

# NoSkin MOULDED PARTICLEBOARD FROM OIL PALM BIOMASS

by: WAN HASAMUDIN WAN HASSAN; MOHAMAD HUSIN; ANIS MOKHTAR and ASTIMAR ABDUL AZIZ

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The Malaysian oil palm industry with its 3.6 million hectares (2002) generates about 11.9 million tonnes of oil and 90 million tonnes of lignocellulosic biomass. These fibrous materials are empty fruit bunches (EFB), palm pressed fibres (PPF), palm kernel shells (PKS), oil palm fronds (OPF) and oil palm trunks (OPT). The chemical, physical and mechanical analyses of the oil palm biomass indicate that these materials are similar to wood, and therefore are suitable raw materials in wood-based industries and, pulp and paper.

Traditionally, the particleboard industry in Malaysia can be categorized into two *viz.* particleboard as a panel product and particleboard primarily for furniture components. The moulded particleboard industry has the potential of 250 000 pieces per month to cover the demand for components in manufacturing furniture for offices, hospitals, educational institutions, restaurants and other in-door furniture.

## MANUFACTURING PROCESS

MPOB had in the past successfully used oil palm biomass in the production of moulded particleboard. Moulded particleboard normally has an outer skin made of melamine or other material.

The latest innovation is the NoSkin moulded particleboard from oil palm biomass particularly OPF. It is environment friendly non-wood product reconstituted from oil palm biomass. While others have to cut trees as source of raw materials, this technology preserves our nature through waste recycling with our innovative and cost-effective technology.

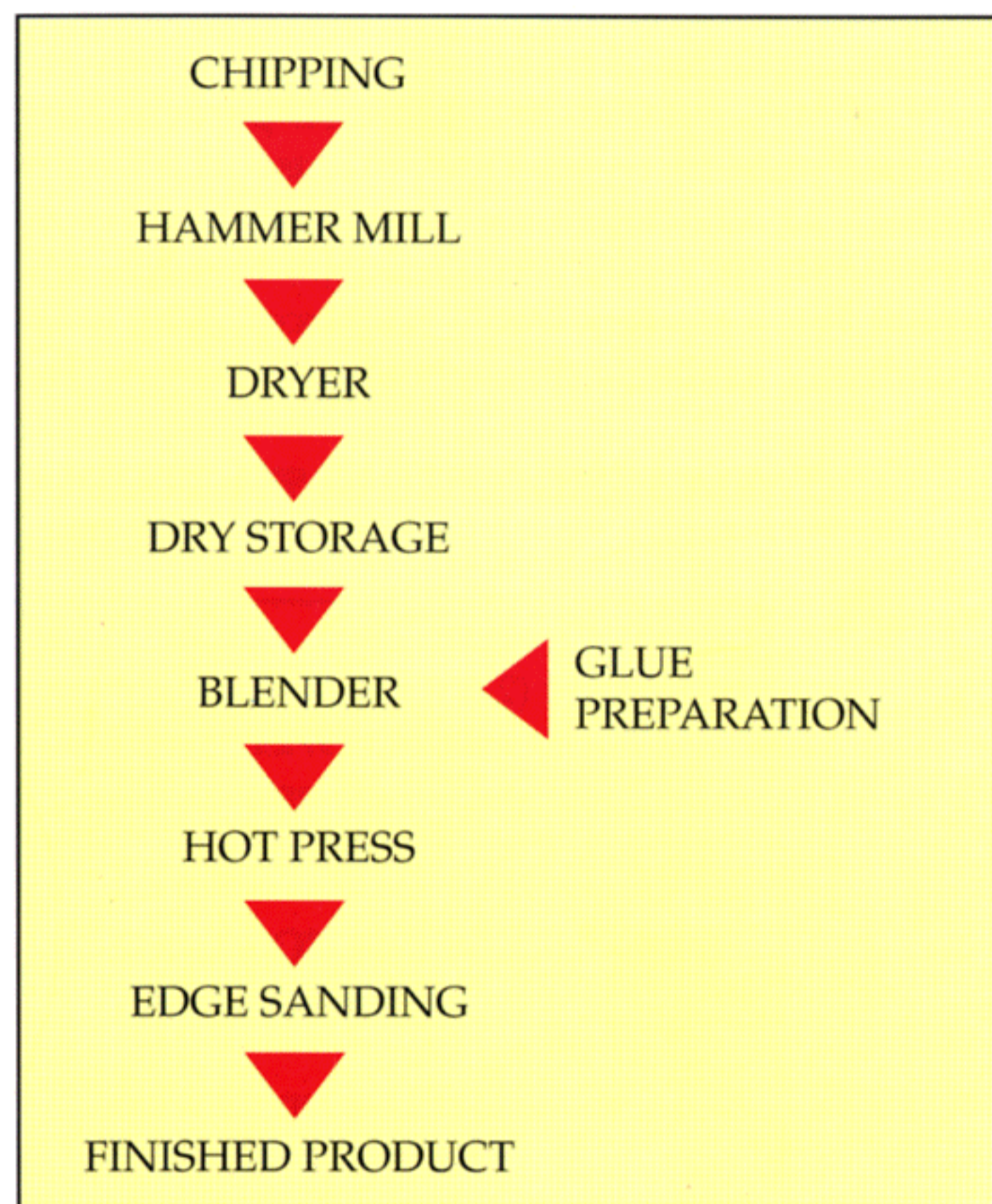


Figure 1. NoSkin process flow.



Figure 2. Oil palm fronds.

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Malaysian Palm Oil Board, Ministry of Primary Industries, Malaysia  
P. O. Box 10620, 50720 Kuala Lumpur, Malaysia. Tel: 03-89259155, 89259775, Website: <http://mpob.gov.my> Telefax: 03-89259446





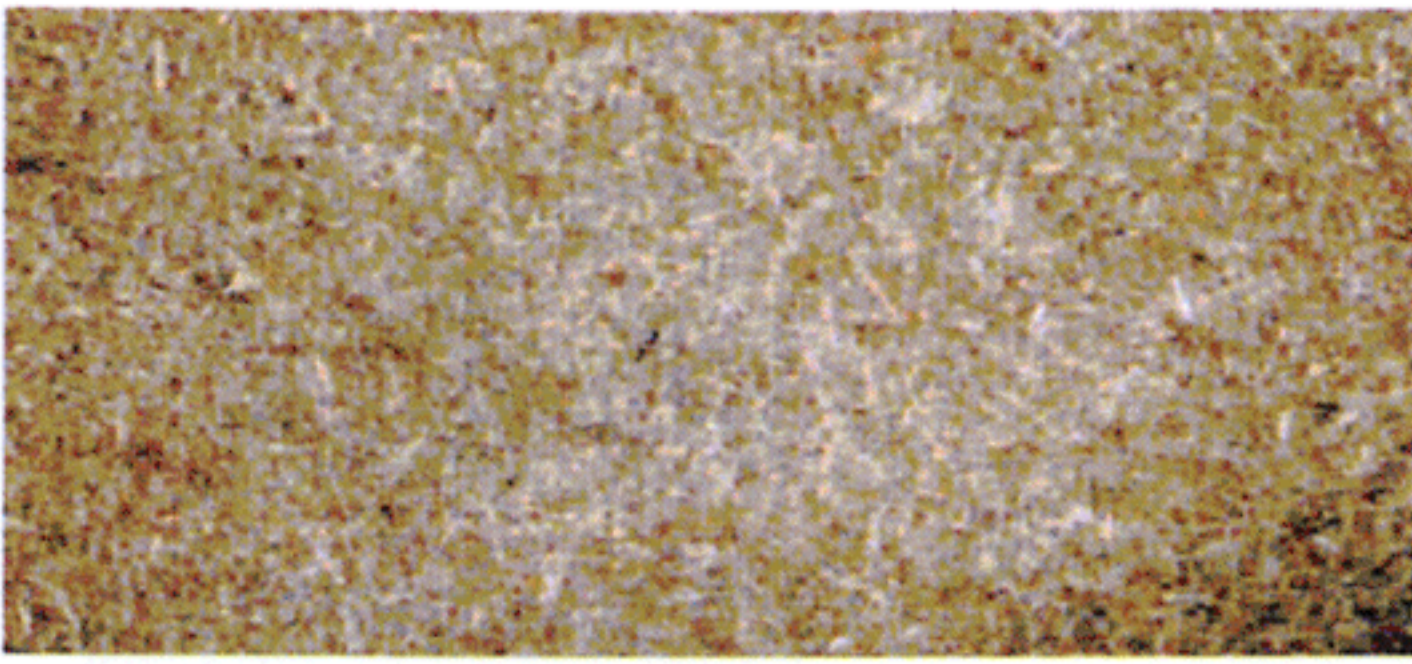


Figure 3. Oil palm fronds chips.

### COST COMPETITIVENESS

The fast depletion of rubberwood supply causes the price of raw materials for moulded particleboard production to increase. Thus, the use of oil palm biomass as alternative raw material provides an opportunity for wood-based industry to revive and exploit the local renewable resources, which are abundantly available throughout our country. The

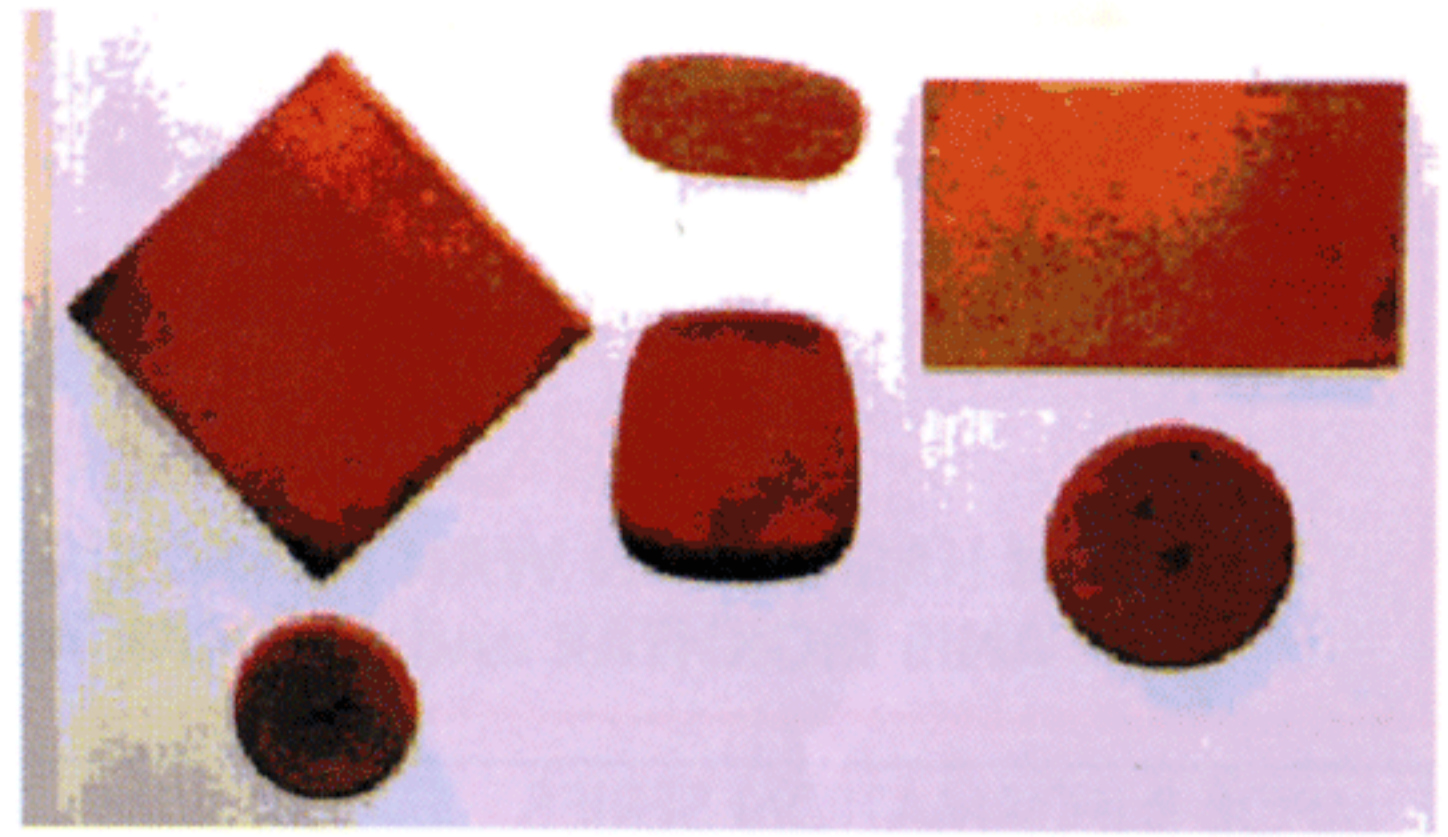


Figure 4. NoSkin products.

cost of transporting oil palm biomass and pre-treatment cost of raw material are becoming more reasonable due to the availability of the latest technology to handle oil palm biomass. For a typical plant of RM 10 million with the production capacity of 150 000 pieces (NoSkin process) per month, the payback period is 5.5 years (Table 1).

**TABLE 1. PROPOSED NoSkin PRODUCTION LINE MOULDED PARTICLEBOARD (150 000 pieces/month)**

Capital Investment:	
(i) Land (2 ha)	: RM 1 520 000
(ii) Factory block (2972.89 m <sup>2</sup> )	: RM 1 120 000
(iii) Plant machinery and ancillary equipment	: RM 7 300 000
<b>Total Investment</b>	<b>: RM 9 940 000</b>
MONTHLY OPERATION COST	
(i) Manpower (50 employees)	: RM 50 000
(ii) Utilities/energy	: RM 40 000
(iii) Raw materials/consumables	: RM 84 000
<b>Total Cost</b>	<b>: RM 174 000</b>
*For six months before receipts of sales proceeds: RM 1 044 000.	
Payback = 5.5 years.	

For more information kindly contact:

Director-General  
MPOB  
P. O. Box 10620  
50720 Kuala Lumpur, Malaysia.  
Tel: 03-89259155, 89259775,  
Website: <http://mpob.gov.my>  
Telefax: 03-89259446