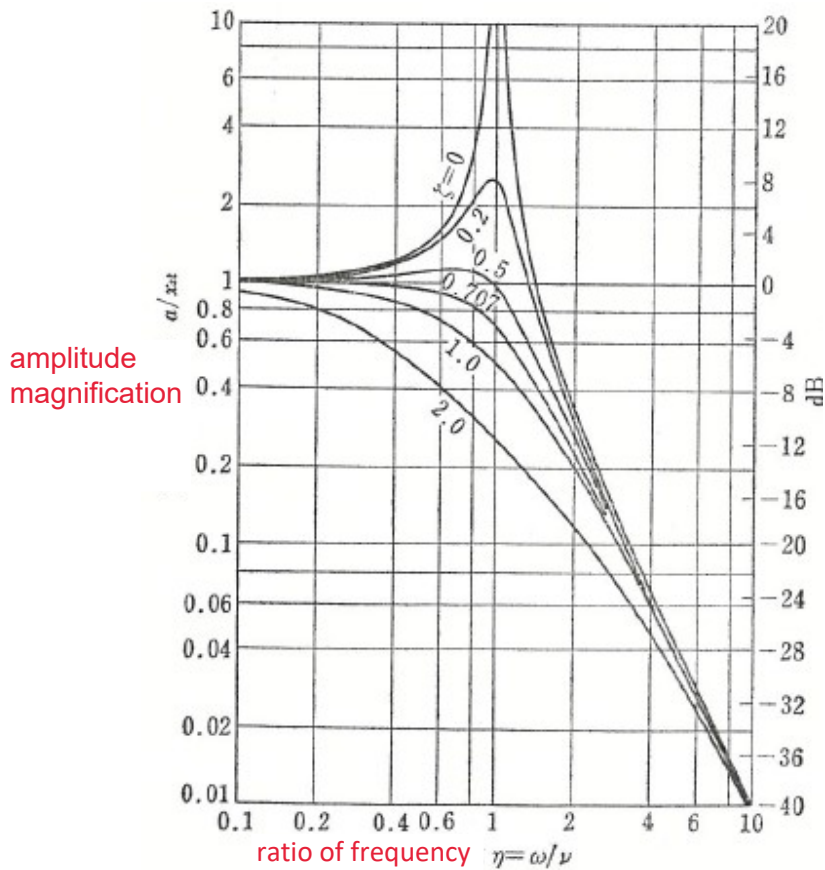


#### A.4.7. Vibrations

The results of analysis of natural frequency showed that the natural frequency of the package is 29.8 Hz (details in “(II)-A Attachment 3”) Generally, the frequency of the excitation force received from trucks, trailers, etc., during transport is less than 20 Hz at the maximum, which is different from the natural frequency of the package. As shown in (II)-A Figure 13, at a frequency ratio of 0.67 (=20/29.8), the displacement amplitude factor is about 200% even without conservative consideration of damping. Generally, acceleration of the vibration generated by trucks, trailers, etc., during transport is less than 2G, even taking into account the passing over bumps, etc., so the load on the packaging is less than four times the load on the package, even if amplification is conservatively considered to be 200%.

Even considering that no deformation of the packaging is observed in the evaluation of stacking under normal conditions of transport ((II)-A.5.4) where the load is five times the weight of the packaging, there is no risk of damage or cracking of the packaging due to vibration occurring during transport.



(II)-A Figure 13. Resonance Curve of Force-induced Forced Vibration  
(Source) Masaharu Kuniyama, “Practical Mechanical Vibration” (1984)