

SYNONYMS:

None

TRADE NAME:

Morani, Molni, Red Oak, Birch, Agthis, Keruing

DESCRIPTION:

This panel product contains a hardwood veneer face (occasionally a decorative softwood face) bonded to wood components such as other wood veneer, particle board, or medium density fiberboard (MDF) using urea-formaldehyde resin.

POTENTIAL AIRBORNE RELEASES:

The product may release small quantities of formaldehyde (CAS No. 50-00-0) in gaseous form. Emissions decrease through time as the panels age. Manual or mechanical cutting or abrasion processes performed on the product can result in generation of wood dust.

PHYSICAL DATA:

Boiling Point	Not applicable
Specific Gravity (H ₂ O = 1)	< 1
Vapor Density	Not applicable
% Volatiles By Vol.	0
Melting Point	Not applicable
Vapor Pressure	Not applicable
Solubility in H ₂ O (% by wt.)	< 0.1%
Evaporation Rate (Butyl Acetate = 1)	Not applicable
pH	Not applicable
Appearance and Odor	Light to dark color. Color and odor are dependent upon wood species.

* This fact sheet is for products that have not been finished (coated, laminated, or overlaid) or treated (for example, with preservative or fire retardant).

FIRE AND EXPLOSION DATA:


Flash Point	Not Applicable
Autoignition Temperature	Not available (will depend upon duration of exposure to heat source and other variables)
Explosive Limits in Air	See below under "Unusual Fire and Explosion Hazards"
Extinguishing Media	Water, Carbon dioxide, Sand
Special Fire Fighting Procedures	None
Unusual Fire and Explosion Hazards	Sawing, sanding or machining can produce dust as a by-product which may present an explosion hazard if a dust cloud contacts an ignition source. An airborne concentration of 40 grams of dust per cubic meter of air is often used as the LEL for wood dust.

REACTIVITY DATA:

Conditions Contributing to Instability	Stable under normal conditions.
Incompatibility	Avoid contact with oxidizing agents. Avoid open flame. Product may ignite in excess of 400 F.
Hazardous Decomposition Products	Thermal and/or thermal oxidative decomposition can produce irritating and toxic fumes and gases, including carbon monoxide, hydrogen cyanide, aldehydes, organic solids and polynuclear aromatic compounds
Hazardous Polymerization	Not applicable

HEALTH HAZARDS INFORMATION:

Exposure Limits:	
Formaldehyde	OSHA PEL - TWA 0.75 ppm OSHA PEL - STEL 2 ppm ACGIH TLV - CEILING 0.3 ppm
Wood Dust (all soft and hard woods except Western red cedar)	OSHA PEL - TWA 5 mg/m ³ OSHA PEL - STEL 10 mg/m ³
Wood Dust (Western red cedar)	OSHA PEL - TWA 2.5 mg/m ³



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Requested by Finnish Plywood Association, Opastinsilta 8 B,
SF-00520 Helsinki 52, Finland

Order Decision by the Technical Commission of the Finnish
Plywood Association of March 13, 1979

Object Determination of the formaldehyde content of Finnish
hardwood, combi, and softwood plywood.

Test Material The test material consisted of hardwood, combi, and
softwood plywood samples, which VTT's representatives
had chosen from the standard production of each
factory for FINPLY quality control. The size of the
samples was abt. 120 x 120 cm. All plywood samples
had been glued with phenol-formaldehyde resin.
Samples were taken twice from each factory. The
total number of sample boards was 110. Boards
belonging to different thickness classes were chosen
for tests as follows:

- birchplywood 9 pieces
- combi plywood 6 pieces
- softwood plywood 7 pieces

One board was tested from each member factory.

Test procedure The samples were conditioned in RH 65 %/20 °C before
the analysis. The formaldehyde content of each
board was determined by the perforator method as
presented in CEN prEN 120 standard proposal.
Formaldehyde evaporating from plywood (temperature
during tests 60°C) was investigated by FESYP gas
analyzing method (FESYP- Formaldehybestimmung bei
Spanplatten, Gasanalysemethode, Giessen, 1975, 31 p.)
The analysis of the formaldehyde separated in the
determinations was carried out spectrophotometrically
according to SFS 3862 standard.

Test results The results of the analysis are shown in appendix 1.

**Examination
of results** The formaldehyde contents of the plywood samples
investigated as well as the formaldehyde amounts
evaporating from them were particularly low.
There are no statistically significant differences
between different plywood types.

By examination of the amounts of the evaporating
formaldehyde it must be taken into consideration
that the method presupposes a temperature of 60°C
during tests. The amounts evaporating in room
temperature are essentially lower than those
measured in these tests.

Along with resins, formaldehyde can also evaporate from the wood raw material of plywood. The highest values measured in our laboratory from unglued hardwood and softwood veneers were 25...30 % of the formaldehyde amounts contained by and evaporating from plywood. The big dispersion of the test results is to a great extent due to the formaldehyde of the wood raw material mentioned above and to the fact that all analysis values are at the lower limit of the sensitivity of determination.

Espoo, September 17, 1979

TECHNICAL RESEARCH CENTRE OF FINLAND
Forest Products Laboratory

Director of Laboratory Osmo Liiri

Research Officer Hannu Sairanen

For a true and correct translation,
Espoo, October 4, 1979


Marjatta Tommila, M.A.

APPENDIX 1

RESULTS FROM THE FORMALDEHYDE DETERMINATIONS

Sample	Thickness mm				Moisture content %		Age at the time of testing days		Formaldehyde content					
	\bar{x}	s	min	max	\bar{x}	s	\bar{x}	s	Perforator test		Evaporating formaldehyde mg/kg(1)			
									\bar{x}	s	\bar{x}	s		
Birchplywood	15.0	8.8	4.3	28.4	9.1	0.7	46	27	0.00010	0.00006	0.1	0.1	0.2	0.2
Corbi plywood	13.3	4.8	7.2	21.1	9.8	0.6	36	6	0.00014	0.00008	0.1	0.1	0.3	0.3
Softwood plywood	9.5	2.9	4.3	16.6	10.1	0.7	36	7	0.00015	0.00009	0.1	0.1	0.2	0.2

1) calculated from an absolutely dry board

WOOD DUST CAUTION! FLAMMABLE

SAWING, SANDING or MACHINING WOOD PRODUCTS CAN PRODUCE WOOD DUST WHICH CAN CAUSE A FLAMMABLE or EXPLOSIVE HAZARD.

WOOD DUST MAY CAUSE LUNG, UPPER RESPIRATORY TRACT, EYE and SKIN IRRITATION. SOME WOOD SPECIES MAY CAUSE DERMATITIS and/or RESPIRATORY ALLERGIC EFFECTS.

- ✦ **Avoid dust contact with ignition source.**
- ✦ **Sweep or vacuum dust for recovery and disposal.**
- ✦ **Avoid prolonged or repeated breathing of wood dust in air.**
- ✦ **Avoid dust contact with eyes and skin.**
- ✦ **FIRST AID: If inhaled, remove to fresh. In case of contact, flush eyes with water and skin with water.**

For additional information, refer to Material Safety Data Sheet



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