Coded Note Number: **Y1010**
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Title**: DISTRIBUTED ISOLATION MATERIAL (DIM) REQUIREMENTS**

This revision history is provided for convenience and does not alleviate the supplier's responsibility with understanding and complying with the full coded note.
Change from Revision A – Editorial change to reformat to current standard.
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Distributed Isolation Material Procurement Specification (Interim)

1.0 Shape and dimensional tolerances shall conform to Newport News Dwg. 216937 dated July 10, 1980.

2.0 Durometer: Shore A 45, +5 -0 durometer shall be determined in accordance with paragraph 8.0.

3.0 Deflection

Maximum allowance deflection when loaded when measured by procedure given in paragraph 9.0.

Load	Deflection
50 psi	0.054"
75 psi	0.075" (for information)

4.0 Resonant Frequency: The resonant frequency of the neoprene pad (dim) shall not exceed 27 and 22 hertz when supporting loads of 25 and 50 psi respectively, when tested in accordance with the requirements of paragraph 10.0.

5.0 Creep. The rubber pad shall not undergo an increase in compression of more than 8 mils when subjected to test described in paragraph 11.0.

6.0 Ozone Resistance. The rubber pad shall not be cracked by exposure to ozonized air as described in paragraph 12.0.

7.0 Swelling in Oil - Maximum allowed volume change shall be - 10% to +10% when tested in accordance with procedure given in paragraph 13.0.

7.5 Tensile Strength and Ultimate Elongation:

The tensile strength and ultimate elongation of the rubber compound shall

conform to the following requirements when subjected to test described in paragraph 14.0.

Initial Properties	Requirements
Tensile Strength, PSI	1800 minimum
Ultimate Elongation, Percent	350 minimum

Properties After Oven Aging Requirements

Tensile Strength, PSI	1700 minimum
Ultimate Elongation, Percent	300 minimum

PROPERTIES AFTER IMMERSION IN TEST FLUID REQUIREMENTS

Tensile Strength, PSI	1700 minimum
Ultimate Elongation, Percent	300 minimum

8.0 Durometer Hardness - shore a durometer hardness shall be determined on a 1/2" diameter test button in a manner consistent with ASTM method D2240. Test button shall be certified to be from same production batch as neoprene pads. Test buttons shall be furnished with each shipment of neoprene pads.

9.0 Compression Under Load

Three specimens, each 2-3/4 plus or minus 1/16 inches in diameter with a centrally located hole 1-1/8 plus or minus 1/16 inches in diameter, shall be prepared from the dim pad. The exact projected surface area of each specimen shall be calculated from measurement of these dimensions to the closest 1/64 inch. The compression under load of each specimen in turn shall be determined using a universal testing machine capable of measuring load in units not larger than 5 pounds and deflection in units not larger than 0.005 inch. The clean, dry, test specimen shall be compressed between clean, dry, polished steel platens. Each specimen shall be loaded in compression to approximately 150 lb/in2 at a deflection rate not exceeding 0.05 inch per minute, then unloaded at the same rate. The compression of the specimen in inches measured during the loading phase of the fourth cycle shall be plotted versus load.

10.0 Resonant Frequency

The three specimens used for the compression-under-load test shall be used for the resonant frequency test. The resonant frequencies of vibration of each specimen shall be determined while it supports a load of 25 lbs/in2 and 50 lbs/in2.

The vibration excursion shall not exceed .005" double amplitude during the test.

11.0 Creep

Three specimens, each 2-3/4 plus or minus 1/16 inches in diameter with a centrally located hole 1-1/8 plus or minus 1/16 inches in diameter, shall be prepared from the dim pad. The exact surface of the specimen shall be calculated from measurement of these dimensions to the closest 1/64 inch. The clean, dry specimen shall be loaded in compression to 50 lb/in2 between clean, dry polished steel platens using dead-weights. The height of each specimen in mils shall be measured one hour after application of the load and 336 hours (two weeks) after application of the load. The difference in the two readings in mils shall be reported as creep and used to determine conformance to paragraph 5.0.

12.0 Ozone Resistance

Three specimens, each 2-3/4 inches in diameter, shall be prepared from the pad. The clean, dry specimens shall be compressed between clean, dry,steel platens and held at a deflection corresponding to a load of 50 lb/in2. The compressed specimens shall be conditioned for 16 to 18 hours at 100 deg plus or minus 2 deg f in an oven in accordance with Method 7221 of FED-STD-601 (or ASTM D573). The compressed specimens shall then be exposed to air at 100 deg plus or minus 2 deg f containing ozone at a concentration of 1.00 plus or minus 0.05 parts per one million parts by volume. The exposure shall be carried out in a chamber conforming to ASTM D1149, and the measurement of the ozone concentration shall be in accordance with this ASTM specification.

13.0 Volume Change After Oil Immersion

The change in volume of the rubber shall be determined after immersion in Type IV oil of TT-S-735 for 46 plus or minus 1/4 hours at 158 deg plus or minus 2 deg f in accordance with Method 6211 of FED-STD-601 (or ASTM No. 1 oil, and ASTM D471).

14.0 Tensile Strength and Ultimate Elongation:

Following tests shall be conducted:

- Initial tensile strength and ultimate elongation,

  The initial tensile strength and ultimate elongation of the rubber shall be determined by Methods 4111 and 4121, respectively, of FED-STD-601 on Die III specimens (or by ASTM Method D412 with Die C specimens).

- Tensile strength and ultimate elongation after oven aging.

  The tensile strength and ultimate elongation of the rubber shall be determined after oven aging in accordance with Method 7221 of FED-STD-601 (or ASTM D573) except that the aging period shall be 70 plus or minus 1/4 hours at 212 deg plus or minus 2 deg f. Die III specimen (or Die C for ASTM) shall be used.

- Tensile strength and ultimate elongation after oil immersion.

  The tensile strength and ultimate elongation of the rubber shall be determined after immersion in Type IV oil of TT-S-735 for 46 plus or minus 1/4 hours at 158 deg plus or minus 2 deg f in accordance with Method 6211 of FED-STD-601. Die III specimens shall be used. The tensile strength reported shall be based on the original cross section of the specimens. ASTM Methods D471 and 412, and ASTM Die C specimens may be substituted for the FED-STD-601 procedure.

15.0 Sampling for Examination and Measurement

Rubber dim pads shall be selected at random from each lot in accordance with table i for visual examination and measurements of shape and physical dimension. The rubber dim pads selected shall be examined and measured in accordance with 16.0 and shall not have more total visual defects than are allowed by Table 1.

16.0 Examination and Measurement:

Each of the rubber dim pads taken in accordance with 15.0 shall be examined for major and minor defects as defined by MIL-STD-407. The shape and dimension of dim pad shall be in accordance with paragraph 1.0, when measured by Methods 2001, 2011, 2021, 2031, 2121, 2321 and 2361 of fed-std-601 as applicable.

Table I - Sampling for Examination

Number of nonconforming or defective rubber pads

Lot Size Number of Pads	Sample Size, Number of Pads
1 to 4	All
5 to 9	5
10 to 25	8
26 to 62	13
63 to 160	20

161 to 410	32
411 to 1,000	50
1,001 to 2,600	80

Major Defects		Total Defects (Major Plus Minor)	
Acceptance Number	Rejection Number	Acceptance Number	Rejection Number
0	1	1	2
0	1	1	2
0	1	1	2
0	1	1	2
1	2	2	
1	2	3	4
2	3	4	5
3	4	6	7

17.0 Packaging and Marking

Packages for rubber dim pads shall be opaque and clearly marked on the exterior with the following information:

A. Newport News Part Number
B. Manufacturing specification or standard
C. Cure date - year and quarter (e.g. 3Q83)
D. Manufacturer's compound number
E. Durometer (hardness)
F. Newport News purchase order and item number

18.0 Age Requirements

The amount of time between the cure date and the date the dim pads are received in the shipyard shall not exceed four (4) quarters.