Coded Note Number: LI113
Revision: **C016**
Date: **September 21, 2023**
Title: STR-4P38 Steam Plant Detrimental Material Controls

1. **PURPOSE:**
   To outline Newport News Shipbuilding's (NNS) test report requirements for non-metallic parts and shop products permanently installed in or on hardware in compliance with STR-4P38B.

2. **DEFINITIONS:**
   A. Shop products – Any substance that contacts hardware surfaces other than metals or solid nonmetallic materials, such as liquids, pastes (e.g., greases, uncured; adhesives, sealants, locking compounds, and epoxies), and powders, not intended to be a permanent part of plant hardware unless otherwise specified by NNS.

   B. Solid Non-Metallic Materials – Materials that contact hardware surfaces not intended to be a permanent part of plant hardware such as elastomers, plastics, cloths, sheet, tubing, stickers, bags, gloves, consumable ceramics, and tape.

3. **GENERAL INFORMATION:**
   A. When EB Standard Clause 12-41 and this coded note are both specified in a Purchase Order, this coded note takes precedence.

   B. Applicability: This coded note only applies to non-metallic parts which contact system fluid. This includes O-rings, packing, elastomers, plastics, sealing compounds, lubricants, locking compounds, adhesives, etc.

   C. If the seller is unable to comply with the requirements of this coded note or has questions concerning its content, the following should be submitted in a VIR for further instructions: Manufacture's Name, Product Name and Description, Lot Number(s), and specific question or issue.

   D. If any materials are found which do not comply with this coded note, then a VIR shall be submitted to HII-NNS for resolution. The VIR must include sufficient information to establish the manufacturer and product number of each material which does not comply.

   E. Bolded font indicates changed/added content (except section titles).

4. **REQUIREMENTS:**

A. Include One (1) Copy of a STR-4P38 Certificate of Compliance. The certificate shall itemize all non-metallic piece parts and shop products (e.g. lubricants, sealants, etc.), which meet the applicability paragraph in the "GENERAL INFORMATION" section above. The certificate shall state for each item:

   a) that it has been tested to meet the requirements of Table (1) below, or

   b) that it is composed solely of one or more of the materials listed in Table (2) below, or

   c) that it has been manufactured per one or more of the requirements listed in Table (3) below, or

   d) that it meets the requirements of paragraph **4.C** below, or

   e) "No solid non-metallic items contained on or in this item that contact system fluids."

   f) NNS approval VIR for shop products (see paragraph **4.E** and **4.F**)

B. Packaging identification:
   Hardware or piece-part packaging shall include a suitable marking, sticker, or tag which indicates the material is STR-4P38 compliant. The marking may state one or more of the following:

   a) A statement that the item or part is STR-4P38 compliant

   b) A statement or indication that the item was manufactured to one or more of the standards listed in Table (3) below

C. O-rings:
   In addition to the requirements listed above, O-rings shall not contain sulfur or halogens in their chemical structure. For example, fluorocarbon (e.g. Viton) or chlorocarbon (e.g. Chloroprene [Neoprene]) rubber shall not be used. O-rings are not required to be detrimentally tested.

D. Exudate test requirements:
   For non-silicon rubber and non-O-ring products, greater than 0.250 inches thick, exudates testing is required if the item is compressed in the intended use. Contact HII-NNS for further information.

E. Permanently applied lubricants (e.g. solid film lubricants) are prohibited unless approved by NNS.

F. Lubricant and sealant prohibition:
The only approved assembly lubricant is colloidal graphite in isopropanol per MIL-I-24131 (Neolube #1 manufactured by Huron Industries). Lubricants, sealants, Teflon tape, etc. shall not be utilized on final cleaned parts unless specifically required by the purchase order requirements. If the hardware cannot be assembled properly or will not function properly without lubricants/sealants, the seller shall submit a VIR listing the products recommended to be used by the manufacturer. When these products are authorized to be applied to sealing and operating surfaces, they must not be present on other surfaces in contact with system fluid. Lubricants, sealants, and other materials approved for use during assembly must be used sparingly on fluid-wetted surfaces and all visible residue shall be removed following completion of work. Special care shall be used when mating flange faces where joint closure could force sealant into fluid-wetted surfaces.

G. Non-metallics shall be chemically analyzed and shown to contain no more than the quantities shown in Table (1) below. The analysis shall be per the requirements of Appendix A of STR-4P38. For further information please contact HII-NNS.

5. TABLES:

Table 1 – Chemical Testing Requirements: Constituents (Max Concentration)

Element	Element Max Result (ppm)
Halogens – Total of Chlorine, Fluorine, and Bromine	750
Sulfur	1000
Lead	250

Table 2 – Acceptable Material Exempt from Chemical Analysis

Acrylonitrile Butadiene (Buna-N) O-rings	Polyarimid (Kevlar)
Acrylonitrile Butadiene (Buna-N) Gaskets (1) requires detrimental testing	Polycarbonate (Lexan)
Borosilicate Glass	Polysiloxane (Silicone)
Derakane (Dow Chemical 470-36 styrene and vinyl ester epoxy)	Polyetheretherketone (PEEK), provided no fluorocarbons are added to the formulation
Delrin	Polyisocyanate-Polyether or Polyester
Ethylene Propylene Rubber (EPR, EPM, or EPDM)	Polytetrafluoroethylene (Teflon)

Polyethylene	Silicon Carbide
Polypropylene	Silicone Rubber
Polyurethane	Tungsten Carbide
Polyamide (Nylon)	

Table 3 – Acceptable Specifications Exempt from Further Analysis
MIL-P-24503, Class 2 (Packing Material, Graphitic, Corrugated Ribbon)
MIL-P-24583, Class 2 (Packing Material, Graphitic or Carbon Braided Yarn)
MIL-G-24696 (Non-asbestos Gaskets)
MIL-G-24716 (Gaskets, Metallic-Flexible Graphite, Spiral Wound)
MIL-G-24740 (Metallic Rubber Gaskets)
MIL-PRF-24790 (Non-asbestos Pump Packing)
MIL-PRF-2863, Rev. C or later (Packing, Preformed, Condenser Tube, Non-Asbestos)
Turbine Exhaust Expansion Joint Specifications:
Pratt Drawing 42-10-70051 (S5W)
Pratt Drawing 42-10-70054 (S5W)
Pratt Drawing 42-10-70057 (S5W)
Pratt Drawing 42-55-7074 (SSW)
NN Specification 2030 (A1B MTG)
NN Specification 2070-22 (S6G MPU)
NN Specification 2070-26 (S6G SSTG)
NN Specification 4122T-MOD25-26 (S6G SSTG)
EB Specification 2548 (S8G)
EB Specification 3328 (S6W)
EB Specification 3968 (S9G)
EB Specification 5227 (S1B)
Propulsion Plant RISIC Specifications:
NAVSEA Drawing 2082005692 (SSW)
NAVSEA Drawing 2091595 (SSW)
Murdock Engineering Co. Drawing 29807S (S5W)
NAVSEA Drawing 84S1889818 (SSW)
Murdock Engineering Co. Drawing 30042 (SSW)
Oil States Industries Drawing 299945 (S6G)
Murdock Engineering Co. Drawing 298365 (S6G/S8G)
Murdock Engineering Co. Drawing 292900 (S8G)
Oil States Industries Drawing 300154 (S8G)
EB Specification 3543 (S6W/S9G)
Filter Flex Hose Filter Unit Specifications
NN Specification PSSSN21C-133 (S6W/S9G/S1B)

Revision History Table		
Rev	**Description**	**Revision Date**
C016	Revision C016 updated formatting throughout. Updated current revision to STR-4P38 Revision B.	9/21/23

This revision history is provided for convenience and does not alleviate the supplier's responsibility with understanding and complying with the full coded note.