

European reaction to fire classification of wood products

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Reaction to fire classes for building products (excl. floorings)

Main class	Smoke class	Burning droplets class	Requirements according to			FIGRA W/s	Typical products
			Non comb	SBI	Small flame		
A1	–	–	x	–	–	–	Stone, concrete
A2	s1 - s3	d0 - d2	x	x	–	≤ 120	Gypsum boards, mineral wool
B	s1 - s3	d0 - d2	–	x	x	≤ 120	Gypsum boards, fire retardant wood
C	s1 - s3	d0 - d2	–	x	x	≤ 250	Coverings on gypsum boards
D	s1 - s3	d0 - d2	–	x	x	≤ 750	Wood, wood-based panels
E	–	- or d2	–	–	x	–	Some synthetic polymers
F	–	–	–	–	–	–	No performance determined

Normal procedure:

Each manufacturer has to test own products to get

- European class
- the CE-mark

Special EC procedure:

CWFT –

Classification Without Further Testing

for

'products with known and stable fire performance'

CWFT procedure:

- DG Enterprise application
- Fire Regulators' Group, FRG / EGF through its CWFT Working Group
- Standing Committee on Construction, SCC
- Commission Decision
- Publication in Official Journal
- Included in Harmonised product standards

Five wood products:

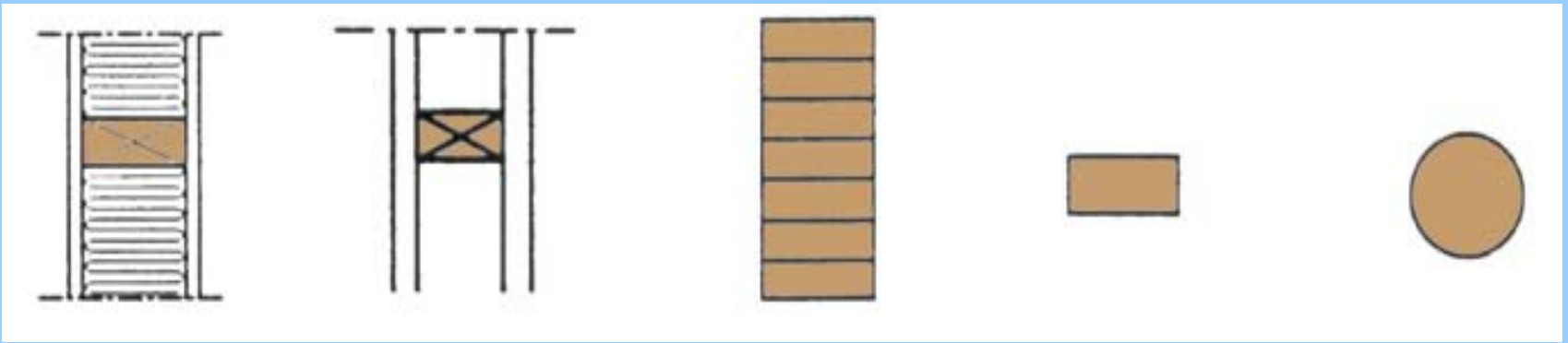
- Wood-based panels
- Structural timber
- Glulam
- Wood panelling and cladding
- Wood flooring

Wood-based panels



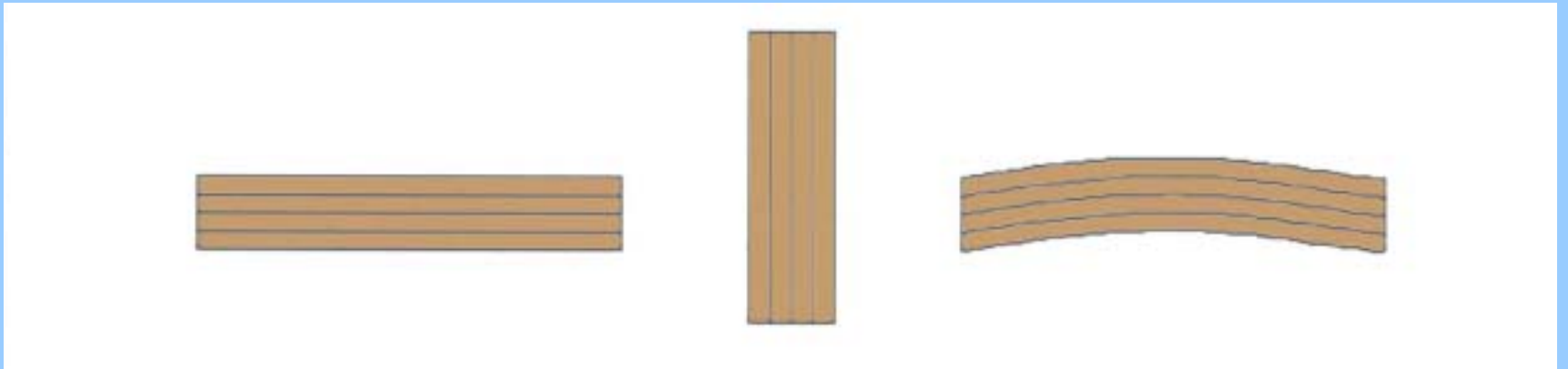
Plywood in the SBI test

Structural timber



Examples of end uses

Glulam (beams and columns)

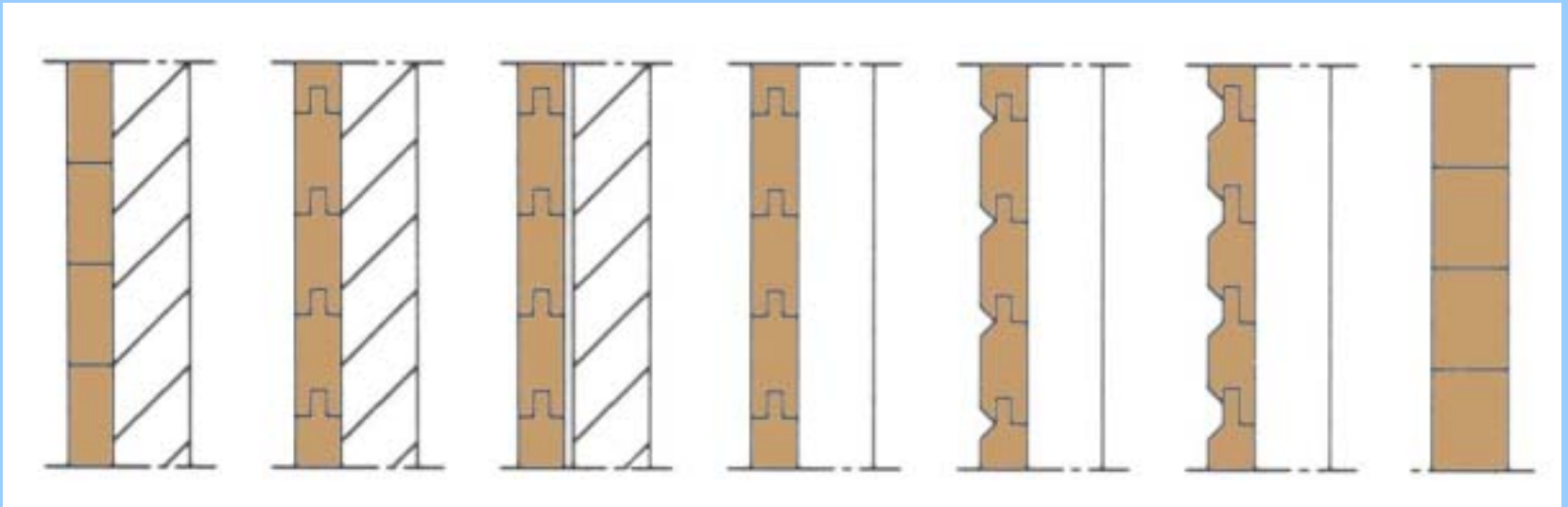


Examples of end uses

Glulam



Wood panelling



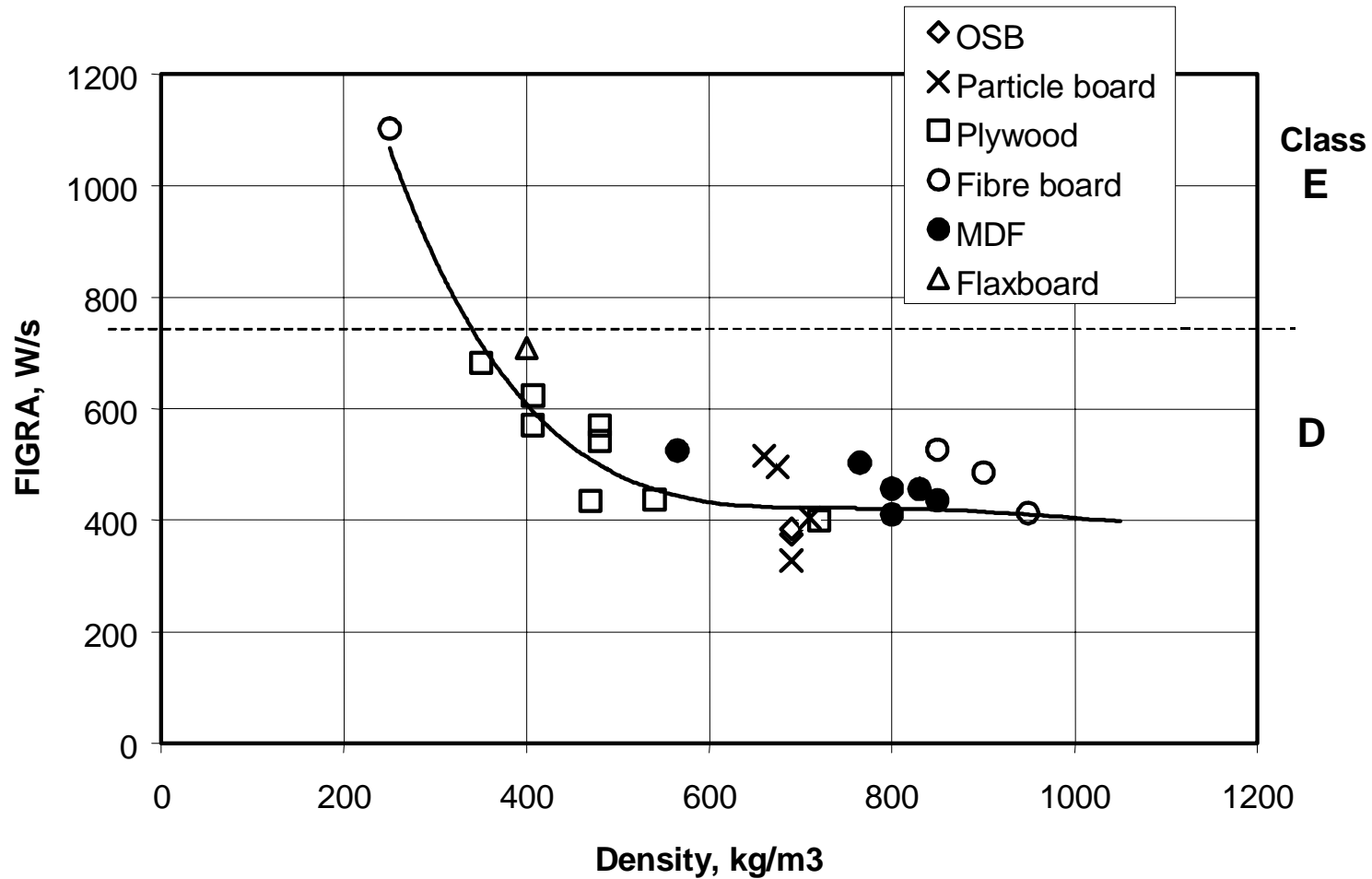
Examples of end uses
Interior and exterior panelling

Wood panelling

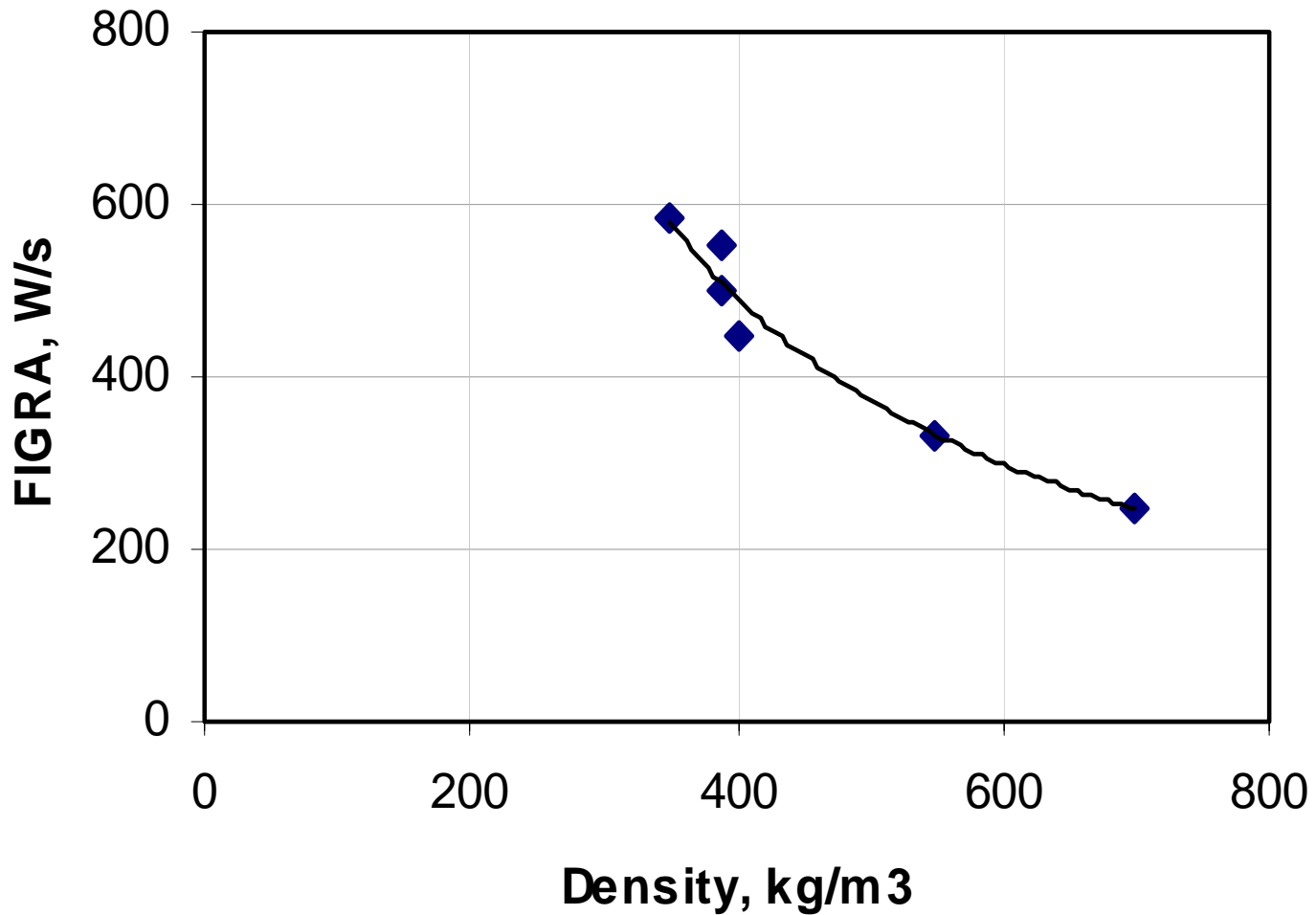


Test Results

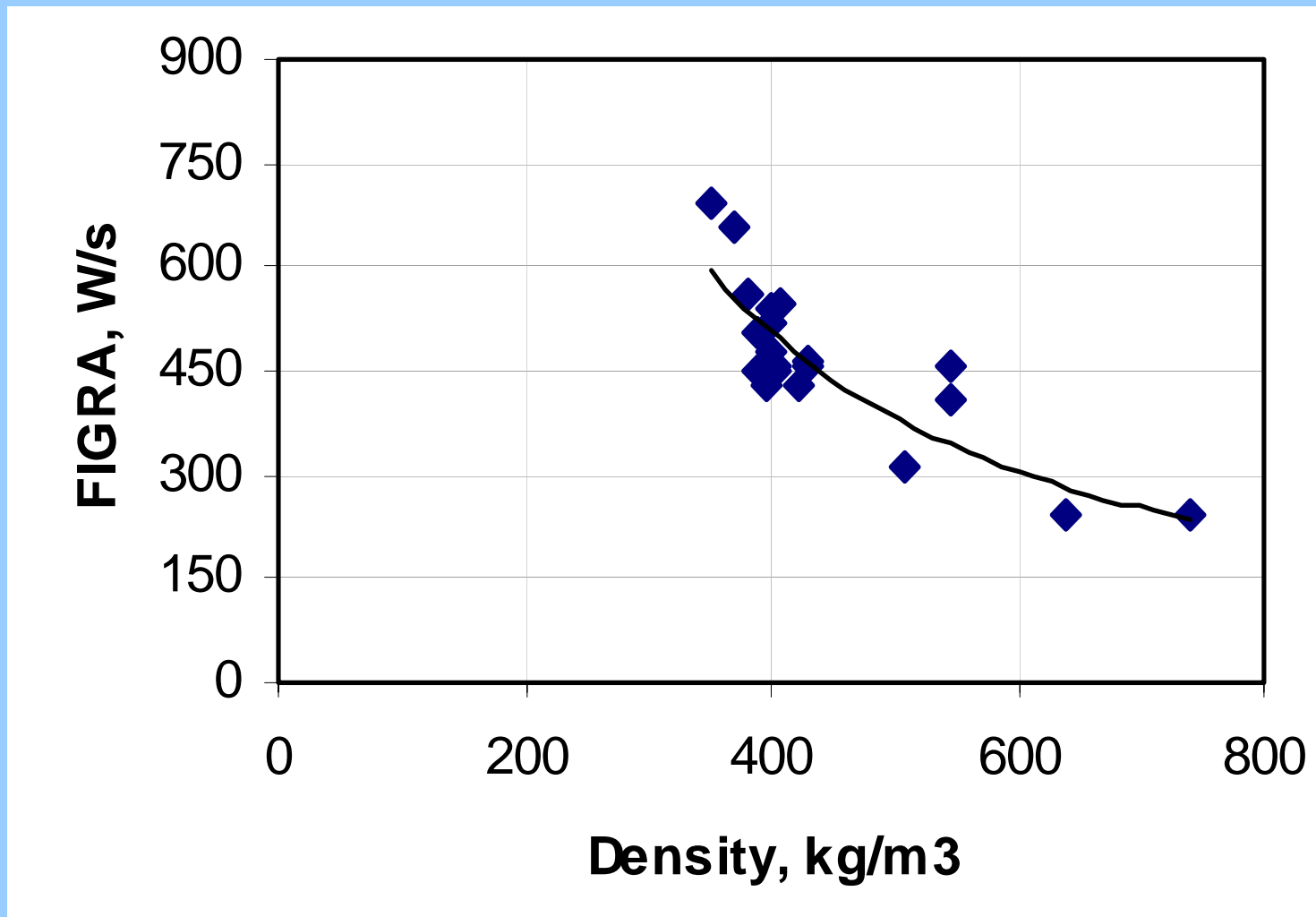
Wood-based panels



Structural timber



Wood panelling and cladding



Classifications

Final table in Commission Decision
(Official Journal January 2003)
Classes of Reaction to Fire Performance for
Wood-based panels

Wood-based panels	Min density kg/m³	Min thickness mm	Class	Class Floorings
Particleboards	600	9	D-s2,d0	D_{FL}-s1
Fibreboards, Hard	900	6	D-s2,d0	D_{FL}-s1
Fibreboards, Medium	600	9	D-s2,d0	D_{FL}-s1
	400	9	E	E_{FL}
Fibreboards, Soft	250	9	E	E_{FL}
Fibreboards, MDF	600	9	D-s2,d0	D_{FL}-s1
Cement-bonded particleboard	1000	10	B-s1,d0	B_{FL}-s1
OSB board	600	9	D-s2,d2	D_{FL}-s1
Plywood	400	9	D-s2,d0	D_{FL}-s1
Solid wood panels	400	12	D-s2,d0	D_{FL}-s1

Footnotes with limitations for end-use conditions

Extension underway during 2005- 06

Final tables in Commission Decision Classes of Reaction to Fire Performance for

Structural timber (Official Journal August 2003) and

Glulam (Official Journal August 2005)

Material	Product detail	Min density kg/m³	Min thickness mm	Class
Structural timber 1)	Visual and machine graded structural timber with rectangular cross-sections shaped by sawing, planing or other methods or with round cross-sections.	350	22	D-s2, d0
Glulam 2)	Glued laminated timber products in accordance with EN 14080.	380	40	D-s2, d0

- 1) Applies to all wood species in product standard
- 2) Applies to all wood species and glues in product standard

**Proposed table for inclusion in Commission Decision
(FRG /EGF July 2005)**

**Classes of Reaction to Fire Performance for
Wood panelling**

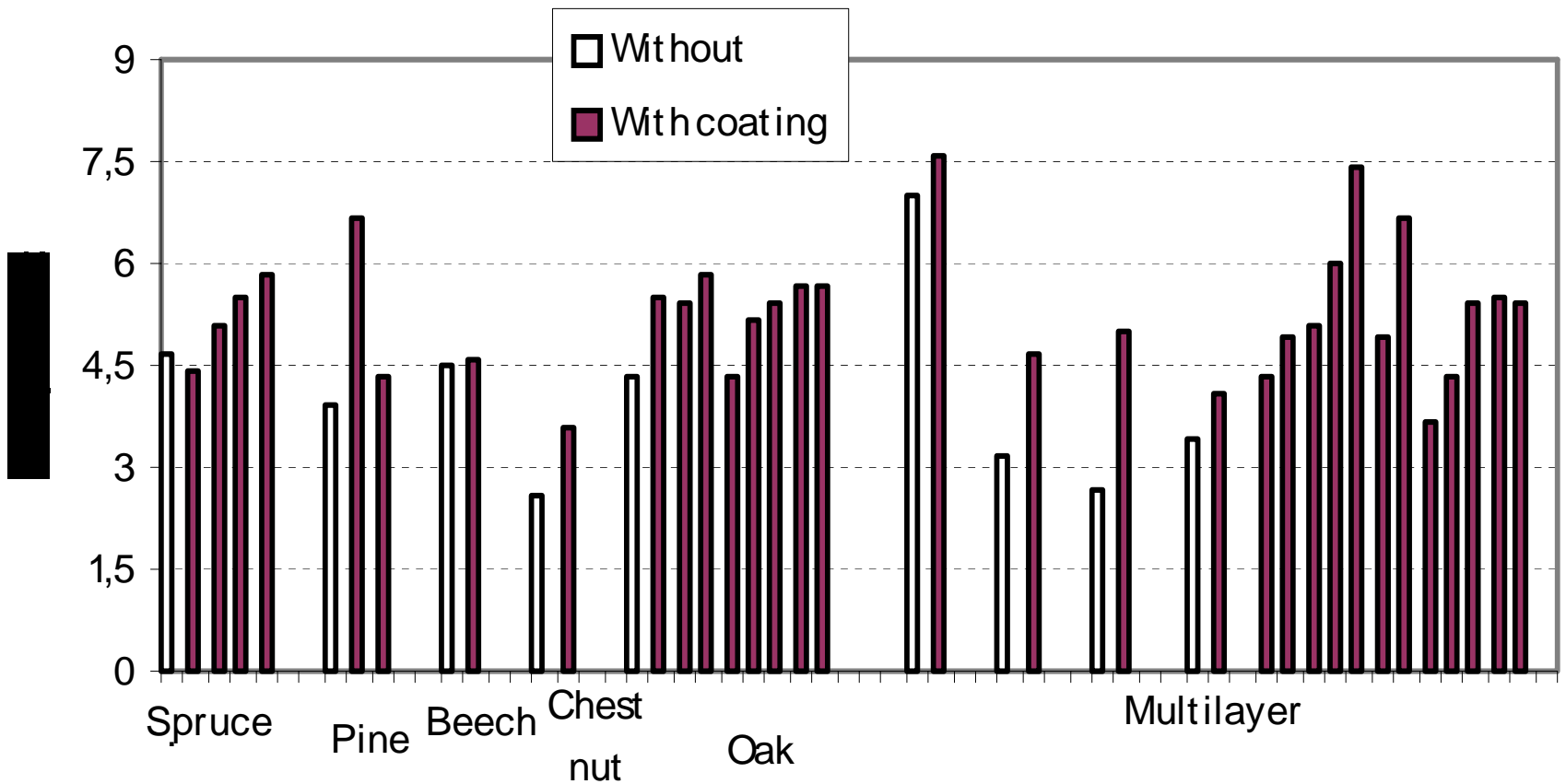
Product	Product detail	Min density kg/m³	Min thicknesses, total / minimum mm	End use condition	Class
Panelling and cladding	Wood pieces with or without tongue and/or groove and with or without profiled surface	390	9 / 6	Without air gap or with closed air gap behind	D-s2, d2
-“-	-“-	390	12 / 8	-“-	D-s2, d0
-“-	-“-	390	9 / 6	Without air gap or with ≤ 20 mm open air gap behind	D-s2, d0
-“-	-“-	390	18 / 12	Without air gap or with open air gap behind	D-s2, d0
Wood ribbon elements	Wood pieces with rectangular cross section	390	10	Surrounded by open air on all sides	D-s2, d0

Footnotes with limitations for end-use conditions

Wood floorings



Wood floorings with and without surface coating



**Proposed table for inclusion in Commission Decision
(FRG /EGF July 2005)
Classes of Reaction to Fire Performance for
Wood flooring**

Product	Product detail	Min density kg/m³	Min thickness mm	End use condition	Class
Wood flooring and parquet	Solid flooring of oak or beech with surface coating	Beech: 680 Oak: 650	8	Glued to substrate	C_{fl}-s1
Wood flooring and parquet	Solid flooring of oak, beech or spruce with surface coating	Beech: 680 Oak: 650 Spruce: 450	20	With or without air gap underneath	C_{fl}-s1
Wood parquet	Multilayer parquet with a top layer of oak of at least 5 mm thickness and with surface coating	650 (top layer)	10	Glued to substrate	C_{fl}-s1
Wood parquet	-"-	650 (top layer)	14	With or without air gap underneath	C_{fl}-s1

Footnotes with limitations for end-use conditions

All other wood floorings with surface coating are in class D_{fl}-s1

Conclusions:

- Main influencing parameters are thickness, density and substrate (including air gap)
- Limits for these parameters determined
- Classes **D-s2**, **d0** and for floorings **Dfl-s1** or **Cfl-s1**
- Commission Decisions ready or proposed
- Classification included in Harmonised product standards
- Used for CE-marking
- Products not covered by CWFT decisions may be tested and obtain higher classifications