



优钻地质材料供应有限公司 PRE-MAT DRILLING SUPPLIES PTE LTD

Co Reg. No. 199900213-K GST Reg. No. 19-9900213-K
No. 48 Toh Guan Road East #06-107 Enterprise Hub, Singapore 608586
Tel: (65) 6861 5323 Fax: (65) 6861 0882 Mobile: (65) 9633 1617 / (65) 9665 2712
Email: enquiry@premat.com.sg Website: <http://www.premat.com.sg>

DRILLING GUIDELINES

Impregnated Diamond Bits

This section of the catalog is intended to provide you with some guidelines which may assist in maximizing the performance of your Boart Longyear® bit.

SOFT ROCK FORMATIONS

- Low RPM's
- Large diamonds/cutters
- Large waterways for better flushing and higher GPM flow rates
- Hard matrix for longer bit life

HARD ROCK FORMATIONS

- High RPM's
- Small diamonds/cutters
- Small waterways
- Soft matrix to expose more cutting elements

ROTATIONAL SPEEDS

Most drillers adopt the practice of choosing the rpm and bit weight they wish to use and then adjust the fine feed control to maintain this particular weight as minor variations in the formation are encountered.

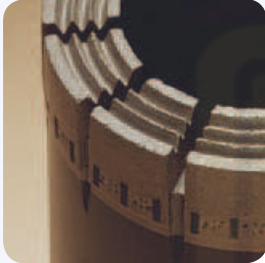
As a rule, impregnated diamond bits require higher rotational speeds to achieve penetration rates comparable with those of surface set bits. This is simply because the diamond exposure (protrusion of the diamond) is less with an impregnated bit and consequently penetration per revolution is less.

With impregnated bits, Boart Longyear recommends a quite different approach in which penetration rates are controlled with a fairly narrow range for a given rpm and the bit weight is of secondary importance. This procedure is known as the rpi (r/cm) method of drilling.

Courtesy of BOART LONGYEAR



TROUBLE SHOOTING



NEW CONDITION



IDEAL WEAR PATTERN

The face wear pattern of an impregnated bit should be relatively flat with slightly chamfered sides. Bit feels sharp, comet tails have formed to support diamonds. Diamonds release from matrix as they are worn. Gauge stays within tolerance.



NORMAL RETIREMENT

Full depth of impregnation evenly consumed. Gauge stays within tolerance.



CONCAVE FACE WEAR (rounded to ID)

Cause: (A) Often caused by excessive penetration rate for the rpm used — rpi (r/cm) too low. Also can be caused by core grinding, overdrilling.



CONCAVE FACE WEAR (rounded to OD)

Cause: (A) Insufficient water flow — Check pump and rod string for leaks; increase pump output.



GAUGE LOSS ID

Cause: (A) Overfeeding — Increase rpi (r/cm); (B) Broken formations — Cement or change to a lower bit; (C) Drilling over lost core — Check core barrel/core lifter/core lifter case; (D) Insufficient drilling fluid — Check inner tube length adjustment; check pump and rod string for leaks — increase pump output.

Courtesy of BOART LONGYEAR

TROUBLE SHOOTING



GAUGE LOSS OD

Cause: (A) Lack of circulation – increase coolant flow rate. (B) Bit being reamed down under-size hole – Check reamer shell gauge and replace if under-sized. (C) Vibration – alter rpm.



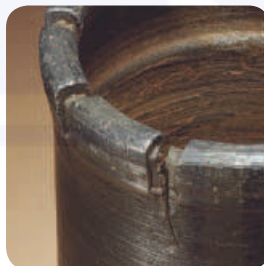
EXCESSIVE DIAMOND EXPOSURE

Matrix abrades away before diamonds have worn sufficiently, resulting in high diamond exposure and low bit life. Caused by overfeeding/over drilling – Increase rpi (r/cm), change to a lower series bit or reduce bit weight rpm.



FACE GLAZED (Diamond polished and metal bound)

Bit does not feel sharp; diamonds flush w matrix; no significant “comet tails” behind each diamond. Sand blast face or use other recommended methods to re-expose diamond. Try again with rpi (r/cm) in the 200/250 (80/100) range. If the face glazes repeatedly, change to a higher bit.



CRACKED WATERWAYS (diamonds polished)

Cause: (A) Excessive bit load; dropped rods; free fall of (wireline) inner tube in dry hole; (B) bit crushed by rod holder, foot clamp or pipe wrench; (C) Pushed down an undersized hole (i.e., reaming shell worn out).



BURNT

Cause: (A) Lack of fluid. (B) Too high a bit weight being used. – Check pump and rod string for leaks, check inner tube adjustment. Maintain coolant flow rates.

Courtesy of BOART LONGYEAR