# Prips Flux

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Prips Flux is a solution that can be made in your studio to help prevent firescale during the soldering or annealing process. It works by creating a barrier to the oxygen in the air, so it will not attack the copper in the piece.

**Making Prips Flux**

1 quart water
120 grams boric acid
80 grams TSP (trisodium phosphate)
80 grams borax

Mix this with water and boil to dissolve the mixture. You might have to add more water, but it's the 3:2:2 ratio that is important, not the concentration of the solution. The only problem with making it more dilute is that you might have to spray a bit more to get full coverage. For some situations this could be an advantage.

Heating the solution will dissolve the components faster, and more will dissolve in hot water than in cold. If you dissolve the maximum amount in hot water, then upon cooling, some will precipitate out again. What's left is a fully saturated solution. The simple way to make Prips Flux is to add some water, shake well, and go do something else for a while. If, when you return, there's still undissolved salts, add some more water.

The borax is available at the grocery store (Borateem or 20 Mule Team Laundry detergent). TSP (trisodium pnosphate) is a strong alkaline cleaner often used to clean walls before painting You can usually get it in paint or hardware stores, but be sure it's actually trisodium phosphate. Because it's rather a caustic (though reasonably safe) material, some stores carry a substitute, which may be confusingly labeled. (eg.TSP brand wall-cleaner no longer contains TSP.) Read the box carefully.

Mixed from pure chemicals, Prips flux is colorless, mixing up to a slightly murky clear color. Some of the laundry detergents have coloring agents to make clothes look whiter. This may change your solution to a blue or green color. The dye has no effect on the function of the flux, so don't worry about it.

**Applying Prips Flux**

You apply it (and this is an important detail) by spraying it on the silver while gently heating the silver up enough so the spray dries on contact, as opposed to hitting as a liquid and bubbling/boiling off. The best sprayers by far are the cheap little two-tube-with-a-hinge mouth atomizers that ceramics folks sometimes use for applying glazes. It gives a much finer and more uniform spray than any sprayer bottle I've

seen, and cannot clog. You can use a sprayer bottle too, and they are easier to use, perhaps, but need to be cleaned after each use of the flux residue dries in the nozzle and clogs the sprayer.

To use it, gently brush the metal with the flame, then with quick short puffs on the sprayer, put the Prips flux on a little at a time. The idea is to coat the entire piece with a thin white crusty coating, thick enough so that reflections from the metal are no longer visible, but no more. Be careful, as you do this, neither to let the metal cool so much that the flux stays liquid (it doesn't coat evenly then), or that the metal gets so hot that it starts to discolor. Coat all the parts of your assembly, then let them cool, set up the joint.

**Soldering with Prips Flux**

Prips is a much less active flux than the paste fluxes, and doesn't burn off easily (though with enough overheating you can do it), so it gives continuous protection, and thereby completely prevents fire scale. It will work as a soldering flux IF your metal and solder are both completely clean before you start, and if your heat control is good. For most soldering jobs, a small amount of soldering flux will need to be added only in the joint area to do the soldering job. Paste fluxes such as the "Handy" or Griffin brands, oddly enough, seem to provide little or no firescale protection. In fact, with some metals (like white golds) you'll find the firescale is worse where the flux was. This is why you don't want to use much, and should keep it only in the joint area. But they are so very active while still fluid that they greatly promote solder flow, so many of us use them anyway. Batterns self-pickling flux is somewhere in between- it lasts longer and doesn't give quite the fire scale problem, but also doesn't protect quite as well.

This coating, if you are careful and don't pickle it off after soldering, can usually last through several soldering cycles; so for some complex assemblies; if you've got everything fitted before hand, you may only need to coat the parts once for a number of sequential soldering steps. Also, since the sprayers tend to cover rather more area than just your silver (like the tools and bench areas behind your soldering area), you will want to set up some sort of simple shield behind the area you're using for spraying on the flux to catch that over spray.