

Distribution Tote Testing: A Weight Study

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Abstract: The Healthcare Packaging Consortium (www.cbu.edu/HPC) was founded on June 1, 2010, at Christian Brothers University (CBU) with seven founding members: Evergreen Packaging, FedEx, Medtronic, Merck, Plastic Ingenuity, Smith & Nephew, and Wright Medical. These companies provide timely R&D projects, while CBU faculty/staff/students work on them. One of such projects is distribution tote testing. Plastic totes are often used to deliver products from a distribution center to retail stores. Partially-filled totes are common. Damage to tote contents can often occur during such distribution. Rutledge, Malasri, and Lawrence [1] validated the problem and found that tote content organization played an important role in damage reduction/prevention. Malasri, Moats, Archer, Shiue, Brown, and Rutledge [2] further found that a bubble wrap sheet and air pillows at the tote bottom and top, respectively, reduced drop impact acceleration significantly. In this paper the effect of tote weight was examined. Experimental drop tests show that drop impact acceleration does not change with weight. However, heavier totes impart a larger impact force to the tote contents, in accordance with a law of physics.

Keywords: Plastic totes, distribution packaging, impact acceleration, drop test

References

- [1] Larry Rutledge, Siripong Malasri, and Anthony Lawrence, "Distribution Tote Testing," *Proceedings of the 2011 International Transport Packaging Forum*, International Safe Transit Association, Orlando, Florida, April 18-21, 2011.
- [2] Siripong Malasri, Robert Moats, John Archer, Paul Shiue, Ray Brown, and Larry Rutledge, "Plastic Tote Drop Impact Study," *Journal of Packaging*, Institute of Packaging Professionals, January 2012.

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