

Cutting Tool Materials

Properties :-

(i) Hardness

(ii) Toughness

(iii) Hot hardness

(iv) Wear Resistance

(v) Thermal Conductivity

(vi) Coefficient of Friction

$$H_T > H_W$$

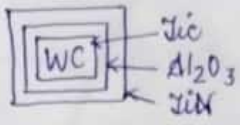
$$1.35 < \frac{H_T}{H_W} < 1.5$$

Oxidation Resistance

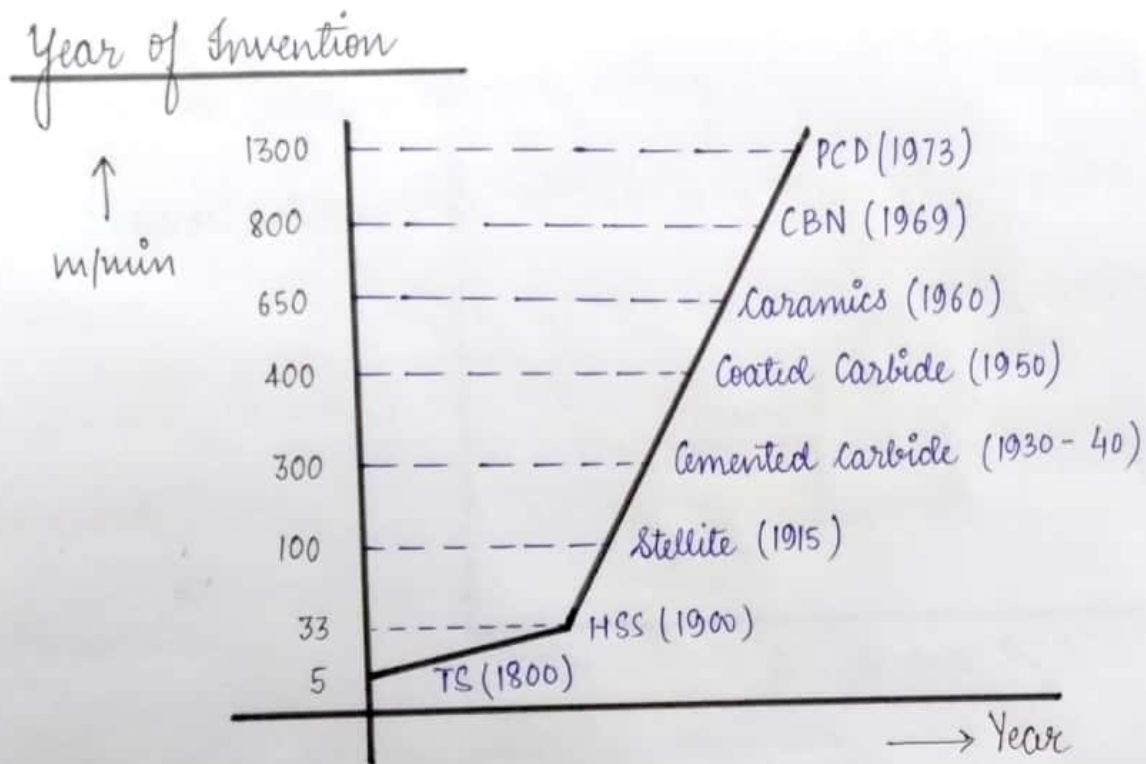
Corrosion Resistance

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Materials and Compositions:-

- | | | |
|------------------------------------|---|------------|
| (1) Carbon Tool steel | (0.6% to 1.5% C) | 5 m/min |
| (2) High Speed Steel | (HSS 18:4:1) 18% W, 4% Cr, 1% V | 33 m/min |
| (3) Stellite | (W, Cr, Ni, Mo, Mn, Si and Co) | 100 m/min |
| (4) Cemented Carbide | (WC + Co) | |
| (5) Coated Carbide |  | 400 m/min |
| (6) Ceramics | Al_2O_3 , CH_2O_3 , Zr_2O , TiN | 650 m/min |
| (7) Cubic boron Nitride (PBN) | - | 800 m/min |
| (8) Poly crystalline Diamond (PCD) | | 1300 m/min |

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