

Continuous Copper Tube Extrusion

In the "Conventional" process, copper cathode and grade 1 scrap are melted and cast into billets each weighing around 400kg. The billets are then reheated and extruded into large tubes or shells typically 70mm in diameter. Because the shells are too large to bend, a special linear machine, known as a pilger mill, is used to draw the shells to a 'mother' tube. The mother tube is now small enough (25 – 40mm) to bend and can be drawn down to a range of finished sizes.

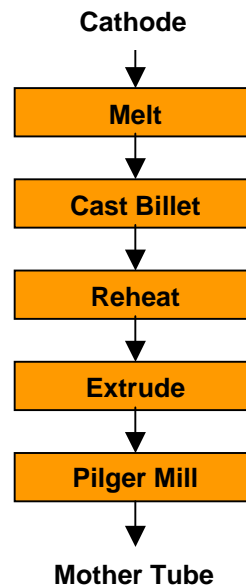
In the QX™ process, copper cathode and grade 1 scrap are melted and continuously cast into a wire rod. Two wire rods are then fed into a Conform QX machine that directly extrudes the mother tube. The mother tube is typically collected on a rotating drum with a capacity of at least 5 tonnes.

BWE has continued to develop the QX process, improving product quality and tooling costs as well as reducing capital costs.

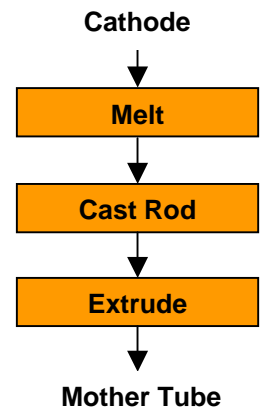
The introduction of in-line feedstock machining, which removes all oxide and defects from the surface of the copper rod, has resulted in the previously "acceptable" 40-45% flare test figure being increased to around 60%. Long-term concentricity has also improved because the rods are now a precision fit in the wheel groove. Drawing limits are now maintained for continuous runs of, typically 12 tonnes.

Critical tooling items, such as the Wheel, Die Chamber and Die, are achieving good working lives. The Mandrel, which forms the inside of the tube, currently has a working life of 12 tonnes and can only be used once. Because the Mandrel is inexpensive, this is tolerable in terms of tooling costs but it does mean that Die Chamber Assembly has to be stripped and reset between each extrusion run. Special surface coatings are now being applied and it is expected that the Mandrel life will steadily improve as these coatings are developed.

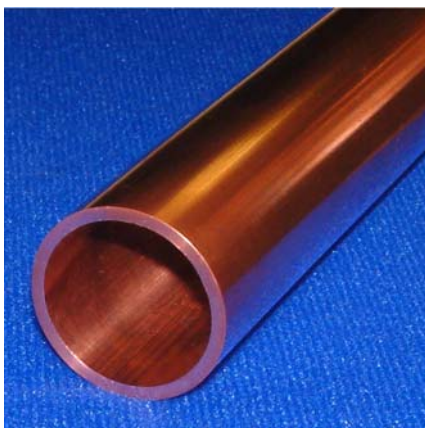
Conventional Process



QX Process



Flare Test



30 x 2.0mm Mother Tube

Features

- Vertically Cast Copper Feedstock to Mother Tube in One Operation.
- Carbon-Free Tube in Soft, Clean Condition.
- Fine Grain Structure.
- Excellent Flare Test.
- Continuous Operation for High Efficiency.
- Low Capital Cost.
- Low Running Cost.

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Cold Welding · Continuous Extrusion · Continuous Cladding · Continuous Sheathing



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