |
|---|----------------------|-------------|--------------------|
| Change in Tensile Strength in Air <sup>5</sup>        |                      |             | ISO 188            |
| Across Flow : 230°F, 1008 hr                          | 13                   | %           |                    |
| Flow : 230°F, 1008 hr                                 | 11                   | %           |                    |
| Across Flow : 100% Strain 230°F, 1008 hr              | 3.5                  | %           |                    |
| Flow : 100% Strain 230°F, 1008 hr                     | 9.2                  | %           |                    |
| Across Flow : 257°F, 168 hr                           | 12                   | %           |                    |
| Flow : 257°F, 168 hr                                  | 12                   | %           |                    |
| Across Flow : 100% Strain 257°F, 168 hr               | 4.0                  | %           |                    |
| Flow : 100% Strain 257°F, 168 hr                      | 12                   | %           |                    |
| Change in Tensile Strain at Break in Air <sup>5</sup> |                      |             | ISO 188            |
| Across Flow : 230°F, 1008 hr                          | 6.0                  | %           |                    |
| Flow : 230°F, 1008 hr                                 | 7.8                  | %           |                    |
| Across Flow : 257°F, 168 hr                           | 9.3                  | %           |                    |
| Flow : 257°F, 168 hr                                  | 9.3                  | %           |                    |
| Change in Shore Hardness in Air                       |                      |             | ISO 188            |
| Shore A, 230°F, 1008 hr <sup>6</sup>                  | 3.0                  |             |                    |
| Shore A, 230°F, 1008 hr <sup>7</sup>                  | 3.6                  |             |                    |
| Shore A, 230°F, 1008 hr <sup>8</sup>                  | 2.7                  |             |                    |
| Shore A, 257°F, 168 hr <sup>7</sup>                   | 3.0                  |             |                    |
| Shore A, 257°F, 168 hr <sup>6</sup>                   | 2.6                  |             |                    |
| Shore A, 257°F, 168 hr <sup>8</sup>                   | 2.6                  |             |                    |
| <b>Fill Analysis</b>                                  | <b>Nominal Value</b> | <b>Unit</b> | <b>Test Method</b> |
| Apparent Viscosity (392°F, 206 sec <sup>-1</sup> )    | 113                  | Pa·s        | ASTM D3835         |

### Processing Information

| Injection              | Nominal Value | Unit |
|------------------------|---------------|------|
| Rear Temperature       | 340 to 380    | °F   |
| Middle Temperature     | 350 to 390    | °F   |
| Front Temperature      | 360 to 400    | °F   |
| Nozzle Temperature     | 370 to 410    | °F   |
| Processing (Melt) Temp | 370 to 410    | °F   |
| Mold Temperature       | 77 to 150     | °F   |
| Injection Pressure     | 200 to 1000   | psi  |
| Injection Rate         | Moderate-Fast |      |
| Back Pressure          | 25.0 to 50.0  | psi  |
| Screw Speed            | 50 to 100     | rpm  |
| Cushion                | 0.150 to 1.00 | in   |

### Injection Notes

Drying is not necessary. However, if moisture is a problem, dry the pellets for 2 to 4 hours at 150°F (65°C).

### Notes

<sup>1</sup> Typical properties: these are not to be construed as specifications.

<sup>2</sup> Type 1, 20 in/min

<sup>3</sup> Method Ba, Angle (Unnicked), 20 in/min

<sup>4</sup> Type A

<sup>5</sup> Type 1

<sup>6</sup> 5 sec

<sup>7</sup> 15 sec

<sup>8</sup> 1 sec