

# Determining Thermal Spray Coating Costs

You think you need a thermal spray coating? The obvious question is, "How much will it cost?" It's complicated.

**Short answer:** Most coaters have minimum charges that range from \$400 to \$2500.

**Long answer:** Like everything else in life. It depends. Let's make some assumptions.

1. Your components are new and easily sprayed
2. No challenging size or geometry
3. No line of site, inside diameter issues
4. No dimension is extremely small under 1" on any surface or heavier than 50#s and larger than a dishwasher
5. No challenging substrate or coating materials (link to materials chart)
6. No rushed delivery requirements
7. No resource intensive set up
8. No post coating processes such as grinding and cleaning
9. No NRE tooling and masking requirements

Long list, isn't it. Handling, NRE (non-recurring expense), and challenging conditions drive up cost. Here are some factors left to consider.

1. Volume: Assume a premium for fewer than 10 pieces to compensate for set up and handling.
2. Coating Materials: Some common materials cost a few dollars per pound and esoteric coating stocks cost hundreds or more.
3. Surface Area: One method to estimate cost is per square inch. It can range from under \$1 to spray some lower cost materials to more than \$50 for higher value components with expensive coatings. Note: The minimum charge comes into play when you have low area, low volume projects.
4. Estimated Annual Usage: Does your job repeat or is it a one-time project.
5. Accuracy: An as sprayed +/- .0005" coating is more expensive than +/- .005"
6. Automation: In small volumes, a robotically sprayed coating has a premium. Automation saves time and money as volumes increase.
7. Process: Electric Arc Wire is less than Plasma Spraying. Vacuum and Cold Spray Processes are more expensive than Plasma.
8. Quality Control Requirements: NADCAP approved coaters have certification and testing costs that often top booth rates exceeding \$1000 per hour.
9. Coating Thickness: Ten times the coating thickness is not exactly 10x the price, but thicker coatings cost more.

Thermal spray applications range from bridges to surgical devices, aircraft engines to vacuum and sputtering equipment. Coatings are on more equipment than you can imagine. We can put almost anything with a melting point onto most metals, ceramics, and polymer materials.

Always consider the following.

1. Are there part size, geometry or material selection issues that will drive up costs or make the job impossible to spray? Remember, thermal spray is a line of site process.
2. Is your required material commercially available or “Un-obtainium”?
3. What tolerances, surface finishes and purity requirements do you need?
4. How much process control do you need? Is your part going into a jet engine or in a manufacturing process?

Look at the entire system.

1. Lifetime Costs: If the chrome oxide coated seal surface lasts 8x over your next best option, what is the real value of the coating, and the added value to your component? Always consider downtime and cost of manufacturing the part when making choices.
2. How does thermal spray compare other options? Do nothing, plating, solid ceramic or carbide, and anodizing all live in this space.
3. What are your options? Factors such as high temperature, corrosive atmospheres, molten metal or glass attack limit material choices.

Thermal spray works best when it works for you.

1. Apply the expensive coating only where you need it on a less expensive part.
2. Machine part lightening: For example, ceramic coat the wear surface on a high speed wire drawing sheave or roller rather to extend bearing life rather than making it out of high speed steel or solid ceramic.
3. More efficient heating of your processes.
4. Repair/rebuild an expensive or difficult to replace component
5. Save time over other fabrication processes.

Need more information? Give us a call at 978-745-4000 or email at [contact@falmer.com](mailto:contact@falmer.com) and we will get right back to you.

