

Compression Wood project - summarised responses to industry questionnaires

Compression Wood Questionnaire in Germany – conducted by IFU

The questionnaire was sent out to 90 forest districts and 70 wood processing companies of different specialisations and size. 67 state and municipal forest districts from the Federal State of Baden-Württemberg, the Forest Research Institute of Baden-Württemberg and the Forest authority Baden-Württemberg participated in the survey. 11 out of 70 companies returned the questionnaire, additional telephone interviews to contact the company personally succeeded in one additional interview.

Forest District Responses

“Compression wood” was already known to all interviewees before receiving the questionnaire. The possible effects of compression wood on the quality of the sawn softwood timber were known to 66 interviewees (95.65%) and partly known to one interviewee. To two interviewees the effects of compression wood on the quality of the sawn softwood timber were unknown.

The new grading standard EN 1927-1(-3) for relevant coniferous roundwood was known only to 10 interviewees (14.49%) and partly known to two interviewees (2.9%). To 57 interviewees (82.61%) the new standard was unknown. From the twelve district managers who knew the grading guideline completely or partly, four were also familiar with the quality parameters and the limits of the norm and six were not. Two interviewees did not answer the question.

Eleven district managers (18.33%) distinguish between round timber containing compression wood and round timber without compression wood when selling timber. 49 interviewees (81.67%) do not separate in this way. This question was answered by 60 interviewees. If the forest enterprises distinguish between round timber with compression wood and without compression wood, they handle the compression wood timber either by downgrading from grade B to grade C (conventional grading agreement for Baden-Württemberg not EN 1927) or, more seldom, by separated stacks.

In total, the investigated enterprises sell 2,447,500 m³ timber per annum, which is an average 37,083,33 m³ per enterprise. The individual volume vary between 1000 and 70000 m³ per annum.

The cut round timber is sold mostly in regional markets. 54 of 57 forest enterprises mentioned this market. 22 enterprises sell the wood in the national market. Three of them sell the round timber only in this market. Nine enterprises sell their round timber in the regional, national and international market.

64 enterprises answered the question of the percentage distribution of round timber cut from particular tree species. All enterprises sell Norway spruce (*Picea abies*) timber. The average amount of Norway spruce round timber sold by all companies amounted to 65.82%. The figures range between 20% and 100%. The wood of Silver fir (*Abies alba*) is sold by 52 companies. For these enterprises, the percentage is 19.48% of the total sold volume. The numbers range between 1% and 60%. The wood of Douglas fir (*Pseudotsuga menziesii*) is sold by 41 companies and reaches a percentage of 4.76%. The numbers vary between 1% and 15%. Larch (*Larix spec.*) is sold by 34 companies. The total volume sold 3.09%. The figures for this species range between 1% and 10%. Pine (*Pinus spec.*) is sold by 43 companies. The percentage for this species is 7.46%. The minimum percentage is 1% the maximum percentage is 25%. Hardwood reaches at 27 companies an average percentage of 20.96%. The numbers range between 1% and 56%.

Baden Württemberg forest districts grade saw logs and long timber according to the conventions agreed between BW forest owners and the wood using industry, not according to EN 1927. Grade A reaches a percentage of 1.18% of the total sold wood mass of all enterprises (n=66). Grade B has a percentage of

71.97%, grade C of 20.24 and grade D 6.95%. 32 enterprises mentioned that they sell round timber of grade A. At these enterprises grade A reaches an average percentage of 2.52%. Wood of grades B and C is sold by 66 enterprises. The percentage is 71.97% for grade B and 20.24% for grade C. Round timber of grade D is sold by 60 enterprises (7.53%).

Grading with respect to market requirements is undertaken by 47 enterprises (77.05%), 14 do not do so (22.95%). Eight enterprises did not answer the question. Grading to special customer's requirements is undertaken by 58 enterprises (90.63%), six enterprises (9.37%) do not so. Five interviewees did not answer this question.

28 enterprises sell short length saw logs (80%), seven enterprises do not sell logs (20%). 34 enterprises did not answer the question. The length of the segments varies between 4 and 5 m, lengths of 3m or 6m are occasionally found.

Problems in the future concerning the grading of softwood is expected by the introduction of the automated volume measurement in sawmills as the only basis for price agreement. The reduction in the influence of forest owners on the price agreement is seen as a major problem. Furthermore the use of big-sized softwood timber and an expected separate handling of silver fir and spruce is a problem seen in the future. The establishment of the new European standards and the increased requirements concerning the quality of the round timber are other anticipated concerns. 39 forest enterprises (61.9%) think that research institutions can assist them to deal with their problems, 24 (38.1%) do not think so. Six enterprises did not answer this question.

Seven (10.14%) of the interviewees have heard about the compression wood project before getting the questionnaire: Mainly they got the information from the GFH (Non-Profit Research Organisation of Forestry and Timber Industry at the University of Freiburg) and the forest press.

Wood Industry Responses

10 questionnaires plus one interview returned from the sawmilling industry and could be analysed. All enterprises are aware of compression wood, but most do not particularly distinguish between logs with and without compression wood for individual products. The European standard 1927 for softwood classification is generally known, but not the individual limits for compression wood in each grade. Information on further processing and marketing of the timber was very heterogenous. Individual results can be discussed directly with partner 3a.

Compression Wood Questionnaire in Sweden – conducted by SLU

The Web-based enquiry (Electronic questionnaire) aimed at both sawmills and wood manufacturing companies was distributed to 273 companies in February 2003. The primary purpose of the questionnaire was to investigate the perception of compression wood among the companies. A secondary aim was to inform the industry about the project and the Swedish web-site. There were three questions in the questionnaire dealing with the awareness of the project and dissemination of results. These questions were:

1. *Before you received this enquiry were you aware of the project?*
2. *Are you interested to take part in a meeting about the project?*
3. *Are you interested to receive results from the project by e-mail?*

In total 70 sawmills and 29 wood manufacturing answered the questions raised. Out of these almost 80% of the saw mills and 70% of the wood manufacturing companies were interested in receiving results from the project by e-mail. About 20% were interested in taking part in meetings.

Summary

The primary purpose of this study has been to investigate the Swedish timber industry's perception of compression wood. A secondary aim was to describe particular areas within the production process where compression wood is likely to cause problems.

This study was mainly been carried out as a questionnaire. In order to connect the findings to current research, additional information was also collected by means of a literature review. The questionnaire was intended for sawmills and wood-manufacturing companies from various production classes and owner categories, as well as from different parts of the country. In total, questionnaires were sent out to 153 sawmills and 120 wood-manufacturing companies. Seventy sawmills participated in the investigation, which represents 46 % of those who received the questionnaire. Within the wood-manufacturing industry, 29 companies took part in the investigation, which represents 24 % of those who received the questionnaire. The low proportion of responses among wood-manufacturing companies could be attributed to a lack of time, resulting from the fact that this category contains many small companies with few employees.

The study shows that compression wood is a well-known problem, which according to the timber industry mainly causes production problems and deformation of the sawn wood. Regarding these deformations, most sawmills consider compression wood to cause bow, followed by spring and twist. Within the wood-manufacturing industry, however, most companies consider compression wood to cause twist, followed by bow and spring. Furthermore, the investigation shows that the wood-manufacturing companies accept considerably smaller deformations than the sawmills, and that the largest sawmills, those producing more than 200 000 m³ per year, accept larger deformations than the rest of the sawmills.

In the investigation, a number of steps in the production process were identified where methods can be applied to improve the stability of the wood. Examples of such methods are curve sawing, grading of sawn products before drying, and applying a top-load on the wood while drying. According to the questionnaire, over three-quarters of the participating companies are using curve sawing. Only about half of the companies producing less than 50 000 m³ per year, however, are doing this. Furthermore, approximately fifty percent of the sawmills are grading their sawn products before drying. This number is considerably larger among companies producing more than 200 000 m³ per year. 38 % of the sawmills are applying a top-load on the wood while drying. However, among companies producing less than 50 000 m³ per year, this number is considerably lower.

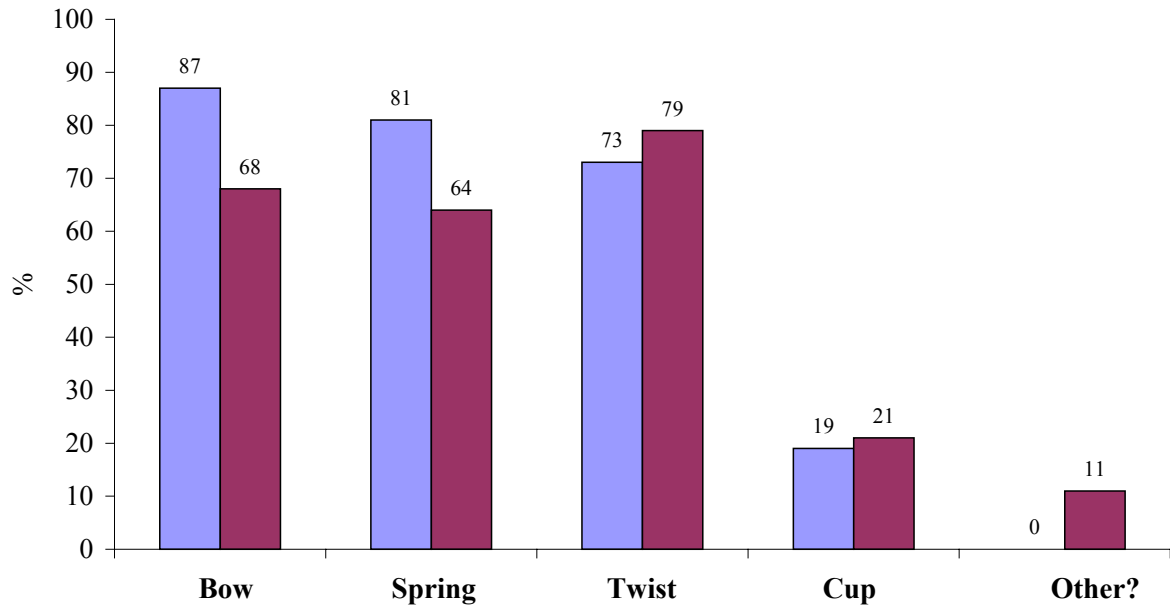
Responses to the questionnaire, as well as literary references, indicate that actions taken in order to reduce the negative impacts of compression wood should be implemented as early as possible in the production process. The sooner this is done, the greater the possibilities are to affect the quality of the finished product.

Table. Maximum size of deformations that can be accepted

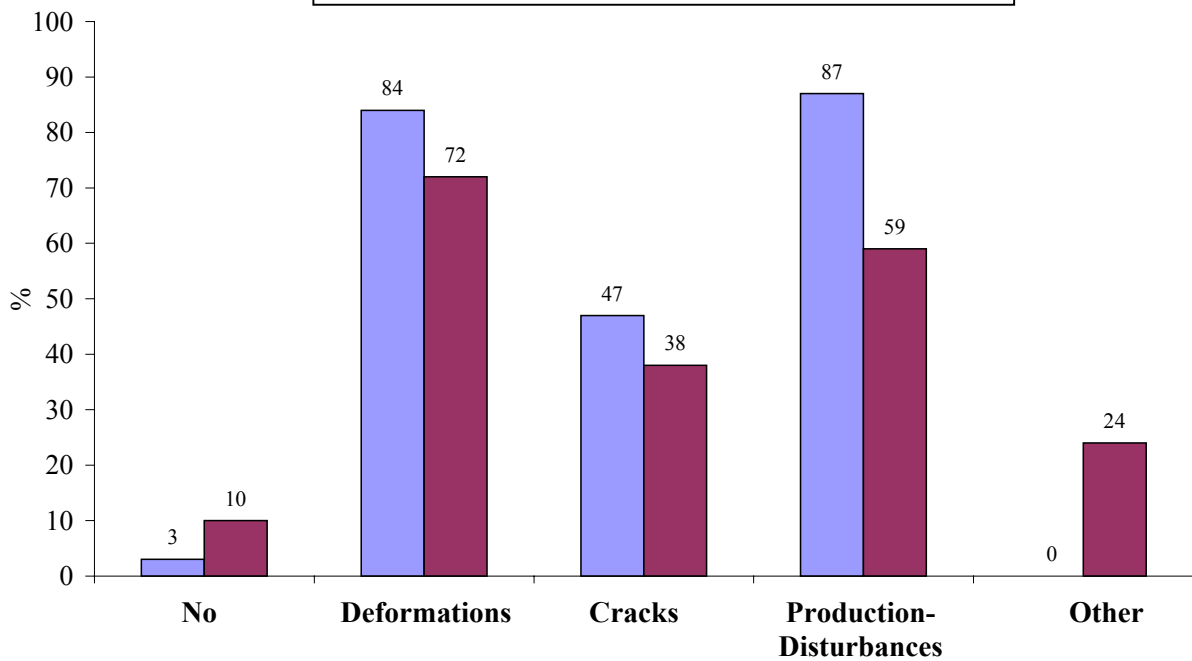
Deformations	Saw milling industries of different production classes*						Wood manu- facturers
	1	2	3	4	5	Total	
Bow (mm/2m)	11.3	13.1	13.1	15.3	22	13.8	4.3
Crook (mm/2m)	6.7	5.5	6.2	5.0	12.6	6.7	3.4
Twist (mm/2m)	7.5	6.1	7.7	8.2	14	8.1	3.6
Cup (mm)	2.6	2.9	4.1	3.2	4	3.5	1.7

* Production classes: 1 = 0-50 000 m³; 2 = 50 - 100 000 m³; 3 = 100 -150 000 m³; 4 = 150 -200 000 m³; 5 = > 200 000 m³

What deformations do CW cause?



What problems does CW cause?



Compression Wood Questionnaire in the UK – conducted by BRE

Response Rate

- Number of questionnaires sent out = 32
- Number of useful replies = 10
- Most of the major UK softwood sawmills replied, representing the vast majority of the production.
- Analysis is difficult due to part completed forms and inconsistent replies, plus for large firms a lack of information on individual sawmills.
- There is a surprising variation in methods and attitudes towards reducing the effects of distortion in timber.

Species of timber and origin

- Timber species is mainly Sitka spruce but the situation varies. Some sawmills deal exclusively with Sitka, others have 60 – 80% Sitka with lesser amounts of Norway spruce, Scots pine and larch.
- Details on origin were too general to be useful.

Usage, grading and reject rates for timber

- The percentage amount of sawn timber going to structural use varies widely between sawmills. Very roughly about half goes to structural use whilst the rest goes to fencing, pallets, formwork, agricultural use etc.
- Most UK Sitka is graded C16/R because grading C16/C24 results in a higher number of rejects.
- Most timber is machine stress graded, although some is visually assessed.
- Most common sizes are 47 x 100, 150 and 200mm.

Compression wood awareness, detection and sorting

- All the sawmills said they were aware of the effects compression wood except 1 pallet manufacturer.
- 2 out of the 7 major sawmills claimed to identify logs likely to contain compression wood.
- Compression wood was rarely a reason for rejection of timber.

Distortion

- Most respondents thought that twist was the most serious form of distortion, with spring and bow being considered less serious.
- Nearly all sawmills were rejecting timber at some stage in the process due to distortion. The stage in the process when rejection occurred varied.
- On average the sawmillers considered that batten bow and spring of 10mm over 2m was acceptable, which is somewhat high.
- Most sawmills had received complaints about the level of distortion in the timber they supplied, most frequently concerning twist but bow and spring were also mentioned.
- Overall, UK timber was considered “fit for purpose” or at least as good as some of the imported timber.

Awareness of EU Compression wood project

- Only 2 out of 10 respondents said they were aware of the project. Of the sawmillers who aware of the project; 1 was actually involved, the other had read about it in the BRE Newsletter.

Sawmillers' concerns

- Poor quality logs and competition from cheap imports