

## [NATIONAL COMPUTER WAREHOUSE SERVICES, LLC](#)

### **SHOCK ABSORBING FLOATING PALLET**

National Computer Warehouse Services, LLC in partnership with engineers, and leading equipment manufacturers, have deployed a floating pallet system that attenuates vibration and impact damage to high-value equipment in over-the road trucking and air transportation. We use energy absorbing visco-elastic polymer disks made of thermo set, polyether-based, polyurethane material.

Unwanted energy manifests itself as vibration, shock or noise in most mechanical systems. Whether it is the vibration from a jet engine, the shock from dropping a cell phone (or other hand-held device), or the noise from a blower that is resonating in an enclosure.

National Computer Warehouse Services, LLC pallets are made within our company, and the key to our pallets are the highly-damped, visco-elastic, polymeric solid that "flows" like a liquid under load. The energy absorbing visco-elastics used within the pallet are a thermo set, polyether-based polyurethane that combines high energy absorption with near faultless memory. The energy absorbing visco-elastics have liquid-solid properties allow it to simultaneously absorb shock and vibration energy.

National Computer Warehouse Services, LLC uses an energy absorbing visco-elastic polymer with the ability to isolate vibrations and shock during travel. National Computer Warehouse Services, LLC proprietary pallets effectively isolate the server racks on shipping pallets from damage-causing impacts. The shape, size and energy absorbing visco-elastic polymer pads are custom made for our populated server rack relocations.

Our pallets containing energy absorbing visco-elastic polymer disks are a proprietary, and the disks have been widely recognized for their superior damping and isolation properties. The energy absorbing visco-elastic polymer disks maintains stability and flexibility over a broad temperature range, enabling the pads to isolate damaging vibrations and impact shock in all climate conditions.

#### **A few FAQ's...**

##### **What does visco-elastic mean?**

Visco-elastic means that a material exhibits properties of both liquids (viscous solutions) and solids (elastic materials). Because visco-elastic behavior is desirable in shock and vibration applications many materials claim to be "visco-elastic." Technically, they are correct. However, many of these materials have only trace "visco-elastic" properties.

A viscous material (a liquid) deforms under load and transmits forces in all directions. It distributes a small amount of pressure over a large area. It does not recover its shape when the load is removed.

An elastic material deforms under load and returns to its original shape when the load is removed.

**Your energy absorbing visco-elastic polymer disks have a damping coefficient, but what is a damping coefficient?**

A damping coefficient is a material property that indicates whether a material will "bounce back" or return energy to a system. A basketball has a low damping coefficient (a good bounce back). If the bounce is caused by an unwanted vibration or shock, a high damping coefficient will attenuate the response ("Swallow the energy" and reduce the reaction of the system.)

**Where does the "swallowed energy" go?**

It is converted into a small amount of heat.

**How efficient is your shock absorbing pallet?**

Our pallet will absorb 94% of shock energy.

