



Best Practices in Glass Recycling

Processing Automotive Windshield Glass

Material: Recycled Glass

Issue: Windshields are manufactured with two layers of glass with a strong plastic (usually PVC) membrane sandwiched between the panes. This structure limits recyclability dramatically. Plate glass itself is challenging to recycle because of its different chemical composition from container glass. Plate glass and automotive glass can be successfully recycled into construction aggregate or other secondary markets if the glass can be separated from the film. Separating film plastic from windshield glass requires that the glass be broken adequately to free the film, while keeping the film in large enough pieces that it can be removed without fouling equipment.

Best Practice: Systems are now available to crush windshields and screen film plastic residuals in a turnkey system. In one system, compression feed rollers are used to guide windshields through a processing system at a predetermined rate and physical orientation. The system is 70 inches long, 50 inches wide and 56 inches high. The input opening is up to 43 inches and drive components include a 10 horsepower motor, solid steel shaft, 40 hammers constructed of flailing arms made from hardened steel, 2 inch heavy duty isolated bearings, and two - ten inch compression feed rollers. Controlled feed is necessary because flexible impactors are used to flail the glass off the plastic membrane, while keeping plastic pieces as large as possible for removal during screening.

A successful removal operation relies on the equipment configuration and material properties of glass and plastic to enable pulverization of the constituents so that the PVC pieces are larger than the glass for separation in a trommel screen ([see *Screening Technologies for Glass Processing Best Practice*](#)). One pass through one of these systems separates the PVC from the glass windshield and pulverizes the glass into a clean, homogenous product of less than 1/4" in size. The plastic PVC laminate remains in pieces one-inch and larger. This system is capable of processing four to five tons per hour (one windshield every five to ten seconds).

Implementation: In considering systems to process automobile windshields, the efficiency of segregation is critical to whether any marketable product will be generated. Ease of operation and throughput rates are important as well.

Benefits: With effective processing, there is no need for windshield glass to be a solid waste. Windshield glass represents a substantial supply of relatively clean, clear plate glass which has potentially widespread applications, including aggregate and industrial minerals applications.

Application Sites: Material Recovery Facilities

Contact: For more information about this Best Practice, contact CWC, (206) 443-7746, e-mail info@cw.org.

References:

Andela product literature. Andela Tool & Machine, Inc., Richfield Springs, N.Y.

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