

**COMPARISON BETWEEN  
LIGHTLY RESIN BONDED MATTRESSES  
AND  
UNBONDED MINERALWOOL INSULATION MATTRESS**

**L.R.B MATTS.**

**1 . Raw Materials :**

Siliceous raw materials - selected rotl's containing inorganic *oxides* of various compositions used in proportions best suited for an ideal chemical composition of the material.

**2. Manufacturing Process :**

**a) Fiber Production :**

Rocks are melted at 1600 to 1650 deg C in electric ruelters and converted into fibers using centrifugal fiberisation process and led into felting chamber designed to align the fibers and distribute into 'felt' form - with uniform weight. distribution. Fibers are interlocked with a fine mist of very low percentage binder.

**b) Felting :**

Felting is achieved in pre - adjusted felting chambers and continuous strips in width of 1.5M are produced. These felts are compressed and cured in curing ovens equipped with a pair of heavy conveyors.

**C) Stitching :**

Compressed and cured felt is mated with the wire netting of required specification "even pressure" stitching with specially designed stitching machine using 0.4MM dia GI wire/rayon/nylon.

**UNBONDED MINERALWOOL MATTS.**

Normally a blast furnace slag with limestone as a flux to remove metallic iron. The ash from Coke used as a fuel also becomes part of the "matt".

Raw materials are melted in Coke fired Cupola and, spun into fibers by centrifugal fiberisation protes. Fiber are drawn into "collection chamber" and led off by Conveyor. Bulk wool is packed into hessi n bags and stacked.

Loose bulk wool is weighed in a balance enough to cover a predetermined area with the calculated mass per unit area. Distribution and laying of the wool over the wirenetting is by manual judgernent.

The bulk wool layer arid wire netting are stitched together manually in spots using GI wire.

### 3. Properties :

#### a ) Form Stability :

Lightly Bonded Rockwool mattresses ha'e cohesive construction produced by machine felting to totally resist tearing/fiber dislodgement. Material is rot- proof vermin proof and incombustible.

Unbonded slagwool is manually made into matts. by distribution of handfulls of fibers (lumps) on wire netting and stitched into mattresses.

#### b) Density (recommended):

100 Kg/Cu.M. Plus or Minus 10%

150 kg/Cu.M. Plus or Minus 15%

#### C) Fiber diameter:

3 to 5 microns.

3 to 5 microns.

#### d) Handleability:

Can withstand vibration and jolting in standard tests when held by grips and hung vertically (as in handleability test) no loss of material results.

Materials with one side wire netting cannot withstand this test at all. When provided with wire netting on both sides with net aperture not over 12mm and tested with max width of 600 MM material partially meets the requirements.

#### 4. Thermal Conductivity:

Mean Temp. Deg C.	Coefficient of Thermal Conductivity @ 100 kg/cu.m density
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(W/M deg K)

50	0.037
100	0.042
150	0.049
200	0.058

Mean Temp. Deg C.	Coefficient of Thermal Conductivity @ 100 kg/cu.m density
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(W/M deg K)

50	0.045
100	0.051
150	0.056
200	0.068

(Thickness obtained with these values require upward adjustment to account. for manual fabrication)

#### 5. Maximum service temperature:

750 Deg C (when used above 400 Deg C, stitching wire to be of SS)

750 Deg C (when used above 400 Deg C GI to be replaced by SS for wirenetting as well as stitching wire)

#### 6. Application :

a) Ease of application due to lower weight and easier handleability

More Difficult to apply since it is heavier and cutting a mattresses is a difficult and untidy jog.

b) The work place remains neat since the material is bonded and does not exhibit and chicken feathering.

Affects the working of other contractors ad makes the work place dirty due to flying of loose fibers.

c) Wastage is reduced due to the above mentioned reasons.

Wastage is more.

d) Weight of supporting structure can be reduced due to lower weight.

Requires heavier supporting arrangement.