

## Guide to good practice – steel roofing and photovoltaic panels

Framed photovoltaic (PV) panels can be successfully installed on COLORSTEEL<sup>®</sup> pre-painted steel and ZINCALUME<sup>®</sup> steel roofs. The following maintenance practices will help to ensure the long term performance, durability and aesthetic appeal of your COLORSTEEL<sup>®</sup> pre-painted steel or ZINCALUME<sup>®</sup> steel roof.



### YOUR ROOF AND PHOTOVOLTAIC PANELS

**Roof Clearance** – ensure adequate clearance is available between the PV panels and your COLORSTEEL<sup>®</sup> pre-painted steel or ZINCALUME<sup>®</sup> steel roof. This will:

- Assist with self-cleaning and limit the build up of leaves and other debris.
- Provide easy access for cleaning, inspection and maintenance of the roofing material and fasteners beneath the PV panels.
- Allow air movement to quickly dry areas beneath the PV panels. This may also benefit the performance of the PV panels, as electrical output is usually temperature dependant.

**Product Compatibility** – ensure all products are fully compatible with your COLORSTEEL<sup>®</sup> pre-painted steel or ZINCALUME<sup>®</sup> steel roof:

- Dissimilar metals **should not** be used in direct contact (or contact that could create an electrical connection) with roofing made from COLORSTEEL<sup>®</sup> pre-painted steel or ZINCALUME<sup>®</sup> steel. Dissimilar metals include stainless steel, lead, copper and alloys containing copper (such as monel and brass). This caution also applies to conductive seals and gaskets. For more information, refer to the *Specifiers and Builders Guide*.
- Avoid using PV panels or flashings made from materials such as copper, or alloys containing copper or lead. This has the potential to create bi-metallic corrosion resulting from water run-off onto COLORSTEEL<sup>®</sup> pre-painted steel or ZINCALUME<sup>®</sup> steel. Refer to Information Bulletin 2 – *Flashing materials*.
- Ensure any sealant in contact with roofing made from COLORSTEEL<sup>®</sup> pre-painted steel or ZINCALUME<sup>®</sup> steel is neutral cure silicone rubber suitable for exterior use. Avoid acetic acid based sealants.
- Timber **should not** be used in direct contact with COLORSTEEL<sup>®</sup> pre-painted steel or ZINCALUME<sup>®</sup> steel roofing. Damp timber resulting from exposure to rainfall, cleaning water or high humidity, may expose COLORSTEEL<sup>®</sup> pre-painted steel and ZINCALUME<sup>®</sup> steel to long periods of wetness.

Sunscreen lotions containing semi-conducting metal oxides such as titanium dioxide (TiO<sub>2</sub>) and zinc oxide (ZnO) can accelerate the degradation of organic materials, including paint systems. To protect the surface of the roofing made from COLORSTEEL<sup>®</sup> pre-painted steel and ZINCALUME<sup>®</sup> steel, prevent contact of the product surface with titanium dioxide (TiO<sub>2</sub>) and zinc oxide (ZnO) containing sunscreen lotions. Refer to Information Bulletin 14 – *Sunscreen*.

**Watertightness** – ensure continued watertightness of your COLORSTEEL<sup>®</sup> pre-painted steel or ZINCALUME<sup>®</sup> steel roof:

- Install PV panels to allow free drainage of moisture from all surfaces to avoid water ponding.
- Any penetrations through the roof should be placed to minimise the risk of water ingress. Ensure penetrations through the roofing sheet are correctly sealed using flashings and sleeves specified for steel roofing, and/or neutral cure silicone rubber sealants suitable for exterior use.
- Avoid valley fixing or valley holes for electrical cables.
- Install PV fasteners and brackets away from sheet side laps. Fasteners and brackets may distort the profile and interfere with the specifically designed anti-capillary laps, leading to possible water ingress.

**Collecting Rain Water** – if rain water is collected from the roof for domestic use, check with the supplier of the PV system to ensure the desired water quality is not adversely affected.

**Comparable Service Life** – ensure fasteners and brackets used in the installation of PV panels are compatible and have a service life comparable with the expected performance of the COLORSTEEL<sup>®</sup> pre-painted steel or ZINCALUME<sup>®</sup> steel roof and appropriate for the PV panels. Refer to fastener manufacturer recommendations.

**Swarf** – ensure any swarf generated during the installation of the PV panels is removed on a daily basis. Refer to Information Bulletin 7 – *Swarf staining of steel roofing and cladding*.

**Positioning** – when considering the location and orientation of PV panels, consider the ease of access for maintenance.

**Cables** – electrical cables should not sit directly upon the roof as this may lead to an accumulation of dirt, salt and other airborne contaminants. Instead, it is recommended that cables are affixed to the PV panel support structure.

**Electrical Earthing** – ensure appropriate earthing of the PV system. Stray currents to the COLORSTEEL® prepainted steel or ZINCALUME® steel roof may accelerate corrosion due to electrolysis. Refer to AS/NZS 5033 – *Installation of photovoltaic (PV) arrays*.

**Safe Work Practices** – during the installation and ongoing maintenance of PV panels, New Zealand Steel recommends working safely in accordance with relevant safety legislation.

### PROTECTING YOUR ROOF DURING INSTALLATION AND MAINTENANCE

Work carried out on a roof exposes it to potential damage by installers or people performing maintenance. Foot traffic could dent, scuff or scratch the roof sheeting. To avoid foot traffic damage, refer to the roofing manufacturer for recommendations relevant to your roof's sheeting profile. Also, consider using 0.55mm gauge COLORSTEEL® roofing if frequent roof traffic is anticipated.

Any dents may need to be rectified to avoid water ponding, which is more likely to occur on low pitched roofs. Ponded water exposes COLORSTEEL® prepainted steel or ZINCALUME® steel to an extended period of wetness, which in turn may increase the potential for corrosion or water ingress.

Scuffing, which is more likely on steeper roofs is typically an aesthetic issue that will have no detrimental effect on the performance of a COLORSTEEL® prepainted steel or ZINCALUME® steel roof.

Should you have any concerns about scratches, please refer to Information Bulletin 5 – *Touch-up paints and COLORSTEEL® building products*.

**Please note:** All roof work should be carried out safely and in accordance with relevant legislation for safe working at heights. Poor installation practices may affect the validity of the roof manufacturer's warranty.

### MAXIMISING ROOF PERFORMANCE

PV panels shield COLORSTEEL® prepainted steel or ZINCALUME® steel from both the drying action of the sun and beneficial washing from rainfall. As such, the roof area directly below the PV panels is considered to be an 'unwashed area' and may be subject to accelerated corrosion due to:

- An accumulation of dirt, salt and other airborne contaminants.
- Accumulated contaminants becoming, and remaining, moist for extended periods due to moisture from condensation or high humidity.

During installation, it is important to allow an air gap between the PV panels and roofing made from COLORSTEEL® prepainted steel or ZINCALUME® steel to assist with drying any accumulated contaminants.

### ROOF CARE AND MAINTENANCE

As unwashed areas have an increased risk of corrosion compared to washed areas, regular cleaning is recommended. Generally unwashed areas should be cleaned with fresh clean water, every 3 months for coastal areas and every 6 months elsewhere. This may coincide with any periodic or scheduled PV panel cleaning. Further guidance for maintaining unwashed areas is contained in Information Bulletin 12 – *Maintenance recommendations*.

During maintenance, it is important to inspect the condition of the roofing fasteners, as well as the surface condition of the COLORSTEEL® prepainted steel or ZINCALUME® steel roof. This will provide an indication of washing frequency, whether any fasteners require replacement, or if remedial work is required to the roof sheeting.

When performing roof maintenance, take care to ensure the safety of those persons performing the task:

- All work should be done safely and in accordance with relevant legislation.
- Use caution – wet roofs can be slippery.
- Precautions should be taken to ensure that any worker or equipment does not come in contact with overhead power lines or other electrical items.

Refer to the roof manufacturer for recommendations relevant to the roof sheeting profile, to avoid damage from foot traffic.

Ensure any roof washing does not flood the eaves of the building, which could cause damage to ceilings.

Ensure that run off from washing does not contaminate rainwater collected in tanks or local watercourses.

### DISCLAIMER

The information and suggestions contained in this bulletin are correct as at the date of publication and supersede all previous editions of this document.

As research into product performance is ongoing, it is recommended that the home/building owner, builder or installer contact New Zealand Steel to obtain up to date information on the steel roof type on which the product will be installed.

New Zealand Steel accepts no liability whatsoever for COLORSTEEL® prepainted steel or ZINCALUME® steel damaged through faulty or poor workmanship in the installation of photovoltaic panels or similar products.

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