

FUNCTIONAL REQUIREMENTS OF CONTAINER FLAT WITH 160 KMPH SPEED OF INDIAN RAILWAYS MAINLINE COACHES

1. FUNCTIONAL REQUIREMENTS:

The container flat with 160 kmph speed on LHB type bogie should work satisfactorily under the following operating conditions of IR coaches:

1.1 Coach Dynamics:

Silicon Foam should provide adequate comfort during the vibrations and shocks normally encountered in service as indicated below:

- i) Maximum vertical acceleration 1.0g
- ii) Maximum longitudinal acceleration 3.0g
- iii) Maximum transverse acceleration 2.0g

The vibrations are of sine wave form and the frequency vibration is between 1 Hz to 50 Hz.

The amplitude 'a' expressed in millimeters is given as a function of f, by equations
 $a = 25/f$ for values of f from 1 Hz to 10 Hz.

$a = 250/f^2$ for values of f exceeding 10Hz and up to 50 Hz.

- 1.2 In the direction corresponding to the longitudinal movement of the vehicle, the Silicon Foam is subjected for 2 min. to 50 Hz Vibrations of such a value that the maximum acceleration is equal to 3g.

1.3 Coach-body displacement encountered under dynamic conditions.

- i) Vertically- ± 100 mm
- ii) laterally - ± 55 mm
- iii) longitudinally- ± 10 mm
- iv) bogie rotation about center pivot- $\pm 4^\circ$

1.4 Ambient Conditions

- (i) Ambient temperature : -4°C to 50°C
Altitude : Sea level to 2500m
Max. temperature under Sun : 70°C
Relative humidity : 40% to 95%
- (ii) The rainfall is fairly heavy.
- (iii) During dry weather, the atmosphere is likely to be dusty.
- (iv) Temperature variations can be quite high in the same journey or short period of time.
- (v) Coaches operate in coastal areas with continued exposure to salt laden air.

1.5 Coach Inside Condition:

Inside condition of the container may consider as under:

- i) The ambient conditions may be similar as mentioned under para 1.4 above, as there is no control in temperature as the coaches are Non-air-conditioned.

However in summer day the value of upper range of the temperature may go up to 60⁰C. There may be remarkable variation in temperature inside of the coach from floor to roof level.

- 1.6 Container length – 23540mm, container width- 3240mm, container height from rail level 4039. (LHB type). Carrying Capacity- 61 T.
- 1.7 Bogie- FIAT type Bogie with disc brake system having air suspension in secondary and conical/coil spring in primary.