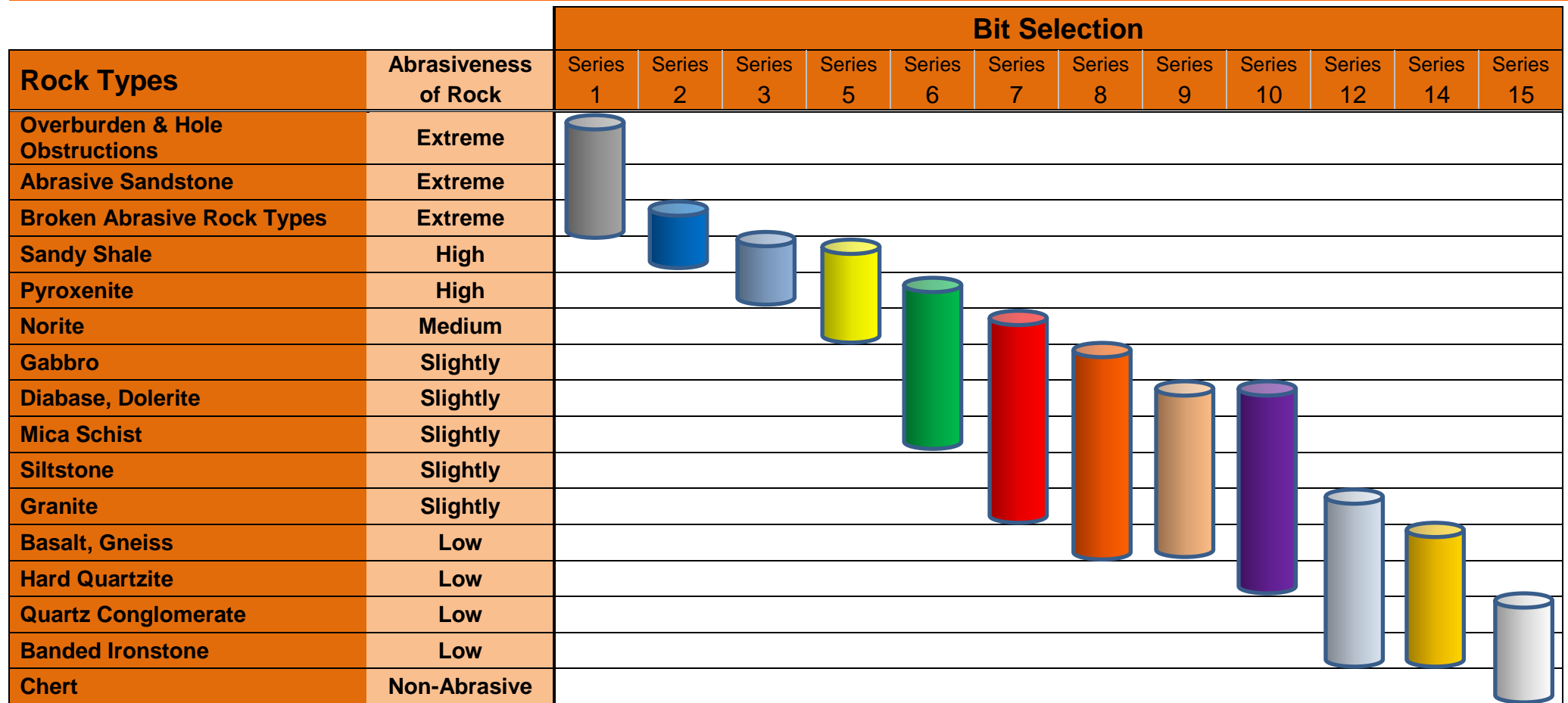




# HUD MINING SUPPLIES (PTY) LTD

## Bit Selection Chart



### Selection Criteria for HUD Impregnated Bits

- 1) Abrasiveness of rock types being drilled.
- 2) Condition of the rock being drilled – e.g. Solid, broken or variable.
- 3) Machine type – e.g. hydraulic feed, screw feed or top drive.
- 4) Power / Torque available – Note:-“Rule-of-thumb” High Power/Torque = Tougher Bond. Low Power / Torque = Softer Bond.
- 5) Weight-on-bit:- High weight = Tough Bond / Low weight = Soft Bond.
- 6) RPM – Note High RPM generally requires a softer bond type, where as low RPM's require tougher bonds.
- 7) **NOTE:** Within each bit group products can be modified to suit specific drilling requirements!

It must be understood that within every rock group there can be several variances and that the rock types given are only a guideline and depending on the conditions, bit recommendations may need to differ to those specified above (Refer to points 1 & 2). It is recommended that when starting a drill contract, that one bond either side of the selected



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## Drilling Hints

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bit is carried in case of changes in the formation being drilled. If only one type of bit is available one can obtain satisfactory results by varying the drilling parameters – eg: RPM; weight-on-bit; flushing.

### Drilling Hints

- 1) Do not start rotation with the bit on the bottom of the hole. Always start flushing, then rotation and then feed slowly until the bit starts to take weight on the bottom of the hole. Gradually increase the RPM and the weight-on-bit until an acceptable rate of penetration has been achieved. Do not over-feed as this will lead to excessive wear and early failure. Under-feeding can lead to the diamonds polishing and excessive weight having to be applied.
- 2) **BEWARE VIBRATION.** Vibration destroys the diamonds and hence the bit!!
- 3) Ensure that there is adequate flushing to lubricate the bit/rod string and effectively flush the cuttings from the hole. **NOTE:** variations in flush pump pressure indicate leaking or cracked rods. **IMMEDIATELY** cease drilling and check the rod string.
- 4) At the end of the feed stroke always allow the rod string to rotate long enough to reduce the compression on the rod string.

### Reading Your Bit

- 1) The ideal bit face wear should be reasonably flat with well developed comet trails behind the diamonds and a low degree of diamond “pull-out”.
  - 2) **CONCAVE** wear on the face indicates “over-feeding”. In this case either reduce the weight-on-bit or increase the RPM.
  - 3) **CONVEX** wear patten indicates “under-feeding”. In this case either increase weight-on-bit or reduce the RPM.
  - 4) Sheared or broken diamond indicates excessive “VIBRATION”. Check rod lubricant and adjust RPM until vibration disappears.
  - 5) Highly exposed diamonds indicate that a tougher bond should be used or alternatively a higher RPM can be used.
- A “Rule-of-thumb” is that     (A) the higher the RPM - - the harder the bond reacts.  
  (B) the lower the RPM - - the softer the bond reacts.

### In-Hole Bit Sharpening

This can be carried out in different ways:

- 1) Reduce the flushing volume to retain cuttings at the bit face for a longer period.
- 2) Reduce RPM whilst maintaining weight-on-bit until penetration rate increases.
- 3) Increase weight-on-bit whilst maintaining RPM.

**NOTE:- ALL THE ABOVE MUST BE CARRIED OUT BY COMPETENT DRILLERS TO AVOID DAMAGING THE BIT OR BURNING IN!!**

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