

BOR-Carbon™



Long Life Production Tubing for Extended Run Times

Benefits

- ✓ Extends tubing string life and total run time of wells
- ✓ Eliminates hole in tubing failures
- ✓ Increases mean time between failures (MTBF)
- ✓ Reduces frequency of costly workovers
- ✓ Reduces downtime on wells and lost oil production



Microstructure of boride layer below ID bore surface

Performance

20x increase in wear / erosion resistance compared to standard tubing

- ✓ Prevents rod on tubing wear failures
- ✓ Prevents pump discharge sand erosion failures
- ✓ Hardness of boronized steel surface is 1200-1900 Vickers compared to 180-250 HV for standard tubing

8x increase in corrosion resistance of ID compared to standard tubing

- ✓ Mitigates hole in tubing failures from internal corrosion pitting
- ✓ Highly resistant to H₂S and CO₂, chlorides, and produced water
- ✓ Recommended for use in wells with up to 30% H₂S and unlimited amounts of CO₂

Case hardened heat treatment performed on inner bore surface

- ✓ Diffusion of boron into the steel (Boronizing treatment)
- ✓ .005 to .015" case depth
- ✓ Cannot come loose, delaminate or peel off
- ✓ No change in tubing bore size

Demonstrated to run 2x to 5x longer than standard L80 and can be re-run

Typical Installation

- ✓ Recommended for any “problem sections” of well with history of hole in tubing failures
- ✓ Rod pumped wells
- ✓ Above the pump - install above the pump at bottom of well where rod cut hole in tubing failures are most common
- ✓ Deviated sections or angled sections – install in deviated areas of tubing string to prevent rod cut
- ✓ ESP pumped wells – install as blast joints around the pump to prevent pump discharge erosion holes from sand
- ✓ No special handling required during installation

Features

- ✓ Plain carbon steel base material
- ✓ Boronized inner bore surface of tubing and couplings
- ✓ Groove on couplings for easy identification
- ✓ 2-3/8", 2-7/8", and 3-1/2" available
- ✓ 50 to 60 ksi yield strength
- ✓ Able to withstand elevated temperatures up to 500°F
- ✓ Reduced coefficient of friction in ID bore by 20%
- ✓ Field proven performance with over 100,000 joints installed



Please contact our experts with any questions or to discuss the best solution for your unique application

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