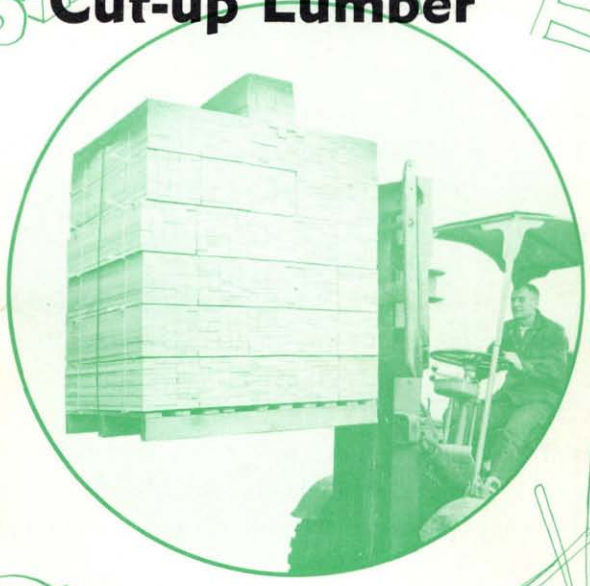
UNIVERSITY OF IDAHO
COLLEGE OF FORESTRY—WILDLIFE
AND RANGE SCIENCE

# The Consumer of Cut-up Lumber



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## SUMMARY

This study was initiated to explore the feasibility of increasing employment and income in northern Idaho through the development of the cut-up lumber industry. In the first phase of the study, questionnaires were sent to firms in selected industrial categories to determine the wood products they utilized; the desired characteristics, important species, and volumes used of cup-up lumber; and the potential for increasing its use.

The firms which responded to the questionnaire indicated that 35 percent of them used cut-up lumber. In total they reported using 1,800 million board feet of cut-up lumber annually.

While hardwoods were most frequently rated as the most important species of cut-up lumber, western pines were rated as the second most important species group.

Resistance to splitting was the characteristic of cut-up lumber most desired with machineability, dimensional stability, glueability, paintability, and durability following in order of decreasing desirability.

There is an interest in increasing the use of cut-up lumber. Over 20 percent of the responding firms indicated they were interested in the future use of cut-up lumber or in expanding their present use.

The strongest interest in the expanded use of cut-up lumber was indicated in the Western, North Central, and Middle Atlantic regions.

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## INTRODUCTION

Lumber production and utilization have played an important role in the growth and development of Idaho's economy since the establishment of a sawmill at Spaulding, Idaho, by Henry Harmon Spaulding in 1840. The forest products industry, based on an abundant forest resource, is now Idaho's second largest industry. The industry provides jobs for over 12,000 people and a payroll of over sixty million dollars.[1] Although this resource has provided the base for industrial growth, many forest areas show signs of hosting "depressed economies."[2]

This study is the first of a series exploring the feasibility of increasing employment and incomes in northern Idaho through the development of cut-up lumber[3] operations. The development of these cut-up lumber plants would reduce the seasonal fluctuation in employment common in logging communities.

The decision to explore the feasibility of using cut-up lumber plants as a means for improving income and employment was made for several reasons. First, Idaho has an abundant supply of western white and ponderosa pines, some 38.5 billion board feet. These species are rated as premium material by many cut-up lumber users because of such desirable characteristics as their fine texture, machineability, and paintability. Second, the transportation costs of cut-up lumber are reduced relative to standard size lumber because most of the waste is eliminated at the mill and maximum utility is delivered to the customer. With Idaho distant from most of its markets, cut-up lumber would allow the producer to extend his market area while operating under the same transportation costs. Third, small plants are often involved in cut-up lumber operations as they are frequently more efficient than large plants for this type of production. Such small cut-up lumber plants require a relatively low capital outlay to construct and maintain and are particularly well adapted to the sparsely populated areas that occur in northern Idaho.

In this phase of the study, the objectives were to delimit:

1. The wood product inputs used in designated product categories.
2. The volume of cut-up lumber used.
3. The use of western wood species as cut-up lumber, compared to other species.
4. The characteristics desired in cut-up lumber.
5. Conveyance in which received.
6. Potential for future use of cut-up lumber in the selected product categories.

[1]Anonymous. 1965. Covered Workers in the Lumber Industry (Report), Idaho Department of Employment.

[2]"Priming the Pump of Regional Growth," Business Week, Oct. 9, 1965. p. 96

[3]Cut-up lumber stock is lumber that has been pre-cut to specific customer specifications (not standard size lumber).

## METHOD AND SCOPE

The selection of the initial sample population was based on the present use of industrial standard-size lumber, the quality of the lumber material used, and the type of product produced. The original sample population was selected using the Standard Industrial Classification (SIC) categories listed by the U.S. Forest Service publication "Wood Used in Manufacturing Industries."[4] An SIC category was selected only if it consumed .04 percent of the total national volume of industrial lumber. A few others were chosen because of the type product they produced or because they were considered to use a high quality lumber material.

The SIC categories selected were as follows: 2431, millwork plants; 2433, prefabricated wooden buildings and structural members; 2441, nailed and lock corner wooden boxes and shook; 2442, wirebound boxes and creates; 2443, veneer and plywood containers, except boxes and creates; 2445, cooperge; 2449 wood products, not elsewhere classified (n.e.c.); 2511, wood household furniture, except upholstered; 2512, wood household furniture, upholstered; 2515, mattresses and bedsprings; 2521, wood office furniture; 2531, public building and related furniture; 2541, wood partitions, shelving, lockers, and office and store fixtures; 2591, venetian blinds and shades; 2599, furniture and fixtures, n.e.c.; 3421; cutlery; 3423, hand and edge tools, except machine tools and hand saws; 3741 ,locomotives and parts; 3742, railroad and street cars; 3751, motorcycles, bicycles and parts; 3791, trailer coaches; 3799, transportation equipment, n.e.c.; 3931, musical instruments and parts; 3941, games and toys, except dolls and children's vehicles; 3942, dolls; 3943, children's vehicles, except bicycles; 3949, sporting and athletic goods, n.e.c.; 3951, pens, pen points, fountain pens, mechanical pencils and parts; 3952, lead pencils, crayons, and artists' materials; 3981, brooms and brushes; 3988, morticians' goods; 3993, signs and advertising displays.[5]

The firms in the above SIC categories used 7,840.8 million board feet or 67 percent of the total 11,742.9 million board feet of industrial lumber used in 1958. These industries consist of 40,107 firms, or 13 percent of all manufacturing firms according to the 1963 Census of Manufacturing.[6]

Of these 40,107 firms, those having a net worth of over $50,000 were selected for the mailing sample. This net worth quantification reduced the sample to 16,422 firms. The decision to sample only the firms with a net worth of over $50,000 was made because the larger firms consume the great majority of lumber.

Questionnaires[7] were sent to 16,422 firms throughout the United States. The recipients were asked to reveal the type of products

[4]U.S. Forest Service. 1965. Wood used in manufacturing industries. U.S. Department of Agriculture Statistical Bulletin No. 353. 120 p.
[5]U.S. Forest Service. 1965. Wood used in manufacturing industries. U.S. Department of Agriculture. Statistical Bulletin No. 353. 120 p.
[6]U.S. Bureau of Census. 1966. Census of Manufacturing: 1963. U.S. Government Printing Office.
[7]See Appendix for copy of questionnaire.

they produced, and the type of wood products they utilized. If the respondents indicated they used cut-up lumber, they were asked to disclose the volume used, conveyance in which it was received, the species class of cut-up lumber used, and the characteristics they desired. The respondents were also asked to indicate if they would consider using cut-up lumber in the future.

## QUESTIONNAIRE RESPONSE

There were 16,422 questionnaires mailed and 3,870 or 23.6 percent were returned and analyzed. This is well above the expected return for national surveys.

### Response by Region

The Intermountain Region showed the highest rate of response, with 31 percent out of those contacted (Fig. 1). The West North Central region followed with a 27.1 percent response. The Pacific Coast region returned 26.1 percent of the questionnaires, and the East North Central region returned 24.8 percent. No region had less than a 19 percent response.

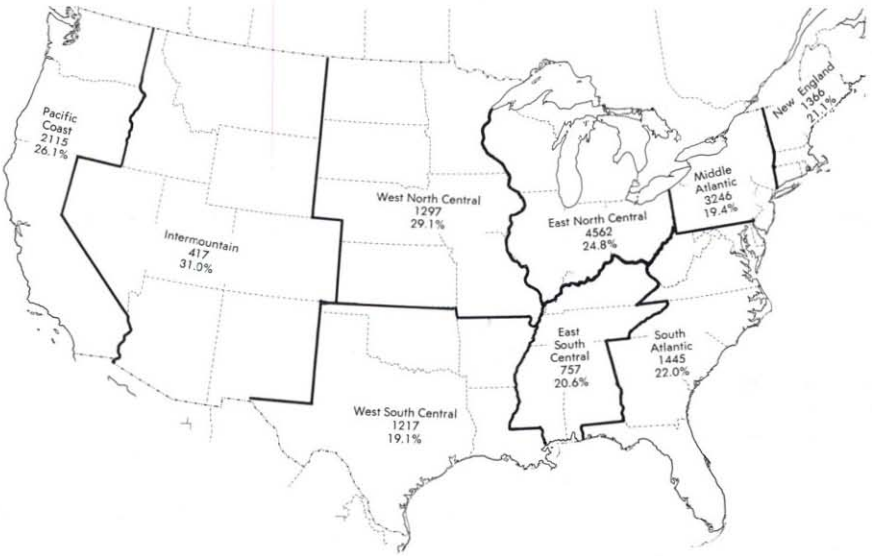


**Figure 1. Recipients of and response (in percent) to Cut-up Lumber Questionaire by Region.**

The regional classifications follow those used in the 1955 **Census of Manufacturers.** U. S. Bureau of Census, **Census of Manufacturers: 1958** (Washington: U. S. Govt. Printing Office, 1961), Vol. 1, Summary Statistics, p. IX.

The higher response from the western states may be attributed to regional ties and a high interest in cut-up lumber production. The response from the North Central regions might be attributed to familiarity with and interest in Idaho lumber products as Idaho markets almost half of its lumber in the North Central regions.[8 9]

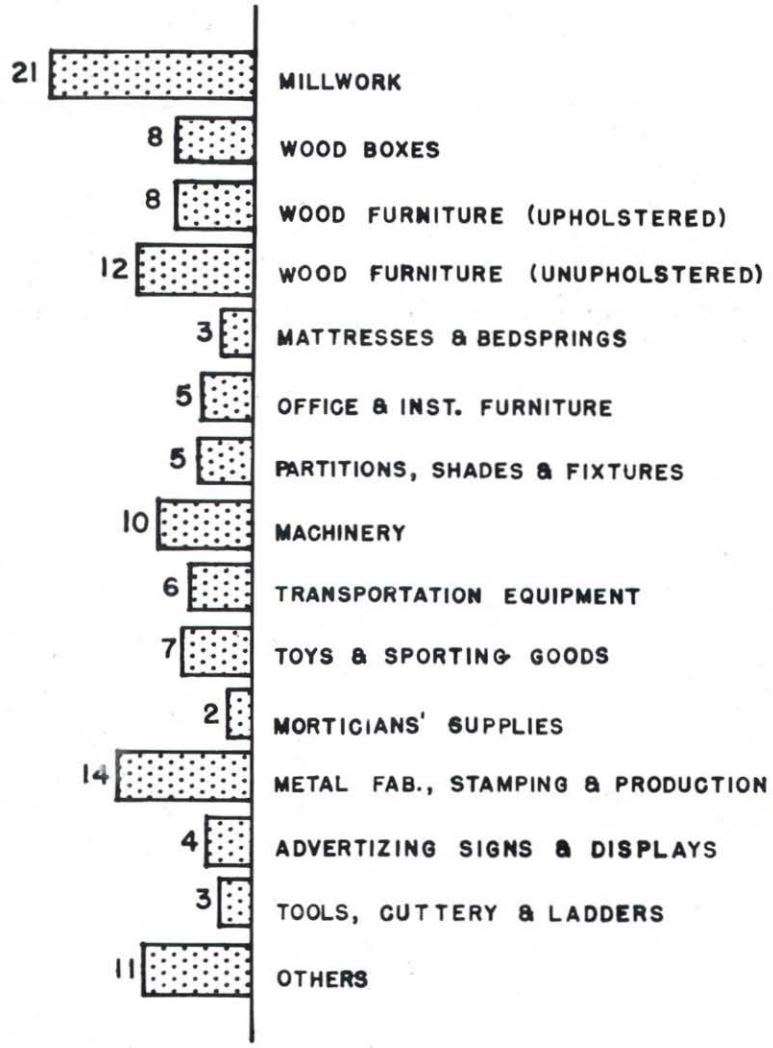


**Figure 2. The Percentage of Responding Firms by Type of Product Produced.** (The percentages do not total one hundred because some firms produce more than one type product.)

[8]Williams, E. L. The northern Idaho sawmilling industry. Idaho Agric. Experiment Station Bull. 430, October 1964, plus unpublished data on southern Idaho.

[9]Williams, E. L. The southern Idaho sawmilling industry. Manuscript in preparation.

### Response by Product Manufactured

There was a well-balanced response from manufacturers of every type product in the questionnaire. The response by the type of product produced varied widely, with millwork being the dominant product. Figure 2 shows the products produced by the respondents.

Of the 3,870 respondents, 807 or 21 percent indicated they produce millwork. There was little difference in the remaining percentage spread, with morticians' suppliers constituting 2 percent of the respondents, and metal fabricators constituting 14 percent of the respondents. Several categories with fewer total firms, such as morticians' supplies and tools, showed a low total response.

## USE OF WOOD PRODUCTS

Standard size lumber and plywood were the two types of wood product inputs most used by the responding firms (Fig. 3). Over 50 percent of the respondents used standard size lumber and 43 percent used plywood. Standard size lumber was particularly important to the millwork, woodbox, furniture, and transportation equipment producers with over 70 percent of the firms in each of these categories using standard size lumber. Plywood was reported to be used by over 70 percent of the millwork, unupholstered wood furniture, office equipment, transportation equipment, and advertising sign producers.

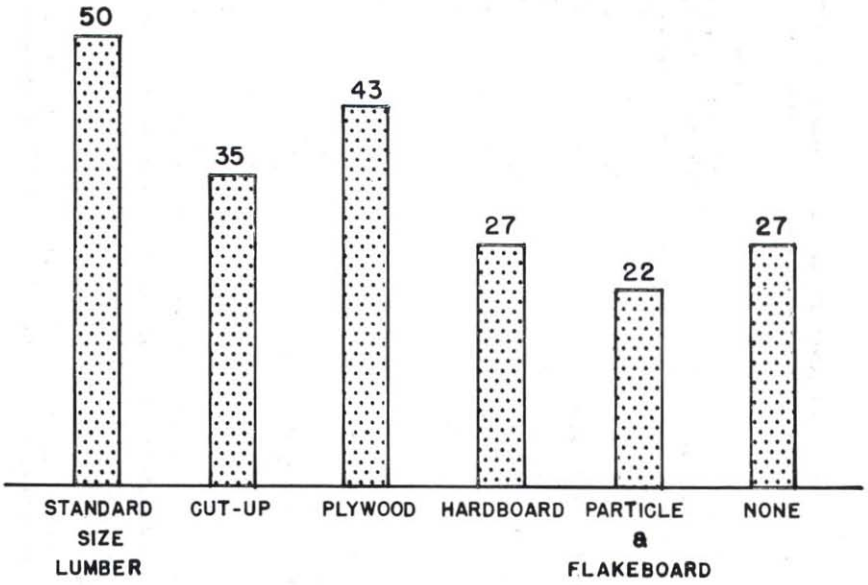


**Figure 3. Percentage of Responding Firms Utilizing Each Type of Wood Product.**

**Table 1. Wood products utilized by the responding firms grouped according to the product produced by the firms.**

| Product Classifications | Total No. of Firms | Wood Products Used (Percent Using) | | | | | |
|---|---|---|---|---|---|---|---|
| | | Cut-up Lumber % | Standard Size Lumber % | Plywood % | Hardboard % | Particle and Flakeboard % | % None |
| Millwork[1] | 807 | 45.1 | 82.7 | 73.1 | 57.6 | 53.5 | 1.3 |
| Wood Boxes | 309 | 55.0 | 73.4 | 58.8 | 28.4 | 18.1 | 3.6 |
| Wood Furniture (upholstered) | 310 | 48.0 | 70.3 | 64.5 | 31.6 | 34.1 | 2.5 |
| Wood Furniture (unupholstered) | 475 | 52.2 | 73.6 | 74.3 | 57.0 | 53.2 | 1.0 |
| Mattresses & Bedsprings | 137 | 59.1 | 39.4 | 32.1 | 13.8 | 14.5 | 15.3 |
| Office & Institutional Furniture | 180 | 43.3 | 67.2 | 82.2 | 58.3 | 65.0 | 3.8 |
| Partitions, Shades & Fixtures | 182 | 36.8 | 67.5 | 65.9 | 55.4 | 58.2 | 9.3 |
| Machinery | 373 | 21.4 | 30.8 | 27.0 | 6.7 | 2.9 | 49.0 |
| Transportation Equipment[2] | 225 | 51.1 | 70.6 | 75.1 | 28.0 | 20.0 | 8.8 |
| Toys & Sporting Goods | 259 | 41.6 | 27.7 | 25.8 | 20.4 | 12.7 | 33.9 |
| Morticians' Supplies | 76 | 42.1 | 61.8 | 25.0 | 5.2 | 15.7 | 15.7 |
| Metal Fabric., Stampings & Products | 536 | 8.9 | 18.4 | 10.6 | 4.4 | 2.6 | 67.9 |
| Advertising Signs & Displays | 141 | 36.1 | 64.5 | 87.2 | 61.7 | 38.0 | 8.5 |
| Tools, Cutlery & Ladders | 135 | 54.0 | 28.8 | 16.2 | 7.4 | 37.0 | 20.7 |
| Others[3] | 434 | 39.8 | 54.1 | 35.7 | 17.0 | 13.8 | 22.1 |

[1]Millwork—includes doors, cabinets, sash, windows and window fixtures and custom items.

[2]Transportation equipment—comprised of mobile homes, campers, travel trailers, truck trailers, airplane and other transportation equipment manufacturers.

[3]Others—includes various items that could not be placed in other categories. Some of the larger groups in this category were wood pallets, prefabricated homes, trusses and laminates, and specially wood items.

The responding firms revealed that cut-up lumber was their third most important type of wood product used. About 35 percent indicated that they used cut-up lumber. Such material was used extensively in every SIC product category except for the machinery and metal product groups (Table 1). Firms producing mattresses and bedsprings, toys, and tools showed cut-up lumber to be their most frequently used wood product. More than 45 percent of the respondents producing millwork, woodboxes, wood furniture, and transportation equipment used cut-up lumber.

The use of hardboard and particle and flakeboard was not as wide spread as the other three wood products used by the firms studied. However, 50 percent of the responding firms producing millwork; office and institutional furniture; unupholstered furniture; partitions, shades, and fixtures; and advertising sign categories used hardboard or particle board products.

## VOLUME OF CUT-UP LUMBER USED

The cut-up lumber consumers are characterized by a large number of firms using small volumes and a few firms using large volumes of cut-up lumber (Fig. 4). The 35 percent of the respond-

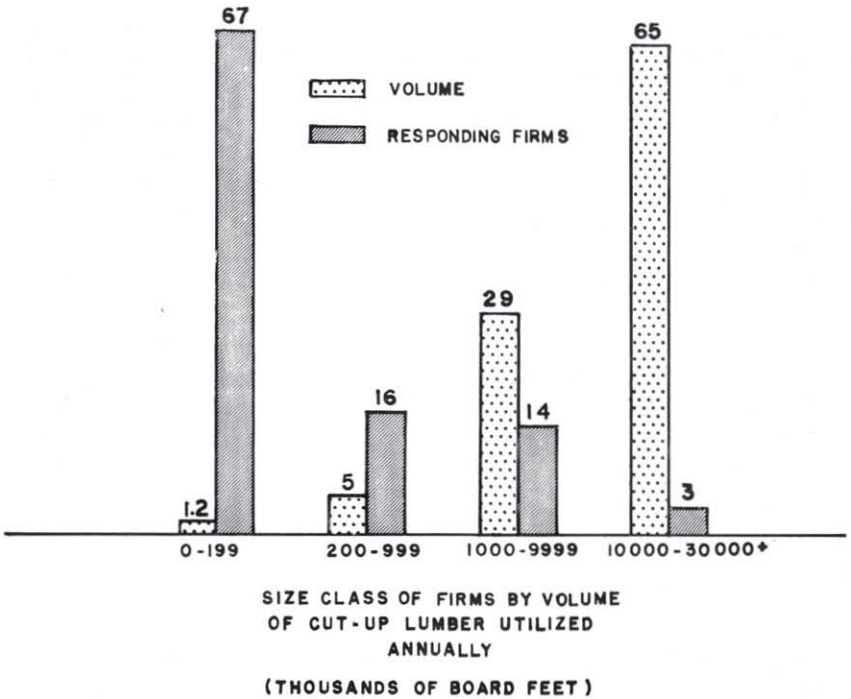


**Figure 4. The Percentage of Total Volume of Cut-up Lumber Utilized by Responding Firms of Different Size Classes and the Percentage of Cut-up Lumber Using Firms in Each Class.**

ing firms which used cut-up lumber reported that they consumed in total over 1,800 million board feet annually. About 1.2 percent of this volume was consumed by 67 percent of the cut-up lumber using firms at a rate of less than 200 thousand board feet per firm annually. The remaining 98.8 percent of the volume was used by the remaining 33 percent of the firms using over 200 thousand board feet. The 3 percent of firms using 10-30 million board feet of cut-up lumber per year consumed 65 percent of the total volume reported.

Although the use is skewed toward the large firms and the sample skewed toward the smaller firms, when desired characteristics of cut-up stock were compared, they were found to be similar.

## USE OF CUT-UP LUMBER SPECIES

### Species Used by Product Produced

Table 2 shows selected cut-up lumber species used by firms in the indicated product categories. The respondents were asked to rank up to three species in order of importance to their firms. The figures appearing in Table 2 were the sums of the weighted rankings.

**Table 2. Weighted ranking of respondents' use of selected cut-up lumber species, by type of product they produced.**

| | Cut-up Lumber Species (weighted rankings)* | | | |
|---|---|---|---|---|
| **Product Classification** | **Western Pines** | **Southern Pines** | **Fir-Larch** | **Hardwoods** |
| Millwork | 667 | 140 | 258 | 622 |
| Wood Boxes | 300 | 96 | 80 | 306 |
| Wood Furniture (upholstered) | 75 | 54 | 56 | 492 |
| Wood Furniture (unupholstered) | 183 | 71 | 76 | 754 |
| Mattresses & Bedsprings | 51 | 30 | 45 | 87 |
| Office & Institutional Furniture | 50 | 22 | 20 | 217 |
| Partitions, Shades & Fixtures | 120 | 23 | 31 | 155 |
| Machinery | 57 | 54 | 60 | 117 |
| Transportation Equipment | 122 | 167 | 127 | 172 |
| Toys and Sporting Goods | 78 | 53 | 39 | 185 |
| Morticians' Supplies | 55 | 8 | 2 | 51 |
| Metal Fabric., Stampings & Products | 33 | 38 | 29 | 51 |
| Advertising Signs & Displays | 63 | 27 | 27 | 76 |
| Tools, Cutlery & Ladders | 19 | 31 | 33 | 144 |
| Total | 2,000 | 792 | 1,030 | 3,734 |

*The figures in this table are the sums of the weighted rankings. First ranked species were weighted with three; second ranked with two; and third ranked with one.

The respondents showed that hardwood and western pine cut-up lumber were the two main species groups used. They were followed by fir-larch and southern pine. Hardwood cut-up lumber was the predominant species used (by frequency) in 12 out of 14 product categories, and western pine was first in the other two. Western pine was ranked as first or second in all but two categories. Western pine cut-up lumber was revealed to be the most important species in the millwork and morticians' supply categories. It was second in all others except for the machinery, transportation equipment, and metal fabric groups.

The firms manufacturing machinery, transportation equipment, and metal fabrics showed hardwoods as their most important species followed by either fir-larch or southern pines. These species were generally regarded as stronger and tougher, thus fulfilling the needs for trailer bodies, frames, truck beds, and crating.

The other western cut-up lumber species listed in the questionnaire were shown to have little importance in the majority of the product classifications.[1] Hemlock, alder, and cedar-redwood species were used only in small quantities. Cedar-redwood, however, was the third most important cut-up lumber species in the morticians' supply category.

#### Species Used by Regional Location

The species ranked "first in importance" by each respondent was closely related with the species class of lumber manufactured in the respondent's geographical area (Table 3). This was to be expected, as an industry will naturally utilize the least expensive, and thus usually local, material available.

Those respondents in the Southern and Middle Atlantic regions, in particular, appear to have developed industries that use a preponderance of hardwood cut-up material. Hardwoods were important as a "first-ranked" cut-up lumber species class in every region, but heaviest use was in the East North Central, East South Central, Middle Atlantic, and Southern Atlantic regions.

Western pines were shown to be most important "first-ranked" species in the Pacific Coast, West North Central, Intermountain, and New England regions. They were the most important "second-ranked "species in five of the other nine regions. The West South Central, and Middle Atlantic regions were the only regions with less than 30 percent of the respondents showing western pines to be the most frequently "second-ranked" cut-up lumber species. The respondents in the West South Central and East South Central regions indicated that southern pine was their most important second-ranked species.

These facts point out that cut-up lumber will only be shipped long distances to consumers when it is needed to fill some special requriements. The respondents have located their businesses in proximity to the major species used by their firms, but when a need for "secondary species" arises that the geographical region does not provide, they ship long distances for the needed products.

Table 3. First and second most important cut-up lumber species used as rated by the respondents, according ot the firm's regional location. (expressed in percent)

| Region | Species Ranked in Importance to Firm by Percent | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Western Pine | | Southern Pine | | Northern Pine | | Fir-Larch | | Hardwood | |
| | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd |
| Pacific Coast | 27 | 26 | 0 | 2 | 4 | 15 | 27 | 17 | 23 | 27 |
| Intermountain | 42 | 22 | 5 | 3 | 10 | 28 | 13 | 19 | 24 | 25 |
| West North Central | 29 | 31 | 9 | 13 | 1 | 15 | 12 | 15 | 36 | 20 |
| West South Central | 19 | 26 | 21 | 32 | 2 | 6 | 4 | 10 | 48 | 26 |
| East North Central | 19 | 32 | 9 | 11 | 4 | 7 | 10 | 17 | 49 | 22 |
| East South Central | 8 | 18 | 18 | 48 | 0 | 4 | 4 | 4 | 64 | 18 |
| New England | 23 | 33 | 4 | 8 | 13 | 16 | 6 | 8 | 47 | 31 |
| Middle Atlantic | 13 | 29 | 6 | 13 | 3 | 19 | 6 | 18 | 61 | 18 |
| South Atlantic | 13 | 30 | 13 | 18 | 0 | 9 | 3 | 16 | 66 | 18 |

Table 4. Important characteristics as indicated by responding firms grouped according to first ranked species class.

| Species | No. of Firms | Characteristics | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machineability | Paintability | Glueability | Screw Holding Ability | Durability | Resistance to Splitting | Lack of Odor | Dimension Stability | Natural Grain and Beauty | Strength | Light Color | Dark Color |
| | | (Percent) | | | | | | | | | | | |
| Western pines | 348 | 65.2 | 45.7 | 48.3 | 36.8 | 39.7 | 67.2 | 15.8 | 51.1 | 24.1 | 38.8 | 28.2 | 1.7 |
| Southern pines | 139 | 29.5 | 28.8 | 20.1 | 28.1 | 41.7 | 59.0 | 9.4 | 41.7 | 8.6 | 56.8 | 6.5 | .7 |
| Northern pines | 65 | 53.8 | 29.2 | 43.1 | 33.8 | 35.4 | 70.8 | 10.8 | 43.1 | 32.3 | 55.4 | 29.2 | 7.7 |
| Fir-Larch | 178 | 32.0 | 27.0 | 28.1 | 28.7 | 43.3 | 64.0 | 14.6 | 48.3 | 15.2 | 64.6 | 9.0 | 2.2 |
| Hardwoods | 785 | 57.8 | 33.8 | 45.5 | 45.4 | 45.4 | 61.0 | 18.1 | 55.3 | 40.8 | 57.2 | 28.2 | 6.1 |
| Hemlock | 29 | 62.1 | 44.8 | 37.9 | 27.6 | 48.3 | 58.6 | 10.3 | 58.6 | 31.0 | 55.2 | 17.2 | 0.0 |
| Cedar-Redwood | 61 | 50.8 | 26.2 | 37.7 | 16.4 | 41.0 | 52.5 | 6.6 | 34.4 | 23.0 | 19.7 | 6.6 | 3.3 |
| Alder | 8 | 50.0 | 0.0 | 62.5 | 37.5 | 62.5 | 87.5 | 75.0 | 75.0 | 37.5 | 75.0 | 12.5 | 0.0 |
| Other | 71 | 47.9 | 22.5 | 32.4 | 29.6 | 47.9 | 69.0 | 15.5 | 50.7 | 19.7 | 62.0 | 18.3 | 0.0 |

## DESIRABLE CHARACTERISTICS IN CUT-UP LUMBER

### Characteristics Desired, By Species

In every species category except fir-larch and hemlock, the respondents revealed that the most desired characteristic was resistance to splitting. Those producers using fir-larch and hemlock had resistance to splitting ranked second. Machineability and dimensional stability were also very important desired characteristics in most species. The respondents showed that the lack of odor and color were not important characteristics for most of the species listed.

Table 4 shows the relationships between the characteristics of cut-up lumber the respondents desired and the species of lumber they were using. This table indicates whether the respondent was actually using cut-up lumber species that possess the characteristics he desired or merely "substituting" other species because of cost or availability limitations. For example, a white-pine cut-up lumber user who showed that his most desirable characteristics were toughness and dark color was obviously not receiving the product he desired.

A comparison between the characteristics desired by western pine and hardwood users is shown in Figure 5. This figure shows a similarity between the characteristics desired.

Those respondents ranking western pines as the most important species listed resistance to splitting as the most desirable characteristic, followed in order of decreasing desirability by machineability, dimensional stability, glueability, paintability, and durability.

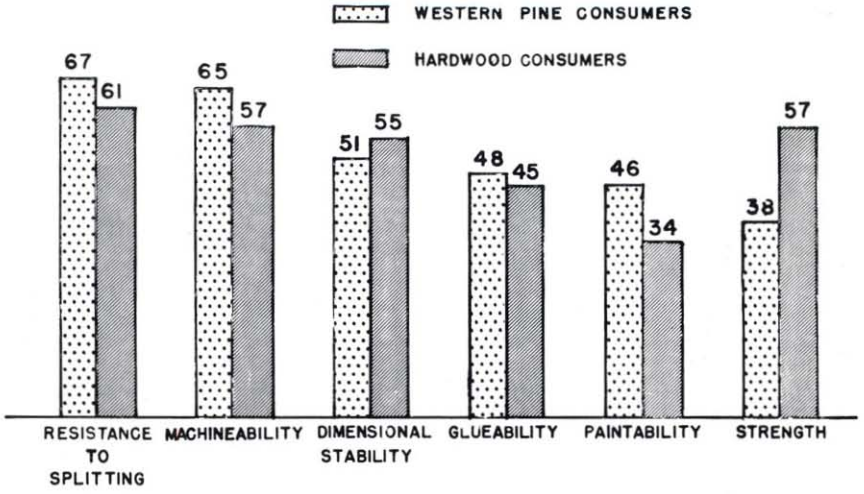


**Figure 5. The Percentage of Responding Firms Utilizing Western Pines and Hardwoods Indicating the Characteristics as Important.**

Table 5. Characteristics of cut-up lumber desired by respondents, according to the type of product they produced.

| Product Classification | Desired Characteristics (expressed in percent) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Machineability | Paintability | Glueability | Screw Holding Ability | Durability | Resistance to Splitting | Dimensional Stability | Natural Grain and Beauty | Strength |
| Millwork | 51 | 34 | 41 | 30 | 31 | 43 | 41 | 30 | 30 |
| Wood Boxes | 41 | 19 | 24 | 26 | 36 | 60 | 38 | 13 | 45 |
| Wood Furniture (upholstered) | 42 | 20 | 43 | 43 | 35 | 52 | 38 | 29 | 50 |
| Wood Furniture (unupholstered) | 57 | 36 | 47 | 44 | 36 | 48 | 44 | 42 | 38 |
| Mattresses & Bedsprings | 18 | 9 | 23 | 26 | 31 | 45 | 28 | 5 | 44 |
| Office & Institutional Furniture | 43 | 30 | 39 | 37 | 33 | 43 | 39 | 32 | 37 |
| Partitions, Shades & Fixtures | 44 | 38 | 35 | 30 | 27 | 38 | 38 | 21 | 24 |
| Machinery | 7 | 5 | 3 | 9 | 16 | 21 | 8 | 2 | 19 |
| Transportation Equipment | 23 | 20 | 18 | 33 | 40 | 48 | 34 | 6 | 50 |
| Toys & Sporting Goods | 29 | 21 | 16 | 17 | 17 | 33 | 27 | 18 | 29 |
| Morticians' Supplies | 42 | 17 | 42 | 39 | 17 | 47 | 31 | 16 | 20 |
| Metal Fabric., Stampings & Products | 1 | 1 | 1 | 3 | 5 | 7 | 2 | 0 | 7 |
| Advertising Signs & Displays | 28 | 40 | 25 | 32 | 29 | 37 | 29 | 18 | 18 |
| Tools, Cutlery & Ladders | 29 | 19 | 7 | 14 | 29 | 41 | 30 | 15 | 34 |

Hardwood consumers showed more interest in strength than western pine consumers, and western pine users showed more interest in paintability than the hardwood users. These were the only variations between the two in the six most desired characteristics.

There was also a similarity between the characteristics desired by fire-larch and southern pine cut-up lumber users (Figure 6). Fir-larch consumers ranked strength as the most important characteristic, followed by resistance to splitting. Southern pine users listed resistance to splitting as the most important characteristic followed by strength. This was the only variation between these two species classes in the ranking of their five most desired characteristics.

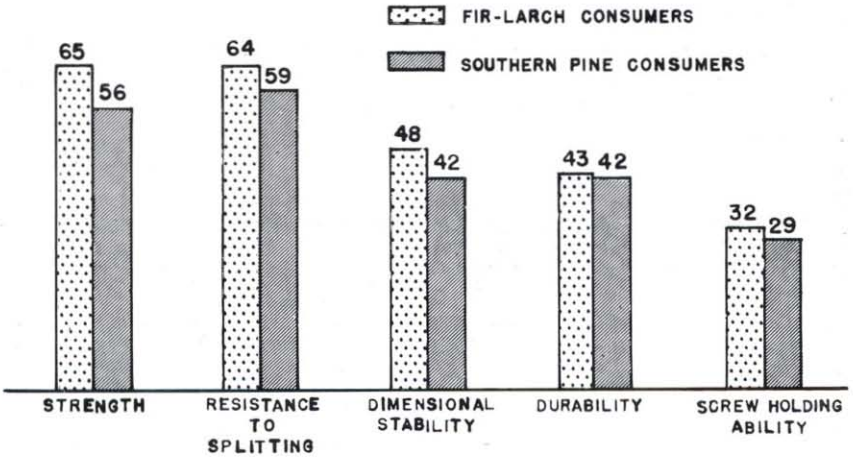


**Figure 6. The Percentage of Responding Firms Utilizing Fir-Larch and Southern Pines Indicating the Characteristics as Important.**

### Characteristics Desired, According to Product Produced

Table 5 shows the relationships between the product produced categories and the characteristics the firms thought were important. Although the characteristics desired varied widely in the different categories, the respondents indicate that machineability, resistance to splitting, strength, and dimensional stability were the most desired characteristics.

Machineability was shown to be first in importance to those manufacturers producing millwork; unupholstered furniture; office and institutional furniture; and partitions, shades, and fixtures. Resistance to splitting was shown to be second in importance to the same manufacturers.

Resistance to splitting was shown to be the most important characteristic to those firms manufacturing wood boxes, upholstered furniture, mattresses and bedsprings, toys, morticians' supplies, machinery, and others.

Strength was the first or second characteristic desired by those firms manufacturing transportation equipment, machinery, steel products, wood boxes, upholstered furniture, and mattresses and bedsprings.

### Characteristics Desired, By Volume of Cut-up Lumber Used

Table 6 shows differences that exist between the characteristics desired by small cut-up lumber consumers and large cut-up lumber consumers. This table shows there was little variation between the characteristics desired by small consumers and large consumers.

Resistance to splitting was the most important characteristic in every volume size class. It was generally followed by machineability, strength, and dimensional stability.

The largest size class, or those using 10 to 30 million board feet of cut-up lumber annually, placed more importance on dimensional stability and durability than smaller users.

**Table 6. Characteristics of cut-up lumber desired by the respondents, according to volume of cut-up lumber used annually.**

| Desired Characteristics | Size Class of Firms by Volume Used (In M Bd. Ft.) | | | |
|---|---|---|---|---|
| | 0-199 | 200-999 | 1,000-9,999 | 10,000-30,000+ |
| Machineability | 45 | 61 | 64 | 62 |
| Paintability | 33 | 36 | 44 | 40 |
| Glueability | 35 | 46 | 43 | 52 |
| Screw holding ability | 38 | 39 | 36 | 52 |
| Durability | 42 | 46 | 45 | 63 |
| Resistance to Splitting | 59 | 70 | 67 | 70 |
| Lack of odor | 15 | 17 | 22 | 15 |
| Dimensional Stability | 44 | 57 | 62 | 70 |
| Natural Grain and Beauty | 30 | 25 | 28 | 33 |
| Strength | 49 | 58 | 59 | 59 |
| Light Color | 19 | 23 | 32 | 22 |
| Dark Color | 5 | 2 | 3 | 0 |

## CUT-UP LUMBER PURCHASES

### Purchases, By Regional Location

There appears to be no great difference in the frequency of carload or truckload purchases in different regions throughout the United States (Figure 7). Over 40 percent of the respondents in the West North Central, East North Central, West South Central, and the Middle Atlantic regions indicated making carload purchases. Over 40 percent of the respondents in all nine regions indicated making truckload purchases. It is important to remember that these percentages represent the method of purchases only, and not necessarily the volume purchased.

In every region except the West North Central, more cut-up lumber purchases were made by truckload than by carload. The higher percentage of truckload purchases may indicate the importance of central distributing or wholesale centers that distribute the orders by truckload.

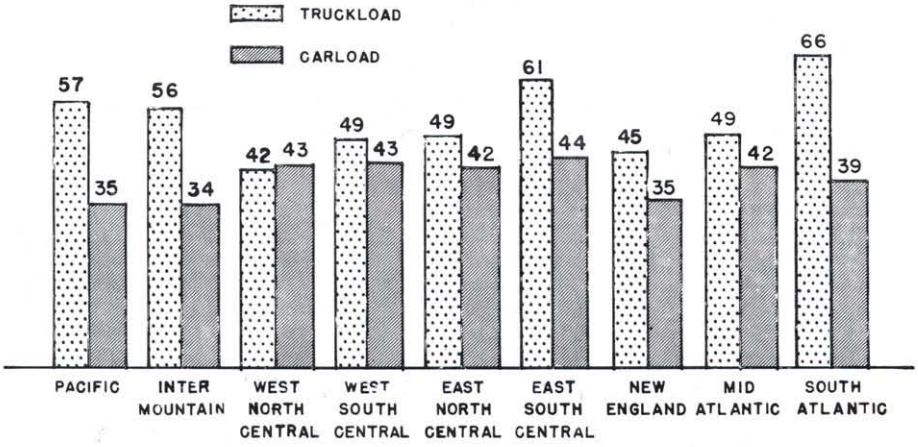


**Figure 7. The Percentage of Responding Firms Receiving Cut-up Lumber by Truckloads and Carloads by Their Regional Location.**

### Purchases, By Volume of Cut-up Lumber Used

There was a definite increase in carload purchases as the amount of cut-up lumber used by the firms increased (Figure 8). In the smallest size class, less than 30 percent of the respondents made carload purchases, whereas over 50 percent of the respondents made truckload purchases. However, in the largest volume size class, 85 percent of the respondents made carload purchases, and 55 percent showed they made truckload purchases.

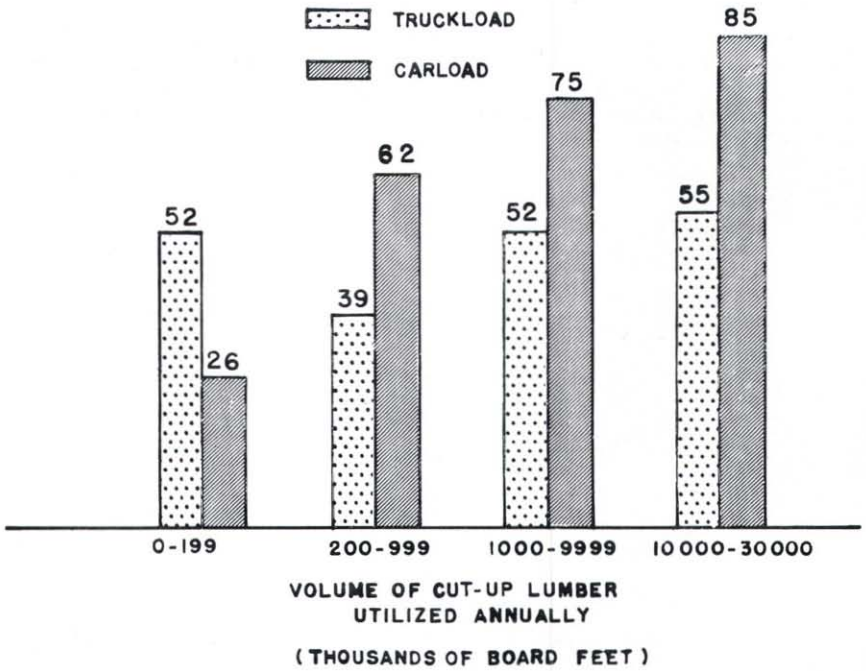


**Figure .8 The Percentage of Responding Firms which Receive Cut-up Lumber by the Carload or Truckload According to the Volume of Cut-up Lumber They Use Annually.**

This data fits traditional concepts of lumber purchasing, as the larger firms generally purchase the great majority of their lumber in carload lots. As was shown by the respondents, these firms also do some supplemental buying in truckload orders.

## POTENTIAL USE OF CUT-UP LUMBER

Although there was wide fluctuation in the respondents' answers to the question, "If not already doing so, would your company consider using cut-up lumber material in existing products?"

a good deal of interest was shown in the use of cut-up lumber. In total, some 406 or 10.4 percent of the 3,870 total respondents indicated they were interested in the future use of cut-up lumber, though they were not now using it. An additional 446 firms or 12 percent of the respondents who were already using cut-up lumber voluntarily revealed they would like to use more cut-up material.

**Potential Use, By Type of Product Produced**

Wood box producers showed the greatest interest in expanded use of cut-up lumber as 46 percent indicated they would consider newly using it (Figure 9). Over 25 percent of the respondents

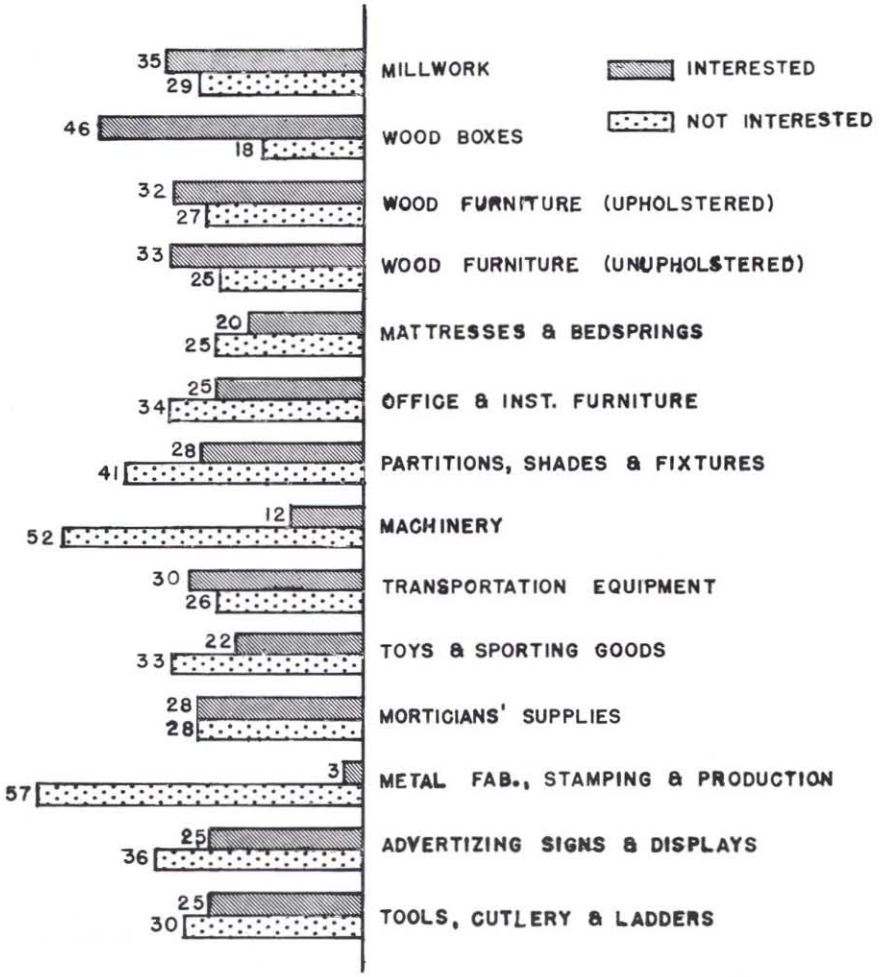


**Figure 9. The Percentage of Firms Indicating an Interest or Non-Interest in the Future Use or Increased Use of Cut-up Lumber.**

in each of the millwork, furniture, shade and fixture, transportation equipment, and morticians' supply categories demonstrated interest in the future use of cut-up material.

Machinery, metal stampings and speciality metal products producers showed little interest in cut-up lumber. Less than 12 percent of the respondents in these categories indicated interest in its future use. These manufacturers were included in the study because they use large quantities of standard size lumber. They use lumber in packaging and crating, but they indicated it was more practical to purchase standard size lumber material and cut it to size themselves.

### Potential Use, By Region

The responding firms indicated that there is more interest in increased use of cut-up lumber in the West Coast, the North Central, and Middle Atlantic states than the other regions (Figure 10). Fourteen percent of the firms interested in the future use of cut-up lumber were located in the Pacific Region, 38 percent were in the two North Central regions, and 16 percent were in the Middle Atlantic region.

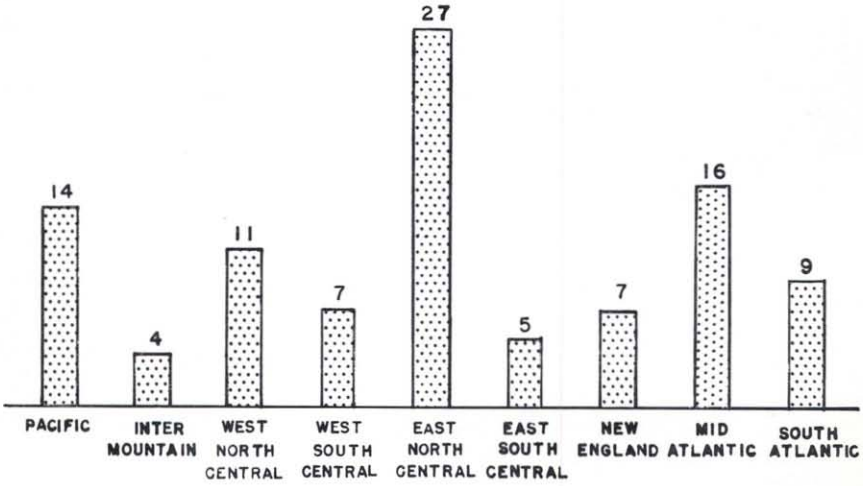


**Figure 10. The Percentage of Responding Firms Which Indicated an Interest in the Future Use or Increased Use of Cut-up Lumber by Regions.**

**Appendix I: Cut-up Lumber Stock Study***

Name of Company .....

Address ..... City ..... State .....

Name of Respondent ..... Title .....

1. Would you please check the important products of your company:

| | | | |
|---|---|---|---|
| Millwork | —— | Partitions and Shades | —— |
| Wood Boxes | —— | Machinery | —— |
| Wood Furniture (upholstered) | —— | Transportation Equipment | —— |
| Wood Furniture (unupholstered) | —— | Toys and Sporting Goods | —— |
| Mattresses and Bedsprings | —— | Morticians' Supplies | —— |
| Office Furniture | —— | Others ..... (name) | |

2. Please Check the following wood products used by your organization:

| | | | |
|---|---|---|---|
| Cut-up Lumber | —— | Hardboard | —— |
| Standard Size Lumber | —— | Particleboard and Flakeboard | —— |
| Plywood | —— | None | —— |

3. Please list the approximate annual volume of cut-up lumber used by your firm and check how it is purchased:

Volume ..... Carload ..... Truckload .....

4. If not already doing so, would your company consider using cut-up lumber material in existing products? Yes ..... No .....

IF 2, 3 and 4 ARE NEGATIVE, THERE IS NO NEED TO CONTINUE THE QUESTIONNAIRE.

5. Please list in order species of cut-up lumber stock in accordance with the importance to your firm: (1, 2 and 3)

| | | |
|---|---|---|
| Western Pines—— | Northern Pines—— | Hardwoods—— |
| Southern Pines—— | Fir-Larch—— | Other ..... (name) |

6. Please check the following characteristics of cut-up lumber stock that are important in your operation,

| | | | |
|---|---|---|---|
| Machineability | —— | Lack of odor | —— |
| Paintability | —— | Dimensional stability | —— |
| Glueability | —— | Natural grain & beauty | —— |
| Screw-holding ability | —— | Strength | —— |
| Durability | —— | Light color | —— |
| Resistance to splitting | —— | Dark color | —— |

*Cut-up lumber stock is lumber that has been pre-cut to specific customer specifications.

**Appendix II. Weighted ranking of respondents' use of selected cut-up lumber species by type of product they produced.**

| Product Classification | Cut-up Lumber Species (Weighted rankings)* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Western Pines | Southern Pines | Northern Pines | Fir-Larch | Hardwoods | Hemlock | Cedar-Redwoods | Alder | Others |
| Millwork | 667 | 140 | 134 | 258 | 622 | 50 | 58 | 0 | 45 |
| Wood Boxes | 300 | 96 | 70 | 80 | 306 | 11 | 21 | 0 | 37 |
| Wood Furniture (upholstered) | 75 | 54 | 27 | 56 | 492 | 12 | 0 | 25 | 30 |
| Wood furniture (unupholstered) | 183 | 71 | 69 | 76 | 754 | 14 | 25 | 5 | 46 |
| Mattresses & Bedsprings | 51 | 30 | 16 | 45 | 87 | 10 | 0 | 3 | 48 |
| Office & Institutional Furniture | 50 | 22 | 19 | 20 | 217 | 3 | 2 | 12 | 18 |
| Partitions, Shades, & Fixtures | 120 | 23 | 21 | 31 | 155 | 9 | 6 | 0 | 6 |
| Machinery | 57 | 54 | 34 | 60 | 117 | 0 | 7 | 0 | 12 |
| Transportation Equipment | 122 | 167 | 47 | 127 | 172 | 3 | 6 | 0 | 23 |
| Toys & Sporting Goods | 78 | 53 | 27 | 39 | 185 | 7 | 27 | 0 | 22 |
| Morticians' Supplies | 55 | 8 | 8 | 2 | 51 | 0 | 41 | 0 | 5 |
| Metal Fabrications, Stamping & Products | 33 | 38 | 16 | 29 | 51 | 3 | 8 | 0 | 3 |
| Advertising Signs & Displays | 63 | 27 | 24 | 27 | 76 | 1 | 4 | 0 | 0 |
| Tools, Cutlery & Ladders | 19 | 31 | 12 | 33 | 144 | 9 | 2 | 0 | 23 |
| Others | 127 | 78 | 39 | 147 | 305 | 33 | 60 | 0 | 35 |
| Total | 2,000 | 792 | 563 | 1,030 | 3,734 | 165 | 267 | 45 | 353 |

*The figures in this table are the sum of the weighted rankings. First ranked species were weighted with three, second ranked with two, and third ranked with one for each respondent.