Siltek
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Siltek Advanced Materials India Private Limited

# *ELECTROSIL 810*

## *Silicone Elastomer for High Voltage Insulator Application*

### PRODUCT DESCRIPTION

Electrosil 810 is a 65 durometer ready to use peroxide cured silicone rubber compound for high voltage insulator applications which require excellent performance in all types of environments.

### KEY PRODUCT FEATURES

- Excellent Tracking and Erosion Resistance
- Excellent Processability
- Superior Water Repellence (Hydrophobicity)
- Good Dielectric Strength
- Good Mechanical Properties

### STORAGE

Electrosil 810 material should be kept away from direct sunlight. It is recommended to store below 30C in original packing for achieving optimal results

### PROCESSING

Electrosil 810 is suitable for molding applications. Cure and processing conditions should be verified by the fabricator and will depend on the processing equipment used.

### SAFETY INFORMATION

During the vulcanization of this product, small amounts of rubber base volatiles and peroxide decomposition products are released. Work areas must be well ventilated.

### PACKAGING

This product is available in 20 kg boxes sheeted, preformed or bulked, wrapped in plastic film

| Properties | Standard | value |
|---|---|---|
| Specific Gravity | ASTM D792 | 1.56 |
| Hardness | ASTM D2240 | 65 |
| Tear Strength | ASTM D624 | 15 N/mm |
| Tensile strength | ASTM D412 | >4.0 MPa |
| Elongation | ASTM D412 | >150% |
| Arc Resistance | ASTM 495 | >200 sec |
| Dielectric strength | ASTM D149 | 24 kV/mm |
| Resistance to tracking and erosion | ASTM 2303/IEC 60587 | 1A4.5 kV |

These figures are intended as a guide and should not be used in preparing specifications

Above properties obtained from a test Slab moulded at 150 C temperature


### Contact Details

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Kumta, Karnataka-581330. INDIA

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# CPRI

# TEST REPORT

## Central Power Research Institute

(A Govt. of India Society)
P.B.No. 8066, Sadhashivanagar Post Office,
Prof. Sir C.V. Raman Road,
Bangalore - 560 080 (INDIA)

# CENTRAL POWER RESEARCH INSTITUTE

## TEST REPORT

CPRI

| | | |
|---|---|---|
| **Test Report Number & date** | : | **CPRIBLRCDDMATMISC23T0137 Date: 13 September 2023** |
| **Name & Address of the customer** | : | M/s.Siltek Advanced Materials India Private Limited, Mahalaxmi Damodar Building, Shree Shantikamba Enclave, Post Hegde, Taluka - Kumta, District Uttara Kannada-581 330 |
| **Name & Address of the Manufacturer** | : | M/s.Siltek Advanced Materials India Private Limited, Mahalaxmi Damodar Building, Shree Shantikamba Enclave, Post Hegde, Taluka - Kumta, District Uttara Kannada-581 330 |
| **Particulars of sample tested** | : | Silicone Rubber Compound Electrosil 810 |
| **Type** | : | Nil |
| **Description of Test sample** | : | Silicone Rubber Compound Electrosil 810 |
| **Serial Number** | : | Nil |
| **Number of samples tested** | : | One |
| **Date(s) of Test(s)** | : | 02 August 2023, 16 August 2023 to 21 August 2023, 04 September 2023 to 13 September 2023 |
| **CPRI sample code no.** | : | CDDMATMISC23S0153 |
| **Particulars of tests conducted** | : | Dry Arc Resistance, Volume Resistivity, Dielectric Strength, Tracking and Erosion Resistance |
| **Test in accordance with standard/specification** | : | In general accordance with ASTM D495-22, ASTM D257-14(2021)e1, ASTM D149-20 and IEC 60587:2022 |
| **Sampling Plan** | : | NA |
| **Customer's Requirement** | : | Nil |
| **Deviations if any** | : | Nil |
| **Name of the witnessing persons** | | |
| **Customers representative** | : | Nil |
| **Other than customer's representatives** | : | Nil |
| **Test subcontracted with address of the laboratory** | : | NA |

**Documents constituting this report (in words)**

| | | |
|---|---|---|
| **Number of Sheets** | : | Five |
| **Number of Oscillogram(s)** | : | Nil |
| **Number of Graph(s)** | : | Nil |
| **Number of Photograph(s)** | : | Nil |
| **Number of Test Circuit Diagram(s)** | : | Nil |
| **Number of Drawing(s)** | : | Nil |

**(Ashitha P. N.)**
**Test Engineer**

**(K.P. Meena)**
**Head of Division**
**Reviewed and Authorized by**

CABLES & DIAGNOSTIC DIVISION
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# CENTRAL POWER RESEARCH INSTITUTE

## TEST REPORT

CPRI

**Test Report Number: CPRIBLRCDDMATMISC23T0137** **Date: 13 September 2023**

### SUMMARY OF TESTS CONDUCTED

1. Tests conducted : As per below Table
2. Rating for which tested : Not Applicable
3. Schedule of tests

| Sl. No. | Tests Conducted | Clause Numbers | Sheet |
|---|---|---|---|
| 1. | Dry Arc Resistance | Cl.no. 13 of ASTM D495-22 | 3 of 5 |
| 2. | Volume Resistivity | Cl.no. 12 of ASTM D257-14(2021)e1 | 3 of 5 |
| 3. | Dielectric Strength | Cl.no. 12.2.1 of ASTM D149-20 | 4 of 5 |
| 4. | Tracking and Erosion Resistance | Cl.no. 6 of IEC 60587:2022 | 4 of 5 |

**(Ashitha P. N.)**
**Test Engineer**

# CENTRAL POWER RESEARCH INSTITUTE

## TEST REPORT

CPRI

**Test Report Number: CPRIBLRCDDMATMISC23T0137** **Date: 13 September 2023**

### TEST RESULTS

**1. Dry arc resistance:**
**Test Parameters:**

| | |
|---|---|
| Electrodes | : Tungsten Rod |
| Electrode gap | : 6.35 ± 0.08 mm |
| Electrode orientation | : Normal |
| Voltage Applied & Frequency | : 12.5 kV AC, 50±1Hz (Open Circuit Operating Voltage) |
| Nominal Thickness | : 3 mm |
| Number of specimen tested | : Five, median and minimum value reported |

The average ambient temperature was 28±2 °C and relative humidity was 55±2% during the test.

| Sl. No. | Tests Conducted | Results Obtained |
|---|---|---|
| 1. | Arc Resistance<br>Median:<br>Minimum: | <br>253 seconds<br>251 seconds |

**2. Volume Resistivity:**
**Test Parameters:**

| | |
|---|---|
| Electrode system | : Three terminal electrode, low voltage electrode area 7.1 $cm^2$ |
| Nominal specimen dimensions | : 150 × 150 × 2.42 mm |
| Applied voltage | : 500 V DC |
| Duration of electrification | : 60 seconds |
| Number of specimen tested | : Five, average steady state value reported |

The average ambient temperature was 28 ± 2 °C and relative humidity was 55 ± 2 % during the test.

| Sl. No. | Tests Conducted | Results Obtained |
|---|---|---|
| 2. | Volume Resistivity | $1.70 \times 10^{14}$ Ω-cm |

**(Ashitha P. N.)**
**Test Engineer**

# CENTRAL POWER RESEARCH INSTITUTE

## TEST REPORT

**Test Report Number: CPRIBLRCDDMATMISC23T0137** **Date: 13 September 2023**

**3. Dielectric strength:**

**Test parameters:**

| | |
|---|---|
| Method of application of voltage | : Method A, Short time/rapid rise method |
| Rate of rise of voltage | : 2 kV/sec |
| Electrode Type and Dimensions | : Opposing cylindrical brass electrodes Φ50 ×25 H mm |
| Surrounding Medium | : In transformer oil at room temperature |
| Nominal size of the sample | : 150 mm x 150 mm ×1.12 mm |
| Number of specimen tested | : Five, average value reported |
| Location of failure | : Punctured at the edge of the HV Electrode |
| Conditioning | : Tested in "as received condition" |

The average ambient temperature and relative humidity during the test was 26±1 °C and 45 ±2 % respectively.

| Sl. No. | Thickness of Specimen (mm) | Dielectric Strength (kV/mm) |
|---|---|---|
| 3. | 1.12 | 20.39 |

**4. Tracking and Erosion Resistance:**

**Parameters:**

| | |
|---|---|
| Instrument used | : Tracking Erosion Resistance Test apparatus |
| Contaminating solution | : 0.1% $NH_4Cl$ with 0.02% Triton–X–100 (wetting agent) |
| Resistivity of contaminant | : 0.253 S/m at 23°C |
| Inter electrode gap | : 50 mm |
| Application of the voltage | : Constant tracking voltage of 4.5 kV |
| Test duration | : 6 hours |
| Flow rate of contaminant | : 0.60 ml/min |
| Nominal size of specimen | : 120 mm × 50 mm × 6.2 mm |
| Number of specimens tested | : Five |

| Specimen No. | Test Conducted | Observations | Current in high voltage circuit during the test period |
|---|---|---|---|
| 1. | Constant Tracking Voltage: 4.5kV, Flow rate: 0.6ml/min | No tracking and erosion | < 60mA |
| 2. | Constant Tracking Voltage: 4.5kV, Flow rate: 0.6ml/min | No tracking and erosion | < 60mA |
| 3. | Constant Tracking Voltage: 4.5kV, Flow rate: 0.6ml/min | No tracking and erosion | < 60mA |
| 4. | Constant Tracking Voltage: 4.5kV, Flow rate: 0.6ml/min | No tracking and erosion | < 60mA |
| 5. | Constant Tracking Voltage: 4.5kV, Flow rate: 0.6ml/min | No tracking and erosion | < 60mA |

**(Ashitha P. N.)**
**Test Engineer**

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# CENTRAL POWER RESEARCH INSTITUTE

CPRI

## TEST REPORT

| | | |
|---|---|---|
| **Test Report Number** | : | CPRIBLRDMD23T0364, Date 22 September 2023 |
| **Name and Address of the Customer** | : | M/s.Siltek Advanced Materials India Pvt. Ltd., Mahalaxmi Damodar Building, Shree Shantikamba Enclave, Post Hegde, Talkya-Kumta, District Uttara Kannada 581330. (Customer Reference - Letter No : Nil, dated 31/08/2023) |
| **Name and Address of the Manufacturer** | : | M/s.Siltek Advanced Materials India Pvt. Ltd., Mahalaxmi Damodar Building, Shree Shantikamba Enclave, Post Hegde, Talkya-Kumta, District Uttara Kannada 581330 |
| **Particulars of Sample tested** | : | Silicone Rubber |
| **Type** | : | Nil |
| **Designation of test sample** | : | Refer "Sheet 2 of 3" |
| **Serial Number** | : | Refer "Sheet 2 of 3" |
| **Date of receipt of sample** | : | 31 August 2023 |
| **Number of Samples Tested** | : | One Only |
| **Date(s) of Test(s)** | : | 21 September 2023 |
| **CPRI Sample Code Number(s)** | : | DMDPOL23S0094 |
| **Particulars of tests conducted** | : | Thermogravimetric Analysis |
| **Tests in accordance with standard/Specification** | : | ASTM E 1131-2020 |
| **Sampling Plan** | : | Not Applicable |
| **Customer's requirement** | : | As per test listed above |
| **Deviations if any** | : | NIL |
| **Name of the witnessing persons** | : | None |
| **Customer's representatives** | : | None |
| **Other than customer's representative** | : | None |
| **Test subcontracted with address of the laboratory** | : | Nil |

***Documents constituting this report (in words)***

| | | |
|---|---|---|
| **Number of Sheets** | : | Three Only |
| **Number of Oscillogram(s)** | : | Nil |
| **Number of Graph(s)** | : | Two Only |
| **Number of photograph(s)** | : | Nil |
| **Number of test circuit diagram(s)** | : | Nil |
| **Number of Drawing(s)** | : | Nil |

**(N. Ajith Kumar)**
**Test Engineer**

22/09/2023
**(P.Sadasiva Murthy)**
**Head of Division**
**Revlewed and Authorized by**

# CENTRAL POWER RESEARCH INSTITUTE

CPRI

## TEST REPORT

Test report Number : CPRIBLRDMD23T0364, Date: 22 September 2023

**DESCRIPTION OF SAMPLE TESTED** : Sample/s received in a plastic cover and labelled as Silicone Rubber ELECTROSIL 810 =DMDPOL23S0094

**TEST RESULTS**

| Sl. No. | Particulars of Test conducted | | Sample No. & Results | | |
|---|---|---|---|---|---|
| | | | DMDPOL23S0094 | | |
| 1 | TGA, % | | Trial 1 | Trial 2 | Average |
| | | Highly volatiles | 17.33 | 17.61 | 17.47 |
| | | Organic component of silicone polymer | 33.01 | 33.02 | 33.02 |
| | | Ash | 49.66 | 49.37 | 49.51 |

**[Instruments Used:**

1. SDT: Test Temperature: Ambient to 600°C, Atmosphere: Nitrogen, Flow Rate: 40ml/min, 600°C to 950° C Atmosphere: Oxygen, Flow Rate :60ml/min, Heating Rate : 20 deg/min.]

N. Ajith Kumar

**(N. Ajith Kumar)**
**Test Engineer**



ULR-TC5452230DMDT0364F
Discipline:Electrical
Group:Insulating Materials & Insulators

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