



Hardfacing Newsletter

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Basic Guidelines Before You Hardface



Did you know.....? The size, shape and location of the equipment or parts that require hardfacing will determine which welding process should be used. The availability of specific equipment and your skill level also will be a determining factor. Typically, hardfacing uses either stick (SMAW) or flux-cored (FCAW) welding processes. You also may choose the submerged arc welding (SAW) process.

Tips from the weld lab! First, [determine your hardfacing needs](#): build-up, overlay or a combination of the two. The build-up technique (placing layers of welds on top of each other) returns older equipment back to its original dimensions after it has been worn. Overlay is the addition of a weld layer that protects the equipment against metal loss. A combination of build-up/overlay can also extend equipment life and may be used repeatedly provided that the part or equipment remains sound.



Technology • Consider your equipment's base material. Carbon or low alloy steels are probably the most commonly hardfaced materials. Material containing higher amounts of carbon and/or alloy content tend to be more brittle and may require pre- or post-heat, or stress relieving to prevent cracking. Thicker base materials require similar pre-heating considerations, as well.

- Consider the [type of wear your equipment encounters](#) in determining the best filler metal to use. The primary types of wear are; low-stress scratching, high-stress grinding, gouging and impact and adhesive wear (also called metal-to-metal wear). Other types of wear include high-temperature and corrosive wear.
- [The least severe form of abrasive wear, called low-stress scratching](#), results when the metal slowly wears away from the scouring action of materials across the equipment. Hardfacing with carbide or chrome-carbide filler metals best protects against this type of wear, and often filler metal formulations are available to provide stress-relieving cracks that prevent spalling.
- [For high-stress grinding abrasion](#), caused by repeated crushing and grinding of materials against the equipment, the best filler metals are those containing austenitic manganese, martensitic irons or titanium carbides.
- Filler metals containing high carbide alloys and supported by austenitic manganese are the best choice when encountering [gouging abrasion](#), as these filler metals provide good impact resistance. Gouging abrasion occurs when large objects, such as rock, press against the equipment and create grooves.
- [Impact wear](#) often occurs on equipment like crusher rolls/impact hammers and results from a compressive load placing high mechanical stress on the equipment. The best protection against this type of wear is to use an austenitic manganese steel filler metal, as it offers good work hardening characteristics. To protect against adhesive or metal-to-metal wear, which occurs from the non-lubricated friction of metal parts against one another, use a martensitic hard surfacing alloy.

Contact your [Hardfacing Technologies representative](#) or Mike Korba at the Corporate office for assistance before you Hardface. mkorba@postle.com