

# Adding Nose Cone Weight

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**Building Techniques – Adding Nose Weight**

Things you will need:

1. Nose Cone
2. Weight-shot (BB's, Ball Bearings, Fishing Tackle, etc)
3. Nose Cone stand, such as the matching rocket airframe.
4. Exacto knife or Hobby saw
5. Slow cure epoxy (30 minutes or greater)
6. Epoxy Mixing Cup / Mixing Stick
7. Expanding Foam (PML, Giant-Leap-Rocketry or others)
8. Expanding Foam mixing cup (s/b bigger than 2.5 oz for large nose cone)
9. Mixing stick for Expanding Foam (flat "spatula" like)
10. Long, strong, narrow mixing stick (for inside nose cone)
11. Protective gloves (available in paint stores, Home Depot, West Marine)
12. Dremel tool with grinding stone
13. Sandpaper (150 Grit)

<p>1. Select weight-shot. For less than 2 ounces, BB's may be fine. Other, heavier, options are ball bearings, fishing tackle, etc.</p> <p><i>If you are using a plastic nose cone and are using more than 2 ounces of epoxy, add the weight in small increments and repeat the epoxy procedure below as required to reach your total weight. This is because epoxy generates heat during curing and this could soften and deform a plastic nose cone. To cool the nose cone during curing, rest it nose down in a bucket of ice water.</i></p>
<p>2. Ensure nose cone shoulder end has an opening big enough to pour in the weight-shot selected. For most added weight, this is ¼" – ½". Keep as much of the original shoulder structure intact as possible, as it needs to be strong.</p> <p>For heavier weight (10 lbs or more) rockets, cut off the bottom of the plastic nose cone and replace with a wood or synthetic bulkhead and steel recovery hardware attachment (U-bolt, Eye bolt, Forged Eye Bolt).</p>
<p>3. Use a long, round file to score the plastic wall of the nose cone for about 3 inches vertically up from the nose tip going towards the shoulder.</p>
<p>4. Support the nose cone so that it rests in a "point-down" position, unaided. The matching rocket airframe is useful here as a nose cone stand.</p>
<p>5. Use a scale to measure the weight-shot. Weigh it accurately, rather than estimating, for the benefit of later pre-flight and post-flight analysis.</p>
<p>6. Prepare for the next set of epoxy steps by having a stick which is strong, narrow enough to fit in the nose cone hole and long enough to reach the tip of the cone from the inside</p>

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<p>7. Mix enough 30 minute epoxy (longer than 30 minute-cure is even better) in a large mixing cup separate from the shot-weight. Use enough so that when they are blended, the epoxy will fully cover the shot-weight.</p>
<p>8. After fully blending the epoxy, add the shot-weight and stir it in slowly. Fully blend the mixture using slow strokes so as to not create air bubbles.</p>
<p>9. Pour the shot-weight / epoxy mixture into the nose cone. Use the long stick to settle the mixture in the tip of the cone evenly. Let dry in the “nose down” position for 2 hours, or more.</p>
<p>10. Select the Expanding Foam. Have paper towels nearby and wear protective gloves.</p> <p><i>The foam is needed since epoxy doesn't adhere perfectly to plastic. The foam helps to keep the weight of the shot from detaching from the nose during the extreme, rapid acceleration at liftoff.</i></p>
<p>11. Use a large mixing cup. Add 1 oz of Foam Component A. Now, slowly fill the cup up to the 2 oz mark with Foam Component B. This will create a 50:50 mixture totaling 2 oz.</p> <p>Work fast! You have 15 – 20 seconds working time. Use the mixing stick to aggressively “whip” the mixture till it turns creamy or starts to expand.</p>
<p>12. Now pour the creamy mixture into the center of the nose and watch it rise. Let it cool completely before repeating this step (it should stop rising in less than 1 minute and cool completely in less than 15 mins.).</p>
<p>13. Note: Each time you repeat the step, use ½ the previous amount of foam in the mixture. As the foam approaches the very top, try to use little enough that it won't expand over the edge. If it does, don't touch it. Let it dry and harden.</p>
<p>14. After the foam hardens, wear a respirator dust mask and cut away extra with a hacksaw or hobby saw. Then, gently grind the extra foam away and clean the surface with a Dremel Tool grinding stone.</p> <p><b>NOTE:</b> Do this step outdoors and <u>wear a dust mask!</u> This step will create a lot of <u>nasty</u> dust that you <u>don't</u> want to breathe into your lungs.</p>