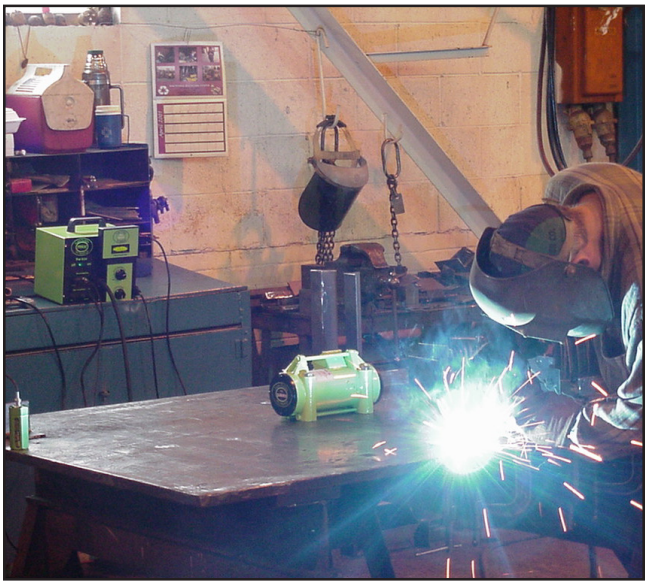
Grain Refinement Achieved by Applying Meta-Lax® Technology During Welding

Typical Welding Results



When molten metal solidifies the correct freezing temperature must be reached as the correct molecular configuration occurs. As the temperature continues to drop grains grow until they meet other grains. Concurrently a severe contraction of the liquid weld metal occurs as it becomes a solid. This contraction results in distortion and/or increased stress on the HAZ.

Change the Manner of Solidification Leads to Better Results

When the patented Meta-Lax® technology is used during welding, as identified by either Meta-Lax Weld Conditioning (MLWC) or Pulse Puddle Arc Welding® (PPAW), the manner in which the liquid metal solidifies will be slightly altered in two ways. First, there will be more centers of freezing (solidification) that will occur simultaneously. This translates into finer, more uniform weld grains which are metallurgically desirable because they tend to be crack resistant. Second, the mild pulsating of the base metal allows the molten weld metal to stay liquid a few seconds longer as evidenced by a smoother weld bead and a slightly smaller bead profile. The overall result is preventing most of the negative effects of the normal contraction on the welded joint including distortion and increased stress which also results in a crack free weld zone AND more resistance to cracking in future service.

Benefits

- prevent weld cracking (up to 95%)
- prevent weld distortion (up to 95%)
- increase service life (up to 400%)
- decrease porosity and other weld defects

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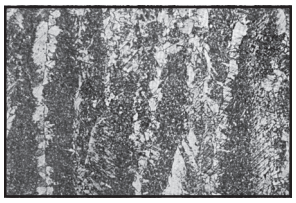
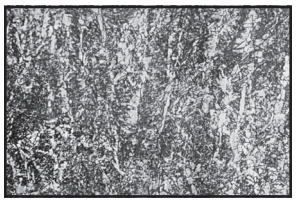


Normal Photomicrograph, courtesy Grumman Aerospace.



Grain Refinement achieved by adding Meta-Lax during welding, courtesy Grumman Aerospace.

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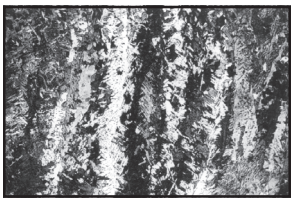
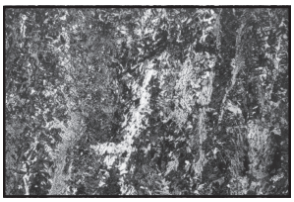


Normal Photomicrograph, courtesy Bonal Corporation.



Grain Refinement achieved by adding Meta-Lax during welding, courtesy Bonal Corporation.

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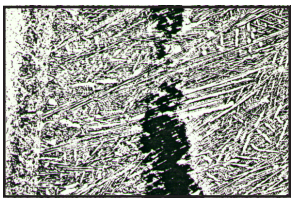
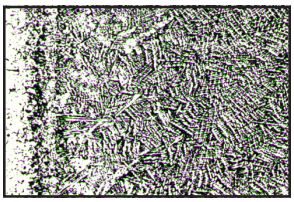


Normal Photomicrograph, courtesy Ohio State University.



Grain Refinement achieved by adding [Meta-Lax] during welding, courtesy Ohio State University.

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