



Applications for WNS Walnut Shells from McKinley Resources

Harmonized Code: #1404.90.9000.

I. Energy Applications

Drilling Fluids: *WNS Walnut Shells* are used to control lost circulation in water and oil base drilling fluids. It may be utilized to treat the entire system in re-circulated fluids or in pill form with fibrous and flake material. It is an inert additive, which is compatible in all types and densities of fluids.

Additional Information:

- The fine grade of *WNS Walnut Shells* can be circulated through a 20-mesh shale shaker screen. In addition, *WNS Walnut Shells* are both nontoxic and biodegradable.

II. Water Applications

Filtration: Walnut Shell filters are frequently installed for the removal of oil and suspended solids from produced water, refineries, and waste/re-circulation streams found at other industrial application facilities. These filters eliminate the need for flat media retention screens and use only one media-scrubbing pump for up to eight filters. This simplifies the design and lowers the cost of multiple filter systems.

Additional Information:

- *WNS Walnut Shells* are used in filters, which, remove oily contaminants from water and treat oilfield-produced water. In addition, these filters are also used to treat refinery wastewater, steel mill direct spray and caster water, ethylene plant quench water, copper concentrate decant water, and industrial plant cooling water.

III. Green Building & Sustainable Cities Applications

Anti-Slip: *WNS Walnut Shells* can be used in anti-slip additives that are placed in paint. *WNS Walnut Shells* are an effective non-skid and anti-slip additive for use in coatings, bathtubs, showers, surfboards, and pool walkways. In addition, they work extremely well for either interior or exterior use like sidewalks, driveways, decks, docks, ramps, and stairs.

Blasting: The operation of forcibly propelling a stream of abrasive material (often-called *media*) against a surface under high pressure to smooth a rough surface, roughen a smooth surface, or remove surface contaminants. Pressurized air is typically used to propel the blasting media on an underline material.

Additional Information:

- *WNS Walnut Shells* are a great media for the removal of graffiti from a brick/stone structure and the removal of paint or baked-on carbon deposits from ferrous metals (like iron and steel). In addition, *WNS Walnut Shells* can be used to clean the internal and external parts of an engine.



Green Building & Sustainable Cities Applications (cont.)

Micro Blasting: In micro-blasting soft abrasives are used to avoid damaging the underlying material. For example, in the removal of coatings from printed circuit boards being repaired and in the removal of paint from a hard wood floor without damaging or scratching the original hard wood. In addition, **WNS Walnut Shells** can be used to alter the look of fabric (jeans) to give an appearance of being used or worn down.

Additional Information:

- **WNS Walnut Shells** can be used in micro blasting after a mold has been machined into a steel cavity with EDM (electrical discharge machining) to give the mold a final finish. In addition, **WNS Walnut Shells** are used to micro blast certain plastics to help create a frosty or slick finish. Micro Blasting with **WNS Walnut Shells** can also texture small, deep cavities that larger bead blast media cannot reach.

Ceramic Burnout Media: This is a technique where artists, using pottery, clay, or other materials, will add **WNS Walnut Shells** to their substrate to encourage texturing during the fire curing process. This technique allows the pottery, clay, or other material to take on a corroded appearance, which enhances the beauty of the artistry.

Other Applications

Cosmetic/Personal Care (Body Scrubs/Hand Cleansers): The cosmetic and personal care industry uses **WNS Walnut Shells** as an exfoliant in facial, body and foot scrubs. **WNS Walnut Shells** for cosmetic applications can be distributed in either a 'natural' or an 'irradiated' form depending on the application. The irradiation process, performed with gamma rays, reduces the bio-burden of the walnut shell and provides an extended shelf life.

Addition Information:

- Crushed walnut shell is a hard, fibrous material that is, ideal as an abrasive. The grit size of walnut shell can be altered so that it is extremely durable, angular, and multi-faceted. However, some cosmetic formulations may require a more aggressive particulate, which will require a larger mesh size. Finally, because **WNS Walnut Shells** are a unique grind, they can have a soft abrasive nature that is smaller, with round edges for a scrub that is finer, smoother, and more sensitive.



Other Applications (cont.)

Filler/Extender (Adhesive/Plastic/Rubber): *WNS Walnut Shells* are used as a filler or an extender for paints, ceramics, adhesives, and building surfaces. In addition, they can be used as a filler mixed with resins to create cold castings. *WNS Walnut Shells* can be used as a flour like filler and adhesive ingredient in the manufacturing of plywood. Whether used in a softwood or hardwood plywood adhesive, walnut shells help to increase viscosity, reduce cost, and improve application.

Additional Information:

- The dynamite industry uses ground *WNS Walnut Shells* as a filler in dynamite. *WNS Walnut Shells* are great fillers for almost any filler/extender because they are a sustainable, renewable and biodegradable.

Carriers (Pesticide/Herbicide/Seed): *WNS Walnut Shells* are inert ingredients, which are added to fertilizer. In many cases, fertilizer companies are turning to organic material, because it breaks down more slowly in the soil. *WNS Walnut Shells* are often added to fertilizers to improve the function, stabilize the material for a longer shelf life, and make the material easier to dilute and apply. Additionally, lightweight pesticides and seeds have walnut shell in the finished product when the material is spread onto fields; the weight prevents the product from blowing away.

Deburring/Deflashing: Metal does not start out completely smooth and shiny. It achieves that state slowly through a finishing process. When the metal is cut, it is usually done so by a welding, shearing, trimming, casting, or molding process. After the metal has been cut, it usually has a rough or rigid surface, especially around the edges. Deburring refers to a variety of methods used to finish the raw metal and wood product. Deflashing is the process used to remove excess material from oddly-shaped, custom molded products.

Additional Information:

- *WNS Walnut Shells* can be used for medium to light deburring/deflashing to smooth out the surfaces and edges of metal. In addition, *WNS Walnut Shells* can be used to lightly finishing and polishing metal. *WNS Walnut Shells* are the perfect organic media to be use in the deburring/deflashing process, mainly because they are durable, reusable, and environmentally safe.