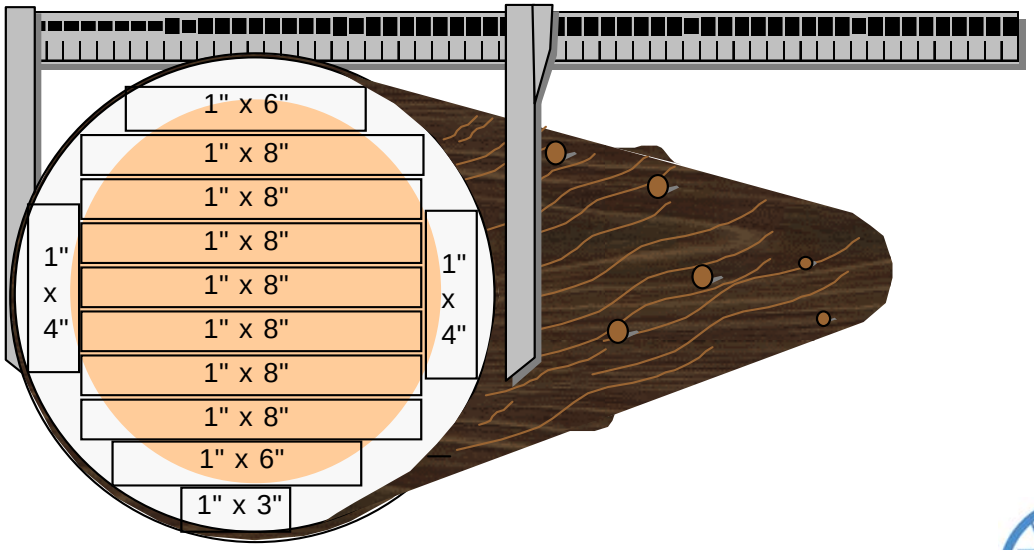




UNECE/FAO Task Force on Forest Product Conversion Factors





Matt Fonseca, UNECE/FAO Timber Section

Work accomplished and current status

- May 2008, Task Force formed
- June 2008, Task Force met in Geneva
  - Developed list of desired conversion factors
  - Units and definitions
  - Handling countries with no data (regional grouping)
- November 2008, questionnaire submitted to Task Force members and country correspondents
- March 2009, questionnaires received from six countries and one trade association (see background document)
- We hope for more!

Received	Committed
Germany	Austria
Ireland	Canada
Netherlands	Finland
Slovakia	France
UK	Spain
US	Sweden
CEPI	

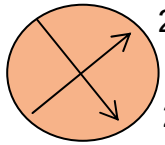
Challenges identified thus far…

- Many countries are having difficulty in obtaining national conversion factors
- Not necessarily seen as a priority for many countries
- Conversion efficiency is often viewed as proprietary by the private sector
- Still some issues regarding units and definitions, e.g., one country's m^3 is not the same as another country's m^3

Issues with units and definitions

- Roundwood
  - Some differences in volume determination
  - Mainly caused by:
    - Rounding methods (unbiased vs. truncated) for lengths and whether trim allowance is given

      10.3 m round down to 10 m
    - Rounding methods for diameters (unbiased vs. truncated)

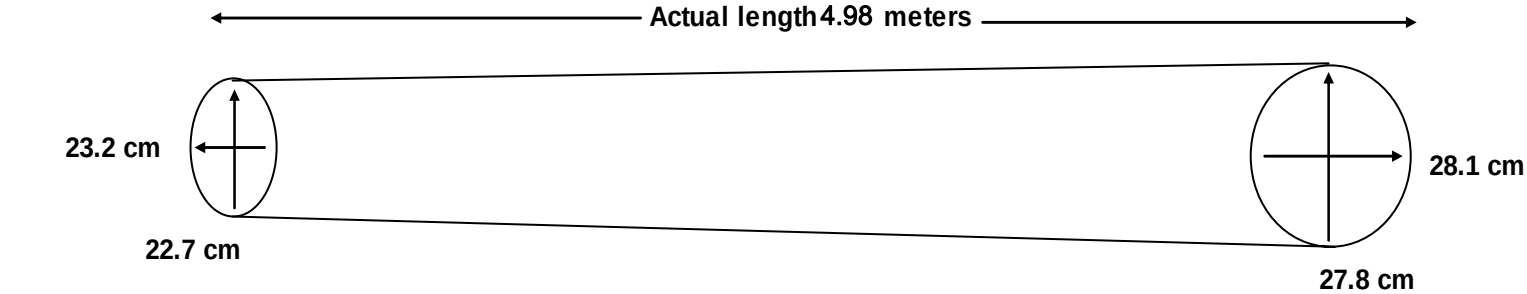
      25.9 cm round down to 25

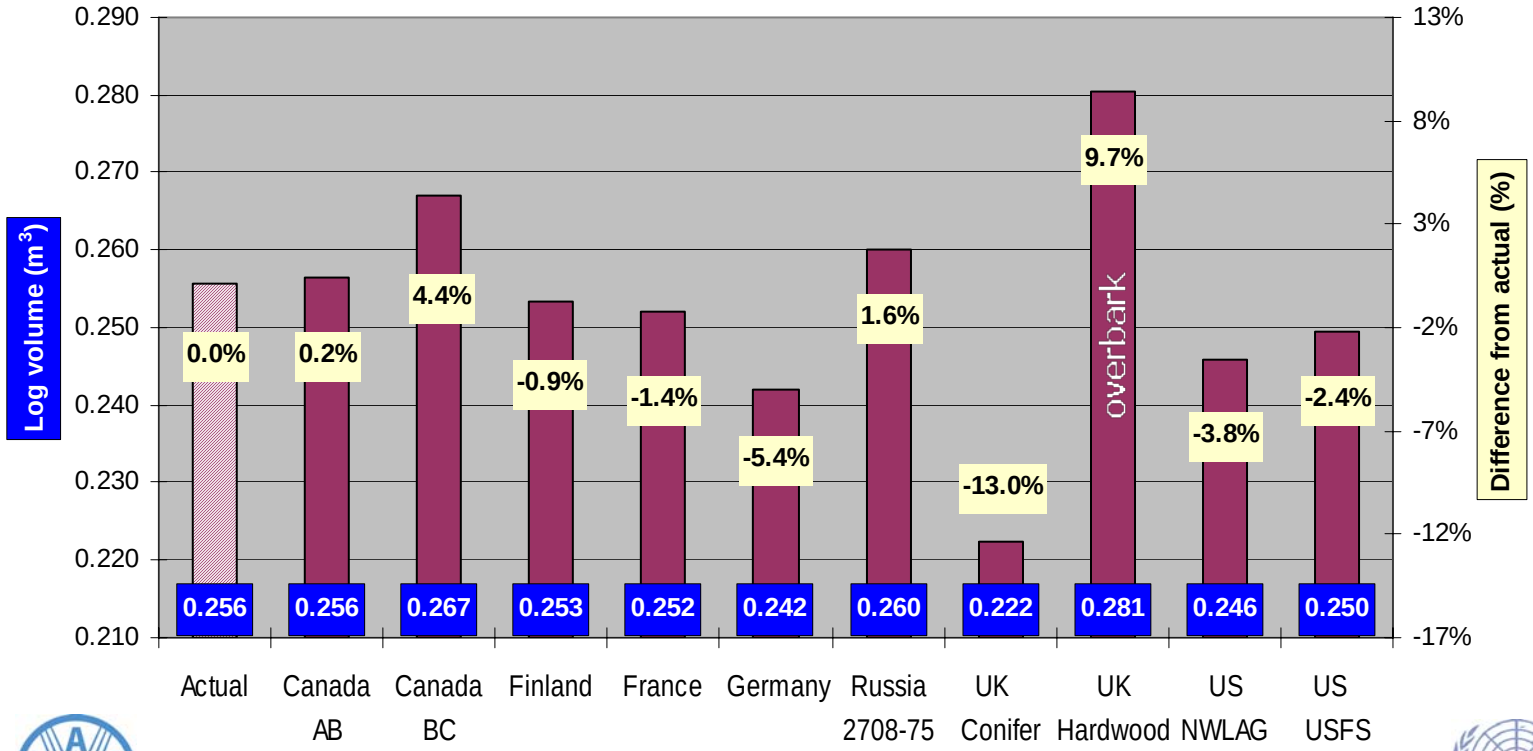
      24.6 cm round down to 24

      (25 + 24) ÷ 2 = 24.5

      Diameter = **24 cm**
    - Volume reductions for defects vs. using grade
    - Differences in formula used (not serious)

Roundwood example

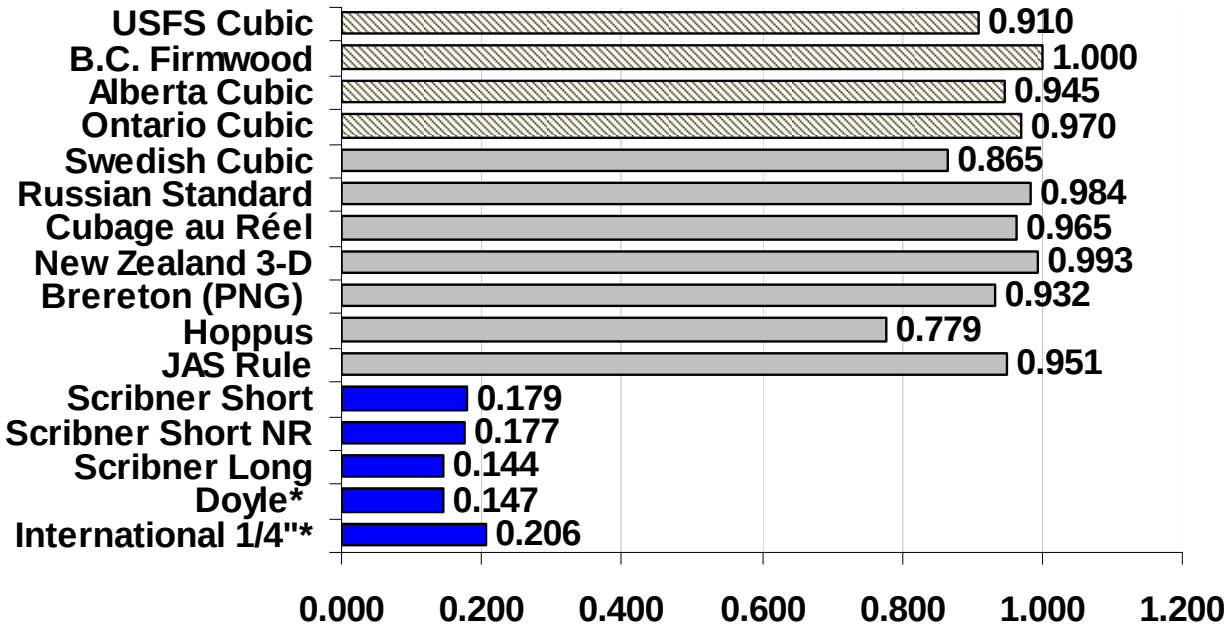




Modelled population index

Scale index for sawlogs 12-90 cm s.e.d.

(B.C. Firmwood =1.0)

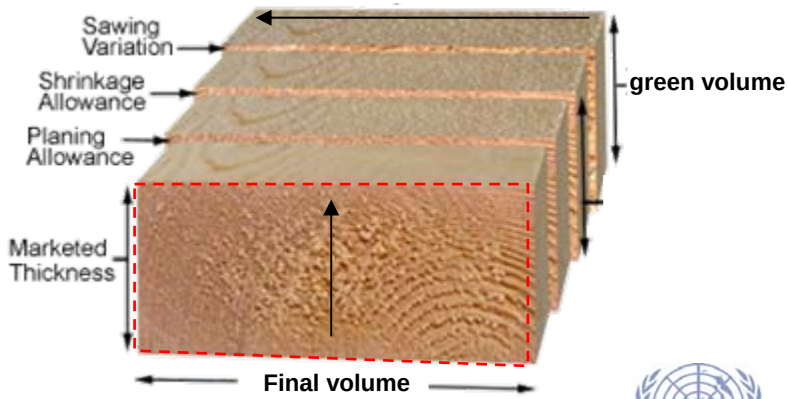


Note: board foot log rules reflected in mbf per m^3 BC Firmwood. Average small end diameter= 30.5 cm.

Source: Fonseca, M.A. 2005.

Sawnwood units

- Suspected differences in volume determination
- Mainly caused by:
  - Measuring volume based on nominal sizes
  - Measuring volume in different states of manufacture
  - Method of measurement



Sawnwood: nominal vs. actual volume

Product	Wolseley Code	Nominal Size (mm)	Finished Size (mm)	
Redwood PSE	G05955	12 x 38	8 x 33	58%
Redwood PSE	G05957	12 x 50	8 X 44	59%
Redwood PSE	G06006	16 x 38	12 x 33	65%
Redwood PSE	G06013	16 x 50	12 x 44	66%
Redwood PSE	G06031	16 X 100	12 X 94	71%
Redwood PSE	G06050	16 X 150	12 X 144	72%
Redwood PSE	G06074	19 x 38	14.5 X 33	66%
Redwood PSE	G06082	19 x 50	14.5 X 44	67%
Redwood PSE	G06101	19 x 75	14.5 X 69	70%
Redwood PSE	G06116	19 x 100	14.5 x 94	72%
Redwood PSE	G06157	19 x 150	14.5 x 144	73%
Whitewood PSE	G06188	22 x 50	18.5 X 44	74%
Whitewood PSE	G06191	22 x 75	18.5 X 69	77%
Whitewood PSE	G06194	22 x 100	18.5 x 94	79%
Whitewood PSE	G06200	22 x 125	18.5 x 119	80%
Whitewood PSE	G06203	22 x 150	18.5 x 144	81%
Whitewood PSE	G06206	22 x 175	18.5 x 169	81%
Whitewood PSE	G06207	22 x 200	18.5 x 194	82%
Whitewood PSE	G06209	22 X 225	18.5 X 219	82%

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- Apparently volume is often reported bases on nominal not actual volume
- In this example actual volume is 58-82% of reported volume
- We reduce North American volumes to 72% of reported to actualize their volume
- Do we have the same issue in Europe? If so to what degree?

Sawnwood: state of manufacture

Is the volume of this...

The same as this?

- Logs made into flitches will produce 20-50% more volume vs. dried, edged and trimmed sawnwood
- Flitches or sawnwood measured green will have roughly 4% (sw) to 8% (hw) more volume vs. wood dried to stable moisture contents
- Are we grouping “apples and oranges”? If so, this could have consequences on wood balances, conversion factors and regional aggregation

Sawnwood: flitch - method of measure

"The first pieces off the boule are measured on the narrow face until the centre piece is reached.

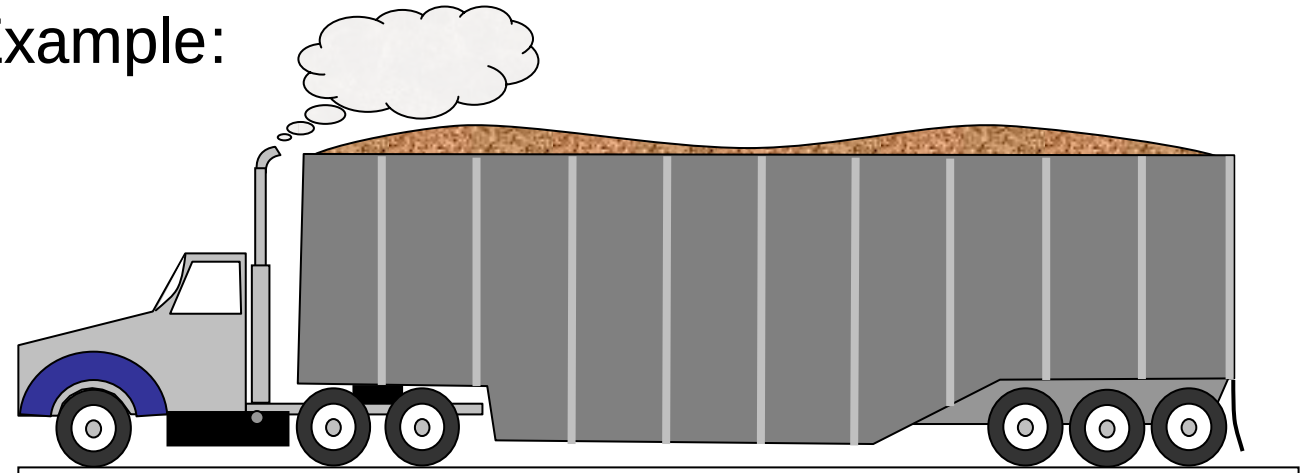
In the UK, the remaining pieces are turned over in order to continue measuring the narrow face, whereas in continental Europe the piece isn't turned and so the wider face of the remaining pieces are measured.

Customers should check which method has been used whenever price comparisons are being made".

Source: **http://www.cte.napier.ac.uk/publications/PDF/docs/6-measurement.pdf**

Wood oven dry density

- Commonly measured in ODMT
- Can be converted to RWE via published basic densities (BD) or specific gravity (SG)
- Example:



Net weight = 32,200 kg

Green chip sample = 922 g
Oven-dry sample = 497 g

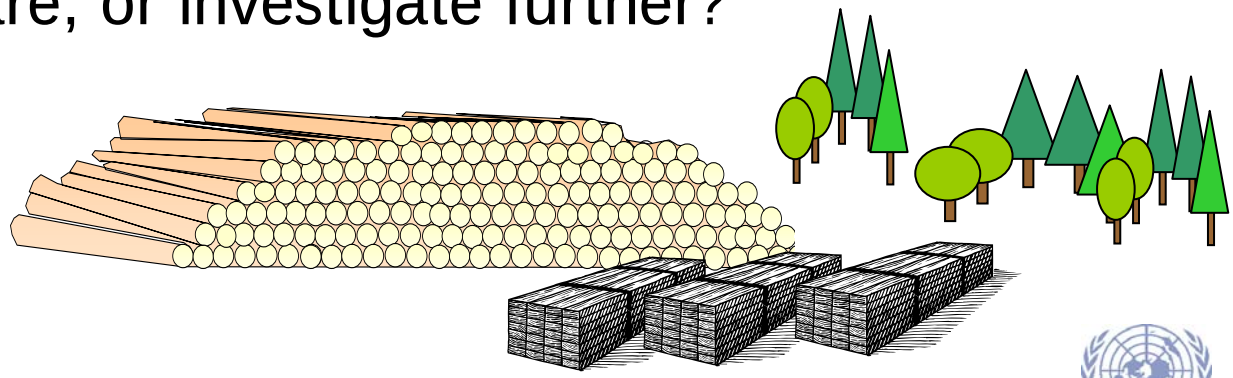
497 ÷ 922 = 53.9% fiber
.539 x 32,200 = 17,356 kg

Wood oven dry density (continued)

- In the previous example there is 17,356 kg of oven dry chips
- If the BD of the chip wood averages 380 kg/m^3 (volume measured in the green state) (SG = 0.38), the roundwood equivalent (RWE) is 17,356 ÷ 380 = 45.67 m^3 RWE (IB)
- Many literature sources of basic density for wood are non-specific as to whether they are showing BD or SG reflective of volumes measured in the dry state or green state (prior to any shrinkage)
- Norway spruce has an average BD of 380 kg/m^3 green volume vs. 432 kg/m^3 dry volume as a result of the roughly 12% shrinkage that occurs from green to oven-dry
- **Green basis is needed for RWE calculations**

Issues with units and definitions

- We do not know the magnitude of this issue
- Once the national systems of measure and sectors affected are understood, it should not be too complicated to harmonize volumes
- This could have implications, not only for conversion factors, but also for statistical reporting
- Direction from the Working Party: do we leave things as they are, or investigate further?



Future work

- Compile questionnaire responses into a report covering the ECE region (questionnaire deadline June 2009? Draft report Fall 2009)
- Continue to seek and refine data
- Discuss results with task force, reporting correspondents and end-users
- Disseminate, find others working on same issue to share information
- Use other sources of information, e.g. *COST Action E44 Country Reports*, etc.
- Work with outlook study team on usage of results and refinement of factors for future studies

Thank you for your attention!

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