



# DESIGN OF PALLET RACK

## in Seismic Areas

Because of the growing awareness of seismological events, it is necessary to make those who quote our product aware of what the requirements are for the design of pallet rack in seismic locations. Any rack that falls into Seismic Design Category B or above needs to be checked for seismic.

The American Society of Civil Engineers (ASCE) has a program available called “asce7hazardtool.online” to determine the spectral response acceleration parameter at short period ( $S_s$ ) and the spectral response acceleration parameter at a period of 1-second ( $S_1$ ).

One can enter either the site address or the latitude and longitude for the project location. Just inputting the zip code for where the project is located may not result in the correct  $S_s$  and  $S_1$  acceleration values to be used for the design the racking.

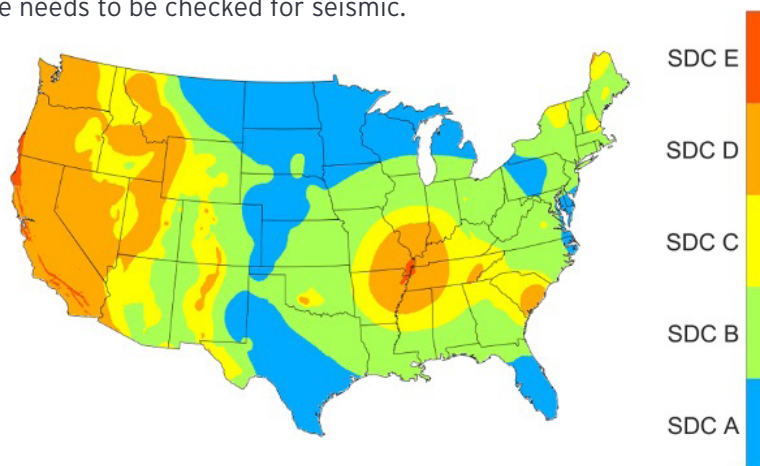


Figure 1 - Seismic Design Categories

The Rack Manufacturers Institute (RMI), an organization within the umbrella of MHI, has published the ANSI MH16.1 pallet rack standard for the design of industrial steel storage racks. Within this Standard are provisions for the design of racks to resist seismic/earthquake load.

Seismic separation between the racking and building columns need to be considered in both the down-aisle (unbraced) and cross-aisle (braced) directions for racking located in Seismic Design Categories D, E, or F regions. In lieu of a rational seismic displacement analysis a minimum down-aisle seismic separation equal to 5% of the height of the top loaded shelf level may be used. For the cross-aisle direction, the minimum seismic separation need only equal 2% of the height of the top loaded shelf level.

Also, when designing racking, whether for seismic loading or not, an importance factor is included. The importance factor for the design of the rack is 1.5, for racking located in an essential facility, such as a hospital, storing hazardous material, or located in areas that are open to the public; otherwise, the importance factor value is 1.0.