

THE INTERNATIONAL RESEARCH GROUP ON WOOD PRESERVATION

The 32nd Annual Meeting of IRG

Technical Programme and Abstracts of papers

**IRG Secretariat
SE-100 44 Stockholm
Sweden**

Programme Section 1

Biology

Monday 21 May 11.00-12.30

Keynote

IRG/WP 01-10416

Future Directions for biological control & BioActivity®.

Roberta Farrell, Joanne Thwaites
University of Waikato, New Zealand

Monday 21 May 16.30-18.30

WP 1.3

Bluestain and moulds

Convener: Mr Robin Wakeling

IRG/WP 01-10387 (Tabled)

Check Development on Jack Pine Logs in Eastern Canada

D Q Yang, R Beaugard

IRG/WP 01-10404 (Tabled)

A trial of "sour" felling to prevent bluestain by depletion of sapwood nutrients

A Byrne, A Uzunovic, D Minchin, C Breuil

IRG/WP 01-10407

Wood Extractive Concentration and SEM Examination of Pretreated Southern Yellow Pine Wood Chips with Blue-Stain Fungi for Mushroom Production

S C Croan, J Haight

IRG/WP 01-30260

The efficacy of Sentry® as a treatment for the control of sapstain in pre-infected radiata pine

C Chittenden, J Van der Waals, B Kreber, R Wakeling

IRG/WP 01-30261

Minimum inhibitory concentration of methylene bithiocyanate towards selected wood inhabiting fungi in liquid culture and on radiata pine

T Singh, B Kreber, C Chittenden, R Wakeling, A Stewart

Tuesday 22 May 16.30-18.30

WP 1.1

Physiology of decay

Convener: Dr Frederick Green III

IRG/WP 01-10391 (Tabled)

Extracellular Laccase Production in Brown-rot Fungus *Coniophora puteana*
K Lee, S G Wi, Y S Kim

IRG/WP 01-10394

A new concept of oxalic acid biosynthesis in physiology of copper-tolerant brown-rot fungi
E Munir, T Hattori, M Shimada

IRG/WP 01-10395

Non-enzymatic *Gloeophyllum trabeum* decay mechanisms: Further study
B Goodell, J Jellison

IRG/WP 01-10397 (Tabled)

Preservation of hyphal-forming brown- and white-rot wood-inhabiting basidiomycetes
S C Croan

IRG/WP 01-10399

Mechanistic aspects of the reactions of copper complexes with lignin in the presence of hydrogen peroxide and lipid hydroperoxide model compounds as proposed for white rot fungi

K Fackler, P Lamaipis, E Srebotnik, M Humar, C Tavzes, F Pohleven, M Sentjurc, T Watanabe, K Messner

IRG/WP 01-10403 (Tabled)

Analysis of Degradation Observed on Ancient Wooden Objects Buried Underground
H Sakai

IRG/WP 01-10412

Free radical process controlled by manganese peroxidase and lipid-related metabolites produced by *Ceriporiopsis subvermispora*

T Watanabe, M Enoki, S Sato, Y Honda, M Kuwahara, N Shirai, K Messner

IRG/WP 01-10415

Influence of CCA and TnTBTO on wood decay, under different oxygen levels and various initial moisture content

S M Kazemi, R J Murphy, D J Dickinson

IRG/WP 01-10411 (poster)

A novel lipid-related compound, (Z)-1,7-nonadecadiene-2,3-dicarboxylic acid, produced by white-rot fungus

Ceriporiopsis subvermispora

M Enoki, Y Honda, M Kuwahara, K Messner, T Watanabe

Wednesday 23 May 11.00-12.00**WP 1.7****Natural durability**

Convener: Dr Marie-France Thévenon

IRG/WP 01-10410

The high decay resistance in the sapwood of the naturally durable Malaysian hardwood belian (*Eusideroxylon zwageri*)

A Wong, A Singh

IRG/WP 01-10402

Antifungal activity of a stilbene glucoside from the bark of *Picea glehnii*

S Shibutani, M Samejima

IRG/WP 01-10393

Interspecific variability of European oak durability against white rot fungi (*Coriolus versicolor*): Comparison between sessile oak and peduncle oak (*Quercus petraea* and *Quercus robur*)

N Ayadi, B Charrier, M Irmouli, J P Charpentier, C Jay Allemand, F Feuillat, R Keller

IRG/WP 01-10413

Susceptibility of sarawak timber to attack by powder post beetles

K Jenang, L W Choon

IRG/WP 01-10392

Possible durability transfer from durable to non durable wood species: The study case of teak wood

M-F Thévenon, C Roussel, J-P Haluk

Thursday 24 May 09.00-10.30**Section 1 Biology****Main Session**

Chairman (acting): Mr Robin Wakeling

V chairman (acting): Dr Frederick Green III

IRG/WP 01-10388

Oxalic acid production of fifteen brown-rot fungi in copper citrate-treated southern yellow pine

F Green III, C A Clausen

IRG/WP 01-10406

Copper tolerance of various *Antrodia vaillantii* isolates

F Pohleven, A Malnaric, M Humar, C Tavzes

IRG/WP 01-10389

The true dry rot fungus (*Serpula lacrymans*) as a wound parasite of living Norway spruce (*Picea abies*) in the Czech Republic

J Bech-Andersen, S A Elborne, J Andreasson, J C Sterler

IRG/WP 01-10401

Service life of outdoor wooden constructions. Expectations of private house owners in Sweden

M-L Edlund, J Jermer

IRG/WP 01-10405 (poster)

Survey of maintenance management of a residence

Y Yamaguchi, M Azuma, Y Hikita, K Nishimoto

**Friday 25 May 09.00-10.30 and
11.00-11.30**

Joint WP 1.5/2.5

**Biology of insects/Insect test
methodology**

**Conveners: Prof Dr Ken Grace/ Mr Jim
Creffield**

IRG/WP 01-10390

Effects of drying processes on termite
feeding behaviour against Japanese larch
wood
S Doi, Y Kurimoto, H Takiuchi, M Aoyama

IRG/WP 01-10396

Intrigue Dust – A New Method of
Eradicating Subterranean Termite
(Isoptera: *Rhinotermitidae*) Colonies
W Madden

IRG/WP 01-10398

Laboratory evaluation of termite resistance
of five lesser-used species of Malaysian
hardwoods utilised for roof and ceiling
construction
A Wong, Suan C Kee, K Grace

IRG/WP 01-10400 (Poster)

Termite-tunnels formation on the surface
of termite-resistant wood species in field
sites
Y Kadekaru, K Kinjo, S Yaga

IRG/WP 01-10409

Termite trail-following substances in
Houttuynia cordata
W Ohmura, K Yamamoto, M Saegusa, T
Ohira, A Kato

IRG/WP 01-10408

Evaluation of tropical wood by-products as
a potential source for termite control
products
A Zaremski, S Robert, J-L Clement, D
Fouquet

IRG/WP 01-20222

Detection of Metabolic Gas from Termites
Using Ceramic Gas Sensors
Y Yanase, Y Fujii, S Okumura, T
Maekawa, K Suzuki, T Yoshimura, Y
Imamura

IRG/WP 01-20225

Longterm monitoring of termite activity on
multiple feeding sites: a laboratory method
intended for the determination of
attractant/repellent properties of wood
preservatives and baits
M Pallaske, E Graf, H Takiuchi

IRG/WP 01-10417

Effects *in vivo* of various tensides (surface
active ingredients) on *Reticulitermes*
santonensis De Feytaud.
W Unger

IRG/WP 01-10414 (Tabled)

The impact of global warming on the UK
distribution of house longhorn beetle
Hylotrupes Bajulus (L)
P Oevering, A J Pitman

Programme Section 2 Test methodology & assessment

Tuesday 22 May 09.00-10.30

Section 2 Test methodology and assessment

Main session

Chairman: Dr Paul Morris
V chairman: Dr Ina Stephan

IRG/WP 01-20226

Biocidal Screening Method of Wood
Extractives by a Direct Use of Cellulose
TLC Plate
R Yusiasih, T Yoshimura, T Umezawa, Y
Imamura

IRG/WP 01-20231

Effect of test site Location on In-ground
Preservative Performance after 6 years
R Wakeling

IRG/WP 01-20239

A Field Study on the Suitability of the
European Lap-Joint Test
M Grinda, Ö Bergman, H V Borck, D
Dickinson, P Esser, R Gründlinger, H
Leithoff, S Molnar, L Paajanen, N
Pfabigan, E Suttie, F Thomassin, T
Nilsson, J Van Acker, M Van Der Zee, A
Voss

IRG/WP 01-20228

Development of Software to Automate
the Quantification of Checking Occurring
in Preservative Treated Wood Exposed
to Weathering
A G Christy, P D Evans

Tuesday 22 May 11.00-12.00

WP 2.1

Topical issue – Predicting/Detecting decay

Convener: Dr Ina Stephan

IRG/WP 01-20219

The effect of hemicellulose degradation on
the mechanical properties of wood during
brown rot decay
S Curling, C A Clausen, J E Winandy

IRG/WP 01-20230

Evaluation of wood durability by laboratory
test – A new equation to predict wood
durability
I Momohara, K Yamamoto

IRG/WP 01-20220 (Tabled)

Application of non-destructive techniques
(durometric and ultrasonic) to evaluate the
degradation of woods in service by
Gloeophyllum trabeum
M T Troya, L Palaia, A Navarrete, V
Galvañ, R Molina, A Guijarro, J Camacho

Tuesday 22 May 12.00-12.30

WP 2.2

Microbiological test methodology

Convener: Prof Dr Shuichi Doi

IRG/WP 01-20227

Fungus cellar testing as an evaluation
method for performance of treated timber
in ground contact
Y Nagano

IRG/WP 01-20232

The effect of storage and subculturing on
in vitro fruit body formation and spore
production in *Gloeophyllum sepiarium* and
Oligoporus placentus
S M Choi, J N R Ruddick, P I Morris

IRG/WP 01-20236 (Tabled)

Which fungi should be included in laboratory evaluation of anti-stain chemicals?

H-J Kim, G-H Kim

IRG/WP 01-20237

Evaluation of the European standard ENV 12038 for durability testing of plywood
J Van Acker, M Stevens, E De Clerq

Thursday 24 May 11.00-12.00**WP 2.3****Chemical analysis**

Convener: Mr Ed Suttie

IRG/WP 01-20223

The quantitative determination of N-cyclohexyl-diazoniumdioxide (HDO) containing compounds in treated wood using TD-GC-MS

P Jüngel, J Wittenzellner, E Melcher

IRG/WP 01-20224

The identification of organic compounds in wood using thermal desorption GC-MS – possibilities and limitations

P Jüngel, E Melcher

IRG/WP 01-20229

Microscopic FT-IR depth profiling study of photo-induced degradation in wood

Y Kataoka, M Kiguchi

IRG/WP 01-20221 (poster)

Weather Testing of Timber - Discoloration
T Toyoda, M Azuma, Y Hikita

Thursday 24 May 12.00-12.30**WP 2.4****International standardization**

Convener: Dr Harry Greaves

IRG/WP 01-20235

Specifying preservative-treated resistant timber: Conforming to European Standards

E D Suttie, A F Bravery, T B Dearling

IRG/WP 01-20233

Experiences with penetration of copper-based wood preservatives

J Jermer, F G Evans, I Johansson

IRG/WP 01-20234

Work Programme of CEN/TC 38 (April 2001) and European Publications

R Hüe

Programme Section 3

Wood protecting chemicals

Monday 21 May 14.00-15.30

Section 3 Wood Protecting Chemicals

Main session

Chairman (acting): Gareth Williams
V chairman (acting): Dr Jeff Lloyd

IRG/WP 01-30256

The Use of Zirconium as an Inert Fixative for Borates in Preservation
J D Lloyd, J L Fogel, A Vizel

IRG/WP 01-30263

The possible role of mobile CCA components in preventing spore germination in checked surfaces, in treated wood exposed above ground
S M Choi, J N R Ruddick, P I Morris

IRG/WP 01-30269

Performance of copper naphthenate-treated hardwoods
H M Barnes, T L Amburgey, M H Freeman, J A Brient

IRG/WP 01-30257

Development process of a new anti-sapstain formulation and its present status with the relevant problems
K Nobashi, Y Nomura, K Tsunoda

Tuesday 22 May 16.30-18.30

WP 3.4

Preservative performance

Convener: Dr Lehong Jin

IRG/WP 01-30268

Lab and field test results for wood treated with polymeric alkylphenol polysulfide
J Goswami, A Abramson, R Buff, D Nicholas, T Schultz

IRG/WP 01-30270

Silica treatments to protect timber from marine borers
D K Scown, L J Cookson, K McCarthy

IRG/WP 01-30253 (Tabled)

BG - an easiest preservative paste and its effective diffusibility in timbers for indoors and outdoors uses
A K Lahiry

IRG/WP 01-30254 (Tabled)

Leaching of CCA preservative from treated timber in marine environment
M V Rao, V Kuppusamy, K S Rao, L N Santhakumaran

IRG/WP 01-30255 (Tabled)

Treatment behaviour of fresh and inservice catamaran logs
V Kuppusamy, M V Rao, M Balaji, K S Rao

IRG/WP 01-30262 (Tabled)

Fumigation of New Zealand grown western red cedar for export markets
B Kreber, G Durbin, D Wilson

IRG/WP 01-30264 (Tabled)

Laboratory Evaluation of Phoxim in Plywood
Z Junhong, L Liling, H Hong

IRG/WP 01-30274

New applications of silafluofen to termite control
K Nakayama, Y Minamite, S Koike, Y Katsuda, K Nishimoto

IRG/WP 01-30275

Termite Field Test Results of Preservative Treated and Modified Woods in Kumamoto, Japan
K Suzuki

IRG/WP 01-30271 (poster)

Chemically Modified Tannin and Tannin-Copper Complexes as Preservatives for Wood
H Yamaguchi

IRG/WP 01-30272 (poster)

Preservative Ability of Wood to be Fixed Hydroxyl Apatite Substituted for Antimicrobial Metals
Y Haruhiko, I Sumaru

Wednesday 23 May 11.00-12.30**WP 3.1****Diffusible preservatives**

Convener: Dr Jeff Lloyd

IRG/WP 01-30258

Lifetime of Impels in Poles Maintenance Cycles for Utility Poles
A Peylo, C G Bechgaard

IRG/WP 01-30259

Biological resistances of wood-metaborate composites using the borax solution system
L Lin, T Furuno

IRG/WP 01-30267

Leaching of the New Boron Based Biocide from Coated Wood
M Petric, M Pavlic, F Cadez

IRG/WP 01-30265

Performance of Borate-treated Lumber in a Four-year, Above-ground Termite Field Test in Hawaii
K Grace, R Oshiro, T Byrne, P Morris, K Tsunoda

IRG/WP 01-30266

Laboratory evaluation of borate formulations as wood preservatives to control the subterranean termite *Coptotermes Acinaciformis* (Isoptera: Rhinotermitidae) in Australia
B M Ahmed, J R J French, P Vinden

IRG/WP 01-30273 (poster)

Silicic acid - boric acid complexes as wood preservatives
H Yamaguchi

Programme Section 4

Processes and properties

Tuesday 22 May 11.00-12.30

WP 4.4

Treatment processes

Convener: Dr Koichi Yamamoto

IRG/WP 01-40207

Fixation and leaching of selected Malaysian tropical hardwood after treated with CCA
R Hashim, O Sulaiman, T Siew Ching, K Yamamoto

IRG/WP 01-40194

Preservative treatment of muli bamboo (*Melocanna baccifera*) by pressure process
K Akhter, M Younus-Uzzaman, M H Chowdhury

IRG/WP 01-40202 (Tabled)

Multiple-Phase Pressure (MPP) Process: Pilot plant trials for disposal of kickback using reverse osmosis membrane filtration
H Pearson, G Durbin, M Hedley

IRG/WP 01-40206

Sterilization to limit pretreatment decay: Internal temperature during kiln drying of Douglas-fir poles
J Morrell, P Forsyth, E Sahle Demessie, K Leven

IRG/WP 01-40197

Preservative Treatment of Gollah cane (*Daemonorops jenkinsiana*) by soaking method
M Younus-Uzzaman, K Akhter, M H Chowdhury

IRG/WP 01-40200

Investigation of temperature effect on fixation of Celcure preservative (ACC) in beech (*Fagus orientalis*)
A Karimi, M Ghorbani

IRG/WP 01-40193 (Tabled)

Accelerated fixation of CCA in borax bamboo (*Bambusa balcooa* Roxb.) of Bangladesh
A K Lahiry

Tuesday 22 May 14.00-15.30

Section 4. Processes and Properties

Main session

Chairman: Prof H Michael Barnes
V chairman: Dr Joris Van Acker

IRG/WP 01-40203

Long-term preservation technology for a large-scale timber structure building in Japan
Y Iimura

IRG/WP 01-40214

MDF Manufactured from Blends of Cypress Pine and Radiata Pine shows Enhanced Resistance to Subterranean Termite Attack
P D Evans, S Dimitriades, C Donnelly, R B Cunningham

IRG/WP 01-40199

Applicability of supercritical carbon dioxide to the preservative treatment of wood-based composites
M Muin, A Adachi, K Tsunoda

IRG/WP 01-40198

Application of roller-pressing method to the novel liquid impregnation treatment of green timber
M Inoue, K Adachi, K Tsunoda, Y Imamura, S Kawai

IRG/WP 01-40212

Comparison of Variable, Constant and
Fluctuating Pressure Methods
S M McFarling, P I Morris

Wednesday 23 May 12.00-12.30**WP 4.5****Treatability of timber**

Convener: Dr Andrew Zahora

IRG/WP 01-40196

Pretreatments of Wood Surfaces for
Improving Weatherability of Clear
Finishing
M Kiguchi, Y Kataoka, P D Evans, Y
Kadegar, Y Imamura

IRG/WP 01-40217

Probing red maple pit membrane pore size
at fiber saturation point and oven dry using
polystyrene macromolecule
A Omidvar, M H Schneider, A R P Van
Heiningen

IRG/WP 01-40211 (Tabled)

Trial to determine a suitable schedule for
radial and longitudinal treatment of the
plug samples by comparison of changes in
the fluid retention and the treated area
I Usta

IRG/WP 01-40208 (poster)

Visualization of Inorganic Element
Distribution in Preservative Treated Wood
by SEM-EDXA
H Matsunaga, J Matsumura, K Oda

IRG/WP 01-40213 (poster)

Treatability problems—Relationships
between anatomy, chemical composition
and treatability
J E Winandy, F Green III, D Keefe

Thursday 24 May 11.00-12.00**WP 4.2****Substrate modification & non-biocidal treatments**

Convener: Dr Gilles Labat

IRG/WP 01-40205

Quality control of microwave treatment of
timber after dry rot attack
J Bech-Andersen, J Andreasson, S A
Elborne

IRG/WP 01-40195 (Poster)

Effect of boron compounds-furfuryl alcohol
treatment of wood on dimensional stability,
termite resistance and boron leachability
S K Ozaki, M K Yalinkilic, Y Imamura, M F
Souza

IRG/WP 01-40204

The Effects of Preservative Treatment and
Exposure to Wood Degrading Fungi on
Fiber Reinforced Polymer (FRP), Materials
Used for Structural Wood Reinforcement
C Tascioglu, B Goodell

IRG/WP 01-40216

Heat treatment of bamboo
H Leithoff, R-D Peek

Thursday 24 May 12.00-12.30**WP 4.3****Wood composites**

Convener: Prof D Pascal Kamdem

IRG/WP 01-40209

Tool wear for vapor boron-treated
composites
W A Jones, H M Barnes, H A Stewart, R J
Murphy

IRG/WP 01-40210

Ancillary properties of vapor boron-treated
composites
W A Jones, H M Barnes, R J Murphy

IRG/WP 01-40201

Physical and mechanical properties of wood polymer composites prepared from alder wood (*Alnus glutinosa* (L.) Gaertn. Subsp. *barbata* (C.A.Mey.) Yalt)
A Temiz, U C Yildiz, E D Gezer

IRG/WP 01-40215 (poster)

Wood-Based Composites Exposed to Fungal Degradation: Laboratory Results
V W Yang, B L Illman, L A Ferge, R J Ross

Programme Section 5 Environmental aspects

Monday 21 May 16.30-17.30

Joint WP 5.1/5.3 Waste management/Risk assessment

Convener: Dr Gérard Deroubaix

IRG/WP 01-50170

Effect of remediation on the release of copper, chromium, and arsenic from particleboard made from CCA treated wood

S N Kartal, C A Clausen

IRG/WP 01-50172

Equilibrium Distribution of Toxic Elements in the Burning of Impregnated Wood

K Sandelin, R Backman

IRG/WP 01-50177

Diagnostics methods and routes proposals to define selective sorting of demolition wood wastes

G Labat, E Bucket, C Fréret, G Deroubaix

IRG/WP 01-50173

Ecotoxicological Effects of Exposed CCA Preservative Treated Wood in Environments

D-H Lee, D-W Son

IRG/WP 01-50179

Analysis of contaminants in waste wood

J Jermer, A Ekvall, C Tullin

Monday 21 May 17.30-18.30

WP 5.2

Emissions of wood preservatives to the environment

Convener: Dr Rolf-Dieter Peek

IRG/WP 01-50167 (Tabled)

An environmental aspect relating to leachability of CCA from hardwood and softwood poles in Bangladesh

A K Lahiry

IRG/WP 01-50171

Leaching of preservative components from pine decking treated with CCA and copper azole, and interactions of leachates with soils

M J Kennedy, P A Collins

IRG/WP 01-50176

A Laboratory Study on Effect of Coating Materials on Leaching of Copper from CCA Treated wood

A Veenin, T Veenin

IRG/WP 01-50178

Effect of Climate, Species, Preservative Concentration and Water Repellent on Leaching from CCA-Treated Lumber Exposed Above Ground

J L Taylor, P A Cooper

Wednesday 23 May 09.00-10.30

Section 5 Environmental aspects

Main session

Chairman (acting): Dr Gérard Deroubaix
V chairman (acting): Dr Rolf-Dieter Peek

IRG/WP 01-50168

Kinetics of the dissociation of Cr, Cu, and As in fixed CCA-treated wood
L Waldron, P Cooper

IRG/WP 01-50169

A diffusion and reaction model for the leaching of Cr-VI from unfixed CCA-treated wood
L Waldron, P Cooper

IRG/WP 01-50174

Isolation of Soil Borne Bacteria and Fungi from Treated Timber
I Stephan, A Stegemann, G Heidrich

IRG/WP 01-50175

Restriction for use and waste management for pressure treated wood. The current situation in Norway.
F G Evans