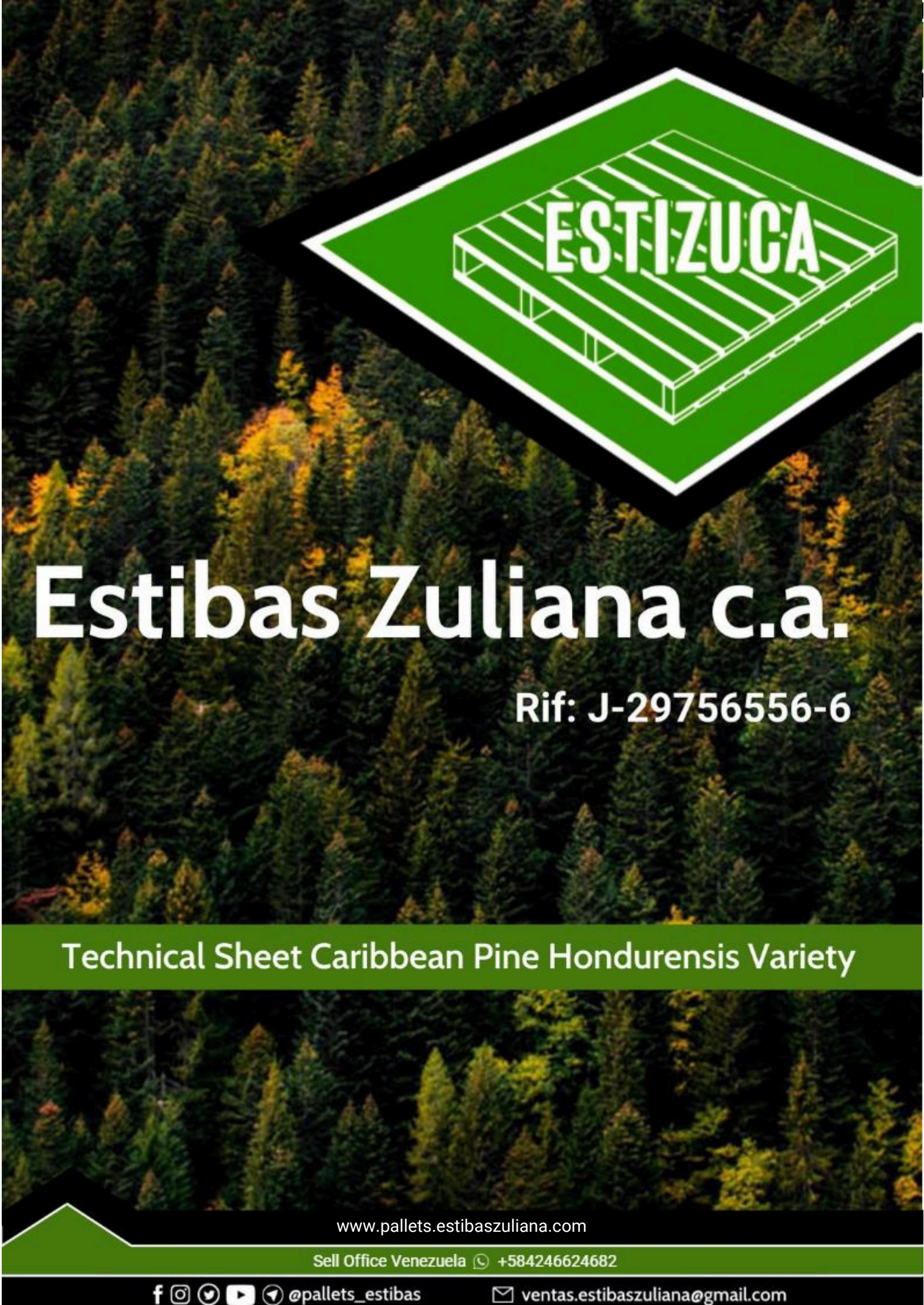

Estibas Zuliana c.a.

Rif: J-29756556-6

Technical Sheet Caribbean Pine Hondurensis Variety

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General information about the wood of Caribbean Pine, Hondurensis Variety.

I. Review on the wood obtained from the conifer "Caribbean Pine, Hondurensis Variety"

1.- This wood has a high versatility, from the point of view of its use. Knowledge of its physical and mechanical properties allows optimization of processing and utilization parameters.

2.- This wood is moderately heavy. Generally with a more or less strong resinous odor, but without a distinctive taste. Grain almost always straight. Heartwood reddish brown, the depth of the color varies with the amount of resin. Pale sapwood. Growth rings clearly defined by bands of dense tissue.

3.- The Caribbean Pine is dense, hard and resinous, and has high strength properties compared to woods of similar density, the Caribbean Pine is above average in terms of impact resistance and stiffness.

4.- Natural wood (not kiln dried and without chemical treatment) is highly resistant to termites, influenced by its high resin content.

5.- The wood performs well against the use of nails and screws, and is successfully varnished and painted. Can be successfully glued.

6.- The Caribbean Pine wood can be used for a large number of uses such as: Light and heavy construction, railroad ties, parquet, pulp and paper, particle board, fibreboard, carpentry (manufacture of furniture diversity), and cargo pallets.

7.- This wood is subjected to a drying process (steam chambers), and a humidity of approximately 12% is obtained, according to the drying program set for it.

II. Physical - mechanical properties of the Caribbean Pine, Hondurensis Variety.

1.-Physical properties

Density (grs./cm3)	Deviation	Coefficient of variation	Maximum value (Density)	Minimum value (Density)	Range
0,61138	0,06791	11,1083	0,7540	0,4910	0,263
Volumetric Shrinkage	Deviation	Coefficient of variation	Maximum value	Minimum value	Range
0,118926	0,011235	9,4469	0,14453	0,08931	0,05522
Longitudinal Shrinkage	Deviation	Coefficient of variation	Maximum value	Minimum value	Range
0,004479	0,002539	56,6877	0,01577	0,00079	0,01498
Tangential Shrinkage	Deviation	Coefficient of variation	Maximum value	Minimum value	Range
0,056659	0,009502	16,7705	0,07670	0,02537	0,05133
Shrinkage radial	Deviation	Coefficient of variation	Maximum value	Minimum value	Range
0,056624	0,008445	14,9142	0,07289	0,02442	0,4847
Static bending. Modulus of Rupture (Kg./cm2)	Deviation	Coefficient of variation	Maximum value	Minimum value	Range
98,3141	27,9444	28,4236	172,759	44,412	128,33
Static bending. Modulus of Elasticity. (Kg./cm2)	Deviation	Coefficient of variation	Maximum value	Minimum value	Range
6396,49	1571,95	24,5752	10190,20	4286,81	5903,40
Parallel compression. Effort to the proportional limit (Kg./cm2)	Deviation	Coefficient of variation	Maximum value	Minimum value	Range
129,5110	34,3776	26,5442	224,903	67,5143	157,389
Maximum parallel compressive strength (Kg./cm2)	Deviation	Coefficient of variation	Maximum value	Minimum value	Range
317,149	78,9682	24,8994	565,520	181,623	383,898

Parallel compression. Modulus of Elasticity (Kg./cm2)	Deviation	Coefficient of variation	Maximum value	Minimum value	Range
25177,8	9786,95	38,8713	54639,6	11525,7	43113,9
Perpendicular compression. Effort to the proportional limit (Kg./cm2)	Deviation	Coefficient of variation	Maximum value	Minimum value	Range
46,7331	4,3068	9,2050	55,8927	39,4148	16,4779
Radial shear resistance (Kg./cm2)	Deviation	Coefficient of variation	Maximum value	Minimum value	Range
96,3019	21,5833	22,4121	136,325	55,4004	80,9248
Tangential shear resistance (Kg./cm2)	Deviation	Coefficient of variation	Maximum value	Minimum value	Range
109,3670	22,2664	20,3593	154,973	74,9106	80,0620
Radial hardness (Kg.)	Deviation	Coefficient of variation	Maximum value	Minimum value	Range
450,177	165,9280	36,8584	781	148	633
Tangential Hardness (Kg.)	Deviation	Coefficient of variation	Maximum value	Minimum value	Range
447,615	196,0830	43,8062	955	142	813
Hardness at the ends (Kg.)	Deviation	Coefficient of variation	Maximum value	Minimum value	Range
520,677	155,0420	29,7770	850	278	572
Radial toughness (Kgm.)	Deviation	Coefficient of variation	Maximum value	Minimum value	Range
1,26964	0,529178	41,6794	2,60	0,39	2,21
Tangential toughness (Kgm.)	Deviation	Coefficient of variation	Maximum value	Minimum value	Range
1,43893	0,592240	41,1584	3,21	0,51	2,70

Average mechanical properties at equilibrium moisture content (12%).

PROPERTY	
Static Bending (Specimens) Modulus of Rupture (Kg./cm2)	874,6138
Static Bending (Beams) Modulus of Rupture (Kg./cm2)	119,2924
Modulus of Elasticity	7078,9315
PARALLEL COMPRESSION (Kg./cm2)	
Effort to the proportional limit	143,1252
Modulus of rupture	357,1554
Modulus of elasticity	26236,480
PERPENDICULAR COMPRESSION (Kg./cm2)	
Effort to the proportional limit	52,7471
Shearing (Kg./cm2)	113,5997
Compression (Kg.)	481,0650
Hardness at the ends (Kg.)	580,3778
Tenacity (Kg.-m.)	1,4085

2.- Mechanical properties

Variation of mechanical properties for a unit variation in moisture content

PROPERTY	% OF VARIATION
FLEXION	
Effort to the proportional limit	5,0
Modulus of rupture	4,0
Modulus of elasticity	2,0
PARALLEL COMPRESSION	
Effort to the proportional limit	5,0
Modulus of rupture	6,0
Modulus of elasticity	2,0
PERPENDICULAR COMPRESSION	
Effort to the proportional limit	5,5
Shearing	3,0
HARDNESS	
a.- Sides	2,5

b.- Ends	4,0
Tenacity	1,0

III. International Standard for Export applied by the Bolivarian Republic of Venezuela.

- (ISPM No. 15). Export Standards issued by FAO (Food and Agriculture Organization of the United Nations).

This International standard on phytosanitary matters No. 15 (ISPM, No. 15), is the one who dictates the guidelines to regulate the wood used in international trade resulting from the International Protection Convention ESTIBAS ZULIANA, C.A. RIF: J-29756556-6. Venezuela, Maracaibo, Zulia State, San Francisco Municipality, Ring road N ° 1, Manzanillo, Warehouse 25B-1-05, 800 meters from the bridge over the lake. Zip code 4004. Phones: (0261) 7153281/7153707 6169559 / 4173963. Cellphone: +58 414 6054666, as well as defines the phytosanitary measures to reduce the risk of introduction and / or dispersal of quarantine pests related to coniferous wood and does not confer, andthatmay representapathwayfor plant pests, which constitute a threat, mainly for living trees.

IV. Quality offered and its characteristics.

Quality I: - It does not present a coloration different from the natural color of the wood. - Presents knots with a diameter greater than 1 inch at most, about 10 well-spaced knots. - May have minor veins of resin. - Bending: At most 1cm in 3.60 m length (0.3%). - Arches: At most 1.5cm in 3.60m length (0.4%).

V. Weight

Weight:Onecubic meter (1 m3) of Caribbean Pine Sawn Wood Var. Hondurensis weighs approximately Five Hundred Eighty Kilograms (580 Kg).

VI. Packing Form:

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