

Q & A

THE Q & A FORUM at www.shotpeener.com is the ideal place to get advice on a wide range of topics from industry leaders and colleagues from around the world that have tackled and solved your challenges.

You don't need to register to browse the forum. If you would like to post or respond to a post, however, you do need to register and it's very simple to do. The following are a sampling of the forum's posts. Maybe you will find an answer here to an issue you're facing.

Shot Peening Non-Magnetic Parts with Steel Shots

Questioner: We are having issues with some of our tubulars cracking in shot-peened areas. We shot peen non-magnetic tubulars on the threaded sections (API Connections) with the objective to relieve machining stresses and mitigate galling. The material of the tubulars is 15-15 HS.

Could I have your opinion about the importance of shot peening these non-magnetic tubulars with non-magnetic media, benefits of doing so and risks of not using stainless steel shot. I am trying to understand the pro and cons of shot peening with carbon steel media versus stainless steel media. Would both media improve the corrosion and oxidation resistance of our tubular the same amount?

What would be the risks of shot peening non-magnetic tubulars with carbon steel media? If we were to shot peen our nonmagnetic tubulars with regular carbon steel shot, would we have a greater risk for stress corrosion cracking? Would it make them more prone to develop oxidation and corrosion? Thank you.

Answerer #1: Cast steel shot will leave a ferrous residue on the surface that will eventually rust. I assume these parts are for the oil drilling industry and there very well may be an issue with magnetization if cast steel shot is used. Sensors used to guide the drill head can be negatively effected. In my experience, peening API threads was done with SS Conditioned cut wire shot then followed up by peening with glass bead at a significantly lower intensity. This would clean the part and improve the surface finish. This additional step also could lead to increased fatigue life.

Questioner: Thanks a lot! This helps a lot!

Answerer #2: What is the issue about peening with non-magnetic media? Is there a fear of imparting magnetism to the part?

Stainless steel cut wire media can retain high magnetism. New high-density ceramic bead from St. Gobain could be used for full range of "A" peening intensities.

Questioner: We are not worried about magnetism here at this point. We are just trying to understand why it is cracking axially and radially on our shot-peened areas. Shot peening might be the cause but we are not sure.

I will make sure we use SS shot in the future.

These parts are for the oil drilling industry. What do you think about the following requirements:

- S-110 SS shots at 8-10 "A" intensity, 200% coverage
- S-100 Glass beads at 8-10 "N" intensity, 200% coverage

Thanks in advance.

Answerer #1: I would limit the S-110 intensity to .009A Max. especially if you a using regular hardness media ASR 45-52rc and not ASH 55-52rc.

Peening intensities too high with too small of media becomes abusive to the part surface.

I'm not familiar with S-100 Glass bead. Unfortunately glass bead has numerous designations for size. I'm familiar with the AMS designations such as AGB or the US Military size designation. If you can convert S-100 to one of those perhaps I can be of more assistance.

It seems like you are on the correct track to finding a proper call out for your project.

Questioner: Sorry, not sure what happened here, I did not edit the size properly. I meant 60-80 (#7) Glass Bead. I know we have used that size for other parts but I have no idea what intensity I should run it at.

Thank you for clarifying about the intensity of the S-110. I wasn't aware of that. Thanks a lot for all your help!

Questioner: I am having a real hard time finding charts or standards on what requirements I need for this process. How do you determine the size, hardness and intensity of the media? Is there some charts or document somewhere that gives recommendations for each type of material and each media combination? Any help would be appreciated. Thank you.

Answerer #1: This maybe of some help. You have to purchase it from SAE.org.

AEROSPACE RECOMMENDED PRACTICE

ARP7488 Peening Design and Process Control Guidelines