

Surface Preparation

Application surfaces must be structurally sound, and the overall structural integrity of the asset is critical to the overall success of any coating or overlay. Some surface damage such as deterioration, cracks and spalls can occasionally be repaired, but C2M does not provide structural improvement or enhancement.

C2M has been formulated to bond with the substrate surfaces, and even many previously applied coatings. Other materials (such as petro-chemicals) which could interfere with this process, must be removed. Remove any loose, soft or contaminated materials from the area that will be repaired or resurfaced. Typical methodology may include sand blasting, degreasing, scraping, and water blasting.

A comprehensive system will include the following program:

- Remove all loose debris using a hand pump, spray on degreaser over the entire area.
- Let sit for 5 minutes (allowing degreaser to sit for longer will NOT increase effectiveness).
- Completely rinse degreased area 2 times.
- Let dry for 30 minutes before any further application.
- With extreme surface dirt or oil, you may have to apply a second time.
- You must repeat this process until the substrate is free of any petro-chemical substance.

When C2M is applied directly to a ferrous surface, the applicator will take steps to ensure full coverage over, if any, flash rust that has developed between surface preparation and product application.

Application C2M over flash rust is normal and acceptable for C2M as long as any flash rust is completely covered, and none is visible. If applying multiple coats of C2M, previous coats must be completely dry before a subsequent coat is applied.

Mixing

The ratio between NIPPON C2M Powder and NIPPON C2M Emulsion is essentially 1 to 1 for spray applications. However, trowel, brush and roll on application methods will require slightly different Mix Ratios and Application Techniques.

For all application methods, the following protocol is advised: NIPPON C2M Emulsion should be first added into a clean container. NIPPON C2M Powder should then be slowly added in the appropriate ratio so the fines of the powder are not dispersed in the air. Mix 1/3 of the C2M Powder and stir until the product looks consistent. Continue adding 1/3 of the powder and re-mixing until the entire NIPPON C2M Powder has been introduced into the Emulsion. Mix each step for at least 2-3 minutes rotating the mix so that all areas of the container are free of clumped powder and the material should look consistent. Before putting into the spray unit the material shall be sieved using a mesh screen to remove any hard particles that may foul the spray equipment.

It is recommended that the applicator sample the mix on a non-critical asset before application on the desired asset to ensure mix consistency, color and results.

For brush, trowel or roll-on applications, a mix ratio should include slightly more (10-30% depending upon conditions, substrate and desired result) NIPPON C2M Powder for each unit of C2M Emulsion. Brush, trowel or roll-on applications on horizontal surfaces will allow for

Please note the protocol above, emulsion first then powder should always be part of the 1/3, 1/3, 1/3 process. Please note that this material can be reanimated by remixing with a minimum amount of water or emulsion.

Sieve

If the applicator is spraying NIPPON C2M, it should be sieved before application. This removes any particulates which might both prohibit a consistent finish and remove any particulates which may jam the applicator's spray gun. The size of the sieve should be proportional with the nozzle size of the applicator spray gun.

All spraying equipment must be cleaned. If there is any break in the spraying procedure, water should be immediately used to clean the nozzle and hose.

YOUR EQUIPMENT WILL BE PERMANENTLY DAMAGED IF NOT CLEANED WITH LOTS OF FRESH, CLEAN WATER DURING ANY INTERRUPTION IN SPRAYING.

Application Instructions

C2M Cement-to-Metal (powder + emulsion)

9/9/19 Version 1.6



General Application Notes

NIPPON C2M can be applied using a sprayer, brush, trowel or roller depending upon the application tools available, substrate, volume of surface to cover, vertical or horizontal surface, hard to reach areas or unique thickness requirements. Please review the above information regarding a thoroughly cleaned substrate. A light application of water could be applied to the area in hot conditions but if sprayed it is NOT mandatory due to the effects of a high volume, low pressure sprayer (15-80psi) rebound or splash back should be minimal.

Using any application method, to avoid mud cracking, do not use too much material on a single coating. Instead, use less material on more layers, and make sure the previous layer properly dries before adding a new layer. If mud cracks develop, simply wait until the coat dries. Then re-coat the surface with a 1 to 1 ratio (emulsion to powder) and apply an additional coat. It is recommended that applicators employ appropriate protection measures, which depending upon the application location, may include gloves, eye protection, dust masks or respirators.

Spray Application

During the application there should be approximately 6 to 12 inches between the tip of the spray gun and the substrate – depending upon the spray equipment and substrate. Adjust the spray gun valve so the gun is spraying a 6 inch fan, using minimal pressure. A 50% overspray technique is recommended. For optimal results, a dual coat program should be applied. First spray one coat horizontally across a section, and then complete the process next with a horizontal spray direction. Do not spray at higher pressures than recommended above, as the mixture may dry before landing on the substrate. It is acceptable practice to brush hard to reach areas after spraying. Continue to agitate the NIPPON C2M solution during application. Let each coat dry completely (to touch) before applying a second coat.

Edges:

Ensure proper coverage on edges, as during normal hydrolysis induced cure, the material may become thinner than expected. Brush edges or corners before spraying the surface to ensure enough material is in contact with the substrate.

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Application (continued)

Brush, Roller or Trowel Application:

The applicator should treat the brushing, rolling or troweling of NIPPON C2M the same as a latex paint when it comes to consistency when mixed properly. When brushing on a vertical surface, there should be virtually no liquid running down the substrate during a horizontal pass. Brush marks may be visible after the first brush or roller pass, but after a second pass the surface will be smoother. Brushed, Rolled or troweled surfaces will not have as glossy a surface as a sprayed application. Continue to agitate the C2M solution during application. Let each coat dry completely before applying a second coat.

Edges:

Ensure proper coverage on edges, as during normal hydrolysis induced cure, the material may become thinner than expected. Make two vertical passes on edges, and then finish with a horizontal cover to ensure proper coverage and that enough material is in contact with the substrate.

Refer to our Material Safety Data Sheet (MSDS) regarding regulatory compliance, safety, hazards, spill procedures and disposal of this product.

While the descriptions, designs, data and information contained herein are presented in good faith and believed to be accurate, it is provided for your guidance only. Because many factors may affect processing or application/use, we recommend that you make tests to determine the suitability of a product for your particular purpose prior to use. NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING PRODUCTS DESCRIBED OR DESIGNS, DATA OR INFORMATION SET FORTH, OR THAT THE PRODUCTS, DESIGNS, DATA OR INFORMATION MAY BE USED WITHOUT INFRINGING THE INTELLECTUAL PROPERTY RIGHTS OF OTHERS. IN NO CASE SHALL THE DESCRIPTIONS, INFORMATION, DATA OR DESIGNS PROVIDED BE CONSIDERED A PART OF OUR TERMS AND CONDITIONS OF SALE.

Spalling Repair Protocol (small segments)

1. Remove all loose concrete around the rebar with a screwdriver or similar tool.
2. Take a thorough examination of the spall and the concrete surrounding it and see if there is any further damage where there are large cracks in the slab.
3. After examination, any remaining loose concrete should be removed. Use a damp cloth to wipe off all dust and debris from the spall area and off the rebar itself.
4. Apply CRS to the rebar, the rebar joints, or any other exposed sections. If you must replace any rebar that is too corroded, please be sure to apply CRS on the new rebar to aid in preventing corrosion and halo effect. Be sure to cover the entire exposed rebar (top, bottom, behind).
5. After the spall area has been reviewed and the CRS has dried (approximately 2 to 4 hours). C2M should be applied over the CRS to all exposed concrete areas and the rebar. Be sure to fully coat around the exposed rebar.
6. Then apply C2M to the entire spall area where the repair concrete cast will be applied, at approximately two mils one coat. Two coats should be applied in a cross-hatch method.
7. Next, apply quick drying cement of your choice to re-cast the spalled area. Let cement dry and cure according to its requirements.
8. Once dried, apply C2M to the cold joints thoroughly. Stipple with a paint brush if necessary to get C2M into every crevice and pit. (stippling is brushing material onto a surface by dabbing in a downward motion directly into any crevices)
9. If Indoors: Use NIPPON-HW to densify the concrete, it will penetrate 150mm or 5 + inches into the concrete to stop further spalling in areas you cannot see.
 - a. If Outdoors: Apply NIPPON-CP first to remove salts and chlorides then apply HW.
 - b. On slabs or roofs: Apply NIPPON -CP first to remove salts and chlorides then apply HW.
10. When quick drying cement is fully cured, and cold joints are fully applied with C2M, you can then paint the entire area with C2M. Two coats of C2M is recommended, one coat applied east-west, one coat applied north-south. Total thickness for both coats should add up to no more than 3-4 mils. When applying C2M, be sure to let each coat sit until it is dry to the touch, then put on the second coat in the opposite direction. Let the entire application of C2M dry for four to six hours.
11. Then, if desired, apply a 1k or 2k paint on top to keep the moisture from coming back through the concrete.
12. On a larger more dramatic cracks and problems the same procedure is done only scaled up by using more product and a larger crew will be needed to investigate the spalled areas.

NOTE: Timing and scheduling of steps will be affected by your local temperature, humidity, and direct sunlight. Please conduct tests before starting a project.