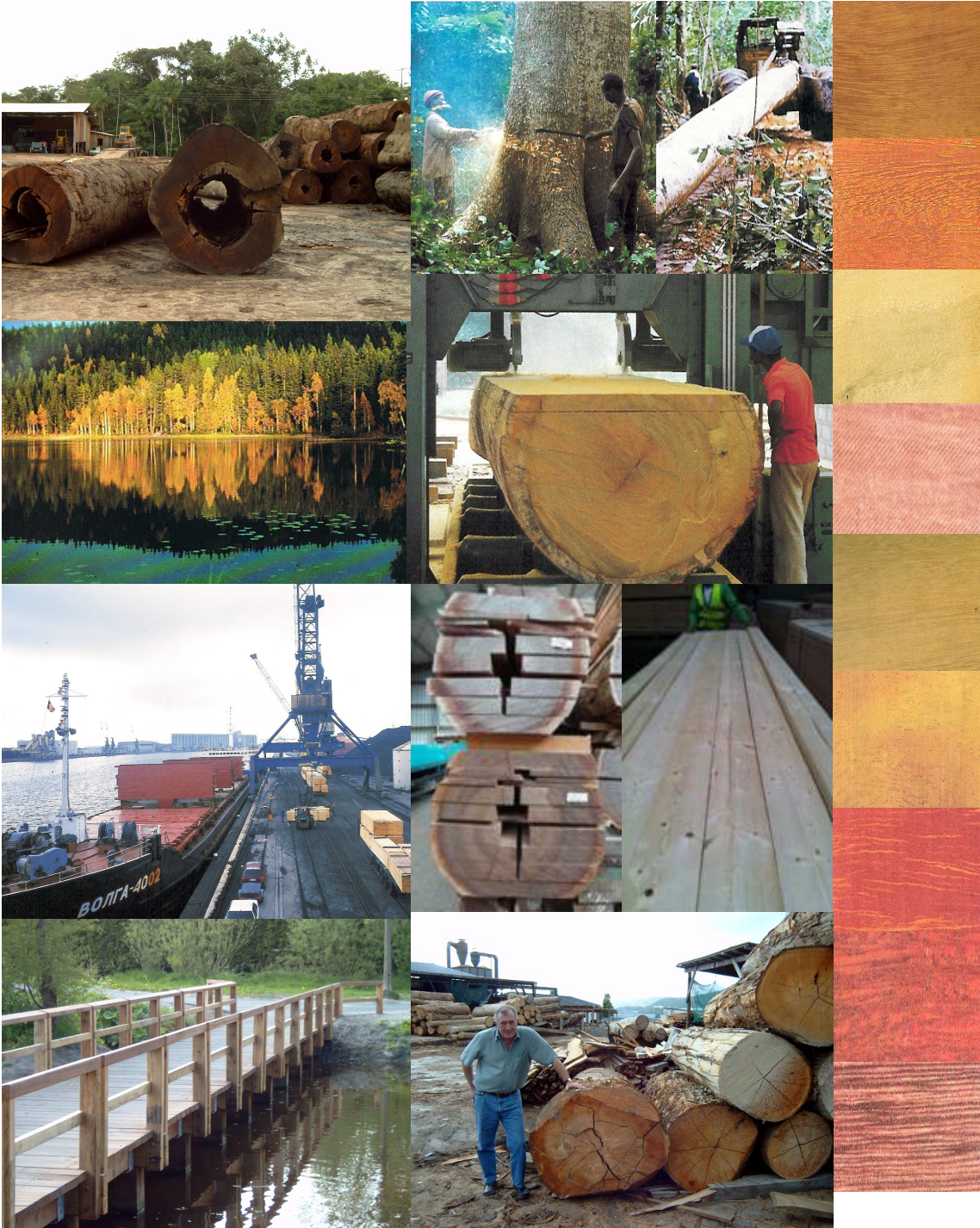


Tibor Timber Agency (TTA)

Do it the easy way, call TTA!



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Wood and Markets

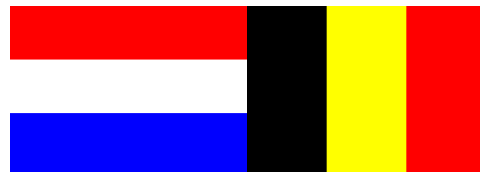
Wood has been used for centuries as a reliable constructional material. Despite the development of materials like aluminium, steel, plastic and concrete wood is a better alternative. Wood is elastic, strong and versatile. An advantage of a wooden construction is its fire resistance. Under extreme temperatures wood doesn't show unpredictable behaviour. In most of the cases the construction still stands after a fire and is there no danger of collapsing. Besides its fire resistance wood can easily absorb bumps and shakes. Wood can be durable, depending on the species, and is competitive in price. Wood can also be environmental friendly as the production factory is - in principle - a well-managed forest. Comparing the energy needed to make wood products with regard to other materials is shown in the table of Enno Abel and Sten Jacobsson:

Energy consumption		
		kWh / m ³
Wood		190
Concrete		1700
Plastic		11000
Steel		82000
Aluminium		85000

If a proper forest management is realized wood is a renewable resource and waste products can be used as energy source for biomass power stations. Concluding:

Wood is an excellent constructional material for everybody

Tibor Timber Agency (TTA) is market oriented. Specific customer demand is possible to get although some sawmills have standardized their production capacity. TTA advises in the best possible and available timber species and provides services like marketing, negotiating, documentation, further processing of the wood and shipping & logistics and tries to realize win-win situations between the sawmills and the customers. Because of its structure TTA is able to offer high quality wood products at a competitive price. TTA represents several sawmills in Germany for hardwoods and softwoods and a sawmill in South-Africa for hardwoods and sells in the Netherlands and Belgium mainly.



Forest Management and Policy

Proper planning reduces the impact on the environment and decreases the harvesting costs. The low impact logging as such, like the creation of the entrance to the forest, the cutting, the recovery after removal of the trees are being considered to keep any damage as low as possible. Planning is done with educated forest engineers and monitored during the entire operation. The ecological data gathered is being investigated before any cutting is done. At first being looked at is the forest soil, the bearing capacity, the sensitivity for erosion and the type of soil. No cutting is allowed on swampy or rocky areas and operations stay away from rare species. Governmental bodies release harvesting credits and monitor through GPS the actual activity in the forests. Commercially interesting trees are cut selectively. The selective cutting of trees is done by chainsaw and the tree is being transported by a caterpillar of a certain weight class (depending on the capacity of the soil). Logs are then collected to a properly chosen spot where they are loaded on a truck which transports the trees to the various sawmills. Road works are done to a minimum extent and when the work is finished left such behind that after a couple of months the first vegetation covers the area so that is hard to see harvesting has been done. Temporary bridges across brooklets are being removed after the operation.

In case the harvesting is done according to the FSC principles similar procedures as above are applicable, but also the social-economic factors of the indigenous people are concerned to a larger extent. Besides this there is a wider variety of species which are being cut besides the commercial interesting species. Because the ecological data is interpreted in a different way less wood of a certain species can be harvested. To be able to keep the harvesting economically viable the lesser known species must be promoted.

The future of TTA depends on the long-term availability of timber. Responsibility towards customers and society demands a sound attitude to the conservation of the forests. TTA encourages fair measures to ensure future supplies and will purchase from suppliers who source wood products legally and comply with relevant environmental legislation and regulations. TTA will refrain from trading in endangered species prohibited under appendix 1 of the Cites convention.



Stammware, sawn, planed and further processed wood

High quality wood is key to a high quality wood product therefore the choice of the right species for the right application has to be made properly. Modern equipped planing mills provide the wood with a machined surface, chamfers, rounded edges, grooves or any other demanded profile. For specialties TTA tries to find the most logical solution(s). Also recutting, cross-cutting, rebating and other machining can be realised to a certain extent. For the most common species standard dimensions apply. The most common species are Ekki for exterior use like piling, Bangkirai for deckings, Oak for furniture and stairs and Spruce for construction timber. Ekki piles are available from 40x40mm x 0.6m until 200x200mm x 6.0m. Oak is available in KD stammware in lengths of 4m and longer and Bangkirai in deckings in 25 x 145mm. Lengths from 2.1 – 6.0m +0.3m. Spruce in CLS 38x63, 89, 120, 140, 170, 184, 235 and 286mm, boards 20x200mm and scaffold boards 32x200mm. Lengths up to 9.5m.



Wood for window frames

The function of a window frame is to keep water and wind outside, to absorb sounds, to limit interior temperature loss, to form a stable moving unit and not to shrink and swell more than is tolerated. Besides these functions limited maintenance is important. The maintenance is determined by the durability of the wood, the way the different parts are connected, the specific profiles machined and the coating used. Most of the time glass is being used, but also plywood can be put within the frame. Moveable parts within the frames are the windows and doors. Standard sizes for window frames in The Netherlands are the actual sizes 67 x 90 mm, 67 x 102 mm en 67 x 114 mm, actual size. TTA supplies 80mm x 130mm in species suitable for window frames KD 14+/-2%. The customer can fingerjoint within the KOMO regulations.



Wood for doors

The door is energy saving as it closes the building from the outside. A door needs to fit well and keeps the water and wind outside like window frames. Doors need to be burglar-proof, stable and meet the requirements for the design the customer wants. The standard sizes for doors in The Netherlands are: height 2015 and 2115mm, width 780, 830, 880 or 930 mm, thickness 38 or 54 mm. Tolerances only +/-1mm in height and in width.



Wood for stairs

The wooden stair has much to offer to a house. The design, the wood species, the wood structure can change the whole idea of experiencing a house. Stairs can be made in any wood species, except species which have a very low hardness. Combinations with steel are possible and also the handrail can be from steel or any other material or from wood.



Wood for flooring

Wood floors exist - in principle – of wooden girders on which boards with tongue and groove are nailed. Besides solid flooring there is a lot of demand for parquet flooring. Parquet is a flooring with a minimum of 6mm thickness. There are different forms of parquet:

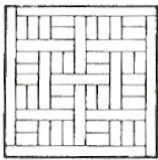
Tapis – usually 6,3 mm thick parquet. The parquet parts without tongue and groove can be laid in a large variety of patterns. The parts are glued or nailed to the underlayment.

Stripparquet – a separation is made between parts with tongue and groove all around or groove all around. When only a groove the tongue is a separate item to connect the parts. Thicknesses of strip-parquet are mainly 15,18 or 20mm. The parts can be nailed or glued to the underlayment and are laid in strips, block or fishbone pattern.

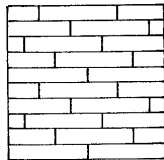
Mosaicparquet – A mosaic floor is usually build from 6 to 8 mm thick pieces rectangular wood. It is glued straight to the concrete.

Lamelparquet – usually composed from three parts of wood glued together in parallel direction and provided with tongue and groove all around. The top layer is most of the time about 5mm thick and the width of the parts about 60mm. The total thickness of the most common boards is 15,18 or 20mm. The underlayment is mostly plywood.

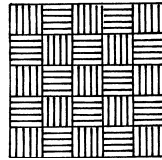
Lamellenparquet – existing of sideways glued together pieces of wood of about 3 - 8mm or plywood.



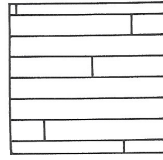
Tapis



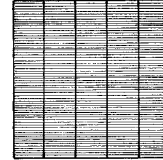
Stripparquet



Mosaicparquet



Lamelparquet



Lamellenparquet

Wood for furniture

The most common species to use in furniture is oak. It can be European oak or for example White oak from Northern America. TTA supplies European oak Boules in QBA-QB3 quality, KD in thicknesses of 26/30/35/40/52/55/65/80 and 100mm. Also species like Sipo, Sapele and Iroko are available in Boules in a high quality, some with FSC certificate. American White oak is available in a FAS1F quality. A little bit of stock is kept in Teak FEQ quality in 26/52/65mm.



A specialty TTA is offering in the market is Australian Blackwood in table-tops. The table-tops are 40/60 or 80mm in thickness, 0.9-1m in width and have a length of 2.5-3.0m. The faces are surfaced.



Campsheeting

In surroundings abounded with water a proper campsheeting is of vital importance. TTA is your partner for supplying you the right timber for campsheetings and piles. Combinations of softwood below the water-level and hardwood above the water-level are possible and economical. Most of the time the campsheetings are put against piles with a heart-to-heart distance of 1m. Most common sizes and lengths of the piles are:

	100	120	150	175	200	175	200	250	275	300	350	400
4 x 4 cm	x	x	x									
5 x 5 cm			x	x	x							
6 x 6 cm			x	x	x	x	x	x	x	x	x	
7 x 7 cm			x	x	x	x	x	x	x	x	x	
8 x 8 cm			x	x	x	x	x	x	x	x	x	x
10 x 10 cm			x	x	x	x	x	x	x	x	x	x



Sheet piling and bunt-lines

Sheet piling boards are supplied in a standard width of 175-185mm with a standardized trapezoid tongue and groove and splayed ends. The splayed ends are made to be able to press the boards properly against each other. Lengths up to 6m are possible. The standard thicknesses are 40, 50 and 60mm, but also thicker thicknesses do occur.

Bunt-lines can be rough sawn or planed and are most of the time provided with 2 chamfers at the face side. The joints are 150 or 200mm in length mainly depending on the size of the bunt-line. Common sizes are 50x150mm up to 150x200mm. Bolts are oft countersunk. Corner posts connecting the sheet piling can be made in 90 degrees. In some cases the sheet piling is braced to stabilize the row of sheet piling boards.



Piles

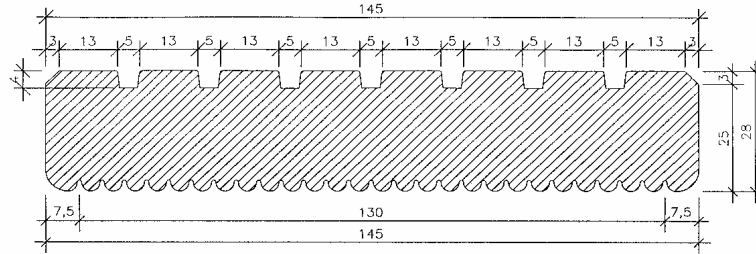
The possibility in piles is almost unlimited. Every size between 40x40mm x 0.6m and 250x250mm x 10.0m is available in larger quantities. The piles can be rough sawn or planed and pointed or not pointed. The most common sizes for rough sawn piles are 60x60, 70x70 and 100x100mm. The 60 and 70mm are being sold in lengths of 1.5-6.0m. The 100mm in lengths of 2.5-6.0m. Planed piles are available in 68x68 and 88x88mm in 2.5-6.0m, planed 4-sides, sometimes provided with 2 V-grooves each face and sometimes reeded each face, with chamfers or 4 rounded edges, cut square both ends, pointed or with a diamond-head and pointed.



Deckings

The application for deckings is mainly to be found for terraces, boardwalks and bridges. The standard deckings TTA sells are 21, 25 and 28mm x 145mm in lengths of 2.1 – 6.0m in the species Massaranduba, Garapa and Bangkirai mainly.

TTA has the standard Dutch profile available:



Massaranduba



Garapa

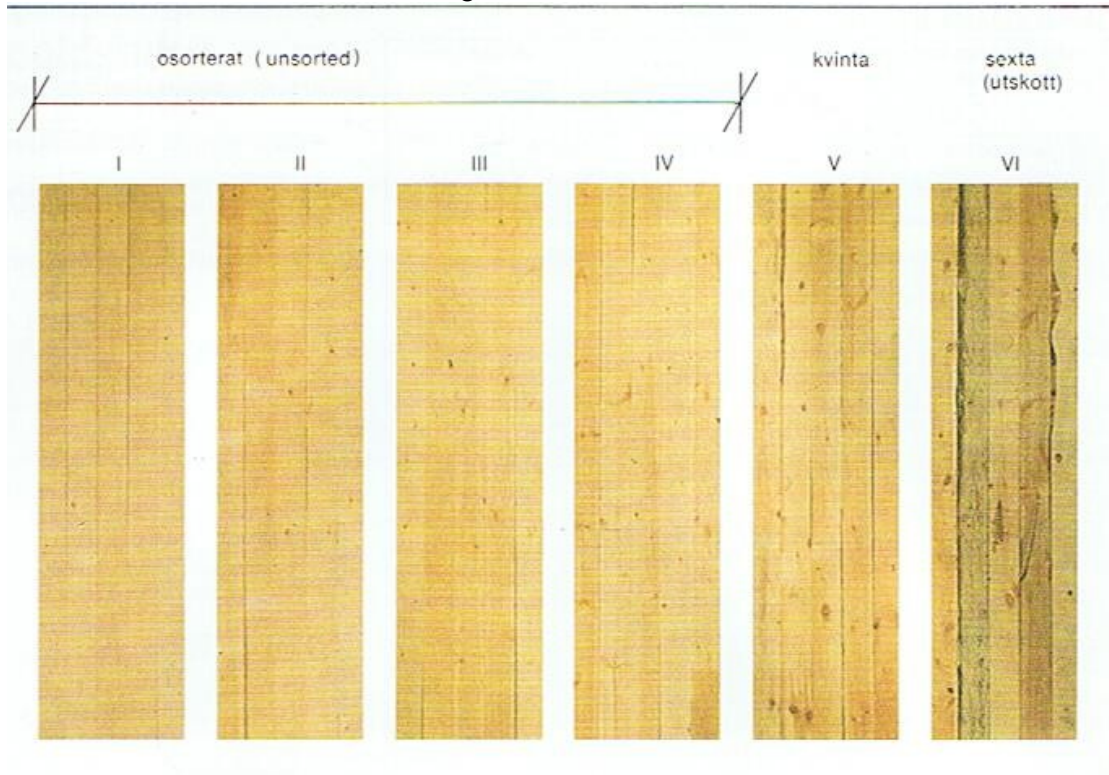


Bangkirai

Wood qualities

Softwoods:

- ◆ Former Nordic Timber Grading Rules:



- ◆ Current Nordic Timber Grading Rules: www.swedishwood.com
- ◆ Russian GOST: http://www.russianlumber.com/grading_rules.htm

Hardwoods:

- ◆ European norm for oak: http://en.eurochene.com/_medias/websites/eurochene-en/storage/european-oak-grading-rules-qfla-qflb_396.pdf
- ◆ NHLA Rules: <http://nhla.com/industry-services/rules>

Wood species

Softwoods:

Douglas

Fir

Larch

Pine

Spruce

Hardwoods:

Angelim vermelho

Australian Blackwood

Bangkirai

Ekki

Garapa

Iroko

Karri

Massaranduba

Oak

Okan

Red Mahogany

Sapele

Sipo

Tali

Tallowwood

Teak

Technical properties compared

(Shrinkage from fresh cut to oven dry in %)

Houtsoort	Krimp Radiaal	Houtsoort	Krimp Tangentiaal
Uchi	9,60	Lariks	10,40
Louro Vermelho	8,60	Azobe	10,20
Sapucaia	7,90	Manbarklak	10,20
Demerara Groenhart	7,60	Bangkirai	10,00
Azobe	7,20	Itauba	9,70
Massaranduba	7,10	Eiken	9,60
Acapu	6,70	Dabema	9,50
Manbarklak	6,50	Massaranduba	9,40
Douglas	5,80	Vuren	8,90
Basralocus	5,50	Piquia	8,80
Hemlock	5,40	Hemlock	8,50
Sapeli	5,30	Tali	8,40
Tanimbuca	5,30	Douglas	8,40
Sipo	5,20	Demerara Groenhart	8,40
Cumaru	5,00	Walaba	8,30
Angelim Vermelho	4,80	Angelim Pedra	8,30
Angelim Pedra	4,80	Angelim Vermelho	8,20
Bangkirai	4,80	Grenen	8,00
Tali	4,80	Basralocus	8,00
Eiken	4,70	Bilinga	7,80
Bilinga	4,70	Cumaru	7,60
Robinia	4,40	Tanimbuca	7,40
Piquia	4,30	Denya	7,30
Lariks	4,30	Rode Meranti	7,30
Purperhart	4,20	Sapeli	7,20
Vuren	4,10	Dennen	7,20
Denya	4,00	Purperhart	6,90
Dabema	4,00	Robinia	6,90
Walaba	3,90	Uchi	6,40
Grenen	3,80	Sipo	6,30
Rode Meranti	3,80	Merbau	5,40
Itauba	3,70	Sapucaia	5,10
Iroko	3,30	Iroko	5,10
Merbau	3,20	WRC	4,70
Dennen	2,90	Louro Vermelho	4,50
Tatajuba	1,80	Acapu	4,30
WRC	1,80	Tatajuba	2,40
Tallow ood	Niet bekend	Tallow ood	Niet bekend
Tauart	Niet bekend	Tauart	Niet bekend
Karri	Niet bekend	Karri	Niet bekend

Technical properties compared

(Bending strength (N/mm²), durability class and E-modulus (N/mm²))

Massaranduba	190	Acapu	1	Demerara Groenhart	22600
Cumaru	188	Angelim Vermelho	1	Cumaru	20800
Tauart	184	Azobe	1	Manbarklak	20600
Ipe	184	Basralocus	1	Massaranduba	19600
Demerara Groenhart	180	Bilinga	1	Angelim Vermelho	19400
Manbarklak	169	Cumaru	1	Tanimbuca	19370
Tanimbuca	167	Demerara Groenhart	1	Tallow ood	19335
Acapu	166	Denya	1	Karri	19200
Angelim Vermelho	159	Ipe	1	Ipe	18800
Sapucaia	157	Itauba	1	Azobe	18600
Azobe	157	Manbarklak	1	Walaba	18600
Tali	154	Massaranduba	1	Purperhart	18400
Tallow ood	153	Padouk	1	Tauart	18340
Uchi	150	Piquia	1	Tatajuba	17700
Purperhart	142	Sapucaia	1	Denya	17200
Tatajuba	141	Tali	1	Tali	16300
Walaba	139	Tallow ood	1	Itauba	16200
Denya	133	Tauart	1	Angelim Pedra	16140
Robinia	133	Walaba	1	Acapu	16100
Karri	132	Angelim Pedra	2	Basralocus	16000
Bangkirai	131	Bangkirai	2	Bangkirai	15900
Bilinga	129	Cupiuba	2	Sapucaia	15600
Basralocus	126	Dabema	2	Uchi	15600
Itauba	124	Eiken	2	Merbau	15300
Cupiuba	122	Iroko	2	Cupiuba	14700
Angelim Pedra	121	Karri	2	Piquia	14300
Padouk	121	Louro Vermelho	2	Robinia	14200
Piquia	117	Merbau	2	Padouk	13500
Merbau	115	Robinia	2	Bilinga	13400
Sapeli	105	Rode Meranti	2	Sapeli	12500
Dabema	104	Tanimbuca	2	Hemlock	12300
Eiken	95	Tatajuba	2	Dabema	12000
Iroko	94	Uchi	2	Sipo	11600
Louro Vermelho	90	WRC	2	Douglas	11600
Sipo	89	Lariks	3	Rode Meranti	11510
Rode Meranti	87	Purperhart	3	Louro Vermelho	11400
Douglas	81	Sapeli	3	Iroko	10900
Hemlock	80	Sipo	3	Dennen	10800
Lariks	80	Dennen	4	Eiken	9800
Grenen	73	Douglas	4	Grenen	9500
Dennen	72	Grenen	4	Vuren	8900
Vuren	69	Hemlock	4	Lariks	8900
WRC	54	Vuren	5	WRC	8300
Meting tot breuk		Kernhout		Vochtgehalte 12-15%	