

APPENDIX B

Modern Wood IAWA Data Sheet.
Reproduced from InsideWood (2004
onwards; Wheeler 2011). Used with the
kind permission of Elisabeth A. Wheeler.

Modern Wood IAWA DataSheet

Name:		Sample#:			
IAWA #	IAWA Item Description	Present	Absent	Presence Varies	Presence Unknown
	Growth Rings				
1	Growth ring boundaries distinct				
2	Growth ring boundaries indistinct or absent				
	Vessels				
	Porosity				
3	Wood ring-porous				
4	Wood semi-ring-porous				
5	Wood diffuse-porous				
	Vessel arrangement				
6	Vessels in tangential bands				
7	Vessels in diagonal and/or radial pattern				
8	Vessels in dendritic pattern				
	Vessel groupings				
9	Vessels exclusively solitary (90% or more)				
10	Vessels in radial multiples of 4 or more common				
11	Vessel clusters common				
	Solitary vessel outline				
12	Solitary vessel outline angular				
	Perforation plates				
13	Simple perforation plates				
14	Scalariform perforation plates				

(cont.)

Name:		Sample#:			
IAWA #	IAWA Item Description	Present	Absent	Presence Varies	Presence Unknown
15	Scalariform perforation plates with ≤ 10 bars				
16	Scalariform perforation plates with 10–20 bars				
17	Scalariform perforation plates with 20–40 bars				
18	Scalariform perforation plates with ≥ 40 bars				
19	Reticulate, foraminate, and/or other types of multiple perforation plates				
	Intervessel pits: arrangement and size				
20	Intervessel pits scalariform				
21	Intervessel pits opposite				
22	Intervessel pits alternate				
23	Shape of alternate pits polygonal				
24	Minute – $\leq 4 \mu\text{m}$				
25	Small – 4–7 μm				
26	Medium – 7–10 μm				
27	Large – $\geq 10 \mu\text{m}$				
	Vestured pits				
29	Vestured pits				
	Vessel – ray pitting				
30	Vessel-ray pits with distinct borders; similar to intervessel pits in size and shape throughout the ray cell				
31	Vessel-ray pits with much reduced borders to apparently simple: pits rounded or angular				
32	Vessel-ray pits with much reduced borders to apparently simple: pits horizontal (scalariform, gash-like) to vertical (palisade)				
33	Vessel-ray pits of two distinct sizes or types in the same ray cell				
34	Vessel-ray pits unilaterally compound and coarse (over 10 μm)				
35	Vessel-ray pits restricted to marginal rows				
	Helical thickenings				
36	Helical thickenings in vessel elements present				
37	Helical thickenings throughout body of vessel element				

APPENDIX B

(cont.)

Name:		Sample#:			
IAWA #	IAWA Item Description	Present	Absent	Presence Varies	Presence Unknown
38	Helical thickenings only in vessel element tails				
39	Helical thickenings only in narrower vessel elements				
	Tangential diameter of vessel lumina				
	Mean tangential diameter of vessel lumina				
40	<= 50 µm				
41	50–100 µm				
42	100–200 µm				
43	>= 200 µm				
45	Vessels of two distinct diameter classes, wood not ring-porous				
	Vessels per square millimetre				
46	<= 5 vessels per square millimetre				
47	5–20 vessels per square millimetre				
48	20–40 vessels per square millimetre				
49	40–100 vessels per square millimetre				
50	>= 100 vessels per square millimetre				
	Mean vessel element length				
52	<= 350 µm				
53	350–800 µm				
54	>= 800 µm				
	Tyloses and deposits in vessels				
56	Tyloses common				
57	Tyloses sclerotic				
58	Gums and other deposits in heartwood vessels				
	Wood vesselless				
59	Wood vesselless				
	Tracheids and fibres				
60	Vascular/vasicentric tracheids present				
	Ground tissue fibres				
61	Fibres with simple to minutely bordered pits				
62	Fibres with distinctly bordered pits				
63	Fibre pits common in both radial and tangential walls				
64	Helical thickenings in ground tissue fibres				
	Septate fibres and parenchyma-like fibre bands				
65	Septate fibres present				
66	Non-septate fibres present				

(cont.)

Name:		Sample#:			
IAWA #	IAWA Item Description	Present	Absent	Presence Varies	Presence Unknown
67	Parenchyma-like fibre bands alternating with ordinary fibres				
	Fibre wall thickness				
68	Fibres very thin-walled				
69	Fibres thin- to thick-walled				
70	Fibres very thick-walled				
	Mean fibre lengths				
71	$\leq 900 \mu\text{m}$				
72	$900\text{--}1600 \mu\text{m}$				
73	$\geq 1600 \mu\text{m}$				
	Axial parenchyma				
75	Axial parenchyma absent or extremely rare				
	Apotracheal axial parenchyma				
76	Axial parenchyma diffuse				
77	Axial parenchyma diffuse-in-aggregates				
	Paratracheal axial parenchyma				
78	Axial parenchyma scanty paratracheal				
79	Axial parenchyma vasicentric				
80	Axial parenchyma aliform				
81	Axial parenchyma lozenge-aliform				
82	Axial parenchyma winged-aliform				
83	Axial parenchyma confluent				
84	Axial parenchyma unilateral paratracheal				
	Banded parenchyma				
85	Axial parenchyma bands more than three cells wide				
86	Axial parenchyma in narrow bands or lines up to three cells wide				
87	Axial parenchyma reticulate				
88	Axial parenchyma scalariform				
89	Axial parenchyma in marginal or in seemingly marginal bands				
	Axial parenchyma cell type/strand length				
90	Fusiform parenchyma cells				
91	Two cells per parenchyma strand				
92	Four (3–4) cells per parenchyma strand				
93	Eight (5–8) cells per parenchyma strand				
94	Over eight cells per parenchyma strand				
95	Unlignified parenchyma				

APPENDIX B

(cont.)

Name:		Sample#:			
IAWA #	IAWA Item Description	Present	Absent	Presence Varies	Presence Unknown
	Rays				
	Ray width				
96	Rays exclusively uniseriate				
97	Ray width 1–3 cells				
98	Larger rays commonly 4–10 seriate				
99	Larger rays commonly > 10-seriate				
100	Rays with multiseriate portion(s) as wide as uniseriate portions				
	Aggregate rays				
101	Aggregate rays				
	Ray height				
102	Ray height > 1 mm				
	Rays of two distinct sizes				
103	Rays of two distinct sizes				
	Rays: cellular composition				
104	All ray cells procumbent				
105	All ray cells upright and/or square				
106	Body ray cells procumbent with one row of upright and/or square marginal cells				
107	Body ray cells procumbent with mostly 2–4 rows of upright and/or square marginal cells				
108	Body ray cells procumbent with over 4 rows of upright and/or square marginal cells				
109	Rays with procumbent, square, and upright cells mixed throughout the ray				
	Sheath cells				
110	Sheath cells				
	Tile cells				
111	Tile cells				
	Perforated ray cells				
112	Perforated ray cells				
	Disjunctive ray parenchyma cell walls				
113	Disjunctive ray parenchyma cell walls				
	Rays per millimetre				
114	<= 4/mm				
115	4–12/mm				
116	>= 12/mm				
	Wood rayless				
117	Wood rayless				

(cont.)

Name:		Sample#:			
IAWA #	IAWA Item Description	Present	Absent	Presence Varies	Presence Unknown
	Storied structure				
118	All rays storied				
119	Low rays storied, high rays non-storied				
120	Axial parenchyma and/or vessel elements storied				
121	Fibres storied				
122	Rays and/or axial elements irregularly storied				
	Secretory elements and cambial variants				
	Oil and mucilage cells				
124	Oil and/or mucilage cells associated with ray parenchyma				
125	Oil and/or mucilage cells associated with axial parenchyma				
126	Oil and/or mucilage cells present among fibres				
	Intercellular canals				
127	Axial canals in long tangential lines				
128	Axial canals in short tangential lines				
129	Axial canals diffuse				
130	Radial canals				
131	Intercellular canals of traumatic origin				
	Tubes/tubules				
132	Laticifers or tanniniferous tubes				
	Cambial variants				
133	Included phloem, concentric				
134	Included phloem, diffuse				
135	Other cambial variants				
	Mineral inclusions				
	Prismatic crystals				
136	Prismatic crystals present				
137	Prismatic crystals in upright and/or square ray cells				
138	Prismatic crystals in procumbent ray cells				
139	Prismatic crystals in radial alignment in procumbent ray cells				
140	Prismatic crystals in chambered upright and/or square ray cells				
141	Prismatic crystals in non-chambered axial parenchyma cells				

APPENDIX B

(cont.)

Name:		Sample#:			
IAWA #	IAWA Item Description	Present	Absent	Presence Varies	Presence Unknown
142	Prismatic crystals in chambered axial parenchyma cells				
143	Prismatic crystals in fibres				
	Druses				
144	Druses present				
145	Druses in ray parenchyma cells				
146	Druses in axial parenchyma cells				
147	Druses in fibres				
148	Druses in chambered cells				
	Other crystal types				
149	Raphides				
150	Acicular crystals				
151	Styloids and/or elongate crystals				
152	Crystals of other shapes (mostly small)				
153	Crystal sand				
	Other diagnostic crystal features				
154	More than one crystal of about the same size per cell or chamber				
155	Two distinct sizes of crystals per cell or chamber				
156	Crystals in enlarged cells				
157	Crystals in tyloses				
158	Cystoliths				
	Silica				
159	Silica bodies present				
160	Silica bodies in ray cells				
161	Silica bodies in axial parenchyma cells				
162	Silica bodies in fibres				
163	Vitreous silica				
	Appendix – Non-anatomical information				
	Geographical distribution				
164	Europe and temperate Asia (Brazier and Franklin region 75)				
165	Europe, excluding Mediterranean				
166	Mediterranean including Northern Africa and Middle East				
167	Temperate Asia (China), Japan, Russia				
168	Central South Asia (Brazier and Franklin region 75)				

(cont.)

IAWA #	IAWA Item Description	Sample#:			
		Present	Absent	Presence Varies	Presence Unknown
169	India, Pakistan, Sri Lanka				
170	Burma				
171	Southeast Asia and Pacific (Brazier and Franklin region 76)				
172	Thailand, Laos, Vietnam, Cambodia (Indochina)				
173	Indomalesia: Indonesia, Philippines, Malaysia, Brunei, Papua, New Guinea, and Solomon Islands				
174	Pacific Islands (including New Caledonia, Samoa, Hawaii, and Fiji)				
175	Australia and New Zealand (Brazier and Franklin region 77)				
176	Australia				
177	New Zealand				
178	Tropical mainland Africa and adjacent islands (Brazier and Franklin region 78)				
179	Tropical Africa				
180	Madagascar & Mauritius, Réunion & Comores				
181	Southern Africa (south of the Tropic of Capricorn) (Brazier and Franklin region 79)				
182	North America, north of Mexico (Brazier and Franklin region 80)				
183	Neotropics and temperate Brazil (Brazier and Franklin region 81)				
184	Mexico and Central America				
185	Caribbean				
186	Tropical South America				
187	Southern Brazil				
188	Temperate South America including Argentina, Chile, Uruguay, and S. Paraguay (Brazier and Franklin region 82)				
	Habit				
189	Tree				
190	Shrub				
191	Vine / liana				
	Wood of commercial importance				

APPENDIX B

(cont.)

Name:		Sample#:			
IAWA #	IAWA Item Description	Present	Absent	Presence Varies	Presence Unknown
192	Wood of commercial importance				
	Specific gravity				
193	Basic specific gravity low, ≤ 0.40				
194	Basic specific gravity medium, $0.40-0.75$				
195	Basic specific gravity high, ≥ 0.75				
	Heartwood colour				
196	Heartwood colour darker than sapwood colour				
197	Heartwood basically brown or shades of brown				
198	Heartwood basically red or shades of red				
199	Heartwood basically yellow or shades of yellow				
200	Heartwood basically white to grey				
201	Heartwood with streaks				
202	Heartwood not as above				
	Odour				
203	Distinct odour				
	Heartwood fluorescent				
204	Heartwood fluorescent				
	Water & ethanol extracts: fluorescence & colour				
205	Water extract fluorescent				
206	Water extract basically colourless to brown or shades of brown				
207	Water extract basically red or shades of red				
208	Water extract basically yellow or shades of yellow				
209	Water extract not as above				
210	Ethanol extract fluorescent				
211	Ethanol extract basically colourless to brown or shades of brown				
212	Ethanol extract basically red or shades of red				
213	Ethanol extract basically yellow or shades of yellow				
214	Ethanol extract not as above				
	Froth test				
215	Froth test positive				
	Chrome Azurol-S test				
216	Chrome Azurol-S test positive				
	Burning splinter test				
217	Splinter burns to charcoal				

(cont.)

Name:		Sample#:			
IAWA #	IAWA Item Description	Present	Absent	Presence Varies	Presence Unknown
218	Splinter burns to a full ash; Colour of ash bright white				
219	Splinter burns to a full ash; Colour of ash yellow-brown				
220	Splinter burns to a full ash; Colour of ash other than above				
221	Splinter burns to a partial ash				