

## J-CORE™: BEYOND LIGHT WEIGHT

(PART 2 of 2)

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[The first part of Beyond Light Weight](#) focused on two factors besides weight reduction (Ease of Flow and Bond Strength) that are important to consider in evaluating materials and processes as part of a program to lighten parts. Additional factors will be discussed in this Pro Tip.

### Cosmetics

Surface finish has become increasingly important as a measurement of overall product quality. Class A finishes are being demanded more and more by discriminating consumers. This trend had its roots, arguably, in the automotive industry, but has found its way into other market areas—including marine. The material and process selections are extremely important for consistently achieving mirror quality finishes. In applications involving hardtops and small parts, a substantial amount of filled material is introduced into the female mold. This material has the potential to generate significant heat during the curing stage with a resultant poor cosmetic finish. Arjay's J-Core with a peak exotherm of 170° F can produce consistently excellent gel coat finish results especially in masses that would typically print. The cure characteristics of J-Core are mostly responsible for this, but the regular shape of the microspheres also plays a part.



Figure 1

### Compressive Strength

The compressive strength of a resin system with a microsphere filler is important for two different reasons. First, as shown in Figure 1, if a mechanical device is used to distribute the material, sphere breakage is an issue in the fluid state. Second, once the material has been applied and cured, an adequate compressive strength is required for stiffness and other measures of performance. In both cases sphere selection plays an important part. As a general rule, the smaller the sphere, the less breakage that will occur. (Wall thickness also plays a part, but it is counterproductive when seeking lower weight.) Again, as pointed out in Part 1 for Ease of Flow and Bond Strength, a “skinny” curve with steep slopes is vital. This is because a “fatter” curve will have at the left more of the smaller spheres that aren't likely to break, but typically there will be a more or less equal number of fragile spheres on the right side that are much more prone to breakage. Since such curves are based on the number of spheres and the ones on the right are much bigger, they constitute a significant potential volume loss in either the fluid or cured state. J-Core has a compressive strength in the cured state of over 1,900 psi. In addition to increasing product stiffness, screw retention is also surprisingly high for a low density product.

Let's discuss how J-Core can help you with your weight – and some other factors, too.