AggrePlex California Initiative

AggrePlex is an advanced technology company focused on decarbonizing construction materials, particularly concrete. It manufactures PozzoDyne™, an Activated Ground Glass Pozzolan (AGGP) derived from diverted landfill waste glass. This innovative supplemental cementitious material (SCM) serves as a sustainable alternative to Ordinary Portland Cement (OPC). By transforming typically landfilled waste glass from material recovery facilities into a high-performance, low-carbon SCM, PozzoDyne™ addresses key challenges in both the solid waste and cement/concrete industries. Committed to quality and environmental impact, AggrePlex's AGGP meets the stringent ASTM C1866/C1866M-20C standards, ensuring both reliability and effectiveness.

The production of AGGP starts with cleaning and grinding waste glass into a very fine powder, with most particles smaller than 20 microns and over half being 5 microns or smaller. This small particle size boosts the product's effectiveness when mixed into concrete, helping to prevent issues like Alkali-Silica Reaction (ASR), which is particularly important for construction in California.

With the increasing emphasis on clean energy initiatives and the transition away from fossil fuels, there is a growing shortage of traditional supplemental cementitious materials (SCMs) such as fly ash and slag. AGGP, produced from finely ground waste glass, presents a sustainable and high-performance alternative SCM. This solution is particularly pertinent in California, where it directly aligns with the state's objectives to reduce landfill waste, promote recycling, and decrease carbon emissions within the construction sector—one of California's most significant contributors to carbon emissions.

AggrePlex maximizes diversion, increases recovery, and optimizes the usage of recycled glass sourced from within California, aligning with SB 1013's goal of promoting in-state recycling and processing. By co-locating at the Halo Glass Recycling Facility, we ensure that recycled glass cullet—regardless of size, color, or CSP—is efficiently cleaned, processed, and utilized within the state. This approach not only strengthens California's circular economy but also minimizes emissions associated with transportation.

With beverage container production experiencing market contraction due to the industry's shift toward aluminum and plastic, securing stable markets for recycled glass has become increasingly challenging. In contrast, the construction industry offers a reliable and expanding market for AggrePlex's Ground Glass Pozzolan (AGGP), with an almost limitless demand for pozzolanic materials. This enduring and stable outlet not only guarantees a

viable market for recycled glass but also supports the economic sustainability of the state's recycling efforts, making them more economically attractive and environmentally beneficial over the long term.

AggrePlex's production is powered through an experienced (25+ years of operation on various feedstocks) German turnkey technology - Microtec's advanced technology that is integral to AGGP production, providing superior throughput, enhanced energy efficiency, and significantly reduced capital intensity compared to conventional milling technologies. Historically used for refining virgin technical raw materials, this technology now optimizes complex, over-engineered recycled materials, supporting the circular economy and sustainability goals by reducing the need for environmentally damaging practices such as landfilling, mining, and deforestation.

AggrePlex will establish a state-of-the-art 50,000-ton/year (to be scaled up to 125,000-ton/year by Year 3) AGGP facility in Modesto, California, co-locating with Gallo Winery/Halo Glass Recycling's facility. This facility will initially process post-consumer container glass byproduct from Halo Glass Recycling, and expand to other types of glass, such as windshield, solar panel, and fiberglass derived from wind turbine blades. This advanced process in the production of AGGP reduces carbon emissions by 92% per ton compared to traditional cement production, significantly lowering the global warming potential of concrete by over 30%.

AggrePlex's AGGP has been rigorously tested and validated by leading cement and concrete companies and universities, including Ozinga, CEMEX, CalPortland, Titan America, CRH Ash Grove/Preferred, Vulcan Materials, MIT, the University of Miami, and soon to be UC Davis, demonstrating its effectiveness and reliability as a supplementary cementitious material.

AggrePlex is committed to creating a circular economy model around waste glass generation. By collaborating with local recycling partners, the company aims to recover waste glass diverted from landfills and transform it into high-performance AGGP. This material will be supplied to the concrete industry, resulting in ultra-high-performance concrete that enhances the resilience and strength of the built environment and infrastructure in targeted states.

The use of AGGP in concrete offers numerous benefits, including increased resistance to seismic events, improved thermal insulation (R-Value) for energy-efficient buildings such as cold storage facilities and data centers, and extended lifecycles with lower maintenance and repair costs. Additionally, the superior durability of AGGP concrete leads to lower insurance costs and eligibility for LEED credits, promoting cost-effective green financing alternatives.

AggrePlex's operations will create a significant number of high-paying, direct jobs in technical roles such as material processing, advanced manufacturing, and plant

operations, while also stimulating indirect job growth in related sectors like logistics, equipment servicing, and raw material processing. By partnering with local recycling facilities, engineering firms, and construction companies, AggrePlex will boost employment across the supply chain, supporting regional economies. This combined job creation will not only drive economic development but also align with AggrePlex's mission of promoting sustainability through waste reduction and lower carbon emissions.

AggrePlex's leadership team includes experienced executives from the resource extraction, waste, and recycling sectors, with Kevin Crutchfield as CEO, Anthony Cialone as President, James Burnham as EVP, Josef Fischer as CTO, Herb Northrop as Director of Business Development, David Petroni as Director of Plant Operations, and Koren Wah as Director of LEAN Manufacturing & Quality Production. The company aims to increase glass recovery rates from 25% to 75%, providing high-paying technical jobs and supporting sustainability goals in each of these states.

By integrating these processes, AggrePlex is driving sustainability and environmental stewardship, transforming waste into valuable construction materials, and supporting the goals for a greener, more resilient built environment across California.

Summary

California seeks an AggrePlex facility as it aligns seamlessly with the state's ambitious sustainability goals and regulatory framework. By processing recycled glass into high-quality Ground Glass Pozzolan (GGP) for use in concrete, AggrePlex directly supports California's objectives of reducing waste, promoting in-state recycling, and building a circular economy. This initiative not only maximizes the diversion of glass from landfills but also lowers greenhouse gas emissions by replacing traditional cement with GGP, thereby contributing to the state's climate action goals.

AggrePlex's co-location at recycling facilities enhances the efficiency of glass recovery and processing, minimizing transportation-related emissions and furthering California's carbon reduction targets. Additionally, it addresses market contraction in beverage container recycling, creating a stable and expanding outlet for recycled glass. The concrete industry faces an ever-growing demand for post-consumer waste glass, while the glass bottle recycling sector continues to decline, leading to a corresponding drop in demand for recycled glass, prompting a necessary move by California to look for other alternatives. By supporting AggrePlex, California reinforces its leadership in sustainable materials management and strengthens the economic viability of its recycling programs.

Ground Glass Pozzolan (GGP) derived from waste glass is optimally suited for replacing Ordinary Portland Cement (OPC) in concrete rather than being used as cullet in glass manufacturing or feedstock for fiberglass production. One key benefit is the significant reduction in CO_2 emissions: substituting OPC with GGP not only reduces the carbon footprint of concrete production but also leverages the inherently lower CO_2 emissions of

the grinding process compared to the high-temperature furnaces required for glass or fiberglass manufacturing. GGP production consumes less electrical and thermal energy, as it involves mechanical grinding rather than energy-intensive melting processes. Additionally, incorporating GGP into concrete enables the sequestration of CO2 over the structure's lifespan, contributing to long-term carbon storage. At the end of its life, concrete containing GGP can be recycled into aggregate, further supporting a circular economy and reducing the environmental impact of raw material extraction. This combined approach of emission reduction, energy savings, carbon sequestration, and recyclability positions GGP as the superior use of waste glass compared to traditional cullet applications.