

CHAPTER 4 - PRE-TREATMENT SYSTEMS

Osmose produce a range of high and low pressure treatment systems. This section covers the system(s) for your site only. Cross-reference to Chapter 3 Treatment Standards is necessary and reference to this will be made.

Each System to include where appropriate:

- (i) Preservative Description
- (ii) Ancillary Range
- (iii) Application Method
- (iv) Preparing Treatment Solutions
- (v) Checking Solution Concentration
- (vi) Treatment Cycles
- (vii) Uptakes
- (viii) Treatment Records
- (ix) Treated Timber – Important User Information
- (x) Technical Data Sheets

OSMOSE CELCURE PRESERVATIVE RANGE

(i) Preservative description

The Osmose Celcure range of preservatives is water-based containing copper. Copper has long been used as an effective wood preservative. More information on your product is given in the Technical Data Sheet, which can be found at the end of this section. Should it be missing please request a copy.

The treated wood is branded as Celcurised wood and it is suitable for timbers exposed to high decay hazards. It may be used in Use Classes 1 to 4, this includes ground contact timbers and is particularly applicable for decking, playground equipment, fencing and garden timbers.

To achieve this protection it is normally necessary to treat at high positive pressures, up to 12.4 bar (180 psi). Cycle times may be several hours long, and during the treatment process there will be a large uptake of preservative which will cause the wood to swell, therefore care must be taken when dimensional stability is important. It is supplied as a concentrate and diluted down on site by the plant operator, details of this can be found in Section (iv), Preparing Treatment Solutions.

More information on the Celcure product range is given in the Technical Data Sheets, which can be found at the end of this section, should they be missing please request a copy.

(ii) Ancillary Range

Dye

When Celcure treated wood dries it will have a green colouration to it. It is not possible to have Celcure treated wood that is clear. However, the wood will weather over a period of months after exposure to the sun to a natural brown colour before finally fading to a grey. Should a customer want an immediate colour to the wood, such as brown, then a dye can be added to the working solution. Dye is supplied as a concentrate, for details on how these are added to the working solution refer to Section (iv) Preparing Treatment Solutions.

More detailed information can be found on the Technical Data Sheet at the end of this section.

Solution Sterilant

Due to the climatic conditions in the UK we may suffer from mould growth on the surface of timber, particularly wet timber such as the freshly treated Celcurised timber. The mould does not affect the structural properties of the wood but does give an unsightly appearance. Some sites are more prone to this than others and it is dependent on the prevailing conditions. See Information Sheet IS/72 in Chapter 6 – Operating Work Procedures, Storage of Treated Timber, for more detailed advice on mould growth.

To help reduce this a solution sterilant additive can be added to the Celcure working solution, it must be remembered that the use of this additive is not an alternative to ensuring that timber is stored under good drying conditions, but it will assist in controlling mould growth. As the time of attack is unpredictable it is safer to run with this throughout the year. The additive is supplied as a concentrate, for details on how this is added to the working solution refer to Section (iv) Preparing Treatment Solutions.

It is recommended that the additive is used in conjunction with a dye, as this makes the treated timber more susceptible to mould growth.

More detailed information can be found on the technical data sheet at the end of this section.

Antifoam

Antifoam may be required in some plants to reduce foaming of the preservative as it is transferred from vessel to vessel. Where possible this will be engineered out in preference to using antifoam.

More detailed information can be found on the technical data sheet at the end of this section.

(iii) Application Method

The treatment process used to apply Celcure to timber is called vacuum pressure impregnation. The process is carried out in specially constructed high pressure plant. Normally the Bethell Full Cell Process is used and it consists of the following stages:

Initial Vacuum

The timber is loaded into the treatment vessel and the door is closed and safely locked. The Initial Vacuum is used to take air out of the timber and its duration and level can be altered to influence the final retention of preservative fluid. The specification being followed will detail what is needed. For very permeable species the Initial Vacuum may be omitted altogether, so reducing the possible over-absorption of preservative. Treatment without an Initial Vacuum is called the Lowry Empty Cell Process. If the treatment plant vacuum fills, ie there is no transfer pump, then a Lowry process cannot be carried out.

Flooding

Preservative solution is transferred from storage to the treatment vessel once the Initial Vacuum period has finished. The vacuum is maintained during transfer so that its effect is not wasted.

Pressure Period

This is an important part of the treatment process and is necessary to achieve the required penetration. After the vessel is flooded with preservative, the timber is put under high pressure (about 12.4 bar / 180 psi / 9000 mmHg) by pumping more preservative into the vessel. The aim of this stage of the process is to force Celcure solution into the wood so that the correct depth of penetration is achieved. Deep penetration is particularly important where treated timber is to be used in ground contact or in similar high hazard situations. If a Lowry process is being carried out then the air in the wood, approximately two thirds by volume, is pressurised as it is forced deeper into the wood.

Initial Drain

At the end of the pressure period the pressure is released and the preservative transferred back to storage. If a Lowry process is being carried out then the moment the pressure pump switches off, the compressed air within the timber blows the preservative back out of the cells, but leaving the cell walls coated with preservative. This is called 'kickback' and approximately 30% of the preservative is removed.

Final Vacuum

A Final Vacuum of -0.8 bar (625 mm Hg) is applied to the timber to help remove preservative from its surfaces and thereby speed up the dripping of the excess preservative into the vessel.

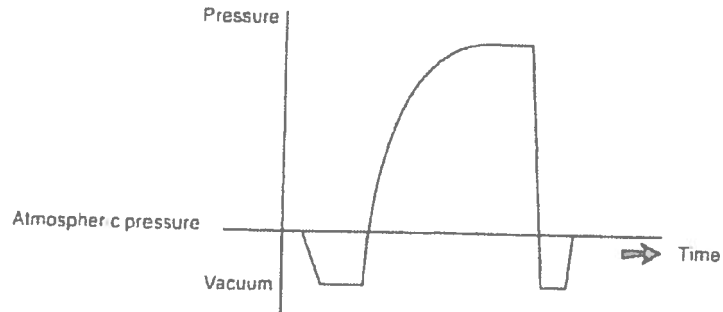
Air Release

As vacuum is released, air rushes back into the treatment vessel and into the surface cells of the wood, carrying with it some of the residual preservative fluid on the wood surface.

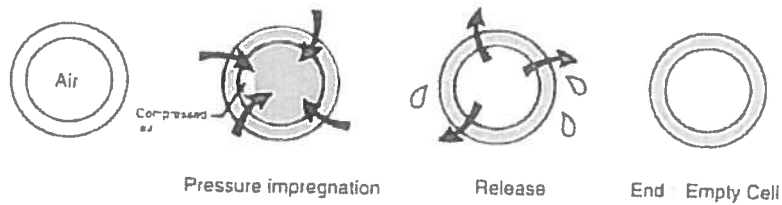
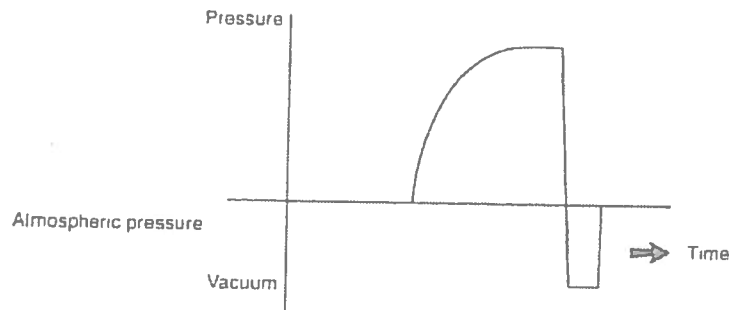
Final Drain

After Air Release, excess preservative collected in the treatment vessel is drained back into the storage tank. The treatment process is then complete and the timber may be removed from the vessel and transferred to an adjacent, contained dripping area. All drips and run off must be collected and preferably recycled. It must remain in this area until it is drip free and the wood is surface dry.

FULL CELL PROCESS



EMPTY CELL PROCESS



(iv) Preparing Treatment Solutions

Celcure is delivered to site as a concentrate and diluted down with water by the operator, it is normally delivered in bulk by road tanker or if necessary in IBCs. Treatment plants vary in the technique available to dilute this down. Some plant may have fully automated systems, such as the Dosatron or WorkNet dosing systems, which virtually eliminates any manual handling or exposure to the preservative. It also ensures a consistent dilution. Other plant, may adopt more manual mixing systems.

Mixing Celcure Concentrate using the Automated Dosatron System

The Dosatron non-electric, proportional dispenser is an ingeniously simple system which has been used in many industries.

It is installed into the supply line running from the mixing pump, with the mixing tank being used as the water supply. The Dosatron operates, without electricity, using water pressure as the power source. The flow of water activates the dispenser, which takes up the required amount of concentrate direct from the storage tank. The concentrate and water are mixed inside of the dispenser and the solution is discharged directly to the storage tank. The quantity of concentrate will always be strictly proportional to the volume of water entering the Dosatron, therefore variations in water pressure and flow will not affect the solution concentration.

Once set the Dosatron requires no further attention.

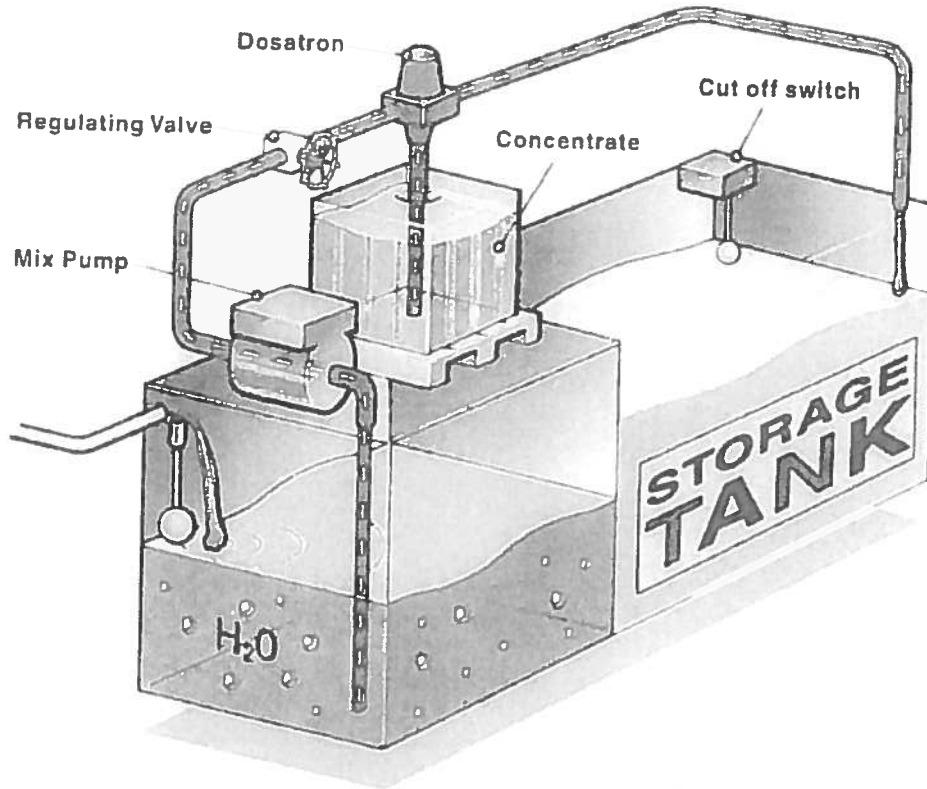
Operating Instructions

1. Fill mixing tank with water from the mains or sump.
2. Open the appropriate valves when mixing dye or solution sterilant additive (refer to mixing instructions supplied).
3. Set Dosatron to the required strength eg 2.5% v/v which will give a 3% working solution. (Dosatrons work by volume, therefore the specific gravity of the concentrate has to be accounted for, eg for a 3% solution

$$\frac{3\%}{1.23 \text{ (sg)}} = 2.44 \text{ rounded up to give } 2.5$$

4. Record the level of the storage tank from the end of the previous treatment cycle, then start the mixing pump.
5. Prepare for the next charge whilst the solution is being transferred to the storage tank.
6. When the storage tank is full, the electrical cut-out stops the transfer of solution.
7. Make sure that the automatic systems are shut down properly at the end of the mixing cycle.

Diagram of Typical Installation



Where operations do not use Dosatrons the following dilution rates apply:

3%
Add 100 kg of Concentrate to 3253 litres of Water to produce 3334 litres of Working Solution
or
Add 100 litres of Concentrate to 4000 litres of Water to produce 4100 litres of Working Solution

Adding Dye

This is normally added at a rate of 1.0% v/v solution strength, but could be adjusted slightly to give the desired colour. (1.0% v/v equates to 10 litres concentrate per 1000 litres of solution).

Adding Solution Sterilant

This is normally added at a rate of 0.1% v/v.
(0.1% v/v equates to 1 litre concentrate per 1000 litres solution).

Adding Antifoam

There are several antifoams in use, the type and application rate will vary from plant to plant and advice will be given on a site specific basis.

Note: Do not be too concerned about the different concentration mixes for the various ancillary products. More detailed instruction and training will be provided on site.

Product Care and Site Operating Procedures for Celcure Products

For more detailed advice about using Celcure additives please refer to Information Sheet 74 - Site Operating Procedures for Celcure Preservatives.



Osmose. Technical Information

SITE OPERATING PROCEDURES FOR CELCURE AC PRESERVATIVES

The following procedures should be followed when operating a high pressure treatment plant using Celcure AC preservatives.

Products

- ◆ Celcure AC concentrate is stable at low temperatures, however storage above 0°C is recommended
- ◆ Osmose ABS33 concentrate is stable at low temperatures, however storage above 0°C is recommended
- ◆ Celbronze Brown and Celbronze Gold Dye must be protected from frost
- ◆ Antifoam SB and AC-AF-1 must be protected from frost and stored above 5 C as the product stability is affected by low temperatures

To assist with frost protection, insulated covers for products stored in IBCs are available from Osmose. Please contact Product Support Department for details/prices.

Compatibility

It is important to minimise contamination of the Celcure AC solution with other products that may be used on site. Cross contamination with other preservatives should be avoided and any diesel or oils used for vehicles on site should be prevented from entering the plant system. Salt used for surface ice control should not be allowed to contaminate either the solution or run-off/water used for mixing.

Additives

Instruction on the use of additives such as Osmose ABS33 and antifoam will be given to individual sites, based on the design of the plant and timber species being treated. For those sites using Osmose ABS33 there are specific instructions based on how frequently the plant is in use.

If the plant is not used for at least two weeks then the following amount must be added to the storage tank(s)

- ◆ Osmose ABS33: Add 0.5 litres per 1,000 litres of treatment solution held in storage, e.g. for 30,000 litres add 15 litres. After this addition revert to the recommended mixing rate.

Water Softeners

Sites using a water softener should monitor the system regularly to make sure it continues to operate correctly. This can be done by checking the hardness of the water generated by the unit and test kits are available for this. Please contact the Osmose Product Support Department for more information.



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Mixing

Mains water for mixing should be stored separately from run-off/rainwater. Any run-off/rainwater collected in the bund area should be re-used for mixing first to ensure the volume in the bund is kept as low as possible. It is important that this is passed through the filter on the mixing system before re-use to minimise contamination of the treatment solution. Where treatment solution is made up in a mixing tank the Celcure AC concentrate should be added first, followed by the water and antifoam, if required. Pipes discharging concentrate and water into the mixing tank should be kept as close as possible to the surface of the solution to reduce the risk of foaming during mixing. If a site has a dosatron system it can be modified to allow both mains water and run-off to be pumped through the mixing system and into the solution storage tank.

Where the whole treatment site is housed in a building, so no rainwater can enter, then the amount of run-off collected will be greatly reduced. Under these circumstances the run-off can be pumped directly back to the solution storage tank or recovered into the vessel during initial vacuum. Regular solution strength checks should be made, however, and the solution strength adjusted when necessary.

Treatment

On initial start up Osmose will recommend the solution strength to be used and treatment cycles should be adjusted, in conjunction with the Osmose Regional Manager, to suit the timber species and Use Class requirements. Once some treatment information has been recorded a review of treatment parameters can be made to ensure the correct levels are being achieved. It is important to ensure that where Use Class 4 material is treated a minimum solution strength of 3% is used. Regular on site checks should be made to ensure the solution strength is maintained. Osmose can also collect solution samples for analysis.

Where sites are using either brown or gold dye to treat timber a minimum treatment cycle of 30 minutes vacuum and 60 minutes pressure is recommended. Packs should not be banded too tightly, as fluid must be allowed free access to all surfaces if best colouration is to be achieved. Timber with a high moisture content and significant sawdust deposits within the pack can make even dye penetration difficult.

Any timber that is frozen should not be treated as this will prevent both the preservative and dye from penetrating through the packs and will result in patchy treatment.

Osmose provides a range of products and technologies for the treatment, protection and enhancement of timber. Information and advice is available on all aspects of our products from the Technical Services Department.

For more information visit www.osmose-europe.com

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(v) Checking Solution Concentration

Even when using automated dosing systems it is advisable to take routine samples from the working solution, if bund run off is re-used in the system this will affect the solution strength which will then need adjusting.

To obtain the most representative sample of the working solution, attach a sample bottle on to a large dimensioned timber about halfway down the treatment vessel load (or alternatively keep it attached to a spare piece of wood which you can put into a charge, as necessary). At the end of the cycle the bottle will be filled with solution ready for testing.

The Hydrometer / Thermometer Method

You should use this method to check the concentration of solution in your storage tanks (at least twice a week).

1. Pour the contents of the bottle into a measuring jar to about 7cm from the top.
2. Gently place a thermometer in the jar and leave for one minute. Then read the temperature whilst it is still in the jar (or take it out and read it straight away if this is not possible).
3. As well as the temperature you also need to record the specific gravity of the solution, using the hydrometer. Gently lower the hydrometer into the jar so that it floats steadily, spinning it will help to remove any air bubbles which could affect the reading. Do not drop it in because it may break if it hits the bottom of the jar. Try not to let it touch the side when taking a reading.
4. Face the jar so that you can clearly read the hydrometer side. Look horizontally through the liquid, level with its surface.

Read the scale to the nearest division where it meets the surface of the solution.

5. To determine the solution concentration use the Concentration Table as follows.

From the Concentration table first find the correct temperature row, then read along until the hydrometer reading is found (you may have to choose the nearest figure to your reading). The figure at the top of that column will give you the solution concentration. Here is an example which you can check for yourself.

Example: If the Celcure solution has a temperature of 14°C and a specific gravity of 62 then its concentration is 3.1% product.

6. Always clean the hydrometer, thermometer and jar in water and dry them after use.
7. Record your concentration measurements on the appropriate charge sheets.

A copy of the Concentration Table is on the following page. Laminated versions, for longer life, are available.



Osmose Celcure AC-500 Concentration Table

Concentration % w/w

°C	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0
5	54	56	59	61	63	65	67	70	72	74	76	78	81	83	85	87	89	92	94	96
6	53	55	57	59	62	64	66	68	70	73	75	77	79	81	83	86	88	90	92	94
7	52	54	56	58	60	62	65	67	69	71	73	75	77	80	82	84	86	88	90	92
8	50	53	55	57	59	61	63	65	67	70	72	74	76	78	80	82	84	86	89	91
9	49	51	53	55	58	60	62	64	66	68	70	72	74	76	78	81	83	85	87	89
10	48	50	52	54	56	58	60	62	64	67	69	71	73	75	77	79	81	83	85	87
11	47	49	51	53	55	57	59	61	63	65	67	69	71	73	75	77	79	81	83	85
12	45	47	49	51	53	55	57	59	61	64	66	68	70	72	74	76	78	80	82	84
13	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82
14	43	45	47	49	51	53	55	57	59	61	62	64	66	68	70	72	74	76	78	80
15	42	44	46	47	49	51	53	55	57	59	61	63	65	67	69	71	72	74	76	78
16	40	42	44	46	48	50	52	54	56	58	59	61	63	65	67	69	71	72	74	76
17	39	41	43	45	47	49	50	52	54	56	58	60	62	63	65	67	69	71	73	75
18	38	40	42	43	45	47	49	51	53	55	56	58	60	62	64	66	67	69	71	73
19	37	39	40	42	44	46	48	49	51	53	55	57	58	60	62	64	66	67	69	71
20	35	37	39	41	43	44	46	48	50	52	53	55	57	59	60	62	64	66	68	69

Adjusting Solution Concentration

If you follow the correct mixing procedures you should not normally have to adjust the solution concentration. However, if it does become necessary to alter the solution strength in the storage tank either by adding water to reduce strength or by the addition of more concentrate to increase the strength, the following corrections should be made.

To reduce concentration - For each 0.1% by which actual concentration exceeds desired concentration, add 33.5 litres of water per 1,000 litres of working solution, mix thoroughly and re-check sg.

To increase concentration - This can be done in two ways, for each 0.1% by which the actual concentration is below the desired concentration, either:

- ◆ add 0.81 litres of concentrate per 1,000 litres of working solution, or
- ◆ for every 1,000 litres of working solution subtract 33.5 litres of water on the next mix.

The method in which the above adjustment is made is dependent on the mixing facilities on the plant. If in doubt, your local Technical Service Manager can advise.

(vi) Treatment Cycles

BS8417 requires timber to be treated to achieve a level of penetration and retention according to the Use Class. A particular service life may also be required. Please see Chapter 3 Treatment Standards for more information. Osmose will provide recommendations which will take the form of suggested treatment cycles for a particular Use Class and timber species.

Alternatively, where plants are fitted with the WorkNet control system, this can be used to target a retention. Chapter 7 – Operation of Your Plant, incorporating the WorkNet control system will identify the appropriate treatment by either a process or by a target.

Customers may have to demonstrate that the timber process carried out actually achieved the required chemical retention and penetration. Osmose can assist with this by carrying out the complex analysis to demonstrate compliance.

It may be possible, in theory, to obtain the necessary loadings by adjusting solution strengths.

The correct treatment cycle will depend on many factors and each treatment plant can be adjusted to achieve the necessary loading and penetration. To achieve this process settings may vary slightly from plant to plant, the following summary tables indicate the likely cycles to be used. Retention should be monitored and the treatment cycle and/or solution strength increased or reduced appropriately.

This data is based on the treatment criteria set out in BS 8417 and interpreted for large scale industrial use. For definitive information and guidance, always make reference to the Standard itself.

To determine the required uptake Osmose have produced on CD a target calculator. The treater can enter variables such as timber size or solution concentration to give a charge uptake in litres/m³. The following section (vii) Uptakes, gives a summary table of target uptakes for a number of timber sections. **It is extremely important to note that it is the treater's responsibility to carry out their own quality control and monitor the performance of the plant and make any adjustments themselves to the operating system.**

Suggested Treatment Cycles For Osmose Celcure Preservatives

Use Class	Species	1 st Vac time (mins)	Pressure time (mins)	Solution strength (%)	Service life (years)
1 / 2	Redwood	0 - 15	10 - 20	2.5	60
1 / 2	Whitewood	15	15 - 45	2.5	60
3	Redwood	15 - 30	15 - 45	3.0	15
3	Whitewood	30	90	3.0	15
4	Redwood	30	90	3.0	15
4	Whitewood	60	120	3.0 - 4.0	15
2 (Battens)	Redwood	5	5	2.0 - 2.5	60
2 (Battens)	Whitewood	5	20	2.0 - 2.5	60

- ◆ When using dye use a minimum 60 mins pressure to ensure good colour
- ◆ Solution strength should not be less than 2%

(vii) Uptakes

Uptakes expressed in litres/m³ at a solution strength or, retentions expressed in kg of chemical used per cubic meter of timber treated can normally be calculated on a charge by charge basis. For commercial reasons it is helpful to know average uptakes to ensure the correct costings are applied. These uptakes will vary depending on a number of factors.

- ◆ Cross sectional size of the wood. For a given volume of timber small sections will have a larger surface area to treat compared to larger sections, and consequently the uptakes will be higher.
- ◆ If you are treating round timbers they will contain a higher proportion of permeable sapwood, than square timbers whose outer face is likely to contain a proportion of the more resistant heartwood.
- ◆ Some timber species such as Redwood are more permeable than say Whitewood.

These, and other factors affecting uptakes, are shown overleaf.

The Osmose Target Calculator will work out accurately the theoretical charge uptake required to meet the treatment standards. It is suggested that a target of 110 - 130% is used, this will account for the timber variability and ensure the majority of treatment meets the minimum treatment level. The following table gives an indication of minimum charge uptakes and retentions necessary for a variety of Use Classes and section sizes using a 3% Celcure AC-500 solution. Please note that for the treatment of resistant species such as Spruce it may not be possible to achieve the 6mm penetration required in UC4 situations and the uptakes and retentions actually achieved may be less than the target figures given. Osmose can provide guidance for other products in the Celcure range.

Use Class/ Service Life (years)	Section Size (mm)	Species	Uptake Litres/m ³ (3%)	Retention Kg/m ³
1 and 2 (60)	19 x 38	Pine/Spruce	139	4.18
	38 x 75	Pine/Spruce	77	2.31
	50 x 100	Pine/Spruce	60	1.81
	50 x 150	Pine/Spruce	55	1.65
3 (15)*	38 x 75	Spruce	96	2.88
	38 x 100	Spruce	90	2.68
	38 x 150	Spruce	83	2.48
	38 x 100	Pine (30% Sapwood)	120	3.60
	38 x 100	Pine (50% Sapwood)	200	6.00
4 (15)*	75 x 75	Spruce	175	5.26
	100 x 100	Spruce	138	4.15
	100 x 100	Pine (30% Sapwood)	165	4.95
	100 x 100	Pine (50% Sapwood)	275	8.25

To calculate the retention refer to section (viii)

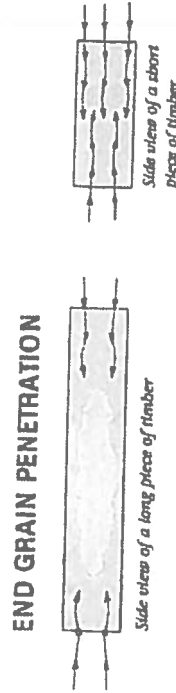
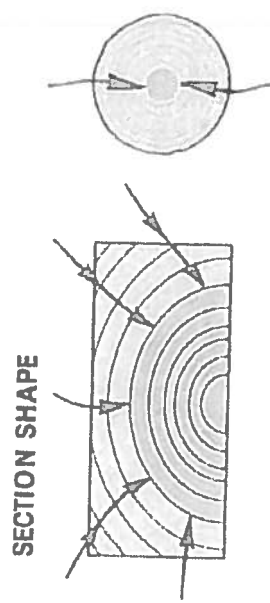
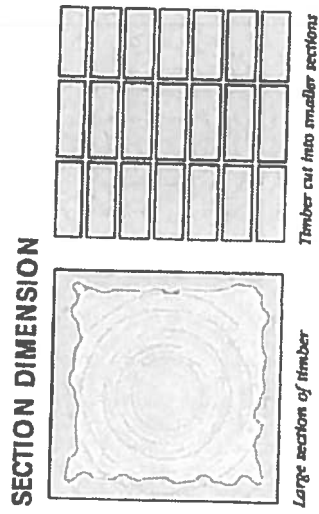
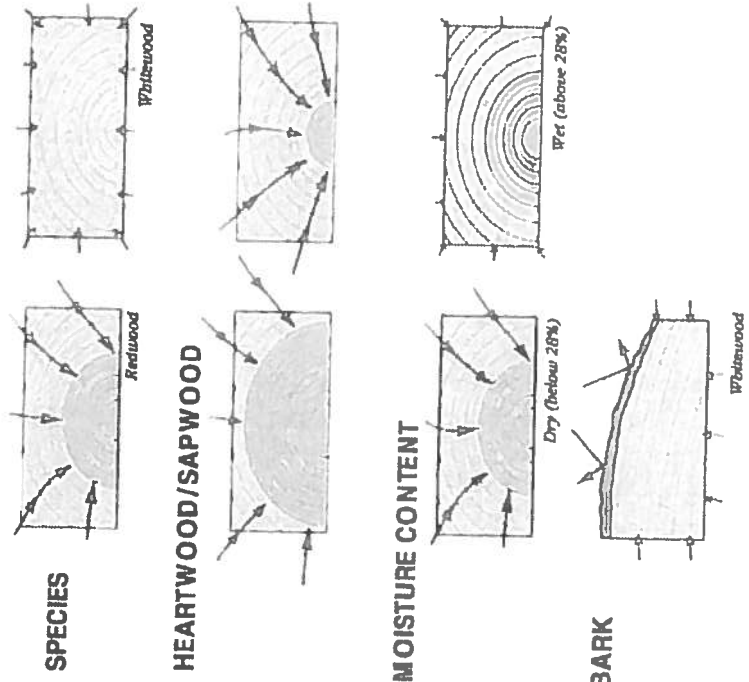
* For a 30 year service life:

- UC3 uptakes and retentions must be increased by 1.25 (For Spruce a 6mm penetration is also required which will approximately double the uptake and retention as well.)
- UC4 the uptakes and retentions must be increased by 1.50 (Spruce is not recommended for this service life, unless the wood is incised prior to treatment.)
- Higher solution strengths may have to be used to achieve the higher retentions.

Treatment of Sole Plates

Sole plates are UC2 components but require a 50% higher retention of preservative than other UC2 components.

FACTORS AFFECTING UPTAKE



(viii) Treatment Records

In order to maintain control of your treatment operation you should keep accurate records of what you do.

Completed charge sheets will help Osmose Service and Engineering staff to diagnose any treatment problems you may have and, of course, can be used (in conjunction with Treatment Certificates) to assure your customers of the quality of the treatment carried out. Calculating retentions will also help you monitor the plant's performance against the treatment specification. Finally, accurate records enable you to calculate the cost of the treatment process over a period of time.

Treatment Charge Sheet

These records can be hand written or produced electronically, but should include the following information:

Before Starting The Treatment Process

- ◆ Enter the name of your company, the charge number, and the date.
- ◆ Record the treatment specification such as Use Class.
- ◆ Record the preservative type, solution strength and treatment cycle (if applicable).
- ◆ Record the details of the timber treated. This includes:
 - Customer name and order number
 - The species of timber.
 - Moisture content range.
 - Record the number of pieces of timber and the timber sizes.
 - Calculate the timber volume in m³ and also the total charge volume in m³
 - Note the storage tank start reading.
- ◆ Once the timber is safely loaded the charge can be started.

At The End Of The Treatment Process

- ◆ Note the storage tank finish reading to work out the amount of working solution used. Calculate the preservative retention, as follows:

Firstly calculate the uptake in litres per cubic meter (l/m³)

$$\frac{\text{litres working solution used}}{\text{cubic meters of timber treated}} = \text{uptake (l/m}^3\text{)}$$

Secondly calculate the preservative retention:

$$\text{uptake (ltr/m}^3\text{)} \times \frac{\text{solution strength (\%)}}{100} = \text{retention (kg/m}^3\text{)}$$

- ◆ Retain the charge sheet for your records. (See overleaf for a completed Osmose charge sheet example).

Treatment Certificate

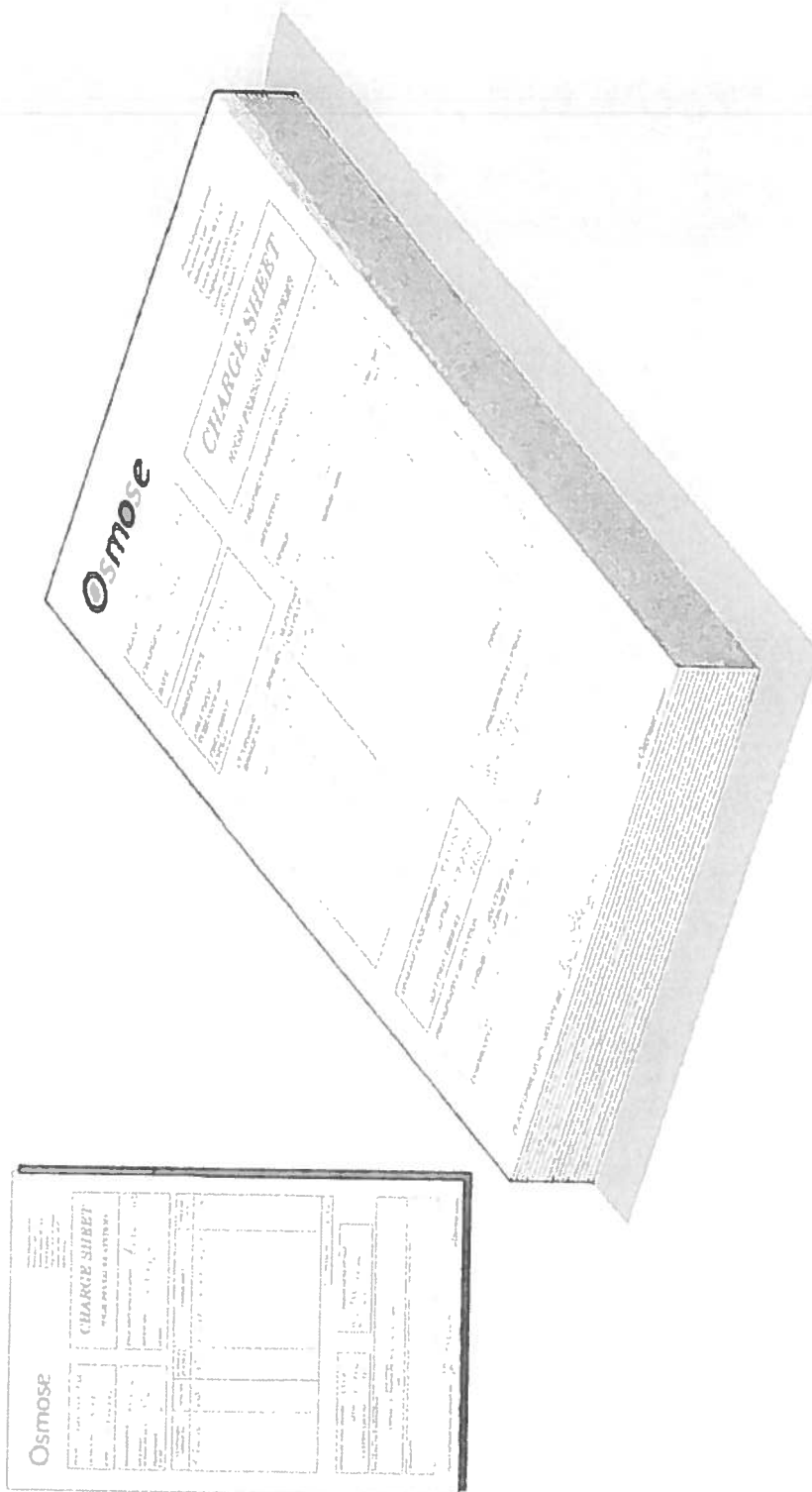
Treatment certificates are used to certify that timber has been treated to the required specification. The certificate should be completed using information from the relevant charge sheet and the example shown is based on the charge sheet overleaf.

Complete the certificate as follows:

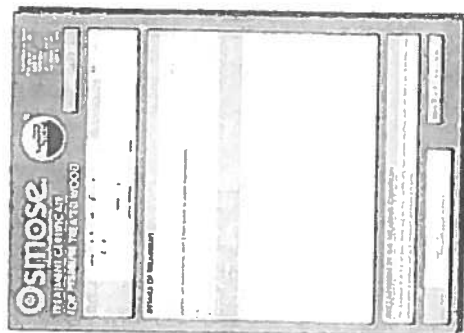
- ◆ Enter your company's treating site name and address on the certificate.
- ◆ Enter the customer's name, order number (if known) and date treated.
- ◆ Enter the timber sizes, moisture content range, species, volume (m³), solution strength, and retention.
- ◆ Enter the treatment specification and charge sheet numbers.
- ◆ Finally, sign and date the treatment certificate but only if all the information on the treatment certificate is correct.

Retain the bottom copy for your own records.

You must not complete a treatment certificate if the treatment carried out did not conform to the required specification.



Charge Sheet



Treatment Certificate

(ix) **Treated Timber - Important User Information**

Please see the Information Sheet on the preserved wood appropriate to your Celcure product.





Osmose Information

THE USER'S GUIDE TO CELCURE® AC-500 PRESERVED WOOD

What is Celcure AC-500 Preserved Wood ?

Celcure AC-500* preserved wood has been preserved by the correct application of Celcure AC-500 wood preservative and then allowed to dry.

Properly treated Celcure AC-500 preserved wood is protected against attack by wood decaying fungi and wood destroying insects.

Celcure AC-500 preserved wood, treated to an appropriate specification, can be used for structural timber, sole plates, garden furniture, playground equipment, patios, decks, fencing, garden edging, and landscaping structures such as pergolas.

IMPORTANT INFORMATION

Wear gloves when working with wood. Only preserved wood that is visibly clean and free of surface residue should be used. Wear a dust mask and goggles when cutting or sanding wood.

Some preservative may migrate from the treated wood into soil/water or may dislodge from the treated wood surface upon contact with skin. Wash exposed skin areas thoroughly.

All sawdust and construction debris should be cleaned up and disposed of after construction.

Wash work clothes separately from other household clothing before re-use.

If you desire to apply a paint, stain, clear water repellent or other finish to your preservative treated wood, we recommend following the manufacturer's instructions and label of the finishing product. Before you start, we recommend that you apply the finishing product to a small test area before finishing the entire project to ensure that it provides the intended result.

If the wood is to be used in an interior application and becomes wet during construction, it should be allowed to dry before being covered or enclosed.

Mould growth can and does occur on the surface of many products, including treated or untreated wood, during prolonged surface exposure to excessive moisture conditions. To remove mould from treated wood surfaces, wood should be allowed to dry. Typically, mild soap and water can be used to remove remaining surface mould.

Preserved wood should not be used where it may come into direct or indirect contact with drinking water, except for uses involving incidental contact such as fresh water docks and bridges.

Do not use preserved wood under circumstances where the preservative may become a component of food, animal feed or beehives.

Do not use preserved wood as mulch.

Do not burn preserved wood (see Disposal). All sawdust and construction debris should be cleaned up and disposed of after construction.

Effective Use of Preserved Wood

Cutting

Preserved wood should not be cut or otherwise reworked as this will expose unpreserved wood. If cutting cannot be avoided, then precautions should be taken to keep airborne dust levels below the Workplace Exposure Limits for wood dust. In particular, avoid inhalation of dust when using high speed cross-cut saws or mechanical sanders. Any surface exposed by drilling or cutting must be retreated with a cut end preservative. Failure to do this will reduce the effectiveness of the preservative. It is recommended that the re-preserved ends are not put in the ground or in direct contact with water. Rip sawing, thickening and planing are not permitted unless the timber is subsequently re-preserved to the original specification.

Metal Fastenings and Hardware

Certain metal products (including fasteners, hardware and flashing) may corrode when in direct contact with wood treated with copper based preservatives. To prevent premature corrosion and failure it is important to follow the recommendations of the manufacturer for all metal products.

Do not use preserved wood in direct contact with aluminium.



Osmose Timber Technologies

IS68/0108

www.osmose-europe.com

Technical Data Sheets

Should your product data sheets not be present please contact Osmose.



Osmose®

Technical Data Sheet
TDS 1789
April 2004

CELCURE AC-500



Wood preservative for industrial vacuum pressure treatment

Celcure AC-500 liquid concentrate

DESCRIPTION

Celcure AC-500 is a water-based wood preservative which contains an alkaline copper quaternary system, including an organic co-biocide (a quaternary compound), and boric acid.

Celcure AC-500 is supplied as a liquid concentrate and diluted solutions are applied to timber in an industrial, controlled treatment process using vacuum pressure impregnation

RECOMMENDATIONS FOR USE

Celcure AC-500 is for use only as a wood preservative. Celcure AC-500 liquid concentrate is diluted with water to obtain a Treating Solution with a concentration between 1% and 10% m/m, according to the treatment specification.

Mixing of the product from the IBC or bulk storage tank should be with an automated dosing system. This requires minimal operator involvement and reduces exposure of the operator to the product. Information on the use of the system can be obtained from Osmose.

Precautions

The handling and safety precautions shown on the Celcure AC-500 product label must be understood and followed at all times. Use only as described on the label. See the Celcure AC-500 product label and the Material Safety Data Sheet for further information.

Care must be taken to avoid exposure, particularly to the eyes and by inhalation, so appropriate personal protective equipment must be worn. Wash splashes from skin or eyes immediately.

The product is dangerous to fish and other aquatic life. Do not contaminate watercourses or ground.

Dispose of surplus chemical, contaminated materials (including sawdust) and the empty container safely using a method approved by the waste disposal authority.

When using do not eat, drink or smoke

PROPERTIES

Colour: Celcure AC-500 concentrate is blue
Density: 1.23 g/cm³ at 20 °C.
Miscibility: Soluble in water.
Odour: Slight ammoniacal and sweet, amine odour
pH: 10.6

PACKAGING and STORAGE

IBC or bulk. Celcure AC-500 concentrate should be stored in a designated, lockable area to prevent unauthorised access. Keep away from food, drink and animal feeding stuffs.

APPROVAL

Celcure AC-500 is approved by the UK Health and Safety Executive under The Control of Pesticides Regulations 1986 (as amended) for use as directed. HSE No. 7404. The approval holder and marketing company in the UK is Protim Solignum Limited.

Celcure AC-500 contains copper carbonate hydroxide, benzalkonium chloride and boric acid.

Always read the label. Use pesticides safely.

Celcure AC-500 treating solution

DESCRIPTION

Celcure AC-500 treating solution is a dilution with water of Celcure AC-500 liquid concentrate, to a concentration between 1% and 10% m/m.

It is applied to timber in an industrial, controlled treatment process using vacuum pressure impregnation.

PROPERTIES

Colour: Celcure AC-500 treating solution is blue
Density: 3% m/m solution: 1.0 g/cm³ at 20 °C
Odour: Slightly sweet, amine odour.
pH: 3% m/m solution: 9.4



An Osmose Company

RECOMMENDATIONS FOR USE

Timber

The timber to be preserved shall be clean, dry, and not decayed by fungi or attacked by insects. The moisture content of the wood shall be appropriate for the preservative treatment method and end use. At the time of preservation the timber moisture content must be below the fibre saturation point (approximately 30 % m/m)

Preservative Application

Celcure AC-500 treating solution should be applied using a vacuum pressure impregnation plant operated in accordance with the Osmose Plant Operations Manual

The (COSHH) Control of Substances Hazardous to Health Regulations 2002 may apply to the use of this product at work. Engineering control of operator exposure must be used where reasonably practicable in addition to the following items of personal protective equipment. However, engineering controls may replace personal protective equipment if a COSHH assessment shows they provide an equal or higher standard of protection

Wear suitable protective clothing (coveralls), gauntlets and eye protection when using the product and during maintenance of treatment equipment

Wear impervious gauntlets, impervious footwear and an impervious apron when handling freshly treated timber

Avoid excessive contamination of coveralls and launder regularly. Take off immediately all contaminated clothing

Do not breathe aerosol.

Wash hands and exposed skin before eating, drinking, smoking and after use

If you feel unwell, seek medical advice (show the label where possible).

Drying

Treated wood must be held until surfaces are dry within a bunded area on a site which is maintained to prevent loss of treatment product to the environment

Treated timber will dry naturally, but to minimise the drying period, tightly bound packs should be stickered and then allowed to stand in a well-ventilated area. Care should be taken not to despatch timber which still contains free liquid on its surfaces

Celcure AC-500 preserved wood

DESCRIPTION

Celcure AC-500 preserved wood has been preserved by the application of a 1 % to 10 % m/m solution in water of Celcure AC-500 liquid concentrate, in an industrial, controlled treatment process using vacuum pressure impregnation, and then allowed to dry

Celcure AC-500 preserved wood is protected against wood rotting fungi and wood destroying insects

Celcure AC-500 preserved wood, treated to an appropriate specification, can be used for structural timber, sole plates, garden furniture, playground equipment, patios, decks, fencing, garden edging, and landscaping structures such as pergolas.

Disposal

NatureWood products which are no longer usable such as cutoffs, broken boards, sawdust or treated timber material taken out of service are not considered hazardous and may be disposed of in landfills or burned in commercial or industrial incinerators or boilers in accordance with National and Regional regulations. For up to date information please contact the Technical Services Department.

RECOMMENDATIONS FOR USE

For further information on Celcure AC-500 preserved wood and recommendations for use, see the User's Guide to Celcure AC-500 Preserved Wood (Information Sheet IS/58) and the Osmose Naturewood® Information Sheet

* Registered Trademark

Technical Advice Service

Information and advice is available on all aspects of Osmose preservatives from the Technical Services Department. Tel. 01628 486644.

TDS 1789 April 2004

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Protim Solignum Limited's products are sold subject to its standard Terms and Conditions of Sale, copies of which may be obtained on request. Whilst Protim Solignum endeavours to ensure that any advice, recommendation, specification or information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products, whether or not in accordance with any advice, specification, recommendation or information given by it save as specifically provided by its Terms and Conditions of Sale.

CHAPTER 6 - OPERATING WORK PROCEDURES

We need to identify the different operations involving preservatives and treated timber that take place during the working day. Safe and correct work procedures should be followed in each situation, including the use of appropriate safety clothing, where necessary.

The following pages detail the recommended work procedures for the operations listed below.

- (i) Receipt of bulk preservative deliveries.
- (ii) Handling and storing containers.
- (iii) Preparation of timber for treatment
- (iv) Operating the treatment plant.
- (v) Loading and unloading timber
- (vi) Storage of treated timber
- (vii) Cleaning debris from the treatment vessel.
- (viii) Routine plant maintenance and servicing
- (ix) Hot work on tanks and pipes.
- (x) Plant and product protection during winter
- (xi) General workplace housekeeping.
- (xii) Waste management (Information Sheet).
- (xiii) Emergency procedures.
- (xiv) Plant security.
- (xv) Personal protective equipment.

(i) Receipt Of Bulk Preservative Deliveries

- ◆ The receiving company should have a named representative on site at the time of delivery to supervise unloading (for example, to ensure unloading into the correct tank and confirm delivery volume). These details must be confirmed by the named representative by signing the delivery procedure ticket before off-loading commences.

Note: The customer is responsible for the goods once they leave the vehicle.

- ◆ The company representative should be familiar with the procedures to be followed in the event of an accident (including spillage).
- ◆ Smoking and naked lights are forbidden during unloading.
- ◆ Spilling and splashing (including splash loading into tanks) must be avoided as far as possible. Any staff engaged in the handling of preservative solutions should wear suitable protective clothing such as overalls, gloves and boots (plus goggles where there is any risk of splashing).
- ◆ Tank filling points must be within a bunded or contained area. Where sites have dedicated tanker off loading areas, these must be used. No preservative must be lost into surface drains or foul sewer. Reasonable access must be provided on site for the unloading tanker. An effort should be made to minimise the length of tanker hose necessary for unloading. Following discharge residual dripping from the hose should be collected and contained.
- ◆ First aid materials suited to the potential emergencies should be readily available nearby.
- ◆ Bulk storage vessels should be fitted with a high level alarm and be tested prior to discharge, and the fill line valve closed after discharge.
- ◆ A product label should be displayed next to the tanker filling point.
- ◆ Should the high level alarm be activated, the level switch should be removed and cleaned as soon as the fluid level has dropped sufficiently. This is to ensure any residue from the preservative does not prevent it functioning next time. Suitable protective clothing must be worn when carrying this out.

(ii) Handling and Storing Containers

- ◆ Containers should be kept in a locked, marked, well ventilated and bunded store.
- ◆ For stability, containers should not be stacked more than two high and always store containers upright.
- ◆ Damaged containers shall be placed in or remain within the bunded store. Spillages shall be dealt with according to the guidelines set out in emergency procedures.
- ◆ Staff handling containers shall be supplied with appropriate protective clothing, namely protective boots, overalls, impervious gloves and apron.
- ◆ Decanting of preservative for resale is forbidden. Decanting of chemicals is not permitted other than for mixing purposes.
- ◆ Only a competent driver should use a forklift for moving containers.
- ◆ For the winter months, the store area should be kept above 3°C and if storing water repellent, above 5°C.

(iii) Preparation Of Timber for Treatment

To ensure timber is properly treated it must be prepared correctly. The following items are important in achieving this:

Moisture Content

Treatment to BS 8417 requires the treater to achieve a particular level of penetration and retention according to the environment in which the timber is placed, ie the Use Class. The Standard does not stipulate how this is achieved or at what moisture content the timber should be. It is recognized that when the timber is freshly felled that moisture levels will be high and this would adversely affect treatment retentions and particularly penetrations. The sapwood of freshly felled timber cannot be penetrated with preservative because the cell lumens are blocked with water. There will always be some water in the wood which has soaked into the walls of the cells but at moisture contents below 28% there is no water in the cell lumen to block the passage of preservative. You can measure moisture content with an electrical moisture meter. Make sure that the probes are at least 25 mm long so that you get a realistic measure of the moisture content inside the wood. The timber should ideally be at the moisture content appropriate for its end use, possible splitting as the timber dries further after treatment may expose untreated timber.

If using dyes then moisture content levels above 28% will adversely affect the colour achieved in the wood, both in uniformity and the colour itself.

Surface Quality

All the bark must be removed from the timber, bark is waterproof and if it is not removed it will prevent the preservative from penetrating the wood. The same principle applies to anything else which may restrict penetration, such as paint, polishes, mud or ice. (Timber cannot be treated if it is frozen!). Timber should not be treated if it already shows signs of attack by wood-destroying fungi or insects, staining fungi would be acceptable within the agreement of the customer.

Sawdust Removal

As far as practical, timber should be loaded into the plant free from sawdust. Sawdust may affect the treatment quality causing preferential treatment into it, and this will be particularly evident when using dyes.

Sawdust washed off within the treatment process will also eventually cause engineering problems and may result in sludge formation in the tanks

Stickers

Effective treatment can only be achieved if preservative is allowed free access to the surfaces of the wood. To this end it is important to place thin stickers/spacers between rows. For PAR timbers this should be at least every 2 - 4 rows. For sawn timbers every 2 – 6 rows should be sufficient. Stickers will also help to drain excess preservative out of the pack during the treatment process, and reduce run off in the dripping area.

Pack Banding

It is essential that packs be banded to ensure they remain stable whilst being moved to and from the treatment plant and during the treatment process as well.

The bands used must not be applied too tightly so that they reduce the penetration of preservative during treatment, which will produce areas of paler coloured wood, and in some cases untreated wood.

Pack Covers

Covers must not be put on packs before treatment. They will create pockets that will affect the application of preservative and they will trap surplus preservative within or on top of the pack, giving a significant exposure risk to the operator during unloading.

Covers will also considerably reduce the drying of the wood after treatment. Loose material from covers could also be pulled into plant pipework and valves during the vacuum sequence.

(iv) Operating The Treatment Plant

Full operating instructions for the plant system can be found in Chapter 7, the following general procedures must be followed.

- ◆ When operating the plant control panel or completing charge records, remove any potentially contaminated items such as impervious apron or gloves.
- ◆ Do not eat, drink or smoke in the treatment area.
- ◆ Wash hands or exposed skin before meals, before using the toilet and after work.
- ◆ Avoid putting hands, pens and pencils into your mouth during work.
- ◆ Keep insides of protective equipment clean.

After work:

- ◆ Take off overalls and footwear. Do not go home wearing work boots.
- ◆ Change work clothes when you get home.
- ◆ Launder clothes / overalls regularly. (Overalls should not be laundered at home).

(v) Loading and Unloading Timber

- ◆ Make sure that timber loaded onto the bogies is safe and that packs are stable. When loading packs on top of each other use bearers which are at least the width of the packs.
- ◆ Have one bearer at the bottom of a pack thicker than the other. This will help solution to drain from the tilted packs in the treatment vessel.
- ◆ Strap down every pack on to the bogie **and ensure all loose strap ends are secure.**
- ◆ Do not stack beyond the width of the bogies. Take particular care not to hit the plant door frame during loading as this may badly damage the door seal.
- ◆ Do not let any pieces of wood become loose in the vessel. A jammed piece of wood can cause a long delay in unloading and is dangerous.
- ◆ Keep other people clear when moving the bogies in or out of the vessel.
- ◆ Do not use loose timbers to push the bogie into the vessel with the fork lift. The timber may break or slip out and cause injury to somebody.
- ◆ Wear splashproof coveralls and gloves when handling bogies and loading equipment likely to be contaminated with preservative.
- ◆ When unstrapping freshly treated timber wear an impervious apron in addition to overalls (or an impervious coverall), impervious gloves and goggles to guard against splashing.

(vi) **Storage of Treated Timber**

Timber after treatment must be stored in a dedicated dripping area adjacent to the plant, that will allow run off to be directed back into the treatment area. Storing packs on a slope initially will help to remove excess preservative quickly. Impervious clothing must be worn when working in this area.

To allow timber to dry quickly it is important to allow good natural ventilation. A positive air flow is essential, storing packs too closely together or in enclosed areas will increase drying times. The quicker timber is dried then the risk of mould attacking it is reduced. If mould spores are present they will quickly develop where there are wet or damp timbers and static air. Information sheet IS/72 – Preventing mould growths on treated wood products is included on the following pages. Timber must remain in this area until it is drip free and surface dry.



Osmose. Technical Information

MOULD GROWTH ON TREATED WOOD PRODUCTS

What are mould growths on treated wood products?

Moulds can grow in the water layer on wet or damp timber surfaces. The growth is often "fluffy" and may be white, green, black, brown or even brightly coloured depending upon the mould species and the presence of spores. Moulds feed on free sugars and starches naturally present in the sapwood and dissolved in the water layer on the surface of drying wood, and on deposits of detritus that collect on the surface of stored timber. Some timber species, such as Scots pine, are more susceptible to mould growth than others. Surface moulds do not decay or affect the structural strength of the wood and do not permanently disfigure the wood.

The conditions that promote the growth of surface moulds

Surface moulds can develop on both untreated wood and on wood which has been preservative treated.

Mould growth is promoted by timber remaining wet over long periods of time. The longer treated or untreated timber is stored under damp conditions the greater the risk of mould growth.

Given the right conditions, surface moulds can develop on wet or damp timber surfaces. The conditions that promote the rapid growth of surface moulds are.

1. Wet or damp timber
2. Humid, still air conditions
3. Warmth

It should also be noted that timber with visible mould should not be put through the treatment plant, as spores removed during the treatment process may remain viable and be spread to otherwise clean timber.

These same conditions which encourage mould will also encourage the growth of sapstain / bluestain fungi which do cause permanent discolouration to the wood and this discolouration can penetrate well below the timber surface. Staining of timber occurs in freshly felled timber and may result when seasoned timber becomes wet, but the practices described in the following section will help to minimise this potential problem.

What can be done to reduce the risk of mould growth?

If the timber surface is kept dry, mould will not be able to grow. Most moulds can be brushed from the surface of wood or will eventually weather off, but initial prevention must be the priority. Timber products should be stored such that they are protected from wetting by rain, where practical, and are in a well-ventilated drying situation. Packs of timber should be well stickered to allow good air flow through the packs.

Stock rotation procedures should be adopted to ensure movement of older material from site and any timber that develops mould should be isolated from clean stock. If present on site, this would only act as a ready source of spores for the infection of new timber.

Further sources of mould growth include logs in direct contact with soil, or a sawmill that generates large quantities of sawdust which may be contaminated and carry the infection quickly to clean surfaces



IS72/1007

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(vii) Cleaning Debris From the Treatment Vessel

No one must enter the treatment vessel at any time without management permission. Entry into confined spaces must be in accordance with company procedures.

Plants using solvent based preservative must be ventilated before entry by leaving the treatment vessel door open for a minimum of 2 hours and for plants using water-based preservative a minimum of 20 minutes

In such circumstances the procedure and "permit to work" certificate shown overleaf are the minimum standard required by the Health & Safety Executive. Such documented procedures must always be used for an entry into confined spaces.

Where this delay is not practicable, the level of protection necessary for early entry will be significantly greater. If immediate entry into the treatment vessel is unavoidable, it should be assumed that the Confined Space Regulations apply, and staff entering vessels must then wear a full face mask with external air supply.

The permit to work would require:

- ◆ Wearing approved and regularly maintained respirator with appropriate filter.
- ◆ Authorisation to enter by a responsible person.
- ◆ Where practicable, wearing a belt with a rope securely attached.
- ◆ A person keeping watch outside and capable of pulling him out is holding the free end of the rope.

POSSIBLE LAY-OUT FOR A PERMIT-TO-WORK CERTIFICATE

<p>PLANT DETAILS WORK TO BE DONE</p>	<p>ACCEPTANCE OF CERTIFICATE</p>	<p>I have read and understood this certificate and will undertake to work in accordance with the conditions in it.</p>
<p>WITHDRAWAL FROM SERVICE</p> <p>Signed _____ Date _____ Time _____</p> <p>The above plant has been removed from service and persons under my supervision have been informed</p>	<p>COMPLETION OF WORK</p>	<p>Signed _____ Date _____ Time _____</p> <p>The work has been completed and all persons under my supervision, withdrawn.</p>
<p>ISOLATION</p> <p>Signed _____ Date _____ Time _____</p> <p>The above plant has been isolated from power and the hand valve between the OSV and TV has been closed and locked off.</p>	<p>REQUEST OF EXTENSION</p>	<p>Signed _____ Date _____ Time _____</p> <p>The work has not been completed and permission to continue is requested.</p>
<p>CLEANING</p> <p>Signed _____ Date _____ Time _____</p> <p>The above plant has been unused and the door left open for not less than 2 hours (solvent system), 20 minutes (water based system)</p>	<p>EXTENSION</p>	<p>Signed _____ Date _____ Time _____</p> <p>I have re-examined the plant detailed above and confirm that the certificate may be extended. Further precautions: The plant must not be re-entered by same personnel.</p>
<p>CONDITIONS</p> <p>Signed _____ Date _____ Time _____</p> <p>Entry limited to maximum 5 minutes. A half cartridge mask with suitable fillers must be worn. See footnote. Second person to be in attendance throughout entry-period, equipped to effect rescue, if necessary, from outside the vessel.</p>	<p>THE PERMIT-TO-WORK IS NOW CANCELLED. A NEW PERMIT WILL BE REQUIRED IF WORK IS TO CONTINUE.</p>	<p>Signed _____ Date _____ Time _____</p>
<p>I CERTIFY THAT I HAVE PERSONALLY EXAMINED THE PLANT DETAILED ABOVE AND SATISFIED MYSELF THAT THE ABOVE PARTICULARS ARE CORRECT</p> <p>Signed _____ Date _____ Time _____</p>	<p>RETURN TO</p>	<p>Signed _____ Date _____ Time _____</p> <p>I accept the above plant back into service.</p>
<p>Note: For organic solvent plant the filter must conform to EN141 with an A1 classification. For waterbased plant if there is a mist or vapour present the filter must conform to EN143 with a P3 classification. The EN141/A1 filter can be used in combination to help remove nuisance odour.</p>		

Possible lay out for a Permit to Work Certificate

(viii) Routine Plant Maintenance and Servicing

The procedures listed overleaf, which occupy very little time, are recommended as the best method of keeping the equipment at all times in good serviceable condition and avoiding unnecessary breakdown. Such breakdowns could be expensive in both replacement costs and loss of production.

Use copies of the record sheet to plan and record your daily, weekly and monthly maintenance. Plants do vary, and all items may not be appropriate to your plant. Simply mark these items N/A (not applicable). If in doubt ask an Osmose engineer on his next visit.

- ◆ Staff involved in the maintenance of the treatment plant must have received adequate training and information concerning the hazards of the products in use and the required safety procedures.
- ◆ Personal protective equipment, including respirators where necessary, shall be provided and used. Where there is any risk of splashing from preservative, goggles and an impervious coverall should be worn.
- ◆ Before removing any pumps, valves or section of pipework (including filters), care must be taken to isolate the item from chemical storage tanks.
- ◆ If there is any doubt about the safety of the plant it shall be safely shut down and company management informed of the situation.
- ◆ Before any entry into tanks or confined spaces refer to 'cleaning debris from the treatment vessel' overleaf.
- ◆ Before undertaking any hot work on pipes or tanks, refer to the following section, (ix) Hot Work on Tanks and Pipes.
- ◆ It is recommended that plants are regularly serviced. Full plant servicing can be carried out by an Osmose engineer. For full details and costs contact our Engineering Division.

MAINTENANCE RECORD FOR HIGH PRESSURE PLANT

Week commencing _____ Plant Operator's signature _____

(Place a tick in the relevant box as each task is completed)

EVERY CHARGE

1. Check for and remove any debris from inside of Pressure Vessel. (Obtain a Permit to Work)
2. Before closing door, check and clear door seal, paying particular attention to the lower part.

M	Tu	W	Th	F	Sa/Su

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DAILY

3. Drain compressor air receiver
4. Check Vacuum and Pressure Gauge readings whilst plant is running and at rest.
5. As (4.) for Chart Recorder (where fitted)
6. Check condition of drain line strainer. If you have to enter the Pressure Vessel to do this you will need to get a Permit to Work
7. Record and report any faults – overleaf.

M	Tu	W	Th	F	Sa/Su

--	--	--	--	--	--

--	--	--	--	--	--

--	--	--	--	--	--

--	--	--	--	--	--

WEEKLY

- | | |
|---|---|
| <ol style="list-style-type: none"> 8. Grease bogie wheels <input style="float: right;" type="checkbox"/> 9. Clean all filters. <input style="float: right;" type="checkbox"/> 10. Check load securers. Repair or replace if necessary. <input style="float: right;" type="checkbox"/> 11. Clean and lubricate door locking mechanisms <input style="float: right;" type="checkbox"/> 12. Test, clean and lubricate door safety devices as required. <input style="float: right;" type="checkbox"/> 13. Check and top up vacuum pump cooling tank. (You may need Anti-Freeze in Winter) <input style="float: right;" type="checkbox"/> | <ol style="list-style-type: none"> 14. Check and adjust pump packed glands, where fitted. <input style="float: right;" type="checkbox"/> 15. Check and top up compressor oil level. <input style="float: right;" type="checkbox"/> 16. Check moisture trap. Drain if required. <input style="float: right;" type="checkbox"/> 17. Lubricate plug valves, where fitted. <input style="float: right;" type="checkbox"/> 18. Carry out visual inspection of plant for any leaks, etc. <input style="float: right;" type="checkbox"/> 19. Check solution strength. Make adjustments as required. <input style="float: right;" type="checkbox"/> |
|---|---|

PERIODICALLY

- | | |
|---|---|
| <ol style="list-style-type: none"> a. Carry out pump lubrication as directed by Osmose Engineering Department b. Check and adjust glands and gate valves. | <ol style="list-style-type: none"> c. Clean out inside of pressure vessel. Obtain a Permit to Work. d. Where fitted, take out and clean dosing system cut out probes. |
|---|---|

Possible layout for High Pressure Plant Maintenance Record - June 2006

(ix) Hot Work On Tanks And Pipes

Hot work should not be carried out without following strict, documented procedures. Management permission is essential before carrying out such work.

HOT WORK PERMIT NO: _____

Location :

Description of Work :

Date :

Time Started : Time Finished :

PRECAUTIONS

TICK

- | | |
|--|-----|
| 1. Remove flammable materials from the work area. | [] |
| 2. Have appropriate fire extinguishers ready for use. | [] |
| 3. Mark off hot work area with boundary tape. | [] |
| 4. Have fire protection plans ready for use. | [] |
| 5. Check for flammable vapours (particularly in tanks) before starting hot work. Purge as necessary. | [] |
| 6. Before starting and after finishing, an inspection is to be carried out by the authorised person. | [] |
| 7. Specification of additional safety measures:
.....
.....
..... | |

Signatures / Date

Fire Watch Required :-

- | | | |
|--|---|-----|
|
a) Person to whom permit is issued | a) Continual supervision | [] |
|
b) Person carrying out the above check on precautions | b) Occasional Supervision (every minutes) | [] |
|
c) Person issuing permit | c) Spot Checks/No. | [] |
| |
Date/Signature of person carrying out Fire Watch | |

Possible layout for High Pressure Plant Maintenance Record - June 2006

(x) Plant and Product Protection During Winter

Plant

During the winter period, plant and equipment must be given protection from the effects of cold. It is unlikely that bulk product in storage vessels would freeze, but any narrow pipelines where fluid is not moving should be protected. This would include, in particular:

- ◆ any site tubes on tanks
- ◆ vacuum system
- ◆ smaller dimensional pipework usually associated with pressure lines
- ◆ compressed air lines
- ◆ mains water supply lines

Plant buildings offer good direct protection from prevailing winds that cause short term extreme temperatures. Vulnerable pipework should be lagged or heat tracing applied. Vacuum systems should have anti-freeze added, and air and moisture should be routinely drained out of the compressed air system.

Thermostatically controlled heaters can be used in control system rooms. If plant equipment does freeze do not use naked flame to thaw it out, use warm air only

Product

Working solution stored in bulk should not freeze except in extreme conditions or, as detailed above, in small volume pipework, and the precautions listed should minimize this. Preservative concentrate is also robust and temperatures would need to drop to well below freezing to cause operational problems, probably in excess of -10°C . Other additives should be kept and stored above 3°C . Water repellent additive and working solution should not be allowed to drop below 5°C . Lagging of additive containers may be necessary.

(xi) General Workplace Housekeeping

- ◆ Preservative contamination in relatively small quantities may not always be visible to the naked eye. Care must be taken not to spread traces of preservative into areas which would otherwise be clean - for example, the Operator's office and control panel, rest and eating rooms, company office, etc.

Always remove unnecessary protective clothing to avoid spreading contamination and observe good hygiene procedures.

- ◆ Soak up any slight spillage of preservative with sawdust, industrial absorbent granules or other suitable absorbent material. Collect and store in closed containers prior to disposal in accordance with the requirements of the local waste disposal authority.
- ◆ Any unavoidable dripping must be contained and its spread around yard surfaces prevented.
- ◆ Store any full or empty containers neatly and in accordance with the previous section on handling containers.
- ◆ Keep area dry, do not use the bund for storage of rain water, store in separate tanks.
- ◆ Keep walkways clear. Restrict access of unauthorised people to the plant. Ensure signs are clearly displayed to this effect.



Osmose. Technical Information

A GUIDE TO PRESERVED WOOD WASTE

OSMOSE PRESERVED WOOD WASTE

Osmose® preserved wood waste can be generated from a number of sources, e.g. off-cuts, shavings or sawdust generated during construction, or older wood being taken out of service. The preserved wood may be considered as hazardous waste depending on the product with which it has been treated.

Preserved wood treatments

The Wood Protection Association has considered the range of different treatments in the context of the Hazardous Waste List from the EC Hazardous Waste Directive[†]. From this it concluded that, with the exception of timber treated with Chromated Copper Arsenate (CCA) and Creosote based products, timber which has been correctly treated with preservative should not be classified as hazardous.

If you are disposing of a significant quantity of preserved wood, it is recommended that this material be segregated from other waste and be disposed of using a registered waste contractor. All producers of waste have a duty of care to ensure that their waste is disposed of correctly and this will include accurately describing your waste to enable waste management companies to dispose of it appropriately.

Wood treated with either Naturewood® (ACQ), Clearchoice® (Micro-emulsion and LOSP) or MicroPro® treatments contain levels of dangerous substances below the threshold concentration stated in waste guidance published by the Environment Agency and is therefore non-hazardous waste. A suitable European Waste Catalogue (EWC) code to describe wood treated with these products is:

EWC 17 02 01: Wood

Any CCA or Creosote treated timber contain levels of dangerous substances above the threshold concentration and are therefore classified as hazardous waste. A suitable European Waste Catalogue (EWC) code to describe wood treated with these products is:

EWC 17 02 04 Glass, plastic and wood containing or contaminated with dangerous substances

(Note: In Scotland, Hazardous Waste is known as Special Waste)

Burning off-cuts of preserved wood in industrial incinerators

Although treated timber is classified as non-hazardous according to waste legislation, there are restrictions on burning preserved wood

Burning of wood waste is regulated by an Environmental Permit and the requirements of the Waste Incineration Directive (WID).

There are some exemptions to complying with the WID. However Naturewood, Clearchoice and MicroPro preserved wood contain either small amounts of heavy metals or trace quantities of halogenated organic compounds and therefore the requirements of WID will apply.

The WID requires minimum technical requirements and strict control over incinerator operating conditions and gas temperatures. It also requires continuous and periodic monitoring of emissions by the operator, with overchecks made by the Environment Agency, including frequent plant inspections.



Osmose. Timber Technologies

IS87/1012

www.osmose-europe.com

(xiii) Emergency Procedures

The loss of preservative fluid into drains or watercourses can cause serious environmental damage and lead to prosecution. In particular, the Environment Agency (SEPA in Scotland) has identified the industrial use of preservative as a key area of concern and has not been slow to take action, where necessary. A spillage is normally defined as an uncontrolled loss of treatment fluid outside a bunded or controlled area. However, the same procedures should be followed, as appropriate, for a loss of fluid which is contained.

Companies should have clearly defined instructions for dealing with an emergency, which should be included at each site in the Emergency Response Plan. These procedures should identify the responsibility of site personnel and give contact numbers for the emergency services. Procedures should be in place to protect surface water drains and to prevent product leaving site.

More general procedures are given on the Osmose Emergency Action Poster, a copy is included on the following page.

EMERGENCY ACTION

Osmose

Water-based Wood Preservatives

GENERAL PROCEDURES

No smoking.

Keep non-essential persons away.

Summon Emergency Services if necessary and contact Osmose immediately.

Wear Protective Equipment when dealing with spill preservative.

SPILLAGE

Shut off leaks if this can be done without personal risk, wear suitable protective equipment.

Preservative solution is harmful to animal and plant life. It is also toxic to fish and other aquatic life forms.

Contain the spillage, particularly avoiding contamination of drains and waterways. If possible, pump any immediately removable liquid into suitable containers. Extreme care should be taken when dealing with undiluted concentrate. Use sand, earth or industrial absorbent.

(Use sparingly to avoid creating excessive quantities of contaminated waste). It may be possible to use the bund containment zone as a temporary holding area.

Immediately inform management, and the Environment Agency, (SEPA in Scotland) if drains or waterways are contaminated.

All waste produced must be disposed of through an authorised waste contractor.

FIRE

Only trained personnel should attempt to deal with a fire and only if there is no risk to themselves or others.

The product is non-flammable, but toxic fumes may be given off in a fire. Stay upwind of fire involving preservative or treated timber.

Call the fire brigade quoting the emergency code 2X.

If fire fighting water becomes contaminated with the product, the water must be contained for recovery and safe disposal.

FIRST AID

If swallowed - Do not induce vomiting, rinse mouth with water and give milk or water to drink. Obtain medical help immediately

If splashed in eyes - Immediately flush eyes thoroughly with plenty of water and seek medical help.

If splashed on skin - Remove soaked clothing immediately and wash skin thoroughly and seek medical help.

If inhaled - Move patient into fresh air immediately. If breathing difficulties are apparent obtain medical help immediately.

Details of active ingredients are given on the product labels.

For further information contact Osmose.

Phyton Subignum Limited
Fieldhouse Lane
Marino, Bucks SL7 1LS
United Kingdom
Telephone: (011628) 486644
Telefax: (011628) 476757 or
481276 (Sales)

An **Osmose** Company

(xiv) Plant Security

In order to minimise the risk of damage or preservative loss through vandalism, the following arrangements must be ensured.

- ◆ Basic site design should comply with the Wood Protection Association's Code of Practice for the Safe Design & Operation of Timber Treatment Plant. Ensure tank sight gauges are tamper-proof.
- ◆ Follow the shut down procedure.
- ◆ Padlock isolating valves.
- ◆ Switch off power supply to plant control panel. (Where possible, also isolate at a point remote from the plant).
- ◆ Prevent unauthorised entry into site.
- ◆ Ensure any manhole covers on tank are securely fixed down.

(xv) Personal Protective Equipment

The following table gives a summary of when and where the different items of safety equipment should be worn when treating timber. See the Osmose "Safety on Site" poster for further details. Records should be kept of the issue and maintenance of protective equipment. A COSHH risk assessment would identify the appropriate PPE for each work activity.

Working Activity	Protective Equipment					
	Impervious Coverall	Overalls	Gauntlet Gloves	Apron	Goggles	Boots
Operating Plant (minimal risk of exposure)		✓				✓
Handling Preservative Containers		✓	✓	✓	When mixing or decanting ✓	✓
Maintaining Plant	✓		✓		(If splash risk) ✓	✓
Unloading & Handling Freshly Treated Timber	✓ May be required depending on condition of timber	✓	✓	✓	✓	✓
Entering Treatment Vessel*	✓		✓		** ✓	✓
Opening & Closing Vessel Door		✓	✓	✓	✓	✓

NOTES:

- * Although respiratory protection is unlikely to be required when the Operator is opening the vessel door, Osmose would recommend the use of a disposable respirator or half face mask to reduce exposure to a minimum and would advise the Operator to step away from the door area until any residual mist has cleared. Mechanical venting of the vessel before the door is fully opened is a standard feature of recent plants and can be retrofitted to older equipment.

Respiratory protection requirements for entry into the treatment vessel are covered in detail in 'cleaning debris from the treatment vessel'.

- ** A full face mask may be required for entry into tanks.