

<b>MONITORING INSPECTION FOR INSPECTION</b>		Issue No. 01 Rev. No. 01
		Date of Issue 03.12.18
<b>OBTURATOR /GAS CHECK</b>		<b>HAPP/QA/SC/AMK/002</b>
Rev no	Amendment	Date
01	a) Details added of Inspection checks to be carried out at firms premises by the firm and HAPPSQAE (Page no :1) b) Details added for Pilot sample will be sent to Russia for acceptance and Inspection checks to be carried out at HAPPS for bulk clearance (Page no :2)	29.11.18

HAPP DRAWING NO. :C OBT 125 7 601 0

SPECIFICATION& document :RUBBER COMPOUND V 14 NTA (B-14 HTA)  
(TU 38 0051166-98)

END USE : AMK -339 FSAPDS (DEVELOPMENT)

**A INSPECTION CHECKS TO BE CARRIED OUT AT FIRM'S PREMISES BY THE FIRM.**

THE FIRM SHALL CONFIRM TO HAVE INSPECTED THE MATERIAL FOR THE FOLLOWING & SUBMIT TEST REPORTS FOR ALL CHEMICAL, PHYSICAL AND MECHANICAL PROPERTIES INDICATING SPECIFIC VALUES OBSERVED IN TESTING.

**B VERIFICATION OF INSPECTION DOCUMENTS BEFORE GIVING PRODUCTION CLEARANCE FOR THE RAW MATERIAL**

SL. NO.	CHARACTERISTICS	SPECIFICATION / REQUIREMENT	SAMPLE SIZE
1	RAW MATERIAL CHEMICAL, MECHANICAL & PHYSICAL PROPERTIES.	FIRM TO FORWARD MANUFACTURER'S TEST CERTIFICATES OF RAW MATERIALS USED FOR MANUFACTURING OBTURATOR - INDICATING BATCH / LOT NO. AND CHEMICAL, MECHANICAL & PHYSICAL PROPERTIES TO BE CHECKED AS PER TECHNICAL SPECIFICATION AS PER TECHNICAL SPECIFICATION TU 38 0051166-98 (ABSTRACT).	ONE SAMPLE EACH PER BATCH / LOT

**C INSPECTION CHECKS TO BE CARRIED OUT AT FIRM'S PREMISES BY HAPPSQAE.**

1. THE RAW MATERIAL SAMPLES / TEST SPECIMENS FOR EACH BATCH / LOT SHALL BE SELECTED FROM BULK AT FIRM'S PREMISES BY HAPPS REP/SQAE. AND FORWARDED TO NEARBY NABL ACCREDITED OR GOVT. APPROVED LABORATORY..
2. THE FIRM HAS TO SUBMIT/FORWARD THE FOLLOWING DOCUMENTS TO HAPPS,
  - I. THE RAW MATERIAL DETAILS OF BATCH / LOT
  - II. THE PHYSICAL PROPERTIES ,CHEMICAL AND MECHANICAL TEST CERTIFICATES FROM NABL ACCREDITED OR GOVT. APPROVED LAB AS PER TABLE B.
3. MANUFACTURING OF COMPONENT SHOULD BE DONE ONLY AFTER GETTING RAW MATERIAL CLEARANCE FROM HAPPS.

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**D VERIFICATION OF INSPECTION DOCUMENTS BEFORE GIVING PRODUCTION CLEARANCE FOR THE PILOT BATCH OF 5 NOS.**

SL. NO.	CHARACTERITICS	SPECIFICATION / REQUIREMENT	SAMPLE SIZE
1	OBTURATOR CHEMICAL, MECHANICAL & PHYSICAL PROPERTIES.	FIRM TO FORWARD TEST CERTIFICATES FOR CHEMICAL, MECHANICAL & PHYSICAL PROPERTIES OF THE END STORE INDICATING BATCH / LOT NO. OF RAW MATERIAL USED. CHEMICAL ,MECHANICAL PROPERTIES TO BE CHECKED AS PER TECHNICAL SPECIFICATION B -14 HTA, TU 38 0051166-98 (ABSTRACT).	ONE SAMPLE EACH PER BATCH / LOT
2	DIMENSIONS	AS PER DRAWING	100 %
3	MARKING	EACH SHALL HAVE MARKING SCREEN PRINTED INDICATING LOT / BATCH NO., SOURCE CODE, MANUFACTURING MONTH / YEAR ETC.	FOR EACH CONSIGNMENT
4	PROPER PACKING	PACKING SHALL BE IN HERMATICALLY SEALED POLY BAGS WITH CLEAR IDENTIFICATION OF SOURCE CODE, QUANTITY AND BATCH / LOT NO. END PRODUCT IN EACH BAG	FOR EACH CONSIGNMENT

4. FIRM TO SUBMIT 5 NOS OF PILOT SAMPLES TO HAPP BEFORE BULK PRODUCTION AND THE SAME WILL BE SENT TO RUSSIA FOR THEIR ACCEPTANCE
5. ONCE ACCEPTING PILOT BATCH BY RUSSIA, CLEARANCE WILL BE GIVEN FOR BULK PRODUCTION.

**E. INSPECTION CHECK TO BE CARRIED OUT ON RECEIPT AT HAPP FOR BULK CLEARANCE.**

SL. NO.	CHARACTERITICS	SPECIFICATION / REQUIREMENT	SAMPLING
1	VISUAL	THE PARTS SHALL BE FREE FROM DAMAGES, BUBBLES, SURFACE IMPERFECTIONS, POROSITY, VOIDS DUE TO DUST INCLUSIONS & OTHER OBVIOUS DEFECTS LIKELY TO IMPAIR THEIR USEFULNESS OR LIFE.	10 %
2	PROPER PACKING	SHOULD BE PACKED IN POLY BAGS WITH PACKING SLIP INDICATING LOT NO. SOURCE, SUPPLY ORDER NO. & QTY.	FOR EACH CONSIGNMENT
3	DIMENSIONS AND MASS	AS PER HAPP DRAWING	100 %
4	MARKING	CONTRACTOR'S INITIAL OR RECOGNISED TRADE MARK AND PART NO. AMK 339 FSAPDS ARE TO BE MOULDED ( WITH 3 MM SIZE LETTERS)	FOR EACH CONSIGNMENT

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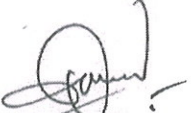
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6. MATERIAL/COMPONENT WILL BE CLEARED/ ACCEPTED BASED ON NOTE/CLEARANCE CERTIFICATE ONLY.

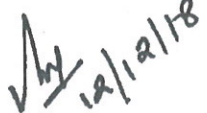
7. MATERIAL HAS TO BE REPLACED 100% BY THE FIRM IN CASE OF ANY DAMAGES DURING INSPECTION AT HAPP, TRICHY

**F. VERIFICATION OF ADEQUECY OF INSPECTION DOCUMENTS.**

SL. NO.	INSPECTION DOCUMENTS
1	FIRM'S MATERIAL TEST CERTIFICATES WITH LOT / BATCH NO. & QTY.
2	FIRM'S DIMENSIONAL & VISUAL INSPECTION REPORT
3	PACKING SLIP INDICATING LOT / BATCH NO. & QTY. DETAILS
4	INSPECTION / ACCEPTANCE DOCUMENTS ISSUED BY HAPP.
5	IN ADDITION TO THE ABOVE SOFT COPIES OF ALL THE CERTIFICATES MENTIONED IN TABLE - D SHALL BE SENT TO E-MAIL ID's. <a href="mailto:happqa.ofb@ofb.gov.in">happqa.ofb@ofb.gov.in</a> , <a href="mailto:mmhapp.ofb@ofb.gov.in">mmhapp.ofb@ofb.gov.in</a>
Note	EXPLICITLY DEVIATION(S) IF ANY SUCH AS TYPOGRAPHICAL ERROR, VALUES, NUMERIC, OTHER PARAMETER, ETC IS/ARE FOUND IN MONITORING INSTRUCTION OF THE ABOVE STORES, THE RELEVANT STANDARDS CONFORMING TO THE CONCERNED SPECIFICATIONS SHALL BE REFERRED TO CONFIRM THE PARAMETER

  
**SOURABH NEGE**  
 WM/P (ALTERNATE OFFICER)  
 C.PANDI SELVA DURAI (ON TD)  
 WM / ASSY  
 MEMBER / MI COMMITTEE

  
**D.BHASKAR RAO**  
 WM / E  
 MEMBER/MI COMMITTEE

  
**T.PRABHU**  
 JT.GM / MM  
 CHAIRMAN / MI COMMITTEE

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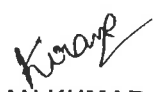
G. IN CASE OF ROE,RUSSIA/OEM:

INSPECTION CHECK TO BE CARRIED OUT ON RECEIPT AT HAPP FOR CLEARANCE.

SL. NO.	CHARACTERITICS	INSPECTION DOCUMENTS
1	VISUAL	THE PARTS SHALL BE FREE FROM DAMAGES, BUBBLES, SURFACE IMPERFECTIONS, POROSITY, VOIDS DUE TO DUST INCLUSIONS & OTHER OBVIOUS DEFECTS LIKELY TO IMPAIR THEIR USEFULNESS OR LIFE.
2	OBTURATOR CHEMICAL, MECHANICAL & PHYSICAL PROPERTIES.	FIRM TO FORWARD TEST CERTIFICATES FOR CHEMICAL, MECHANICAL & PHYSICAL PROPERTIES OF THE END STORE INDICATING BATCH / LOT NO. OF RAW MATERIAL USED
3	DIMENSIONS AND MASS	AS PER DRAWING : 3Bm42-006
4	PROPER PACKING	SHOULD BE PACKED IN POLY BAGS WITH PACKING SLIP INDICATING LOT NO. SOURCE, SUPPLY ORDER NO. & QTY

  
C.PANDI SELVA DURAI  
WM / ASSY  
MEMBER / MI COMMITTEE

  
D.BHASKAR RAO  
WM / E  
MEMBER/MI COMMITTEE

  
KIRAN KUMAR  
WM/QA  
CHAIRMAN / MI COMMITTEE

5

Sheets 7 Sheet 1

Procedure of incoming control for rubber compound B-14 HTA

TECHNOLOGICAL INSTRUCTION

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COPY  
REPL  
ORIG

Verification (incoming control) of purchased products is provided to check compliance of rubber compound quality B-14 HTA TU 38 0051166-98 with specified requirements and to avoid production start-up of defective product. Each batch of rubber compound B-14 HTA supplying for production is subjected to incoming control.

The following parameters for verification of rubber compound B-14 HTA TU 38 0051166-98 are as follows:

- check the availability of data sheet conforming the quality of products;
- check compliance of marking with requirements of TU 38 0051166-98;
- visual inspection of rubber compound B-14 HTA for compliance with requirements of TU38 0051166-98;
- check compliance of main physical and mechanical properties of compounded rubber B-14 HTA with requirements of TU 38 0051166-98.

1. Equipment, appliance, tools

1.1 Rolls П/Л 630 315/315.

1.2 Hydraulic press with force 100 tf.

1.3 Press form for manufacturing plate with dimensions  $(150 \pm 1,0 \times 160 \pm 1,0)$  mm, thickness  $(2,0 \pm 0,2)$  mm.

1.4 Press form for manufacturing washer with  $(\varnothing 65 \pm 5)$  mm and thickness  $(6 \pm 0,2)$  mm.

1.5 Cutting machine. Specimen die for specimen cutting in the form of double-sided blade. Blade dimensions: total length is at least 115 mm; broad side width is  $(25,0 \pm 1,0)$  mm; narrow side width is  $(6,0 \pm 0,2)$  mm; distance between the marks is  $(25,0 \pm 1,0)$  mm; thickness is  $(2,0 \pm 0,2)$  mm.

1.6 Hardness measuring instrument - instrument for measuring Shore hardness A.

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1.7 Thickness gauge is an instrument with a scale interval of 0.01 mm used to measure specimen thickness and with a diameter of test surface of 16 mm (max.).

1.8 Tensile testing machine providing force measurement error of  $\pm 1\%$  (max.), stroke of active grip of at least 1000 mm and speed of active grip movement of  $(500 \pm 50)$  mm/min.

1.9 Knife.

1.10 Scale with maximum load 1 kg. accuracy class 111.

1.11 Watch with error of run 160s within 24 hours.

1.12 Resistance temperature detector digital, portable with measuring range from  $0^\circ$  to  $100^\circ\text{C}$  and accuracy of measurement  $\pm 5^\circ\text{C}$ .

2 Checking of covering documentation (data sheet) for the batch of rubber compound.

During acceptance procedure the identity of compound rubber shall be checked

as per availability of data sheet conforming the quality of compound rubber and comprising details regarding manufacturer, number of batch, date of manufacture as well as control of parameters specified in technical specification.

3 Control of marking

Every sheet of rubber compound shall be clearly marked with marking crayon or other means with indication of grade of rubber compound and number of batch.

4. Visual inspection

Examination shall be visual. Foreign impurities are not allowed on the surface and cutting of rubber compound.

Recd.  
Orig.

11

### 5 Control of physical and mechanical properties.

During control the following parameters shall be checked:

- Nominal tensile strength;
- Ultimate elongation at break;
- Shore hardness A.

#### 5.1 Process procedure of sample manufacturing.

5.1.1 Probe of rubber compound B-14 HTA shall be selected from each batch from

one sheet in amount not less than 0.300 kg.

5.1.2 Selected probe of rubber compound shall be rolled at temperature of rolls not more than 50°C. Temperature of rolls surface shall be controlled with resistance temperature detector digital, portable.

Initial gap between rolls is set equal to sheet thickness reducing it while heating of rubber compound up to required thickness.

Rubber compound shall be rolled with gap between rolls (2±1) mm during (2±1)min.

5.1.3 Rubber compound shall be removed from rolls in a form of plate and the direction of rolling

shall be marked on the plate. Lag time of rolled

rubber compound is not less than 4 hours before cutting semi-finished product.

5.1.4 Semi-finished product with dimension (150±1,0×160±1,0) mm shall be cut from the plate so that 150mm side was in line with direction of rolling.

Weight of semi-finished product -- 60 ±2 g.

5.1.5 Three semi-finished products with (Ø60±5) mm shall be cut from the plate to make a washer. Total weight of three semi-finished products - 30±2g.

5.1.6 The plate and washer shall be vulcanized as per parameters specified in the table.

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Table

Pressure on press form, kgf/cm <sup>2</sup>	Vulcanization temperature, °C	Holding time, minutes	
		of a sheet	washer
100±10	143±3	40±1	40±1

5.2 Specimens shall be cut in the form of double-sided blade (5 pcs.) from vulcanized sheet using specimen die so that the direction of knife axis matches with rolling direction.

Cutting of samples and testing shall be arranged not earlier than 16 hours after vulcanization and not later than 28 days.

The sample surface shall be smooth and without surface rupture, skewing, damages and other defects.

5.3 Parallel marks shall be applied on the specimen narrow side, which enclose working area of (25.0±0.5) mm to measure the elongation.

5.4 Specimen thickness shall be measured using thickness gauge. Blade specimen thickness shall be measured on the narrow side.

5.5 Blade width shall be designated as a distance between the cutting edges of a knife on its narrow area.

5.6 Specimens shall be tested. Before testing the specimens shall be held in the room with the temperature of (22±2) °C within an hour. In this case, they shall be protected against direct sunlight.

5.6.1 Nominal tensile strength and ultimate tensile elongation shall be determined on five specimens produced according to the paragraph 5.2.

5.6.2 Washer hardness shall be determined in three points of the specimen. Test shall be carried out on a single specimen.

5.7 Processing of testing results

5.7.1 Nominal tensile strength shall be calculated as per formula:

$$f_p = \frac{P_p}{d \times b}, \text{ where}$$

$f_p$  - nominal tensile strength, MPa (kgf/cm<sup>2</sup>);

$P_p$  - force, causing sample breaking, MII (kgf);

$d$  - average thickness of sample, m (cm);

$b$  - width of sample before testing, m (cm).

5.7.2 Ultimate elongation at sample break in % is calculated as per formula:

$$\epsilon_p = \frac{L_p - L_0}{L_0} \times 100, \text{ where}$$

$\epsilon_p$  - ultimate elongation at break, %;

$L_0$  - intervals between markings before testing, mm;

$L_p$  - intervals between markings at the moment of break, mm.

5.7.3 An arithmetic mean of all test specimens parameters shall be taken as a test result.

Strength test results are rounded to integral values in kgf/cm<sup>2</sup> and to tenth in MPa, and ultimate elongation - to decimal digit.

If the test results differ from average value of strength more than  $\pm 10\%$ , they are not considered and arithmetic mean is calculated with remaining samples which quantity shall be not less than three. Samples, that are not considered at calculation of arithmetic average value of strength,

are not considered at calculation of other parameters.

If after results analysing less than three samples are available, testing shall be provided with double quantity of samples.

5.7.4 An arithmetic mean of all measurements rounded off to a whole number, shall be taken as specimen hardness test result.

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### 5.7.5 Physical and mechanical parameters of rubber compound

V-14 NTA (B-14 HTA) determined on the standard vulcanized specimens shall meet the following values:

- nominal tensile strength - not less:  
10.8 (110.0) MPa (kgf/cm<sup>2</sup>);
- ultimate tensile elongation - not less, 160%;
- hardness - 72-79 Shore A scale.

Following the results of rubber compound incoming inspection the conclusion of rubber compound admission for production shall be drawn up.

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