INTEGRITANK®

Cold Spray Applied Structural Waterproofing Membrane

Stirling Lloyd is now GCP Applied Technologies

Contents

Appendices

1. Introduction

1.1. This document should be read in its entirety before commencing application.

1.2. The INTEGRITANK® structural waterproofing membrane system consists of a number of standard elements:

- PAR1 Primer for Concrete – a two component, reactive, fast curing, ESSELAC® based primer consisting of a resin base and a powder catalyst (BPO).
- PA1 Primer for Concrete – a single-component, air-drying primer.
- ZED S94 Primer for Metal – a single-component, air-drying primer with anti-corrosion pigments.
- INTEGRITANK® Spray Grade – a three-component, reactive, fast curing ESSELAC® based membrane consisting of Part A and B base resins and a powder catalyst (BPO). Available in Standard and Tropical Grades.
- INTEGRITANK® Hand Grade – A two-component, reactive, fast curing, waterproofing membrane based on our advanced ESSELAC® resin technology, consisting of a base resin and a BPO liquid catalyst. Available in summer and winter grades.
- SL Smoothing Primer – A two-component, reactive, fast curing, slurry primer consisting of a base resin and specially blended fillers containing BPO Powder Catalyst designed to seal and level uneven surfaces prior to application of the INTEGRITANK® Hand Grade System. Available in summer and winter grades.
- Other primers are available to cover a wide range of climates and specifications.

1.3. A range of ancillary products is available for use with INTEGRITANK®. They include:

- SENTINEL® Expansion Joints – a complete range of compatible expansion joints.
- METASET® Sealants, Concrete Repair Compounds - fast curing compatible sealants and mortars available for horizontal and vertical work.

1.4. Only Authorised Contractors trained by GCP are authorised to apply the INTEGRITANK® system.

2. Surface Preparation

2.1. All surface coating systems are dependent on the quality of surface preparation.

2.2. Concrete

2.2.1. Concrete substrates should be designed and built in accordance with BS EN 1992:2004.

2.2.2. All new concrete decks should be a minimum of seven days old. If additives, cement replacement or curing agents have been used please consult our Technical Services Department.

2.2.3. The class of finish for all new unformed surfaces will depend on the grade of INTEGRITANK® being applied.

2.2.3.1. For INTEGRITANK® Spray Grade a U2 finish as defined by the Department of Transport is required. A non - Class U2 finished surface may be over coated but the substrate should still comply with requirements detailed below. Application to a non - class U2 finish may involve the use of additional materials to achieve the specification. Prior consideration of this is required, and agreement should be reached between the Resident Engineer, Main Contractor and Authorised Contractor before any materials are applied.

2.2.3.2. For INTEGRITANK® Hand Grade a laitance free, wood float finish conforming to a U5 finish should be provided for all unformed concrete surfaces. A non-wood or power floated finish may be overcoated but the self-levelling nature of the product may result in an increased coverage rate.

2.2.3.3. For further information on the class of finish refer to Appendix 1.

2.2.4. All surfaces to be treated must be dry and free from oil, grease, curing compounds, loose particles, moss and algae growth, laitance, friable matter, dirt and all other contaminants.

2.2.5. All concrete decks shall, where necessary, be prepared by suitable mechanical means means such as diamond grinding, vacuum blasting or grit blasting to provide a sound surface free from laitance. Water jetting is not recommended but if it is to be used it must be of sufficient pressure to remove all the laitance from the surface. All the cement dust should then be removed from the substrate using clean water.All blow holes and voids must be filled. For suitable materials please contact our Technical Services Department.

2.2.6. The INTEGRITANK® system cannot economically alter levels or correct badly laid substrates. There is also an inevitable tendency for the system to mirror imperfections in the substrate. It is therefore advisable to even out as much of the substrate as possible prior to INTEGRITANK® application.

2.2.7. Concrete spills, irregular shutter joints or sharp internal or external angles should be ground, levelled or filled as necessary.

2.2.8. Damaged areas of concrete can be repaired using METASET® ResiFilla Repair Compound. If other repair materials are to be used then the compatibility must be checked with Technical Services Department prior to use.

2.3. Steel Substrates

2.3.1. All surfaces that have been subject to metallization shall be checked for integrity. The Authorised Contractor shall assess the adhesion of the metallization coating to the deck by testing for tensile bond strength in accordance with a recognised standard i.e. BS EN ISO 4624:2003 or ASTM D4541-02. At least one test should be carried out every 50m² subject to a minimum of 6 tests for each structure being treated. Should the adhesion of the metallization coating to the substrate fall below 2.0N/mm² the metallizing coating can, at the client's discretion, be removed.

2.3.2. Welds must be inspected for blowholes and other imperfections. Laminations and sharp edges must be removed by grinding off. If necessary the Engineer should direct the appropriate remedial action.

2.3.3. Flux and other contaminants must be thoroughly cleaned from the steel substrate after welding operations take place.

2.3.4. All surfaces must be free from rust, dirt, scale and other contaminants. The surface finish shall comply with Swedish Standard SIS 05 59 00 (1967) SA 2.5.

2.3.5. Prior to any blast cleaning the surface must be thoroughly degreased.

2.3.6. If mechanical brushes or grinders are to be used care must be taken not to polish the steel surface.

2.3.7. If low pressure wet grit blast cleaning is to be used, then immediately after a clean condition is achieved the deck must be dried to prevent oxidation of the steel.

2.3.8. Within three hours of blast cleaning and before contamination or re-oxidation of the steel all spent grit and detritus must be completely removed from the surface and the ZED S94 primer applied to prevent deterioration of the steel.

2.4. After the relevant substrate preparation has been carried out all debris must be removed from the surface. The surface should then be fully dried prior to application of the primer.

2.5. The prepared substrate must then be inspected and approved by the Authorised Contractor to ensure the preparatory work is satisfactory and the finished substrate meets the required standard.

2.6. The Authorised Contractor shall assess the adhesion of the INTEGRITANK® system to the substrate, prior to it being applied by random spot testing to establish the tensile bond strength. The test must be in accordance with a recognised standard i.e. BS EN ISO 4624:2003 or ASTM D4541-02. At least one test should be carried out every 50m² subject to a minimum of 6 tests for each structure being treated. The sampling must include all variations in the substrate finish.

2.7. On concrete the adhesion tests should exhibit failure in the substrate and not at the interface. A minimum tensile adhesion value of 0.3N/mm² must be achieved on concrete. A minimum tensile adhesion value of 2.0N/mm² is required on steel substrates. All results should be recorded on the Site Q.A & Materials Record. The mode of failure should also be recorded. If any value falls below these requirements please contact our Technical Services Department.

2.8. Once the substrate has been cleaned trafficking must be kept to a minimum to prevent contamination. Where plant or vehicles are taken onto cleaned areas, checks should be made for fuel or oil leaks. Leaking compressors should be replaced. If this is not possible the leaks must be contained off the deck. All compressors must be fitted with an oil/water filter if they are to be used to power an air lance at any stage during the works.

2.9. Other Substrates

2.9.1. For treatment of other substrates please contact our Technical Services Department.

3. Treatment of Joints

3.1. Joints should be treated in accordance with the site-specific specification provided by GCP as agreed with the client.

4. Detailing

4.1. Detailing is site specific. The treatment of those details will be agreed in advance between GCP, the Authorised Contractor and the Client.

5. System Application

5.1. Application Temperatures:

5.1.1. INTEGRITANK Standard Spray Grade may proceed while the substrate temperatures are between 0°C and +30°C, provided the substrate is above the dew point. This can be calculated using the Dew Point Table. Refer to Appendix 2.

5.1.2. For substrate temperatures between 15°C and +50°C, INTEGRITANK Tropical Spray Grade should be used.

5.1.3. For substrate temperatures between -10°C and 0°C , GCP Arctic Additives are mixed into INTEGRITANK Standard Spray Grade membrane; see Application Guidelines - **Arctic Additives for Sub-Zero Application (QA358)** for guidance.

5.2. The finished coating system must be uniform in colour, texture and appearance. All edges should be cosmetically acceptable with no thick or ragged edges. The Authorised Contractor shall work out a masking technique to ensure an acceptable finish to all edges. No element of the system shall be feather edged. All spraying must be terminated at a taped edge ensuring the correct thickness is applied.

5.3. If there is a risk of contamination from other trades during the course of the works adequate protection to prevent this should be provided.

5.4. Wherever possible other trades should be excluded from the working area during the application of the INTEGRITANK® system.

6. Application of Primer

6.1. Prior to application of the INTEGRITANK® membrane, concrete substrates must be primed using either PAR1 Primer or PA1 Primer. Metal substrates must be primed using ZED S94 Metal Primer. For treatment of other types of substrate please consult our Technical Services Department. The application temperature ranges of the various primers are typically:

- PAR1 Primer: 0°C to +30°C (substrate temperature)
- PAR1 Primer LT: -10°C to +15°C (substrate temperature)
- PA1 Primer: +5°C to +50°C (substrate temperature)
- ZED S94 Primer: 0°C to +50°C (substrate temperature)

6.2. PAR1 Primer Application: -10°C to +30°C (substrate temperature)

6.2.1. PAR1 Primer consists of a clear resin base and BPO Powder Catalyst. There are two grades of PAR1 Primer: Standard and Low Temperature (LT). The quantity of BPO Powder Catalyst to be added will vary with the grade used and the temperature. Please see Appendix 3.

6.2.2. Immediately before use, stir the primer resin thoroughly using a mechanical mixer, such as an air-driven drill (400 – 800 rpm) or intrinsically safe electric drill with mixing paddle. Whilst continuing to stir, gradually add the required amount of BPO Powder Catalyst and continue stirring until it is all added and completely dispersed.

Note: If the PAR1 Primer is supplied in a 200kg drum and is to be decanted into smaller containers, stir thoroughly immediately before decanting.

6.2.3. Once the BPO Powder Catalyst is added it initiates the “working life" of the material during which time it should be applied. The “working life" of the material will vary depending upon the quantity mixed, the ambient and material temperature and the level of BPO Powder Catalyst addition. Refer to Appendix 3 for further information on working life and cure times.

6.2.4. PAR1 Primer should be applied evenly to the substrate by brush, roller or airless spray. For spray application the recommended equipment is a Graco 23:1 Monark airless spray pump with a ¼" spray line and a spray tip size between 0.025" (25 thou) and 0.035" (35 thou).

6.2.5. The substrate should be completely wetted ensuring maximum penetration so as to prevent pinholing and ensure good adhesion, however “ponding" must be avoided. Do not try to apply the PAR1 Primer once it starts to gel.

6.2.6. One application of PAR1 Primer is normally sufficient. When dry adequately sealed areas will display a glass like sheen finish. Any areas displaying a matt finish will require a second coat. Visually inspect the primed surface for defects e.g. pinholes. If any defects are found, apply a second coat to areas to ensure the substrate is adequately sealed.

6.2.7. The coverage rate will depend upon the porosity of the substrate but should be between 0.2kg/m² and 0.3kg/m² depending on the concrete.

6.2.8. The primer will accept foot traffic once it has cured, and where necessary will accept vehicle traffic with rubber tyres after one hour. To prevent unnecessary contamination, keep traffic to a minimum. The primer should be dry to the touch and fully cured before the next application stage starts.

6.3. PA1 Primer Application: +5°C to +50°C (substrate temperature)

6.3.1. PA1 consists of a clear resin base.

6.3.2. Immediately before use stir the primer resin thoroughly using a mechanical mixer, such as an air-driven drill (400 – 800 rpm) or intrinsically safe electric drill and mixing paddle. Care should be taken not to entrain excessive air in the mix.

Note: If the PA1 Primer is supplied in a 190kg drum and is to be decanted into smaller containers it should be stirred thoroughly immediately prior to decanting it.

6.3.3. PA1 Primer should be applied evenly to the substrate by brush, roller or airless spray. For spray application the recommended equipment is a Graco 23:1 Monark airless spray pump with a ¼" spray line and a spray tip size between 0.025" (25 thou) 0.035" (35 thou). If spray applied then it is preferable to follow closely behind with a dry roller to remove any ‘ponding’. For roller application, a roller tray should be used as this helps to avoid ponding that can occur if you pour straight from the container onto the deck.

6.3.4. The substrate should be completely wetted ensuring maximum penetration so as to prevent pin holing and ensure good adhesion, however ‘ponding’ must be avoided.

6.3.5. One application of PA1 Primer is normally sufficient. When dry, adequately sealed areas will display a slight gloss. On very porous concretes, areas may dry to give a matt finish where all the primer has been absorbed. These areas will require a second coat. Visually inspect the primed surface for defects e.g. pinholes. If any defects are found, apply a second coat to areas to ensure the substrate is adequately sealed. Ensure all areas of the first coat of PA1 are completely dry and hard before applying a second coat.

6.3.6. The drying time of the PA1 Primer will depend upon site conditions, but typically is 60 minutes at 20°C. Additional drying time may be required on porous substrates. Refer to Appendix 4 for further information on drying times.

6.3.7. The coverage rate will depend upon the porosity of the substrate but should be between 0.15kg/m² and 0.25kg/m² depending on the concrete.

6.3.8. The primer will accept foot traffic once it has cured, and where necessary will accept vehicle traffic with rubber tyres after one hour. To prevent unnecessary contamination, keep traffic to a minimum. The primer should be dry to the touch and fully cured before the next application stage starts.

6.4. ZED S94 Metal Primer Application: 0°C to +50°C (substrate temperature)

6.4.1. ZED S94 is a single-component, anti-corrosive metal primer supplied in a metal pail.

6.4.2. The application temperature range of ZED S94 is 0°C to +50°C (substrate temperature). For application at elevated temperatures it is best to apply ZED S94, pigmented white to help reduce solar gain in the steel deck.

6.4.3. Immediately before use stir the primer resin thoroughly using a mechanical mixer, such as an air-driven drill (400 – 800 rpm) or intrinsically safe electric drill with mixing paddle. Care should be taken not to entrain excessive air in the mix.

Note: If the ZED S94 is supplied in a 200kg drum and is to be decanted into smaller containers it must be stirred thoroughly immediately prior to decanting.

6.4.4. ZED S94 should be applied evenly to the substrate by brush, roller or airless spray. For spray application the ZED S94 can be diluted with up to 25% by weight of Xylene. The recommended spray equipment is a Graco 23:1 Monark airless spray pump with a ¼" spray line and a spray tip size between 0.025" (25 thou) and 0.035" (35 thou). If it is sprayed then it is preferable to follow closely behind with a dry roller to remove any 'ponding'.

6.4.5. One application of ZED S94 is normally sufficient. The coverage rate is typically 0.2kg/m².

6.4.6. The drying time of the ZED S94 will vary depending upon the site conditions i.e. airflow, as well as the coverage rate and the material and ambient temperatures, typically 30 minutes at 20°C. Visual inspection of the primed area should be undertaken to ensure the primer is tack-free in all areas and not soft to the touch, before any overcoating is permitted. Refer to Appendix 5 for further information on drying times.

6.4.7. Once the primer has been applied vehicular trafficking should be avoided to prevent unnecessary contamination. The primer should be fully dry before the next application stage starts.

6.5. SL Smoothing Primer: 0°C to +30°C (substrate temperature)

6.5.1. SL Smoothing Primer is a two-component slurry screed designed to prime and level uneven or rough surfaces prior to application of INTEGRITANK® Hand Grade. It can be applied from : 0°C to +30°C (substrate temperature)

6.5.2. SL Smoothing Primer consists of a clear resin base and a bag of graded fillers containing the BPO. Pour the resin into a clean mixing vessel, which should be large enough to take a whole kit. Do not split the kit. Add the fillers and mix thoroughly until all the fillers are wetted out. A mixer powered by an air drill is ideal for this task.

6.5.3. Once the fillers are mixed the working life is initiated and the material must be used. Pour the material onto the substrate and spread out using a flat edged rubber squeegee.

6.5.4. There are two grades of SL Smoothing Primer - summer and winter. For faster curing below 10°C a separate sachet of BPO is provided for addition to the resin component. It should be mixed into the resin component immediately prior to adding the bag of fillers.

6.5.5. Ensure that the SL Smoothing Primer is fully cured and dry to the touch before overcoating.

7. Application of Reinforced Stripe Coats

7.1. Once the Primer has cured a stripe coat of INTEGRITANK® membrane with reinforcing mesh should be applied to areas where there is potential for movement or deflection e.g. on a cantilever slab. If INTEGRITANK® Hand Grade is being used the Vertical Grade should be applied for the stripe coats.

7.2. There is no requirement to reinforce static or shrinkage cracks or day work /construction joints.

7.3. The standard reinforcement is 180mm wide, so the stripe coat should be at least 200mm wide by a minimum 1.5mm thick.

7.4. Cut the scrim to the required length and back roll onto a length of PVC pipe.

7.5. Mark out the area to be treated using masking tape.

7.6. Apply INTEGRITANK® membrane at a minimum thickness of 0.5mm. Before it starts to gel roll the pre-cut reinforcing scrim into it. This should then be wetted out using a spiked roller to ensure it is totally coated and any trapped air is removed.

7.7. Once the scrim is incorporated into the INTEGRITANK® membrane a further coat of INTEGRITANK® membrane should be applied over the top at a thickness of 1mm before the first layer of membrane has cured. The total required minimum coverage rate is approximately 2.5 to 3kg/m², depending upon surface irregularity.

Note: For best results when spray applying stripe coats the recommended spray tip size is 0.035" (35 thou) with an output pump pressure of between 1,000psi and 1,600psi

7.8. If the Authorised Contractor applying the reinforcing scrim needs to walk on the scrim to apply the second coat they must wear spiked shoes so as to avoid displacing the membrane. Do not walk on the second coat or any cured parts of membrane with spiked shoes.

7.9. Where more than one width of scrim is to be applied overlap the edge of the existing reinforcing scrim by a minimum 50mm with the new reinforcing scrim.

7.10. Once the INTEGRITANK® membrane has been applied remove any masking/edge tape before it starts to gel. If the INTEGRITANK® membrane has started to gel, the utmost care must be taken when removing the tape so as to avoid disturbing it as it could affect its adhesion to the substrate.

7.11. All reinforced stripe coats should then be overcoated with a further coat of INTEGRITANK® membrane in accordance with Section 8 or 9.

8. Application of INTEGRITANK® Spray Grade

8.1. To help achieve the correct coverage, the area to be coated by each kit should be marked. The coverage rate must be monitored constantly and the total weight of material used against the marked area must be recorded on the Site Q.A. & Materials Record.

8.2. Overcoat the primer as soon as possible to avoid unnecessary surface contamination. Check the primer is fully cured, clean and free from loose debris, moisture and other contaminants before applying the INTEGRITANK® membrane. Avoid the use of tri-burners, thermal lances etc. when drying the primed surface. If the primed surface is wet, use a compressed air lance fitted with an oil/water filter.

8.3. Use masking tape; protection boards or other approved means to control overspray and provide a neat finish.

8.4. The INTEGRITANK® membrane in both Standard and Tropical Grades consists of two resin components (Part A and Part B) and BPO Powder Catalyst, supplied in pre-weighed bags ready for on-site mixing. The Part A resin component is neutral in colour, Part B resin component is pigmented to distinguish it from the Part A. When referencing temperatures, this section assumes Standard Grade is being used.

8.5. The INTEGRITANK® membrane is applied in two coats. The first coat of membrane is yellow. The colour of the second coat will be dependent on the requirements of the specific contract (white or grey).

8.6. Separately stir the Part A and Part B thoroughly prior to use using a mechanical stirrer, such as an air-driven drill (400-800rpm) or intrinsically safe electric drill with mixing paddle. Separate mixing paddles must be used for the Part A and Part B to prevent cross-contamination.

8.7. Whilst stirring the Part B gradually add the correct amount of BPO until all the BPO has dispersed. Scrape around the sides and base of the container to ensure thorough mixing.. Use the same day when possible, however for temperatures below 10°C, add the BPO to Part B on the day prior to application. Refer to Appendix 8 for further information.

Important: BPO must not be added to Part A, it will initiate an immediate reaction causing the product to gel.

8.8. The Part A and Part B should be spray-applied using suitable cold, plural component, 1:1 airless spray equipment with integral in-line static mixer, as recommended by GCP.

8.9. Spraying may proceed while the air and substrate temperatures are between 0°C and +30°C, provided the substrate is above the dew point. This can be calculated using the Dew Point Table, refer to Appendix 2. For application at temperatures outside of this range please contact our Technical Services Department.

8.10. Recommended spray tip size is between 0.035" (35 thou) and 0.045" (45 thou). Where a more controlled spray pattern is required e.g. on exposed vertical work, stripe coats etc., a tip size between 0.025" (25 thou) and 0.035" (35 thou) with a smaller fan width i.e. 335, should be used. The output pressure on the pump should be set to give a satisfactory fan but not too high so as to cause rippling of the material. Maximum output pressure should be between 1,000psi to 1,600psi. In the event of any delays during spray application flush the system through with solvent or flushing media to avoid gelling in the lines or pump. Please contact our Technical Services Department for more specific spraying details if required.

8.11. If the INTEGRITANK® membrane is to be extended up a vertical it should be carried out in accordance with the particular site requirements and with agreement of the Engineer. This should be measured and masking tape positioned accurately. Ensure the required thickness is applied. The thixotropic nature of INTEGRITANK® allows it to be applied to vertical surfaces in a single coat thickness in excess of 1mm. Do not feather edge the INTEGRITANK® membrane. Apply to a taped edge to maintain the correct thickness. Do not apply the material above the level of any damp proof course that may be present.

8.12. The INTEGRITANK® membrane is applied in two separate coats. Each coat of the membrane must be applied to give a measured wet film thickness of 1.25mm, checked by;

- Dipping every 2m² with a gauge pin or standard comb (Wet Film Thickness) gauge.
- Calculating the quantity of the material used against the area treated.
- Visual inspection, the contrasting colours assist in highlighting areas of insufficient coverage.

These measures help ensure that the minimum dry film thickness of 1.0mm per coat is achieved on most substrates including over any peaks, arises and irregularities. The required minimum coverage rate is 1.4kg/m² per coat, this will increase with surface irregularity.

8.13. Once the first coat of INTEGRITANK® membrane has been applied remove any masking/edge tape before it starts to gel. If the INTEGRITANK® membrane has started to gel the utmost care must be taken when removing the tape so as to avoid disturbing it as it could affect its adhesion to the substrate.

8.14. Before the application of the second coat the cured surface of the first coat must be visually inspected and if any defects are found they shall be repaired by hand in accordance with section 11.

8.15. Allow the 'snagged' areas to fully cure before moving onto application of the second coat.

8.16. The second coat of membrane may be applied directly onto the cured first coat with no preparation other than the removal of any moisture and loose debris such as dust, grit etc. that may have accumulated.

8.17. Once the second coat of INTEGRITANK® membrane has been applied, remove any masking/edge tape before it starts to gel. If the INTEGRITANK® membrane has started to gel the utmost care must be taken when removing the tape to prevent disturbing the bond of the material.

8.18. Following application and cure of the second coat of INTEGRITANK® membrane it must be visually inspected and if any defects are found they shall be repaired by hand in accordance with section 11.

8.19. When terminating at a boundary or edge during membrane application do not feather edge the INTEGRITANK® membrane. Apply to a taped edge to maintain the correct thickness.

8.20. The waterproofing membrane will accept foot traffic once it has cured, and where necessary will accept vehicle traffic with rubber tyres after one hour. To prevent unnecessary contamination, keep traffic to a minimum. The INTEGRITANK® membrane should be dry to the touch and fully cured before the next application stage starts.

9. Application of INTEGRITANK® Hand Grade

9.1. To help achieve the correct coverage, the area to be coated by each kit should be marked. The coverage rate must be monitored constantly and the total weight of material used against the marked area must be recorded on the Site Q.A. & Materials Record.

9.2. Overcoat the primer as soon as possible to avoid unnecessary surface contamination. Check the primer is fully cured, clean and free from loose debris, moisture and other contaminants before applying the INTEGRITANK® membrane. Avoid the use of tri-burners, thermal lances etc. when drying the primed surface. If the primed surface is wet, use a compressed air lance fitted with an oil/water filter.

9.3. Use masking tape; protection boards or other approved means to control overspray and provide a neat finish.

9.4. INTEGRITANK® Hand Grade consists of two liquid components: a pigmented resin supplied in 20kg pails and BPO Liquid Catalyst supplied in 5kg or 20kg packs for on-site addition.

9.5. For ease of application, and to avoid unnecessary wastage it is advisable to decant the required amount of material into a 5ltr graduated dispensing jug. As some wax separation may occur during storage, immediately prior to decanting stir resin thoroughly. A large spatula or a low speed mixing drill and paddle (150-250rpm) is ideal for this. Care should be taken not to entrain excessive air in the mix. Accurately decant the required volume of resin from the 20kg pail into a suitably clean dispensing jug.

9.6. Measure the temperature of both the resin and the substrate. The lower of these two temperatures should be used to determine the quantity of BPO Liquid Catalyst to add to the resin. Refer to Appendix 7 for further information on the addition levels.

9.7. The preferred technique of measuring and dispensing the BPO Liquid Catalyst is by means of a graduated syringe. The BPO Liquid Catalyst may separate over time therefore it is advisable to stir the BPO Liquid Catalyst using a clean paddle at the start of each day's application (DO NOT use a stirrer that has been contaminated with resin). Place the tip of the syringe into the container of BPO Liquid Catalyst and slowly draw the required amount into it. Make sure the syringe is full of BPO Liquid Catalyst with no air locks present. Add the BPO Liquid Catalyst to the INTEGRITANK® Hand Grade and mix thoroughly using either a large spatula or a slow speed mechanical mixer until all the BPO Liquid Catalyst has dispersed. Care should be taken not to entrain excessive air in the mix.

9.8. Once the BPO Liquid Catalyst is added it initiates the 'working life' of the material during which time it should be applied. The 'working life' of the material will vary depending upon the quantity mixed, the ambient and material temperature and the level of BPO Liquid Catalyst addition. Refer to Appendix 7 for further information on working life and cure times. Mix only enough material that can be applied within the working life.

9.9. Application may proceed while the air and substrate temperatures are between 0°C and +30°C, provided the substrate is above the dew point. This can be calculated using the Dew Point Table, refer to Appendix 2. For application at temperatures outside of this range please contact our Technical Services Department.

9.10. Vertical Application

9.10.1. INTEGRITANK® Hand Grade should be applied to any vertical surfaces prior to waterproofing the horizontals.

9.10.2. INTEGRITANK® Hand Grade should be extended up the verticals in accordance with the particular site requirements and with agreement of the Engineer. This should be measured and masking tape positioned accurately. Ensure the required thickness is applied. Do not feather edge. Apply to a taped edge to maintain the correct thickness. Do not apply the material above the level of any damp proof course that may be present.

9.10.3. INTEGRITANK® Hand Grade is applied in two colour contrasting coats. Each coat is applied using a stiff paintbrush or other suitable means to give a measured wet film thickness of 1.1mm per coat to achieve minimum dry film thickness of 1mm per coat is achieved over the whole substrate including over any peaks, arises and irregularities in the substrate. This shall be checked every 2m² using a gauge pin or standard comb type thickness gauge and by calculating the quantity of the material used against the area treated. This measure takes account of localised variations in substrate profile and will help ensure the minimum dry film thickness of 1mm per coat is achieved over the whole substrate including over any peaks, arises and irregularities in the substrate. The required minimum coverage rate is 1.4kg/m² per coat but this may increase with surface irregularity.

9.10.4. INTEGRITANK® Hand Grade should be extended out onto the deck horizontally by 75mm. This should be measured using a chalk line and masking tape positioned accurately.

9.10.5. Once the first coat has been applied remove any masking/edge tape before it starts to cure. If curing has already commenced leave the tape in position and remove after full cure with a sharp knife taking care not to damage any membrane beneath.

9.10.6. Once the first coat has fully cured reapply the masking tape (where appropriate) and proceed with application of the colour contrasting second coat as soon as practically possible to prevent unnecessary contamination. Overcoating times will depend upon ambient conditions. Refer to Appendix 7 for further information on working life and cure times.

9.10.7. The first coat must be dry, clean and free from loose debris, moisture and all other contaminants before the second coat is applied. Any oil, grease, diesel or petrol must be removed using a cloth soaked in solvent. The recommended solvent is acetone. Approval must be obtained from GCP before using any other types of solvent. The use of tri-burners, thermal lances etc. must be avoided when drying the membrane surface. Drying of the membrane is best achieved using a compressed air lance fitted with an oil/water filter.

9.10.8. Once the second coat has been applied, remove any masking/edge tape before the material starts to cure. If curing has already commenced leave the tape in position and remove after full cure with a sharp knife taking care not to damage any membrane beneath.

9.10.9. Once the second coat has fully cured it should be inspected for defects. If any are found these should be treated in accordance with Section 11.

9.11. Horizontal Application

9.11.1. Once all vertical areas have been treated application to the horizontal sections can commence.

9.11.2. The INTEGRITANK® Hand Grade is applied to horizontal surfaces in two colour contrasting coats. It should be poured onto the prepared substrate and spread out using a triangular notched trowel to give a measured wet film thickness of 1.1mm per coat, checked every 2m² using a gauge pin or standard comb type thickness gauge and by calculating the quantity of the material used against the area treated. The required minimum coverage rate is 1.4kg/m² per coat but this may increase with surface irregularity.

9.11.3. Do not feather edge the horizontal coats, always apply to a taped edge to maintain the correct thickness.

9.11.4. Once applied remove any masking/edge tape before the material starts to cure. If curing has already commenced leave the tape in position and remove after full cure with a sharp knife taking care not to damage any membrane beneath.

9.11.5. Once the first coat has fully cured reapply the masking tape (where appropriate) and proceed with application of the colour contrasting second coat as soon as practically possible to prevent unnecessary contamination. Overcoating times will depend upon ambient conditions. Refer to Appendix 7 for further information on working life and cure times.

9.11.6. The first coat must be dry, clean and free from loose debris, moisture and all other contaminants before the second coat is applied. Any oil, grease, diesel or petrol must be removed using a cloth soaked in acetone. Approval must be obtained from GCP before using any other types of solvent. The use of tri-burners, thermal lances etc. must be avoided when drying the membrane surface. Drying of the membrane is best achieved using a compressed air lance fitted with an oil/water filter.

9.11.7. Once the second coat has been applied, remove any masking/edge tape before the material starts to cure. If curing has already commenced leave the tape in position and remove after full cure with a sharp knife taking care not to damage any membrane beneath.

9.11.8. Once the second coat has fully cured it should be inspected for defects. If any are found these should be treated in accordance with Section 11.

10. Lapping at Day Joints

10.1. Where new INTEGRITANK® membrane is to be joined to existing cured INTEGRITANK® membrane at a day joint, the new application should be lapped on to the existing by 50mm.

10.2. No preparation is necessary unless the existing INTEGRITANK® membrane is dirty or contaminated on the lap edge, in which case the lap edge must be cleaned with a cloth soaked in acetone.

11. Snagging

11.1. Spray Grade

11.1.1. Once the first coat of the INTEGRITANK® membrane has cured it should be visually inspected for potential defects e.g. pinholes. Walk the entire area of the INTEGRITANK® membrane and if any are found they should be highlighted by circling them with a piece of chalk.

11.1.2. The snagging can then be carried out using pre-mixed INTEGRITANK® spray grade. Take an equal amount of Part A resin and catalysed Part B resin and mix together in a small pot.

11.1.3. Apply the INTEGRITANK® membrane by pouring it onto the defect and spreading it out with a trowel to a minimum thickness of 1mm. spread the material out rather than brushing it out so you get an even coverage. Ensure the entire defect is covered.

11.1.4. Allow the 'snagged' areas to fully cure before applying the second coat.

11.2. The second coat should then be snagged in the same way as the first.

11.3. INTEGRITANK® Hand Grade

11.3.1. Once the second coat of INTEGRITANK® Hand Grade has cured it should be visually inspected for potential defects e.g. pinholes. Walk the entire area of the INTEGRITANK® Hand Grade membrane and if any defects are found they should be highlighted by circling them with a piece of chalk.

11.3.2. The snagging can then be carried out using a further coat of pre-mixed INTEGRITANK® Hand Grade. The application can be carried out using a paintbrush or notched squeegee. Ensure the entire defect is covered and the coverage is even.

11.3.3. Allow the 'snagged' areas to fully cure before moving onto the next stage of application.

12. Protection from Damage

INTEGRITANK® is a fully bonded, durable liquid applied waterproofing system. It has an excellent track record in maintaining its waterproofing integrity on construction sites where it has been left exposed to numerous site activities and traffic on elevated concrete decks such as Podium Decks, Terraces, Balconies and Roofs.

However, the INTEGRITANK® membrane is not indestructible and can become damaged by impact or abrasion. Whilst INTEGRITANK® can be electronically tested to locate any minor defects and is easily repaired to maintain a complete, effective waterproofing system, it is good practice to limit the potential for accidental damage in high-risk areas by providing localised protection.

INTEGRITANK® is resistant to rubber wheeled vehicular traffic, foot traffic, most following trades and the careful storage of building products and landscaping materials. In addition structures can be built directly off the INTEGRITANK® membrane (see 12.1) without additional protective layers. We would however recommend the use of localised protection in the following areas/activities so as to prevent any unnecessary accidental damage from occurring:

12.1. Scaffolding

12.1.1. Scaffolding built directly off the INTEGRITANK® membrane shall be erected off base plates and sole boards.

12.1.2. To avoid substrate failure and impact damage to the INTEGRITANK® membrane when dismantling scaffolding, the scaffolding should be dropped onto appropriate protective board or matting.

12.2. Storage of Building Products

12.2.1. Heavy or abrasive building materials such as pre-cast concrete units, reinforcement bars and skips stored on waterproofed elevated concrete decks should be lowered and stored on a localised protection layer such as Rubber Matting (5mm thick) or scaffolding boards.

12.3. Following Trades

12.3.1. Tradesmen working directly on the INTEGRITANK® membrane must ensure that their activity does not present a risk of damaging the INTEGRITANK® membrane. For instance, where circular saws, welding equipment, heavy or abrasive plant are in use.

12.4. Compacted Type 1 Ballast

12.4.1. 'Type 1' ballast material can be compacted directly on top of the INTEGRITANK® membrane provided it is above 150mm in depth. With a depth of less than 150mm there is a small risk that the INTEGRITANK® membrane may be punctured therefore an additional protection board or layer (such as a 50mm layer of sand) should be applied prior to placing the ballast.

12.5. Vehicular Traffic

12.5.1. Rubber wheeled vehicles can be driven directly on the INTEGRITANK® membrane provided the vehicular route and the vehicles tyres remain clean and free of loose material such as stones, nails and other abrasive debris.

12.6. Fork Lift Trucks

12.6.1. Drivers of rubber wheeled forklift trucks must take particular care when lifting or dropping pallets or materials on to the INTEGRITANK® membrane. The INTEGRITANK® membrane is more likely to be damaged if the pallets are lowered whilst the vehicle is still moving. Localised protection is recommended in high-risk areas such as delivery or drop off zones and at the base of hoist towers.

12.7. The INTEGRITANK® membrane system is an exceptionally durable waterproofing system and with the above good practice will maintain its waterproofing integrity under site conditions. For further details please contact our Technical Services Department.

13. Repairs

13.1. If the system, or any part of it, has been damaged by mechanical means then you should cut back the damaged area to sound material, using straight cuts to provide uniform rectangular or square shapes. If the system has been damaged through to the substrate then the substrate will require cleaning. All substrates should be mechanically cleaned. For small, localised areas on concrete substrates this can be achieved with a 'scabbling' machine or needle-gun. All surface contaminants should be removed completely.

13.2. If the area around the damaged spot is dirty or contaminated, wipe the periphery of the repair area to 150mm using a cloth soaked in acetone.

13.3. Mask the area to be repaired ensuring that there is an overlap onto the existing membrane by at least 50mm. This also ensures a neat finish.

13.4. Re-prime the substrate, if exposed, using the appropriate primer. Allow the primer to cure.

13.5. Re-apply the full INTEGRITANK® Hand Grade system in accordance with Section 9.

14. Miscellaneous

14.1. The finished system should have a minimum dry film thickness of 2mm.

15. Quality Assurance

15.1. The Authorised Contractor must complete a Site Q.A & Materials Record for each day when any element of the INTEGRITANK® system is applied. This includes the recording of the batch numbers and coverage rate of the primer and membrane any time material is applied, together with all weather information.

15.2. The Site Q.A. & Materials Record shall be dated and numbered consecutively for each phase of a contract. They should be signed off by the Client's Representative.

15.3. Copies of the records must be retained by the GCP Authorised Contractor for a minimum of three years or the length of any warranty, and made available to GCP upon request. It is the responsibility of the Authorised Contractor to retain records to meet other relevant legislative requirements.

15.4. For more detailed information on the Quality Control systems applied during the manufacture and application of INTEGRITANK® please refer to document no. GCP0082 INTEGRITANK® QA.

16. Cleaning of Tools and Equipment

16.1. All tools and equipment should be cleaned using acetone. Do not allow material to cure on tools.

17. Application in Enclosed Areas of in Areas of Poor Ventilation

17.1. If the INTEGRITANK® system is applied in an enclosed space or an area with restricted air circulation, such as a basement, there is a possibility of the system not fully curing at the surface. To prevent this from happening adequate ventilation must be provided. In many cases it may be adequate just to leave a door open and allow a through draft. Alternatively the use of mechanical ventilation such as industrial fans may be required. An air exchange of 5 to 6 times an hour is normally sufficient.

18. Packaging and Storage of Materials on Site

18.1. All components of the INTEGRITANK® system will be supplied to site in the manufacturers unopened packaging, with all pertinent labels intact and legible.

18.2. All components of the INTEGRITANK® system should be stored in cool, dry, protected conditions, out of direct sunlight and in accordance with the relevant site Health & Safety regulations. Storage temperatures must not exceed 25°C. Do not store near naked flames or foodstuffs. Stored in unopened containers, under these conditions, the components have a minimum shelf life of twelve months. Do not store metal containers on any completed sections; as in the event of rain rust rings may be deposited.

18.3. Each component of the INTEGRITANK® system is made up of the following:

	Kit Size	Grade	Resin	Fillers	Catalyst
PAR1 Primer	5kg 20kg	Standard & Low Temperature Grade (LT)	5kg 20kg	-	
BPO Powder Catalyst (For use with PAR1 Primer) No. of bags to add varies with Grade & Temperature	100g 400g	-	-	-	100g 400g
PA1 Primer	5kg 20kg 190kg	-	5kg 20kg 190kg	-	-
GCP Smoothing Primer	22kg 22.12kg	Summer Winter	4.6kg 4.6kg	17.4kg 17.4kg	 120g
ZED S94 Primer	5kg 20kg 200kg	-	5kg 20kg 200kg	-	-
INTEGRITANK® Spray Grade Membrane	48kg	-	Pt A 24kg Pt B 23.04kg Pt A 200kg Pt B 192kg	-	960g 8kg
INTEGRITANK® Hand Grade Membrane	5kg 20kg	-	20kg	-	5kg 20kg liquid(bulk)

19. Health & Safety

19.1. Safety datasheets for all components of the INTEGRITANK® system and any associated products e.g. acetone, must be available on site. The Authorised Contractor must read and understood them before commencing work. If you have any questions do not hesitate to contact our Technical Services Department.

19.2. It is the Company's policy to take all reasonable steps to prevent injury to all property and personnel from foreseeable hazards. This extends to the public in so far as they come into contact with the Company or its products.

19.3. All relevant Health & Safety signage must be posted in advance of any system application to inform members of the public, road users or other contractors, of the application being undertaken i.e. No Smoking, Odour Warning etc.).

20. Completion

20.1. The final stage in the application is ensuring that you leave a site clean and tidy. Ensure the following:

- All areas are complete.
- All masking tape has been removed.
- All rubbish has been removed to a skip or off site.
- Any full or part containers of material are accounted for and removed from site.
- All waste containers are disposed of in accordance with the Local Authority and Environmental requirements.

Appendix 1

Classification of Concrete Finish

CLASSIFICATION OF CONCRETE FINISH FOR A U5 UNFORMED SURFACE

(As defined by the Department of Transport)

This finish is for footbridge surfaces that are to receive either separate or combined systems, or coatings of waterproofing and surfacing materials. The concrete shall be uniformly levelled and screeded to produce a plain finish. When the concrete has sufficiently hardened to prevent laitance being worked to the surface it shall be floated to produce a surface free from screed marks.

CLASSIFICATION OF CONCRETE FINISH FOR A U2 UNFORMED SURFACE

(As defined by the Department of Transport)

Class U2 finish

After the concrete has hardened sufficiently, the Class U1* finish shall be floated by hand or machine sufficiently only to produce a uniform surface free from screed marks.

*Class U1 finish

The concrete shall be uniformly levelled and screeded to produce a plain surface as described in the contract. No further work shall be applied to the surface unless it is used as a first stage for a Class U2 or U3 finish.

Appendix 2

Dew Point Calculation Table

Air Temp °C	Relative Humidity													
	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%
-10	-23.2	-21.8	-20.4	-19.0	-17.8	-16.7	-15.8	-14.9	-14.1	-13.3	-12.6	-11.9	-10.6	-10.0
- 5	-18.9	-17.2	-15.8	-14.5	-13.3	-11.9	-10.9	-10.2	-9.3	-8.8	-8.1	-7.7	-6.5	-5.8
0	-14.5	-12.8	-11.3	-9.9	-8.7	-7.5	-6.2	-5.3	-4.4	-3.5	-2.8	-2.0	-1.3	-0.7
+2	-12.8	-11.0	-9.5	-8.1	-6.8	-5.8	-4.7	-3.6	-2.6	-1.7	-1.0	-0.2	-0.6	1.3
+4	-11.3	-9.5	-7.9	-6.5	-4.9	-4.0	-3.0	-1.9	-1.0	0.0	0.8	1.6	2.4	3.2
+5	-10.5	-8.7	-7.3	-5.7	-4.3	-3.3	-2.2	-1.1	-0.1	0.7	1.6	2.5	3.3	4.1
+6	-9.5	-7.7	-6.0	-4.5	-3.3	-2.3	-1.1	-0.1	0.8	1.8	2.7	3.6	4.5	5.3
+7	-9.0	-7.2	-5.5	-4.0	-2.8	-1.5	-0.5	0.7	1.6	2.5	3.4	4.3	5.2	6.1
+8	-8.2	-6.3	-4.7	-3.3	-2.1	-0.9	0.3	1.3	2.3	3.4	4.5	5.4	6.2	7.1
+9	-7.5	-5.5	-3.9	-2.5	-1.2	0.0	1.2	2.4	3.4	4.5	5.5	6.4	7.3	8.2
+10	-6.7	-5.2	-3.2	-1.7	-0.3	0.8	2.2	3.2	4.4	5.5	6.4	7.3	8.2	9.1
+11	-6.0	-4.0	-2.4	-0.9	0.5	1.8	3.0	4.2	5.3	6.3	7.4	8.3	9.2	10.1
+12	-4.9	-3.3	-1.6	-0.1	1.6	2.8	4.1	5.2	6.3	7.5	8.6	9.5	10.4	11.2
+13	-4.3	-2.5	0.7	0.7	2.2	3.6	5.2	6.4	7.5	8.4	9.5	10.5	11.5	12.3
+14	-3.7	-1.7	0.0	1.5	3.0	4.5	5.8	7.0	8.2	9.3	10.3	11.2	12.1	13.1
+15	-2.9	-1.0	0.8	2.4	4.0	5.5	6.7	8.0	9.2	10.2	11.2	12.2	13.1	14.1
+16	-2.1	-0.1	1.5	3.2	5.0	6.3	7.6	9.0	10.2	11.3	12.2	13.2	14.2	15.1
+17	-1.3	0.6	2.5	4.3	5.9	7.2	8.8	10.0	11.2	12.2	13.3	14.3	15.2	16.6
+18	-0.5	1.5	3.2	5.3	6.8	8.2	9.6	11.0	12.2	13.2	14.2	15.3	16.2	17.1
+19	0.3	2.2	4.2	6.0	7.7	9.2	10.5	11.7	13.0	14.2	15.0	16.3	17.7	18.1
+20	1.0	3.1	5.2	7.0	8.7	10.2	11.5	12.8	14.0	15.2	16.2	17.2	18.1	19.1
+21	1.8	4.0	6.0	7.9	9.5	11.1	12.4	13.5	15.0	16.2	17.2	18.1	19.1	20.0
+22	2.5	5.0	6.9	8.8	10.5	11.9	13.5	14.8	16.0	17.0	18.0	19.0	20.0	21.0
+23	3.5	5.7	7.8	9.8	11.5	12.9	14.3	15.7	16.9	18.1	19.1	20.0	21.0	22.0
+24	4.3	6.7	8.8	10.8	12.3	13.8	15.3	16.5	17.8	19.0	20.1	21.1	22.0	23.0
+25	5.2	7.5	9.7	11.5	13.1	14.7	16.2	17.5	18.8	20.0	21.1	22.1	23.0	24.0
+26	6.0	8.5	10.6	12.4	14.2	15.8	17.2	18.5	19.8	21.0	22.2	23.1	24.1	25.1
+27	6.9	9.5	11.4	13.3	15.2	16.5	18.1	19.5	20.7	21.9	23.1	24.1	25.0	26.1
+28	7.7	10.2	12.2	14.2	16.0	17.5	19.0	20.3	21.7	22.8	24.0	25.1	26.1	27.0
+29	8.7	11.1	13.1	15.1	16.8	18.5	19.9	21.3	22.6	22.8	25.0	26.0	27.0	28.0
+30	9.5	11.8	13.9	16.0	17.7	19.7	21.3	22.5	23.8	25.0	26.1	27.1	28.1	29.0
+32	11.2	13.8	16.0	17.9	19.7	21.4	22.8	24.3	25.6	26.7	28.0	29.2	30.2	31.1
+34	12.5	15.2	17.2	19.2	21.1	22.8	24.2	25.7	27.0	28.3	29.4	31.1	31.9	33.0
+36	14.6	17.1	19.4	21.5	23.3	25.0	26.3	28.0	29.3	30.7	31.8	32.8	34.0	35.1
+38	16.3	18.8	21.3	23.4	25.1	26.7	28.3	29.9	31.2	32.2	33.5	34.6	35.7	36.9
+40	17.6	20.6	22.6	25.0	26.9	28.7	30.3	31.7	33.0	34.3	35.6	36.8	38.0	39.0
+42	19.6	22.3	24.7	26.7	28.7	30.5	32.0	33.6	35.0	36.3	37.6	38.8	39.9	41.0
+44	21.3	24.0	26.4	28.5	30.5	32.2	33.9	35.3	36.8	38.2	39.3	40.6	41.8	43.0
+46	22.9	25.8	28.3	30.7	32.2	34.2	35.8	37.3	38.8	40.2	41.3	42.7	43.8	44.9
+48	24.6	27.3	30.0	32.0	34.0	35.9	37.5	39.1	40.5	43.0	43.3	44.5	45.7	46.9
+50	26.3	29.3	31.6	33.7	35.9	37.8	39.3	41.0	42.5	43.9	45.3	46.6	47.7	48.9

Method

Step 1 – Measure the air temperature.
Step 2 – Measure the relative humidity.

Result: The figure given in the table where the two measurements converge indicates the dew point i.e. the temperature at which dew will form on the substrate. The temperature should be at least 1°C higher (and rising) than this for application to take place. As an extra precaution the deck can be blotted with paper roll to establish whether any moisture is present.

Note: To obtain dew point temperatures in Fahrenheit, use the formula °F = (°C x 9/5) + 32

Appendix 3

Cure Ladder for PAR1 Primer

Material	Temperature Range* (°C)	Bags of BPO**	Typical Working Life	Typical Cure Time
PAR1	15 to 30°C	1	10 – 25 minutes	15 – 35 minutes
PAR1	5 to 15°C	2	15 – 27 minutes	18 – 40 minutes
PAR1	0 to 5°C	3	18 – 25 minutes	30 – 45 minutes
PAR1 LT	10 to 15°C	1	22 – 30 minutes	30 - 45 minutes
PAR1 LT	0 to 10°C	2	20 - 35 minutes	25 – 50 minutes
PAR1 LT	-10 to 0°C	3	25 – 50 minutes	34 – 80 minutes

* Based on ambient, material and substrate temperature all being the same.
** BPO bags are 2% of the kit weight. The amount of BPO Powder Catalyst addition is varied according to the application temperature.

Appendix 4

Cure Ladder for PA1 Primer

Ambient Temperature (°C)	Typical Drying Time
50	10 minutes
40	15 minutes
30	25 minutes
25	40 minutes
20	60 minutes
15	2 hours
10	4 hours
5	8 hours

Appendix 5

Cure Ladder for ZED S94 Primer

Ambient Temperature (°C)	Typical Drying Time
50	10 minutes
40	15 minutes
30	25 minutes
20	30 minutes
10	1 hour
0	3 hours

Appendix 6

Cure Ladder for INTEGRITANK® Spray Grade

Ambient Temperature (°C)	Typical Working Life	Typical Cure Time
Tropical Grade		
50	4 minutes	5 minutes
40	5 minutes	6 minutes
30	7 minutes	12 minutes
20	10 minutes	15 minutes
15	13 minutes	17 minutes
Standard Grade		
30	5 minutes	10 minutes
20	7 minutes	15 minutes
15	8 minutes	20 minutes
10	10 minutes	25 minutes
5	15 minutes	30 minutes
0	20 minutes	35 minutes

Appendix 7

Cure Ladder & BPO Liquid Catalyst Addition for INTEGRITANK® Hand Grade

[1]Resin Temperature (°C)	Resin Volume					Typical Working Life (Minutes)[2]	Typical Overcoating Time (Minutes)
	1 litre	2 litres	3 litres	4 litres	5 litres		
Summer Grade[3]							
30	9	18	27	36	45	10	60
25	10	20	30	40	50	10	60
20	15	30	45	60	75	10	60
15	25	50	75	100	125	10	60
10	50	100	150	200	250	10	60
Winter Grade[4]							
15	7.5	15	22.5	30	37.5	10	60
10	15	30	45	60	75	10	60
5	30	60	90	120	150	10	60
0	60	120	180	240	300	10	60

[1] BPO Liquid catalyst addition should be determined by measuring the resin and substrate temperatures. The lower of these two temperatures should be used to select the quantity of BPO Liquid Catalyst to add. The appropriate volumes are shown above and should be dispensed from a graduated syringe in cubic centimetres (cc).

[2] IMPORTANT NOTE: The working life indicated above is based on the resin temperature only. If the substrate temperature is lower than the resin temperature you will, then you will select the substrate temperature to determine the level of BPO Liquid Catalyst to add. Be aware that this will reduce the working life.

Example1: 5 litre batch Summer Grade - Resin temperature 20°C / Substrate temperature 20°C / BPO Liquid Catalyst addition = 75cc.
This will give a working life of approximately 10 minutes as indicated in the above table.

Example2: 5 litre batch Summer Grade - Resin temperature 20°C / Substrate temperature 15°C / BPO Liquid Catalyst addition = 125cc.
This will give a reduction in working life of approximately 50% i.e. about a 5 minute reduction.

[3] Summer Grade is supplied automatically between 1st April and 30th September.

[4] Winter Grade; an increased amount of accelerator over Summer Grade is added during manufacture and additional BPO is provided for addition on site. This grade is supplied automatically between 1st October and 31st March each year. Winter Grade products should only be used when the ambient and substrate temperatures fall below 15°C.

Appendix 8

Working Life of 'Catalysed' INTEGRITANK® Spray Grade Part B

A typical Pot Life of a 24kg pail of INTEGRITANK® Part B containing the BPO Powder Catalyst in the temperature range of 10 - 40°C is as follows.

Temperature °C	Pot Life (Standard Spray Grade, BPO Powder Catalyst addition)
40	16 hours
30	50 hours
23	16 days
12 (Average Temperature)	Not cured after 80 days

Notes:

1) Tropical Grade: an inhibitor is added during manufacture. This extends the working life at elevated temperatures. This grade is supplied automatically to tropical climates.

2) By following the advice below it is possible to maximise the working life of the components of the INTEGRITANK® system.

   a. Keep the material temperature below 25°C. Cooler if possible. The colder it is the longer the working time. For example cooling the components in air-conditioned containers from 25°C down to 10°C will almost double the working life.
   b. The INTEGRITANK® Hand Grade and Primers will cure a lot quicker in mass. Pour the product out of the container as soon as it is mixed or as soon as possible.
   c. Ensure you have sufficient labour on hand to apply the products.
   d. Use smaller kit sizes for detailed areas such as steps and verticals.

We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate, and is offered for consideration, investigation and verification by the end user, but we do not warrant the results to be obtained. Please read all statements, recommendations, and suggestions in conjunction with out conditions of sale, which apply to all goods supplied by us. No statement, recommendation, or suggestion is intended for any use that would infringe any patent, copyright, or other third party right.

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