Q-Dummy Service Bulletin
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Overview
Changes to the polyurethane materials, used in the manufacture of Q-Dummies, are forthcoming. This measure is being taken due to a lack of raw material availability from the supplier.

Background
The polyurethane components, used to mold bones and ribcages in Q-Dummies, are no longer commercially available. A key hardening agent has become obsolete due to a European REACH compliance requirement. The European Community’s Regulation body, REACH (Registration, Evaluation, Authorization and Restriction of Chemical substances), deals with chemicals and their safe use.

Current Standard
The raw materials used in molding Q-Dummy bones and ribcages are made by mixing a base material with a hardener to produce the polyurethane part. The various polymer components are formulated to ensure that each part meets all known requirements. Humanetics has a very limited supply of these materials and it is necessary to find a suitable replacement.

Challenge
Rigorous material testing is underway at Humanetics to find a suitable polymer that provides similar durability, consistency, and dynamic response characteristics as the original polyurethane product. All samples are being subjected to a controlled set of tests to ensure compliance with all known specifications.

Various suitable replacement materials are blended and molded into test samples (Fig 1)
The test samples are then subjected to numerous three-point bending tests (Fig 2).

The parts are then exposed to dynamic impact tests on a drop tower (Fig 3).
Summary of Improvements

Flexural test methods are being used to determine the tensile bending properties of the replacement materials. Flexural properties, as determined by these test methods, are especially useful for quality control and specification purposes, and can also be used to determine mechanical property degradation as a result of product use and accelerated aging.

Conclusion

Humanetics is in the process of qualifying new polymers as a replacement material for the manufacture of Q-Dummy components. The new materials are being subjected to controlled testing protocols to ensure that the replacement material meets all known standards and specifications.