

Value-Added Particleboard Development Using Waste and Recycled Materials for Sustainable Utilization

Raw Materials (Waste Materials)

Durian peels
(Particle sizes of 4 and 20 mm)



Areca nut husks
(Particle sizes of 4 and 20 mm)



Spent coffee grounds

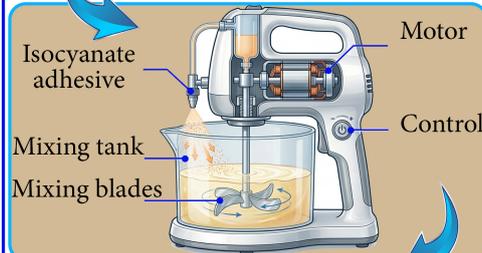


Recycled plastic pellets



Processing Steps

- Mixing raw Materials + reinforcing materials with isocyanate adhesive of **6%, 9%, and 12%** by weight of the raw materials.



Hot pressing with temperature of **160 °C**, hydraulic pressure of **30 MPa** and holding time of **10 minutes**



Particleboard
with dimensions of
400 × 600 mm



Finals Product (Optimal Product)

Particleboard Testing
According to TIS
876-2547

Optimal particleboard product
from 20 mm durian peel particles
with 12% isocyanate and reinforced
with recycled plastic pellets

▲ Density 780.02 kg/m³

▲ Moisture Content 4.36%

▲ Swelling 8.24%

▲ Tensile Strength 6.93 MPa

