

# Green plastics: economically and ecologically sound

*Cereplast's compostable, renewable plastics are an economically and ecologically sound substitute for petroleum-based products. CEO Frederic Scheer: "Bio-plastic isn't new, it's been around for 25 years, but the relative high costs of sustainable plastic kept it from penetrating the market." Cereplast uses a breakthrough technology that makes bio-plastic cost competitive, and manufacturers don't have to make any major investments in new equipment to use it.*



Mr Frederic Scheer,  
CEO of Cereplast, Inc.

Cereplast resins use proprietary and patented formulations for a large variety of applications. Since Cereplast is starch-based, rather than petroleum-based, the cost is not subject to fluctuation based on the price of fossil fuels. The manufacturing process for Cereplast resins takes place at a lower heat than that required for manufacturing with traditional plastics, further bringing down manufacturing costs. Cereplast resins can substitute for traditional resins and are compatible with existing manufacturing processes and equipment. "We need to

manage the carbon cycle properly. It doesn't make sense to make disposable cups that we will use for only 5 to 30 minutes and make it from oil that takes about 70 million years to make, and then send the cups to a landfill for the next 500 years," says Mr. Scheer on his motivation for establishing Cereplast. "We used to be under the impression that the oil reserves were unlimited, now we realise that they are not. Besides, a lot of oil is coming from undemocratic countries. People are starting to realise that we need alternatives, and our bio-plastic is a

very easy alternative that can be used without any major investments."

The company was established in late 2001, but founder Frederic Scheer has been involved in biodegradable plastics for 15 years already. "Bio-plastic isn't new, it has been around for 25 years. The main factor preventing sustainable plastic from penetrating the market was cost. A second issue was making sure that the thermal and physical properties of bio-plastics were as close as possible to the petroleum-based plastics. I tested the market for a few years, and I found a breakthrough technology which allowed us to make bio-plastic at an attractive price. At the same time, the price of oil went up. The combination of these two things made Cereplast's starch-based bio-plastics extremely competitive from a financial viewpoint. We were able to sell at the same price or even cheaper than traditional plastics."

Right from the beginning Cereplast partnered with a number of large companies that wanted to push the agenda of green plastics, such as food service packaging company Genpak and leader in the plastics extrusion business Alcoa KAMA. Cereplast co-developed its



products together with these companies and started distributing them via their distribution channels.

In January 2007 Genpak introduced a full line of products under the name of the Harvest Collection (<http://harvestcollection.genpak.com/>). Alcoa KAMA is producing plastic sheet for thermoforming using Cereplast's biodegradable resins, which will have wide applications for food service packaging and other uses.

"So far we've been concentrating primarily on food service packaging, but our resin can also be used in other industries such as cosmetics and medical," says Mr. Scheer. "The market is huge, that's why we don't really feel that we have a lot of competitors. We look at other companies that make biodegradable plastics, such as Metabolics and NatureWorks as potential suppliers. Cereplast is a solutions provider, not a polymer creator. We buy polymers and we tweak them to make them suitable to run on the existing equipment of converters."

Cereplast manufactures ten grades of resins, suitable for everything from thermoforming to injection moulding and extrusion. The resin manufacturing process goes as follows. First Cereplast selects the right bio-polymer matrix made from renewable, cost-stable resources. These biopolymers include polylactic acid (PLA) from NatureWorks, soy proteins, or starch from corn, wheat or potatoes. The selected bio-polymer is blended with other biodegradable components to reinforce its molecular structure through a proprietary process developed by Cereplast. The blend is then polymerised and treated with nano-composites for surface optimisation and further reinforcement. The entire green composite process is high-speed and low-cost. The final product is then packaged and shipped to converters for further processing.

Products made from Cereplast resins biodegrade within 60 to 180 days, depending on thickness. In a landfill, products will biodegrade, but this process will take longer, as landfills, unlike compost facilities, are designed to be moisture-free. In incinerators, Cereplast products will burn without toxic emissions, as the main ingredient is starch.

Cereplast went public in 2005. The money raised was used to build a production facility, which will be extended further in the years to come. In March 2007 Cereplast received USD 3.4 million in new capital through the sale of common stock. The new funding will not only support Cereplast's growth but also allow the company to introduce additional bio-based resins to the market. The new capital also expands the breadth of Cereplast's shareholders to include two large European institutional fund managers, including Swisscanto. As part of its investment, Swisscanto has added Cereplast to its Equity Fund Climate Invest, which invests in public companies with environmentally and economically sound platforms in renewable energy and water. Mr. Scheer: "In the next five years we want to build up our production capacity to at least one billion pounds, because I believe that in the next 10 to 15 years the entire plastics industry will have a large segment based on sustainable resins. If we don't build up our capacity I think this segment will be taken in by the very large players like DuPont and Dow Chemical."



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## Cereplast bio-plastic

### Sustainable

- developed from plant starches
- non-petroleum based
- production process uses up to 50% fewer fossil fuels and emits less carbon dioxide
- reduced greenhouse gases

### Economically viable

- cost of raw ingredients is stable relative to cost of fossil fuel based resins
- can be manufactured using existing equipment and processes
- lower processing temperatures mean lower manufacturing costs

### Comparison with other bio-based plastic

- top quality performance, including rigidity
- higher thermo-resistance
- greater strength
- not brittle

