



QM-C-7.1/AB/0015

Inspection Plan(Check Sheet)

Item : High Capacity Thermoplastic polyester elastomer (Hytrel) Upper & Lower Washer used in the primary suspension for B.G. mainline coaches
Specn. : C-K 409 (Rev.02 of Dec'2008)
Amd. : 3 of Sep'2010
Drg. No. & Alt. : CG-K4058 Alt.3 & CG-K4059 Alt.4

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- | | |
|------------------------------------|---|
| 1. Firm's name | : |
| 2. Description of Material | : |
| 3. Drawing No. | : |
| 4. RDSO File No. | : |
| 5. Specification No. | : |
| 6. Purchase Order No. | : |
| 7. Firm's Offer Letter No. & Date | : |
| 8. Quantity Earlier Passed | : |
| 9. Quantity Now Offered | : |
| 10. Quantity Consumed in Testing | : |
| 11. Quantity Accepted | : |
| 12. Quantity Rejected | : |
| 13. Date of Inspection and Testing | : |
| 14. Date of Offer | : |
| 15 i) No. of Boxes | : |
| ii) Continuous Sl.No. Of Boxes | : |
| 16. D.P. | : |
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(A) This is guaranteed by M/s that reconstituted /recovered material has not been used for manufacturing of above items offered for inspection. The material has been kept in poly-bags. This is also certified that Hytrel resin has only been used.

(B) Washer are packed in heavy gauge poly-bags & kept in corrugated/wooden boxes enough to resist damage in transit/storage.

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A. Sample Size:

The inspection lot shall consist of 500 nos. of washers or part thereof.

a	Visual Inspection	Min. 10 samples shall be drawn at random from each lot.
b	Dimensional check & Product weight	
c	Specific Gravity	5 samples shall be drawn at random from each lot. Out of these samples selected, two nos. shall be tested for c, d, e, f .
d	Hardness	
e	Ash Content	
f	Melting Point	
g	Compressive Load Deflection & Crush Load	2 samples from a lot of 500 nos. or part thereof

- Inspection certificate no :-

B. Record of Test Result for a Lot of 500 Nos.

SL. No.	Desc. Of Test	Specified Value as per C-K 409 Rev. 2	Lot no.1	Lot no.2	Lot no.3	Lot no.4	Lot no.5
1	Visual Observation & Marking	Surface shall be smooth, & free from moulding defects. Edges shall be neatly finished and free from flash. Marking shall be as per the Spec./Drawing					
2	Dimensional check & Product weight	As per drg./spec All dimensions are in mm	10 nos.	10 nos.	10 nos.	10 nos.	10 nos.
	a) ID	Upper :168±1					
		Lower :121.8±1					

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b) OD	Upper: 267 ± 1	
	Lower: 249.25 ± 1	
c) Thickness	Upper: 35 ± 1	
	Lower: 27.4 ± 0.7	
	Lower with liners: 35 ± 1	
d) Top Liner	ID: 112 ± 1	
	OD: 252 ± 1	
	Thickness: 3.8 ± 0.15	

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e)Bottom Liner	ID: 120 ± 0.5	
	OD: 252 ± 1	
	Thickness: 3.8 ± 0.15	
Weight (gms)	Upper : 570 ± 12	
	Lower: 525 ± 15	
	Top liner: 255 ± 15	
	Bottom liner: 220 ± 15	

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3	Specific Gravity.		1	2	1	2	1	2	1	2	1	2
		(Washer) -1.22±0.03										
		Top Liner - 1.39 – 1.44										
		Bottom Liner - 1.39 – 1.44										
4	Hardness	Washer: 63 ±5 (Shore D)										
		Top Liner:120 ±6 (Rockwell)										
		Bottom Liner:120 ±6 (Rockwell)										
5	Melting Point °C	Washer- 213 ± 8										
		Top Liner- 178 ± 8										
		Bottom Liner- 178 ± 8										

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6	Ash Content	Washer-Less than 1%										
		Top Liner- Less than 1%										
		Bottom Liner- Less than 1%										
7	MFR (Max)	Top Liner -3.0 gm/ 10 min.										
		Bottom Liner -2.1 gm/10 min.										

For Lower Washer:-

(i) Compressive Load Deflection Test- As per Clause 4.4.1.1(a)

Load in Tonne	Deflection in mm	Observation				
		Lot no.1	Lot no.2	Lot no.3	Lot no.4	Lot no.5
2	4.25-5.75					
3	5.95-8.05					
4	7.65-10.35					
5	9.05-12.05					
6	11.35-14.50					
7	12.50-15.10					
8	14.00-16.60					
9	15.20-17.80					
10	16.60-19.30					

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After the test the washer should comply the following:

- i) At the max. Load, the sample shall not show any evidence of cracking.
- ii) OD, ID and thickness shall be within specified tolerances of drawing.

Parameters	Specified value	Observation									
		Lot No.1		Lot No.2		Lot No.3		Lot No.4		Lot No.5	
		1	2	1	2	1	2	1	2	1	2
OD											
ID											
Thickness											

(ii) Crush Load Test: As per Clause 4.4.1.1 (b)

Parameters	Specified value	Observation									
		Lot no.1		Lot no.2		Lot no.3		Lot no.4		Lot no.5	
		1	2	1	2	1	2	1	2	1	2
Thickness											
Appearance (No crack or deformation)											

For Upper Washer:-

(i) Compressive Load Deflection Test- As per Clause 4.4.1.2(a)

Load in Tonne	Deflection in mm	Observation				
		Lot no.1	Lot no.2	Lot no.3	Lot no.4	Lot no.5
2	5.10-6.90					
3	7.65-10.35					
4	9.35-12.65					
5	11.15-14.95					
6	13.95-17.80					
7	16.10-19.50					
8	17.80-21.40					
9	19.30-22.80					
10	20.30-23.90					

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After the test the washer should comply the following:

- i) At the max. Load, the sample shall not show any evidence of cracking.
- ii) OD, ID and thickness shall be within specified tolerances of drawing.

Parameters	Specified value	Observation									
		Lot No.1		Lot No.2		Lot No.3		Lot No.4		Lot No.5	
		1	2	1	2	1	2	1	2	1	2
OD											
ID											
Thickness											

(ii) Crush Load Test: As per Clause 4.4.1.2 (b)

Parameters	Specified value	Observation									
		Lot no.1		Lot no.2		Lot no.3		Lot no.4		Lot no.5	
		1	2	1	2	1	2	1	2	1	2
Thickness											
Appearance (No crack or deformation)											

Marking: Marking shall be as per clause 8.0 of the specification.

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