Weld Heat Tint Removal Cheat Sheet

Read the colour. Pick the method. Prove the tube is clean.

Companion to: How to Remove Heat Tint from Stainless Steel Tube Welds | eliteaquachem.com/blog

1. READ THE COLOUR



First visible at about 20 to 30 nm of oxide → Above 100 nm, up to about 850 nm

Darker tint means a thicker oxide. Any visible tint signals a chromium-depleted layer underneath, and the heat-affected zone pits first.

2. PICK THE METHOD

GRINDING, BRUSHING, BLASTING

Best for: cosmetic tint on the outside.

Watch: 360 grit or finer, stainless-only tools. Brushing alone leaves the depleted layer.

PICKLING PASTE OR GEL

Best for: local outside welds, spools, site work.

Watch: cool surface only, dwell time from the supplier's TDS, rinse until no residue.

IMMERSION OR CIRCULATION

Best for: the bore and whole batches of tubes.

Watch: typical bath 10 to 15% nitric + 0.5 to 3% HF. Add an inhibitor. Log every batch.

ELECTROCHEMICAL CLEANING

Best for: visible welds and HF-free sites.

Watch: slow on long seams and cannot reach down a bore.

3. PICKLING CHECKLIST

BEFORE

- ☐ Degrease the weld area
- ☐ Descale heavy black tint first (6 to 10%, 70 to 80 °C, 10 to 15 min)
- ☐ PPE on; calcium gluconate gel on site and in date

DURING

- ☐ Apply to a cool surface only
- ☐ Follow the TDS dwell time
- ☐ Record acid strength, dissolved metal, temperature and time

AFTER

- ☐ Rinse until the water tests neutral
- ☐ Ferroxyl or copper sulphate test for free iron
- ☐ Passivate if specified; neutralise rinse water

4. PREVENT IT

- Purge the bore with argon; measure oxygen with an analyser
- Welds near 50 ppm oxygen matched AWS D18.2 colour level 3 in an ISPE-reported study
- Low heat input; joint free of oil and marker ink

5. STAY SAFE

- HF burns can feel painless for hours while damage continues
- Full-face shield, neoprene gloves, acid-resistant clothing
- Local exhaust ventilation; never apply paste to hot steel

Sources: TWI, ESAB, ISPE, Heat Treat Today, UK HSE, ASTM A967. Always follow your supplier's SDS and TDS.

Not sure which route fits your line? WhatsApp us a photo of the weld.

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