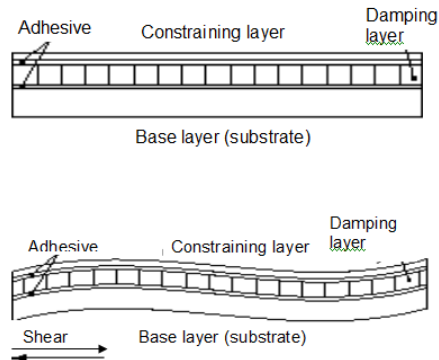


## **Rubber blend (EAP-43) for Constrained Layer Damping (CLD) treatment of vibrating structures**

High damping materials are widely used to reduce vibration in aircraft, ship and other dynamic system. The benefit of using damping material is longer service life of components owing to reduced fatigue, reductions noise generation and transmission and human comfort. Structural damping is defined as the irreversible removal of energy from a vibrating system. Viscoelastic materials have found application in vibration damping in different configurations. One of the most widely used configurations is Constrained Layer Damping (CLD) treatment. The complete CLD configuration is a three layer laminate comprising base layer to be damped, viscoelastic layer (polymer layer usually rubber) and constraining layer. The CLD system works by exploiting the difference in stiffness of the viscoelastic layer and constraining layer which facilitate shear deformation of viscoelastic layer resulting in higher damping. NMRL has developed EAP-43, a rubber blend based viscoelastic damping material for CLD applications in vibrating structures.



### **Constrained Layer Damping treatment**

#### **Salient Features:**

- ❖ Physical appearance – Vulcanised rubber sheet of standard size 1ft x 1ft x 2mm thickness
- ❖ Application – by adhesive bonding
- ❖ High damping in ambient operational temperatures
- ❖ Broad frequency range of damping
- ❖ Good strength and resistance to fuel and oil
- ❖ Good resistance to fire
- ❖ Can be made using conventional rubber processing machinery

#### **Areas of application:**

- ❖ CLD treatment of ship and submarine decks, engine foundations, bilge plates and frames
- ❖ Structural damping in aircrafts and railways

#### **Facility required for manufacturing the rubber sheets:**

- Two roll rubber mixing mill (minimum batch size 20kg)
- Rubber dispersion kneader (minimum batch size 20kg)
- Compression moulding machine (platen size 2ft x 2ft)