

**MASTER COPY****मूल प्रति****1.0 SCOPE**

This instruction stipulates the action to be taken by DIVISIONS & OHES depots for handling of 25 kV Composite Insulators.

**2.0 OBJECTIVE**

The composite insulators have been inducted in to the Indian Railways traction network only recently & for its long & trouble-free service, the performance not only depend upon the quality of the manufactured product but also on the manner in which the user handles these insulators from the time it is received in the consumer premises until the time it is put into service & as well as, in service (line).

Since the composite insulators have silicon rubber as a component, they are much more flexible and fragile than the solid core porcelain insulators. Thus special care needs to be taken during their handling.

**3.0 GENERAL INSTRUCTION :**

This instruction elaborate the various stages through which the insulator goes through from the production line to the actual service on line. Various stages are as under :

- (i) Receiving, unpacking & storage
- (ii) Transport to construction site.
- (iii) On-site handling
- (iv) Installation by TRD staff / vendors.
- (v) Conductor stringing & cantilever assembly.
- (vi) Final inspection before energisation.
- (vii) Care during maintenance

**3.1 RECEIVING, UNPACKING AND STORAGE.**

- 3.1.1 On receipt of composite insulator at the store of the user, the crate should be carefully inspected for any sign of damage. After inspection, the insulators should be either returned to original packing or placed on a suitable designed rack, so that sheds of the insulators do not bend and remain straight.
- 3.1.2 The stacking & storage of insulators should be proper, i.e one insulator over the other at 90° should be avoided.
- 3.1.3 They should be stored in a dry, covered area with the packing, raised off the ground. Lids should remain sealed to prevent entry of rodents.
- 3.1.4 The storage area should be free from oil or other petroleum derivative products

**3.2 TRANSPORT TO CONSTRUCTION SITE**

Whenever possible, the insulators should be transported to site in their original (closed) packing. However, if this is not possible, they should neither

be transported loosely or without sufficient protection, nor the insulators be tied down or bound together with chain or ropes.

### **3.3 ON SITE HANDLING**

Upon arrival at site, the packing should again be carefully checked. If any sign of breakage or rough treatment is evident, each insulator shed should be carefully examined for evidence of damage.

It is recommended that a temporary reusable packing system be introduced to provide them with adequate protection.

### **3.4 INSTALLATION**

Prior to installation, the insulators should once again be thoroughly examined for any damage. Units displaying hit marks, cuts or damage of sheds of the composite material should be set aside for expert inspection. In case exposure of the fiber glass core is noticed, however small, the insulator should immediately be discarded from the lot and should not be installed on line.

If the insulators are dirty & require cleaning, they should be washed with clean water only. Detergents, solvents or abrasive materials should never be used for this purpose.

While installing these insulators, care should be taken that lifting lines or ropes are not attached to the metal end fittings of the insulators and not to the sheds or FRP rod.

The ladder / person should not rest on the rest portion of the insulator.

### **3.5 CONDUCTOR STRINGING**

During conductor stringing operation, the insulators should not subject to bending & torsions loads.

### **3.6 CARE DURING MAINTENANCE**

Special care needs to be taken while undertaking OHE maintenance near the composite insulator area and the staff working on the cantilever and on OHE overhead line should not damage the sheds of these insulators by standing or resting the ladder on these insulators.

### **3.7 FINAL INSPECTION BEFORE LINE ENERGIZATION**

On undertaking a final inspection prior to commissioning of a line, composite insulators should be examined for any of the following.

- (i) Broken & torn sheds.
- (ii) Damage to the end seats where the rod enters the metal fitting.

- (iii) A misalignment of the metal fitting which would indicate that the insulator has been subjected to, or is being subjected to a torsional stress.
- (iv) Splitting of the sheath resulting in exposure of FRP rod or core.

#### 4.0 SUGGESTION

If any other suggestion is there with the Railways based upon field experience & it is felt that it will be beneficial for Railways, the same may please be sent to RDSO.

