

# Metalwork

## KEY WORDS



## METALWORK KEYWORDS

**Keywords with pictures to trigger your memory.  
A Revision tool for Junior Certificate Metalwork.**

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Author: Alma Ui Fhlannchadha

Scoil Phobail Mhic Dara, Carna, Co.na Gaillimhe

## 1

## NATURES MATERIAL

## PERIODIC TABLE OF ELEMENTS

								boron 5 B 10.811	carbon 6 C 12.011	nitrogen 7 N 14.007
								aluminum 13 Al 26.982	silicon 14 Si 28.086	phosphorus 15 P 30.974
vanadium 23 V 50.942	chromium 24 Cr 51.996	manganese 25 Mn 54.938	iron 26 Fe 55.845	cobalt 27 Co 58.933	nickel 28 Ni 58.693	copper 29 Cu 63.546	zinc 30 Zn 65.39	gallium 31 Ga 69.723	germanium 32 Ge 72.61	arsenic 33 As 74.922
niobium 41 Nb 92.906	molybdenum 42 Mo 95.94	technetium 43 Tc [98]	ruthenium 44 Ru 101.07	rhodium 45 Rh 102.91	palladium 46 Pd 106.42	silver 47 Ag 107.87	cadmium 48 Cd 112.41	indium 49 In 114.82	tin 50 Sn 118.71	antimony 51 Sb 121.76
tantalum 73 Ta 180.95	tungsten 74 W 183.84	rhenium 75 Re 186.21	osmium 76 Os 190.23	iridium 77 Ir 192.22	platinum 78 Pt 195.08	gold 79 Au 196.97	mercury 80 Hg 200.59	thallium 81 Tl 204.38	lead 82 Pb 207.2	bismuth 83 Bi 208.98

## ELEMENTS



Iron (Fe)



Carbon (C)



Copper (Cu)

## MATERIAL

Steel

Brass

PVC

# 2

## NATURES MATERIAL

### States

Solid

Liquid

Gas

SOLID

LIQUID

GAS



Ice

Water

Steam

3

# METAL

**Ferrous = With Iron**

## FERROUS

**Iron**



**Steel**

**Mild Steel**



**Carbon Steel**

**Cast Steel**



**High Speed Steels**

**Steel Tools**

**Stainless Steel**



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# METAL

**Non-Ferrous = Without Iron**

## NON-FERROUS

**Aluminium**

**Copper**

**Lead**

**Zinc**

**Tin**

**Brass**



## ALLOYS

**Bronze**

**Soft Solder**

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# METAL

## PROPERTIES OF METAL

Strength

Hardness

Ductility

Stiffness

Malleability

Brittle

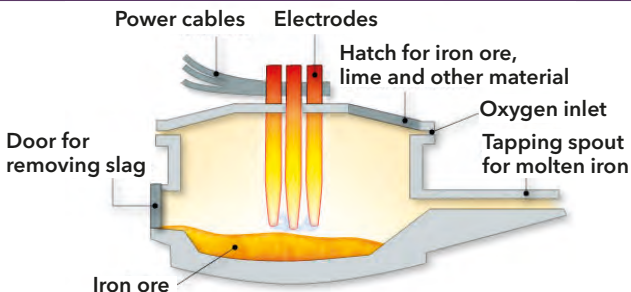
Plasticity

Elasticity

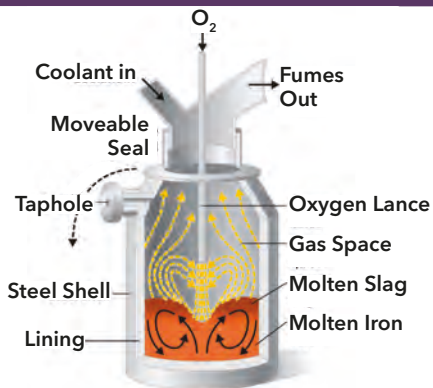
Conductivity

## THE FURNACE

## ELECTRICAL ARC FURNACE



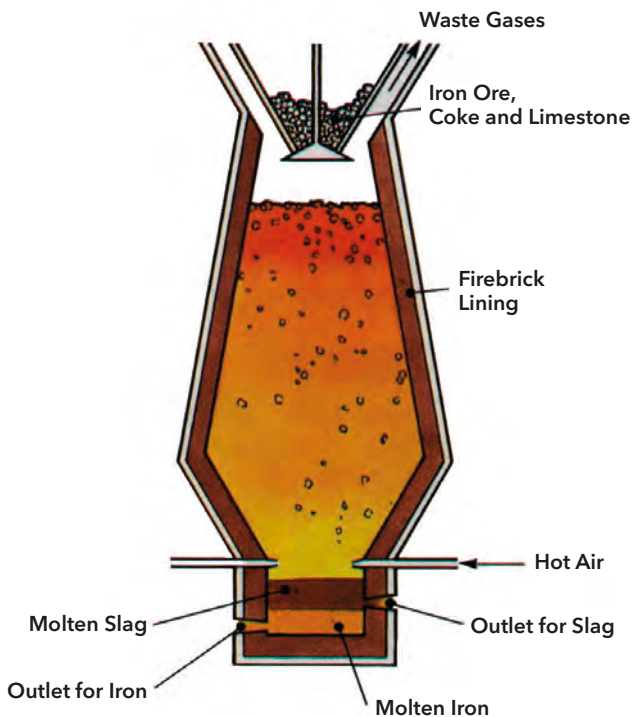
## BASIC OXYGEN FURNACE





## THE FURNACE

## BLAST FURNACE



## THERMOPLASTICS

Acrylic



Polyethelene



PVC



Nylon



## THERMOSETTING PLASTICS

Polyester Resins



Polyurethane



# 9

## PLASTICS AND WOOD

**Sawing**



**Polishing**

**Filing**

**Joining**



**Drilling**

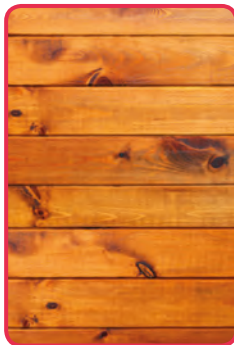
**Shaping with Heat & Bending**



**Tapping**

**Pressure Shaping**

## SOFTWOODS

**Red Deal****Red Cedar****Parana Pine****Larch****White Deal**

## HARDWOODS



Mahogany



Teak



Beech



Oak



Ash

## MANUFACTURED BOARDS

**Plywood****Block-Board****Chipboard****Harboard**

Equipment and  
Personal Care

Clothing

Hair

Shoes



Dangers to Skin



Approved Personal  
Protective Equipment  
must be worn



Dust and Flames



Eye Protection

Health



Behaviour

**Floor**

**Bench**

**Operating  
Machines**

**Protective  
Measures**

**Cleaning  
Machines**

**Storage and  
Handling**



**Heating  
Materials**

**Fire Hazards**

**Fire  
Extinguishers**



## TOOLS

Scriber



Ruler



Try Square



Punch



Dividers



Compass



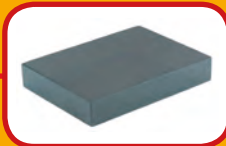
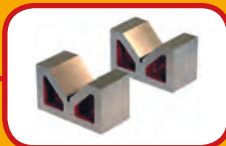
Odd Leg Calipers



## TOOLS

**Outside Calipers****Bevel****Engineers Protractor****Centre Square****Combination Set****Inside Calipers**

## TOOLS

**Key Set Ruler****Surface Plate****Scribing Block****V-Block****Micrometer**

## TOOLS

**Vernier Calipers****Wire Gauge****Thread Gauge****Radius Gauge****Feeler Blade**

## FILING



**Cross Filing**

**Draw Filing**

**Square File**

**Half Round File**

**Round File**

**Square**

**Triangular**

## TOOLS

**Vises**

**Clamps**

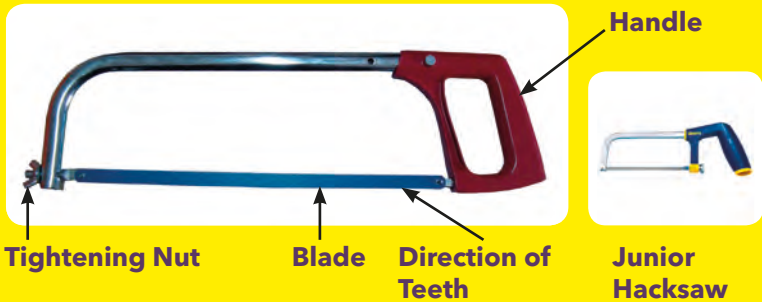
**Bench Vise**

**Hand Vise**

**Vise Clamps**



## THE HACKSAW



## ENGINEERING HAMMERS

Ball Pein Hammer



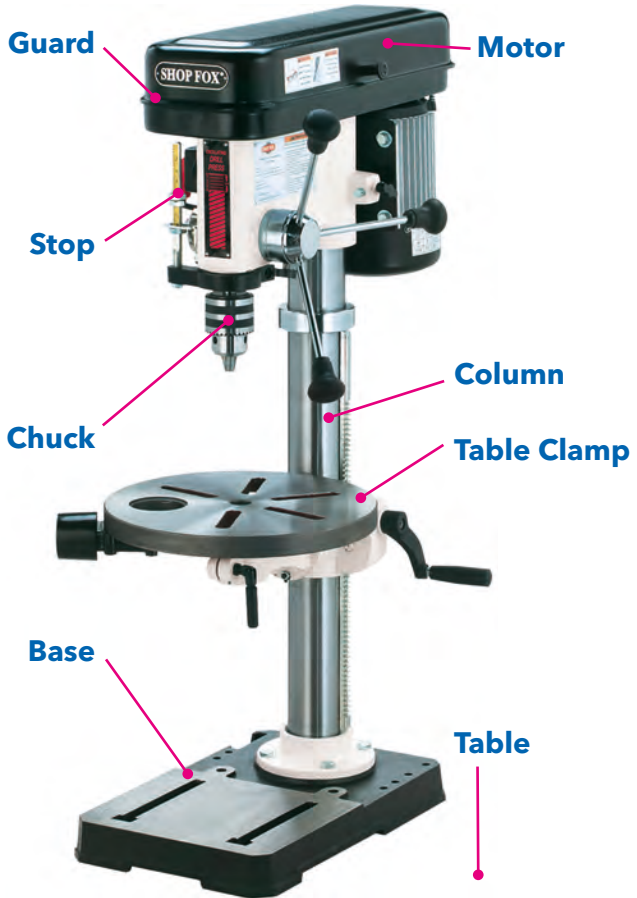
Cross Pein



Soft Hammers



## DRILLING MACHINE



22

# DRILLING

## ELECTRIC HAND DRILL



Electric Hand Drill



Chuck

Key



Drillbits





Heart

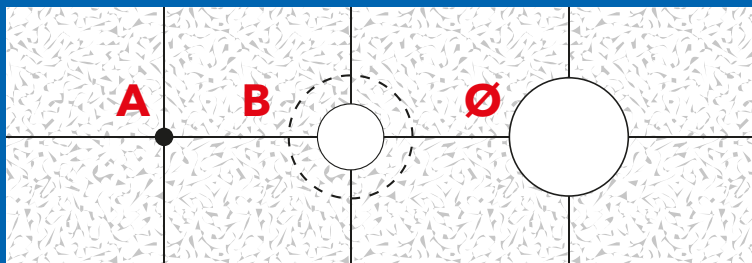
(A) Centre Point

Ø Diameter

(B) Pilot Hole

Flank

Tapping Hole

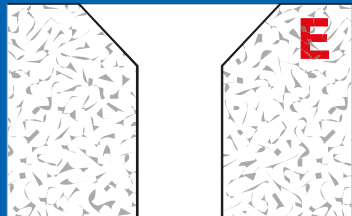
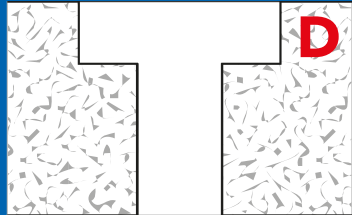
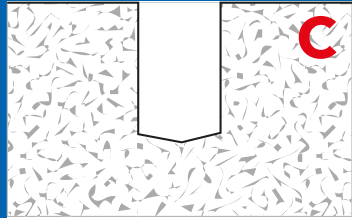


## CHISELLED EDGE

Heel

The Pad

The Shank

**(C)** Blind Hole**(D)** Counterbored**(E)** Countersunk

## TAPPING



**Tapping Wrench**

**Taper Tap**

**Second Tap**

**Plug Tap**

## SCREWING

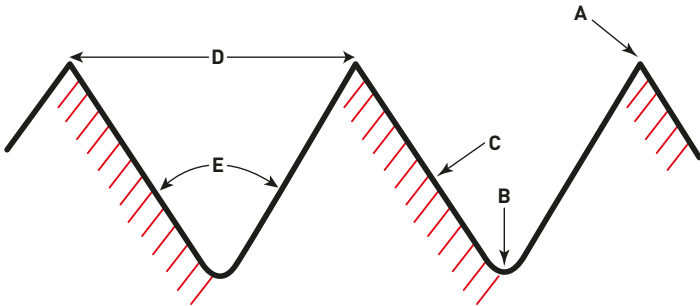


Die

Stock

Cutting a Thread

## THREADS



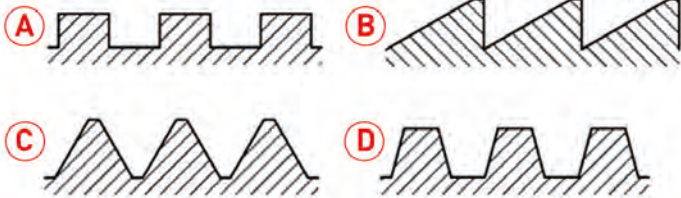
(A) Crest

(B) Root

(C) Flank

(D) Pitch

(E) Thread Angle



**Isometric (C)**

**Buttress (B)**

**Square (A)**

**Acme (D)**

**Plain Washer**



**Plain Hex Nut**

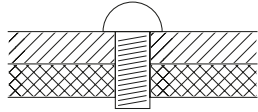
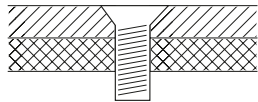
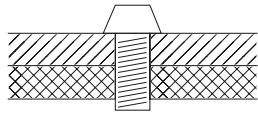
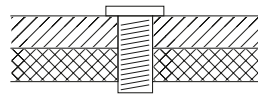


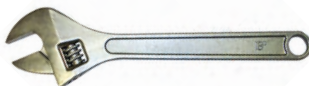
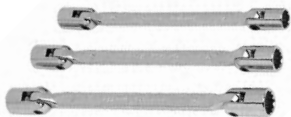
**Bolt****Lock Nut****Nylock****Castle Nut****Wing Nut****Spring Washer**

**Hex Head****Cheese Head****Raised Head****Round Head****Grub Screw**



## THREADS

**Button Head****Countersunk Head****Pan Head****Flat Head****Pop Rivet**

**Open Spanner****Ring Spanner****Adjustable Spanner****Stilson****Box Spanner****Socket Spanner**

**Flat Screwdriver****Philips Screwdriver****Pliers****Allen Key****Vise Grips**

**Soft Soldering****Fluxes****Soldering Irons****Sliver Solder****Pilot Light****Gas Torch****Oven****Brazing****Spelter****Brazing Flux****Brazing Fireplace****Glueing**

## Sheet Metalwork



## Snips



## Mallet



## Ball Pein Hammer



## Folding Bars



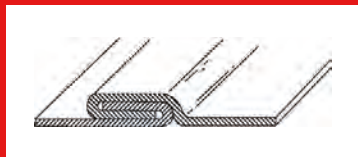
## Groove Punch



## Stakes



## Joints



**Tools****Hammer or Mallet****Hollowing****Straightening****Raising****Smoothing****Turning/Twisting****Scrolls****Hallmarks**

## FORGE



Anvil

Sets

Sledge Hammer

Punch

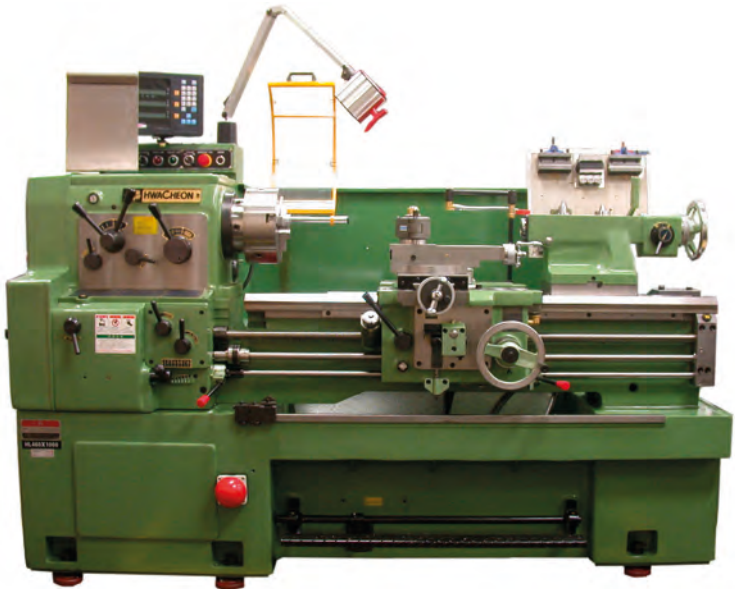
Hardie

Flatter

**FIRE TOOLS****Slice****Poker****Rake****Forge Tongs****HEAT TREATMENT****Hardening****Tempering****Annealing****Normalising****Crust/Face Hardening**



## LATHE

**Bed****Carriage****Head Stock****Tool Post****Tail Stock****Cutting Tools**

**WORK**

**FACING OFF**

**TURNING**

**DRILLING**

**KNURLING**

**PARTING OFF**

**COMPUTER**

**CNC LATHE**



