

æelsafe
always innovating

PIP2 and PIP3

“The world's first commercial space power module manufactured using plastic with up to 60% recycled plastic content.”



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EXECUTIVE SUMMARY

OE Elsafe Australia and its parent company, OE Electrics, in the UK have 35 years of experience in powering commercial spaces. OE is a global leader in the design and manufacture of power and data distribution modules, cable management, and soft wiring solutions. OE Elsafe is committed to excellence in products, services, and support.

Our manufacturing processes conform to:

- ISO 9001; 2015 Approved Quality Management Systems.
- ISO 14001; 2015 Approved Environmental Management Systems.

OE Elsafe has embedded continuous improvement policies that drive the development and implementation of sustainable solutions in our business practices to reduce our impact on the environments in which we operate. Commercial spaces need power for end-user laptops, tablets, and smartphones. This power is almost always provided as a power unit on or in the desk surface.

In line with OE's net zero by 2035 policy, we have been working towards the inclusion of bioplastics and/or recycled plastic content into our products. While this can be easily achieved for many items made from plastic, power sockets require a higher level of consideration due to standards, heat resistance, shrinkage, and fire safety.

The recent successful inclusion of recycled plastic content in the manufacture of PIP2 and PIP3 is the culmination of two years of research and development. The success has also opened the way to include recycled plastic content in current and new product lines.

The manufacture of PIP2 and PIP3 using plastic containing 60% post-consumer recycled plastic content meets all global industry standards and certifications.

The resulting PIP2 and PIP3 power units provide our clients with an eco-friendly option, satisfying the growing demand for more eco-friendly products in the commercial building sector.

PROFILE – PIP2 and PIP3

PIP2 and PIP3 are designed for commercial spaces such as offices and education spaces. PIP can be installed into the surface of a desk or workstation, providing power for end-user smartphones, tablets, and laptops.

PIP2 and PIP3 are manufactured primarily from engineering plastic (polycarbonate), as it meets global safety standards, certifications, and regulations for electronic product production.

PIP2 and PIP3 are also compatible with the 2023 ABA 100 eco-award winning TUF-R USB charging modules, furthering their eco-contribution. Replacing a module and not the whole PIP2 or PIP3 saves time, resources, and *significantly* reduces waste.

Developed over two years, PIP2 and PIP3 are now manufactured successfully using plastic that contains 60% post-consumer recycled plastic.

The plastic components of **Black PIP2 and PIP3** contain 60% recycled post-consumer plastic.

The plastic components, *except the fascia*, of **White PIP2 and PIP3** contain 60% recycled post consumer plastic. The fascia is not manufactured from recycled plastic to retain the crisp white colour.



PIP2 and PIP3 ECO-FEATURES

PIP2 and PIP3 CONTAIN UNIQUE ECO-FEATURES.

Manufactured using plastic that contains 60% recycled plastic content.

Electrical products are mostly made from polycarbonate, which is an engineering (polymer) plastic that offers unique properties, making it suitable for use in the manufacture of electrical products, including:

- High dimensional stability
- High impact strength
- Good thermal-insulation and high heat resistance
- Good electrical properties

The manufacture of PIP2 and PIP3 using polycarbonate containing 60% recycled plastic is a world first. OE has successfully included a high percentage of recycled plastic content without compromising on quality while still meeting all global certifications and safety standards.

Currently, only OE Elsafe and the OE Electrics group have commercial electrical power modules that are manufactured using recycled plastic. Our success will pave the way for others in the industry to follow, compounding the eco-benefits of using recycled plastics in the manufacture of electrical power modules.

PIP2 and PIP3 are compatible with the ECO award-winning TUF-R modules.

PIP2 and PIP3 are designed to accommodate power modules from the OE range. Being modular, if there is any failure in those modules, just the module can be replaced, without disturbing the unit, in less than five minutes without turning off the power or calling an electrician.

Replacing a module and not the whole product saves time, resources and *significantly* reduces waste.

[CLICK](#) to see the TUF-R module being replaced.

PIP2 and PIP3 ECO-FEATURE IMAGES

PIP2 and PIP3 are installed in worksurfaces - *below*. The back housing of both black and the white PIP2 and PIP3 - *right*, plus the black faceplate are made up from plastic containing 60% recycled plastic content. The white fascia faceplate is not made using recycled content plastic to retain the crisp white color.



PIP2 and PIP3 are low-profile in-desk power units for commercial workspaces.



END USER BENEFITS

POWER FOR THE END USER

As a product, PIP2 and PIP3 are contemporary slimline in-surface power units providing power and device charging for end user laptops, tablets, and smartphones.

Robust and practical PIP2 and PIP3 are suitable for

- Education / TAFE / Universities / Colleges / High Schools
- Public Spaces / Airports / Retail Centres / Foyers
- Workspace / Offices / Workshare Spaces / Corporates
- Hospitality / Cafes / Hotels

ECO- FRIENDLY POWER FOR THE END USER

The unseen end-user benefit of PIP2 and PIP3 is the contribution made toward reducing the production of virgin plastics by incorporating a high percentage of recycled plastic into the manufacturing process.

Currently, most of the plastic in use globally will not be recycled. The costs of recycling are high, and the value of recycled content plastic is low, creating a tough economic environment for anyone in the business. Additionally, incorporating recycled plastic content into products is still in its infancy; it simply costs more to use recycled content plastics.

The development of an engineering plastic (polycarbonate) suitable for electrical products was only made possible by demand from the automotive industry, where potential volume warranted the investment required by recycled plastic suppliers.

Incorporating the now available higher-grade engineering polycarbonate plastic in the manufacture of PIP2 and PIP3 significantly reduces the amount of virgin plastic we would otherwise use. OE plans to further incorporate recycled content plastic into existing and new products.

A quick look at the history of plastics and their impact on our environment.

<https://www.plasticonline.com.au/history-of-plastic/>

RESEARCH & DEVELOPMENT – The Journey

The OE Research and Development team, based in Australia and the UK, are constantly challenged to create new products and improve existing products. Our mission to reach net zero by 2035 is a key factor that drives our efforts, and the incorporation of bioplastics has been on our agenda for four years.

In 2019, we started to notice that bioplastics were moving from a concept to a reality. Lego started to produce some of their blocks from sugar cane-based plastic, and NIKE began making a range of shoes from fishing nets. Food packaging started to emerge, made from other recycled food packaging, and more and more manufacturers were switching from plastics to more circular materials like aluminium and cardboard.

At the same time, we noticed our customers in the commercial furniture and building sectors began setting targets for reducing their carbon footprint. We at OE decided electrical power modules made from plastic like those used by LEGO and NIKE would be a massive win for our industry. It would help to reduce both our carbon footprint and our customers. It would help our customers meet their ESG requirements for new building projects and fitouts of old buildings, and it would also be an industry first.

In December of 2019, the R&D team had a weeklong brainstorming session during which we put forward the idea of using bioplastics in our products. Having never been done before, a bioplastic power module would be the first ever environmentally friendly office power solution. Great in concept, but in our industry, we had to meet certain challenges.

Operating in the commercial sector means our products must be tested to very high safety standards. To meet these standards; they must typically be manufactured from a group of plastics called engineering plastics. Only this class of plastics can guarantee the flame retardancy and strength required. It was this constraint that made the search for a suitable bioplastic so difficult.

Sustainable plastics were a relatively new material at the time, meaning by the time we had our idea for a bioplastic product, none of our plastic suppliers had a material that could meet the flammability requirements of our markets.

RESEARCH & DEVELOPMENT – The Journey

Moving forward to late 2022, we had a meeting with a plastics distributor we had worked with during the development of previous products, where we explored the possibility of using recycled content plastics.

That plastics distributor had started working with a new plastics supplier that had built their entire production plant and production processes to operate sustainably. This included powering the factory with wind and solar power, building the factory in a biodiverse green energy park, and using grey water for their manufacturing needs.

Meanwhile, the automotive sector had ramped up its requests for a more sustainable engineering plastic. The sizable automotive sector provided the economic scale necessary to trigger plastics manufacturers to develop and produce a high-specification engineering polymer plastic incorporating recycled plastics.

The demand from the automotive industry resulted in the development of an engineering polymer (polycarbonate) that was also suitable for the manufacture of electrical power modules. As we were now developing PIP2 and PIP3, the dream of incorporating bio or recycled plastics into the manufacturing process was now an exciting possibility.

Bioplastic vs Recycled Plastic.

- Bioplastics are made from marine or plant-based materials such as corn and sugarcane. (No suitable bioplastic is yet available for power modules.)
- Recycled plastics are made from used post-consumer plastic materials collected for recycling, rather than raw (virgin) petrochemicals. (Now a suitable engineering polymer polycarbonate plastic was available.)

We approached our plastics distributor with a brief to source an engineering grade polycarbonate that utilised recycled plastics in its composition that could achieve a safety rating of V0 at a wall thickness of 1.5mm. A V0 rating means that the plastic, when set on fire, will stop burning within ten seconds with no flaming drips of plastic coming from the burnt test strip.

RESEARCH & DEVELOPMENT – The Journey

Polycarbonate was also essential for another key reason. We already had an existing polycarbonate called Makrolon 6485 that we knew would pass the flammability test.

By specifying a recycled content polycarbonate, we could continue with the launch of PIP2/3 and have the option to launch the product in Makrolon if the supplier could not source the recycled content plastic in time for the launch. If they did manage to source the material, the matching shrinkage values between the recycled content plastic and Makrolon would mean we could swap between the two materials without having to manufacture two separate mould tools with different shrinkage values.

In 2023, the good news arrived that a material had been manufactured from 60% recycled content that could achieve a V0 rating at 1.0mm wall thickness, an even better safety rating than Makrolon. A test run was moulded and the parts were a success.

However, due to the 60% recycled content, the colour did not match the colour of our existing components perfectly. After consulting our sales team, they concluded that the value of having the first power module made from recycled plastic was a bigger win than a perfect colour match for the black PIP. Now only the fascia faceplate on the white PIPs are made using non recycled plastic to retain the crisp white colour.

PIP2 and PIP3 manufactured using recycled content plastic are due for release in March 2024, in Australia and New Zealand. We are now in talks with the same plastics manufacturer to trial a new polycarbonate material made from 80% recycled plastic and have started a project to mould more of our existing products from the new recycled content plastic. We are also investigating materials such as marine waste TPE (bioplastic) for use in our second-generation battery products and other non-power modules.

PIP2 and PIP3



PIP2 and PIP3

