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Ezytube Spiral, Plastic Lined & Foam Core Tubes Data Sheet

Introduction

Ezytube is the newest technology in producing off-form finished round concrete columns. Ezytube offers many advantages over alternative spiral tubes, some of these are as follows:

- Light weight, saves craneage as the tube can be safely manhandled in most cases.
- Weatherproof.
- Save labour due to the simple and quick set-up requirements, and even faster removal using the unique "Rip Cord Tape" feature
- Very safe to use. No grinders or electric tools required to trim, remove or cut to place in the waste bin.
- Flexible, strong multilayer wall structure. Ensures improved impact resistance compared to single seam spiral tubes.

Ezytube Spiral is a composite tube comprising multiple layers (6-11 layers depending on diameter and height requirements) of thin water resistant paper and high tensile strength plastic coated mesh. The concrete surface which is produced is a class 2-3 with a light spiral mark which can be painted or left as a natural concrete finish.

Ezytube Lined is a Spiral tube which has had a smooth and durable plastic liner inserted. The concrete surface which is produced is a class 2, and has 1- 2 minor vertical seams (depending on the tube diameter) which extend the full length of the column.

Ezytube Foam Core Tubes are a composite tube comprising a high compressive strength lightweight polystyrene foam core; durable inner plastic coated liner; multi-layer high tensile strength outer reinforcing layers. These tubes are usually used for larger diameter columns (greater than 1000mm dia) or where a separation void is required around the concrete column / pier. The concrete surface which is produced is a class 2, and has 1- 2 minor vertical seams (depending on the tube diameter) which extend the full length of the column.

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1. Transport & Handling

Due to Ezytube lightweight properties, tubes of up to 4.5 mtrs in length (diameters up to 600mm) are easily handled by one man.

Ezytube is extremely strong however has a flexible wall structure. When transporting the tubes, they may at times become out of round. This is not a problem as the tubes can normally be pushed back into shape prior to fitting, however the tube will attain a round form when filled with concrete even if the tube is slightly out of round prior to filling.

Ezytube can be transported in either a vertical or horizontal position. Ezytube is quite resilient, however, care should be taken when handling and securing the load during transport, ensuring that the securing straps do not cut or damage the outside layer of the tube.

To aid in reducing freight costs, each of the different diameter tubes fit within the internal diameter of the next larger size. eg 400mm fits inside 450mm, which fits inside 500mm etc.

Longer and larger diameter tubes should always be stacked at the lowest levels on the trucks tray. High sided gates should be fitted to trucks to ensure best stacking arrangements, otherwise trucks without gates will require pyramid type stacks which will reduce carrying capacities.

2. Storage

Ezytube can be stored in either a vertical or horizontal position. Ezytube can be stored in most outside conditions for short periods, as it is water resistant and will not be affected by normal weather conditions.

Ezytube is robust and offers a reduced risk of damage from normal handling whilst on the building site. It is advisable where possible to store unused tubes away from areas where they may incur more serious damage from impact or falling objects or longer term effects of weathering.

Always inspect the outside of the tube for any visual damage to ensure that the load bearing properties of the tube have not been adversely affected prior to filling. Any damage, impacts, cuts etc should be reinforced using the Ezytube Cross Filament tape which can be purchased from Ezytube or our approved distributors.

Due to Ezytube lightweight properties, it is advisable to secure the tubes to prevent being dislodged by strong winds. For longer-term storage, it is advisable to store Ezytube under cover.

3. Physical Properties

a) Hazardous Elements

All elements of Ezytube are inert/nonhazardous in their manufactured form. However, neither the composite tube nor its components should be subjected to fire/burning/ignition source, as the resulting emissions may be harmful if inhaled.

b) Odourless

The range of Ezytube products generally do not emit or absorb odour.

c) Dimensionally Stable

Ezytube is dimensionally stable in length and diameter and will maintain the desired dimensional properties through a wide range of temperature, humidity and typical weather conditions.

d) Waterproof

Ezytube will not be affected by water should rain occur prior, during or after fixing. However, please note that the lightweight, buoyant nature of Ezytube may cause product, which is not adequately contained, to be dislodged or moved in heavy rain or water flow.

e) Combustibility

The Ezytube Spiral and plastic lined tubes consist of numerous layers of Kraft paper, inner and outer plastic films, and inner plastic mesh materials.

The tubes are combustible with difficulty but not readily ignited except with high heat flux.

Combustion will involve toxic and irritant gasses. (as will all organic materials)

Ezytube products should not be exposed to open flames or other ignition sources.

The Polystyrene foam used in the large diameter foam core tubes contains a flame retardant additive to inhibit accidental ignition from small fire sources.

The generic testing results for EPS to AS1530 Part 3 – Early Fire Hazard Test are: Ignitibility Index (0-20) = 12; Spread of Flame (0-10) = 0; Heat Evolved Index (0-10) = 3; Smoke Developed Index (0-10) = 5

f) Release agents

No release agents or chemicals should be used in conjunction with any Ezytube forms for creating Round Concrete columns.

g) Ezytube Physical Properties Table

Spiral and Plastic Lined Tubes					
Dia. (mm)	Wall Thickness (mm)	Outside Tube Diameter (mm)	SPIRAL Tube Weight (kg)/mtr	Safe Filling Heights Unrestricted Pour Rate (mtrs)/Hr	Safe Filling Heights Controlled Pour @ 3.0mtrs vertically/Hr (mtrs)
150 (STD)	1.2	153	0.69	9.0	
200 (STD)	1.2	203	0.91	9.0	
255 (STD)	1.2	257	1.16	7.0	9.0
305 (STD)	2.0	308	1.52	5.6	
305 (HVY)	2.4	309	1.85	7.0	9.0
356 (STD)	2.0	356	1.76	5.4	
356 (HVY)	2.4	357	2.14	6.5	9.0
406 (STD)	2.0	410	2.03	5.2	
406 (HVY)	2.4	411	2.46	6.5	9.0
457 (STD)	2.0	458	2.26	5.0	
457 (HVY)	2.4	459	2.75	6.5	9.0
508 (STD)	2.0	512	2.54	4.8	
508 (MED)	2.8	514	3.46	6.5	
508 (HVY)	3.2	515	4.39	8.0	9.0
559 (STD)	2.0	557	2.76	4.7	
559 (MED)	2.8	559	3.77	6.2	
559 (HVY)	3.2	560	4.78	8.0	9.0
604 (STD)	2.0	614	3.05	4.6	
604 (MED)	2.8	616	4.16	6.0	
604 (HVY)	3.2	617	5.27	7.5	9.0
660 (STD)	2.0	664	3.30	4.4	
660 (MED)	2.8	666	4.50	5.8	
660 (HVY)	3.2	667	5.70	7.2	9.0
711 (STD)	2.5	716	4.85	5.0	
711 (MED)	3.2	718	6.14	6.5	
711 (HVY)	4.0	719	7.43	8.0	9.0
762 (STD)	2.5	770	5.25	4.5	
762 (MED)	3.2	771	6.61	6.0	
762 (HVY)	4.0	773	8.01	7.5	9.0
813 (STD)	2.5	816	5.53	4.0	
813 (MED)	3.2	817	7.01	5.5	
813 (HVY)	4.0	819	8.49	7.0	9.0
914 (STD)	2.5	919	6.23	3.8	
914 (MED)	3.2	921	7.90	5.2	
914 (HVY)	4.0	922	9.56	6.5	8.0
990 (STD)	2.5	995	6.75	3.6	
990 (MED)	3.2	997	8.55	5.0	
990 (HVY)	4.0	998	10.36	6.3	8.0
1100 (STD)	2.84	1106	13.4	3.2	
1100 (MED)	3.62	1107	17.1	4.1	
1100 (HVY)	4.02	1108	19	5.0	8.0
1200 (STD)	2.84	1206	13.4	3.0	

1200 (MED)	3.62	1207	17.1	3.8	
1200 (HVY)	4.02	1208	19	4.6	
1200 (XHVY)	4.85	1210	22.9	5.6	8.0 @ 2LM/HR

Foam Core Tubes					
Dia. (mm)	Wall Thickness (mm)	Outside Tube Diameter (mm)	Foam Core Tube Weight (kg)/mtr	Safe Filling Heights Unrestricted Pour Rate (mtrs)/Hr	Safe Filling Heights Controlled Pour @ 3.0mtrs vertically/Hr (mtrs)
1050mm (STD)	33	1116	11	5.0	
1050mm (HVY)	35	1120	13	7.0	8.0
1100mm (STD)	33	1166	11	5.0	
1100mm (HVY)	35	1170	13	7.0	
1150mm (STD)	33	1216	12	4.8	
1150mm (HVY)	35	1220	14	6.8	8.0
1200mm (STD)	33	1266	12	4.8	
1200mm (HVY)	35	1270	14	6.8	8.5
1300mm (STD)	33	1366	13	4.7	
1300mm (HVY)	35	1370	16	6.7	8.0
1400mm (STD)	33	1466	14	4.6	
1400mm (HVY)	35	1470	17	6.5	8.0
1500mm (STD)	33	1566	17	4.4	
1500mm (HVY)	55	1610	24	6.3	7.5
1500mm (XHVY)					
1600mm (STD)	33	1666	18	4.0	
1600mm (HVY)	55	1710	25.5	6.0	7.5
1600mm (XHVY)					
1700mm (STD)	33	1766	19	3.8	
1700mm (HVY)	55	1810	27	5.7	7.3
1700mm (XHVY)	57	1814	31	6	8.0
1800mm (STD)	33	1866	21	3.6	
1800mm (HVY)	56	1912	29	5.4	7.0
1800mm (XHVY)	59	1918	33	6.0	8.0
1900mm (STD)	33	1966	22.5	3.3	
1900mm (HVY)	56	2012	30.5	5.0	6.8
1900mm (XHVY)	59	2018	34.5	6.0	8.0
2000mm (STD)	33	2066	24.0	3.1	
2000mm (HVY)	56	2112	32.0	4.5	6.5
2000mm (XHVY)	60	2120	37.0	6.0	7.8
2100mm (STD)	33	2166	25.5	3.0	
2100mm (HVY)	56	2212	34	4.3	6.0
2100mm (XHVY)	60	2220	39	5	7.4
2200mm (STD)	34	2268	27	2.9	
2200mm (HVY)	57	2314	36	4.0	5.8
2200mm (XHVY)	60	2320	40	5.0	7.0
2500mm (STD)	56	2612	36	2.7	
2500mm (HVY)	59	2618	40	3.5	

2500mm (XHVY)	62	2624	45	4.5	5.5
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4. Column Set Up

a) Top Fitting Technique

i) Installation

Ezytube is primarily designed for installation by the top fitting technique ie. The tube is placed over the reinforcing steel from the top and lowered into position. Care should be taken to avoid scraping the internal layer on the steel reo bars (plastic caps on the exposed ends are advised) as this may result in marks onto the surface of the concrete column.

ii) Inspection of Tubes

Always ensure that the tubes are individually inspected both upon delivery to site, and prior to installation over the reinforcing steel.

Ensure that the inner liner has not been damaged during either transportation or whilst being stored on site. For plastic lined tubes, ensure that the adhesive tape securing the internal liner to the tube is well adhered at both ends of the tube, as well as for the full length of any internal vertical seams. It is very rare for such problems, however is much easier to rectify prior to placement than after a pour is completed.

iii) Positioning

The spiral and plastic lined tubes are equally strong when the tube is positioned in either direction.

Where a tube incorporates a 'Ripcord tape' for easy removal, it is important to position the tube in the correct position. The tube should be placed with the long section of Ezytube tape running down from the top (will extend to a height that is easy to reach from ground level, with the short tape at the base.

The internal plastic liner of Ezytube has a small joint, which results in a fine horizontal line on the surface of the column. Should any areas of the column be concealed or be less visible, the join should be located in this position.

The position of the internal joint is marked top and bottom on the outside of the column for easy identification.

The foam core tubes are to be positioned in the correct orientation and shall be marked "TOP" on all tubes. These tubes should be orientated correctly as the reinforcing may vary from the top to the bottom of the tube depending upon the overall height of the column being poured.

Slide the tube through the hole cut in the slab / beam formply, and over the steel cage taking care not to damage the inside of the tube by scrapping on any exposed tie wire or reo bars. Spacer wheels should be used on the reo to assist in protecting the inside face of the tube as well as to maintain clearances.

iv) Trim to Length

Using a Stanley knife (or similar), trim off any excess Ezytube in line with the top of the formply.

IMPORTANT

Where the Ripcord tape is used, pull the tape away from the tube to allow trimming the tube without cutting through the Ripcord tape.

Where lined tubes are trimmed, ensure that the top of the cut tube is retaped and sealed to prevent concrete flowing between the spiral tube and the liner.

v) Fixing

The top and bottom of Ezytube must be fixed securely in place to prevent movement whilst filling with concrete. The base of the tube is held in place by fixing four equally spaced blocks of wood to the floor slab.

When fitted, the top edge of the tube is cut so that it is held neatly in place by the soffit formwork.

vi) Bracing

Cross bracing is not normally required on top fitted columns up to a height of 5.5 mtrs. For columns that are longer than 5.5 mtrs, cross bracing supports should be located approx. $\frac{1}{2}$ the overall height, or installed to reinforce either side of any joints where standard length tubes are extended / joined on site.

Should the Ezytube form not be fixed in place at the top as no soffit formwork is in place (column first – ‘Pour Up Technique), vertical bracing should be applied as 4 equally spaced timbers around the form which extend the full height of the column. The vertical bracing is fixed in place to a timber support at the top of the column and props fixed to the vertical bracing running diagonally away from the column to a secure fixing. Under no circumstances should the props be positioned in direct contact with the Ezytube form.

vii) Concrete Properties

Ezytube columns forms are designed to accommodate most commonly used concrete formulations. Please consult Ezytube technical staff if the poured concrete;

- a. Has an expected setting time longer than 2 hours.
- b. Is expected to generate higher temperatures than 85 Degrees Celsius (for Foam core tubes)

viii) Pouring Concrete

When pumping the concrete into the tube, place the concrete pump hose within the centre of the steel cage and locate as low towards the base of the tube as possible. Do not rest the hose on the top of the tube and allow the concrete to drop from the top as this may result in damage to the top of the tube and concrete may enter between the tube and the plastic liner.

Particularly with longer column forms, ensure that the concrete flow is not directed at the wall of the tube, as the flowing concrete can wear through the inner liner resulting in surface and structural defects in the finished column.

Place the vibrator with-in the concrete as close as possible to the base and centre of the tube, and withdraw both the hose and vibrator evenly in an upward direction. The air and water trapped within the concrete needs to be vibrated in an upward direction. Do not move the vibrator up and down repeatedly as this will increase the incidence of honeycomb on the concrete surface.

If there is any doubt as to the correct concrete placement method required, please do not hesitate to request a site meeting with Ezytube technical staff, Formworker, concrete contractor and builder to ensure the best possible outcome on site.

ix) Stripping

a. Using a Knife

Ezytube ensures an ease in stripping which is unachievable by any other type of formwork tubing. After allowing sufficient time for the concrete to set (in accordance with AS1509-1974), simply remove the base supports and use a Stanley knife (or similar) to perform a straight vertical cut from the top of the tube to the base.

Perform a cut around the full circumference of the tube approximately 100mm from the soffit or support beams. Pull the two sections apart and slide the Ezytube form off the concrete column. One person can perform this operation generally in a few minutes per column.

For best results with lined tubes, always try to cut the form in line with the marks on the outside of the tube, which indicate the location of the internal plastic join. This will result in the best possible finish on the surface of the column.

For columns that are higher than 3 mtrs, it may be easiest to cut laterally around the circumference at intervals of 2.5 to 3.0 mtrs to strip the form as smaller sections.

Due to the ease of removal, Ezytube is often left in place on the column until just prior to hand over. This protects the column from scratches, bumps or other damage by other building works on site.

b. Using EzyStrip Tape

Remove bracing at base of tube, chip away any excess concrete that may have run out the base or top of tube which may restrict removal.

The 'Ripcord tape' is approx 18mm in width and is covered by a protective Ezytube tape. The ripcord tape is designed to be strong enough to cut through the Ezytube form without risking cuts to hands etc.

Simply, pull the Ripcord tape away from the tube all the way to the top. Set back approx 1-1.5mtrs to achieve approx 30 degree angle, and pull down evenly on the tape.

Avoid pulling excessively, or pulling down too close to the tube as this may cause the tape to break. In the event that the tape breaks, cut the tube directly beneath the tape with a knife approx 50mm in a downwards direction, pull down on the short tail of tape to continue with the removal process.

When the tape has cut down to approx. 1 mtr from the base of the tube, pull up on the short piece of tape located at the base of the tube to cut through the remaining tube in an upward direction.

Where lined tubes are used, the ripcord tape will remove the outer tube only. The liner is then simply removed by cutting a small section of the tape which joins the plastic and pulling away from the column.

Rip cord tape is not supplied with the foam cored tubes as they are easily removed using a hand held knife.

b) Side Fitting Technique (Spiral and Plastic Lined Tubes only)

- i) Where it is not possible to install the formwork tube by the "Top Fitting Technique", Ezytube may be installed by the following process. However, a high quality finish may not be achieved at the joining point.
- ii) Mark a straight line between the top and bottom marks, which correspond with the internal liner join.
- iii) Cut along this line with a Stanley knife (or similar) and a straight edge guide to ensure a straight, fine cut.
- iv) Wrap the cut Ezytube form around the steel cage (or I beam) by gently spreading the tube at the cut edges.
- v) Pull the 2 edges together using small amounts of packaging tape for the full height of the tube.
- vi) Run a packaging tape over the full length of the cut surface to prevent water, fine cement and sand from running out.

- vii) Take a second Ezytube and cut the same way as indicated in steps 1 & 2 above. Place this second Ezytube form around the inner Ezytube, ensuring that the join in the inner and outer tubes are on opposing sides (180 degrees apart).
- viii) Using Ezytube approved reinforced tape, start from the base of the tube and wrap the full circumference of the tube with multiple overlapping layers as per the Ezytube Wrap table for the respective diameter and height. Repeat this process leaving a 100mm spacing between each multiply taped sections until 2.0mtrs height from the ground level, and continue with multiple layers every 150mm thereafter to the top of tube in accordance with the requirements of the Ezytube Wrap Table
- ix) for larger diameters or increased heights, please refer to Ezytube for specific instructions
- x) Fill the tube with concrete and remove the Ezytube in reverse order upon adequate cure of the concrete.
- xi) Please refer to the Ezytube wrap video found at www.ezytube.com.au/video or Ezytube Head Office staff for further detailed information

5) Cut Outs and Penetrations

Ezytube is unique in that it can be easily cut to accommodate varied adjoining surfaces/structures (e.g. beams, steps, edges, conduits etc).

Where a section of the tube is removed/cut out, the opposing side and cut edges should be reinforced with either a ply yolk or similar to maintain the desired round shape.

Small holes up to 30mm diameter such as required for plastic conduit penetrations can be drilled anywhere in the tube (with the exception of within 100mm from the base) subject to positioning and the diameter of the tube. Large diameter holes may be drilled, however we recommend that you contact the Ezytube technical department for clarification prior to performing such works.

(END)
