T.C.
MİLLÎ EĞİTİM BAKANLIĞI

METALÜRJİ TEKNOLOJİSİ

TEKNİK YABANCI DİL (İNGİLİZCE) 2
222YDK020

Ankara, 2011

- Bu modül, mesleki ve teknik eğitim okul/kurumlarında uygulanan Çerçeve Öğretim Programlarında yer alan yeterlikleri kazandırmaya yönelik olarak öğrencilere rehberlik etmek amacıyla hazırlanmış bireysel öğrenme materyalidir.
- Millî Eğitim Bakanlığınca ücretsiz olarak verilmiştir.
- PARA İLE SATILMAZ.

CONTENTS

EXPLANATION

KOD	**222YDK020**
ALAN	**Metalürji**
DAL/MESLEK	**Döküm**
MODÜLÜN ADI	**Teknik Yabancı Dil -2 (İngilizce)**
MODÜLÜN TANIMI	Dökümcülükle ilgili İngilizce kelime ve kavramların tanınmasını, okunmasını ve yazılmasını hedefleyen öğrenme materyalidir.
SÜRE	40/32
ÖN KOŞUL	
YETERLİK	Dökümcülükle ilgili temel kavram ve araç-gereçleri İngilizce ifade etmek
MODÜLÜN AMACI	**Genel Amaç:** Gerekli ortam sağlandığında, dökümcülükle ilgili temel kavram ve araç-gereçlerin İngilizcelerini dilbilgisi kurallarına uygun olarak okuyup ifade edebileceksiniz. **Amaçlar:** **1.** Dökümcülükle ilgili temel kavramların İngilizcelerini doğru olarak okuyabileceksiniz. **2.** Dökümcülükte kullanılan araç ve gereçlerin İngilizcelerini doğru olarak okuyabileceksiniz
EĞİTİM ÖĞRETİM ORTAMLARI VE DONANIMLARI	Dil laboratuarı; Kulaklık, bilgisayar ve donanımları, kütüphane, projeksiyon vb. Bireysel öğrenme ortamları; İngilizce sözlük, yardımcı teknik kitaplar. İnternet ortamı, bilgi teknolojileri vb. İşletmeler ve üniversiteler
ÖLÇME VE DEĞERLENDİRME	Modül içinde yer alan her öğrenme faaliyetinden sonra verilen ölçme araçları ile kendinizi değerlendireceksiniz. Öğretmen modül sonunda ölçme aracı (çoktan seçmeli test, doğru-yanlış testi, boşluk doldurma, eşleştirme vb.) kullanarak modül uygulamaları ile kazandığınız bilgi ve becerileri ölçerek sizi değerlendirecektir.

INTRODUCTION

Dear Student,

One of the most considerable reasons why the humanity advances is the production and “Research and Development“. The countries which are paying more money from their incomes are getting an easier and more comfortable life style because the countries which don’t renew their technology become underdeveloped day by day.

New technology develops thanks to foreign language and the one who knows foreign language. Hardworking people can read the magazines, books and internet documents in English so can follow the recent technology on their own branches or jobs by learning foreign languages and technical foreign languages. They broad their mind. So they can be more effective and useful people for their country. Lazy people can’t follow the recent technology since they don’t have enough foreign language. So they are blocked in their factories or workshops.

We have aimed to improve your occupational English in to a higher level with the “Technical English 2“. In this case, you can learn the technical words and terms in English and follow the recent technology in the world more closely.

We wish you success in your job and life…

LEARNING ACTIVITY-1

AIM

By the end of this learning activity you will be able to acquire the equivalents of the basic terms about foundry.

SEARCH

- Search the topics given below on internet and in university libraries from English sources.

1. MAIN TERMS OF FOUNDRY

1.1. Casting

An artifact process of introducing molten metal into a cavity of the required shape, using gravity, pressure or centrifugal force.

Picture 1.1: A typical steel casting picture

Picture 1.2: A typical aluminum casting

1.2. Alloy

A substance having metallic properties, composed of a metal and one or more elements, usually possesses qualities different from those of the constituents.

Picture 1.3: A car's rim made of aluminum alloy

1.3. Element

It's such a pure material that cannot be decomposed into materials by chemical methods. Iron, nickel, chrome, carbon, aluminum, copper are all elements.

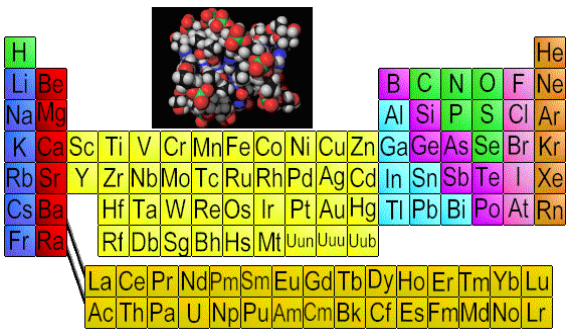


Table 1.1: Periodic Table of Elements

1.4. Melting

Metal melting is the process of producing a liquid metal of the required composition at the required rate, and with the required amount of superheat while incurring the minimum cost.

Picture 1.4: A typical molten steel casting into a ladle

1.5. Mould

The form, usually made of sand, which contains the cavity into which is poured to make a casting.

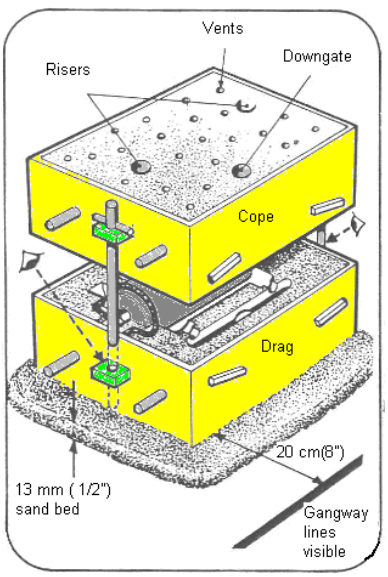


Figure 1.1: A mould with cored

1.6. Core

A shape made in ***core sand*** and baked hard in a ***core oven***, which is inserted into the mould before pouring to form an internal cavity of some part of the casting which cannot be shaped by the pattern. After the casting has cooled, the core is broken up and removed.

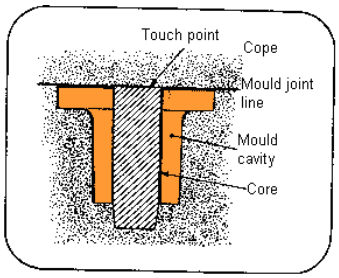


Figure 1.2: A vertical core in a mould

Touch print

- The use of a touch print eliminates the top print in the cop box.
- More suitable for block cores as illustrated in the section with a simple flat back pattern with a 'touch' print core. (See, Figure.1.2**)**

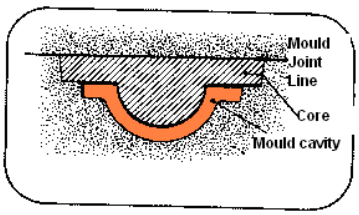


Figure 1.3: A hanging or cover core

Cover / hanging print

- Useful where it is needed to eliminate the use of a top (cope) box.
- Eliminates a hanging section (cod) of sand. (See, Figure.1.3)

Balance print

- Eliminates the need for other core holding techniques (i.e. studs, chaplets).
- Extended print provides additional support to lock and secure the core in position. (See, Figure. 1.4)

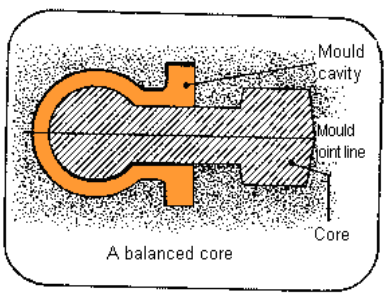


Figure 1.4: A balanced core

APPLICATION ACTIVITY

Read the basic concepts in English about foundry correctly.

Steps of Process	Suggestions
➢ Write the English Words those are used in the Main Terms of Foundry. ➢ Learn the words correctly that you determined by writing repeatedly.	➢ Repeat the terms that you have just learnt. ➢ Prepare a pocket dictionary with these terms. ➢ You can follow the foundry and different foundry methods on the internet.

CHECKLIST

If you have behaviors listed below, evaluate yourself putting (X) in “Yes” box for your earned skills within the scope of this activity otherwise put (X) in “No” box.

Evaluation Criteria	Yes	No
1. Have you written the English Terms about foundry?		
2. Have you learnt the terms correctly by writing them correctly?		

EVALUATION

Please review your"No" answers in the form at the end of the evaluation. If you do not find yourself enough, repeat learning activity. If you give all your answers "Yes" to all questions, pass to the "Measuring and Evaluation".

MEASURING AND EVALUATION

Answer these questions as *Yes* or *No*

	Evaluation Criteria	Yes	No
1.	Can a Foundry man draw a technical drawing?		
2.	Can a Foundry man work on the various machines?		
3.	Can a Foundry man use the program “Auto cad”?		
4.	A Foundry man can not cast a mechanical part which is used in Space Technologies.		
5.	A person who works on Industrial Casting can cast a statue from tinned bronze..		
6.	A person who works on Industrial Casting can not work in Investment Casting.		

EVALUATION

Please compare the answers with the answer key. If you have wrong answers, you need to review the Learning Activity. If you give right answers to all questions, pass to the next learning activity.

LEARNING ACTIVITY-2

AIM

You will be able to learn the equivalents of the tools and equipment used in the foundry when the necessary equipment is obtained

SEARCH

Search the tools and equipment used in the foundry from the factories around, maintain a catalogue and find the English equivalents.

2. THE TOOLS AND EQUIPMENT USED IN THE FOUNDRY

2.1. Moulding Box

The moulding box is used for making a mould material.

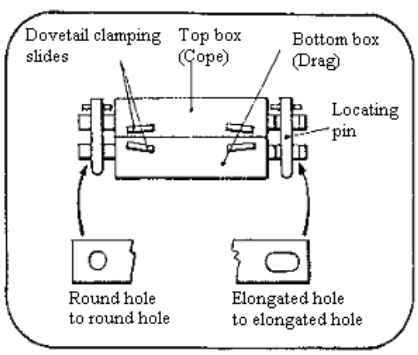


Figure 2.1: A couple of moulding boxes

- Select two boxes – the chosen boxes should have enough space for the runner and riser system around the pattern
- Check condition of box location holes
- Locate top box onto bottom box to round the hole
- Round hole
- Check clamp slides for dovetail arrangement

2.2. The Sand

2.2.1. Moulding Sand

- Advantages:
  - Comparatively cheap.
  - Readily available.
  - Suitable for short run and jobbing work.
  - Withstands casting temperatures of high melting point metals.
  - Has flexibility to take up almost any shape for casting.
  - Sands and additives can be used *to* create special properties for particular purposes.
  - In certain instances it can be re-cycled; i.e., reclaimed for re-use.
- Disadvantages:
  - Longer production time.
  - New mould has to be made from pattern for each casting.
  - Waste sand must be disposed of.
  - Castings are generally not as dimensionally accurate as those produced by die casting.
  - Additional processes may be needed to deal with problems like 'burn on' and metal penetration.
- Sand may be classified into three broad categories:
  - Natural sands.
  - Synthetic sands.
  - Special purpose sands.

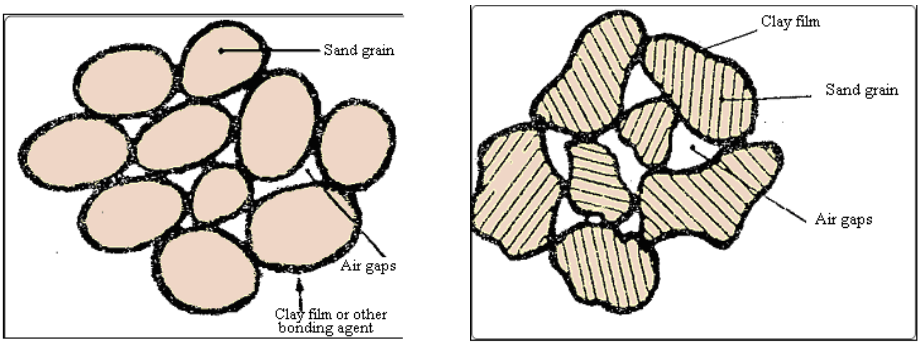


Figure 2.2: Types of Sand Grains in common use

2.2.2. The Facing Sand

- Using a 3mm (⅛ ") sieve, shake facing sand over the pattern.
- Carefully pack sand around the pattern until it is about 25mm (1") thick.

Excessive thickness of facing sand is unnecessary and increases costs. It is only necessary to cover the surface of the pattern (See, Fig.2.3.)

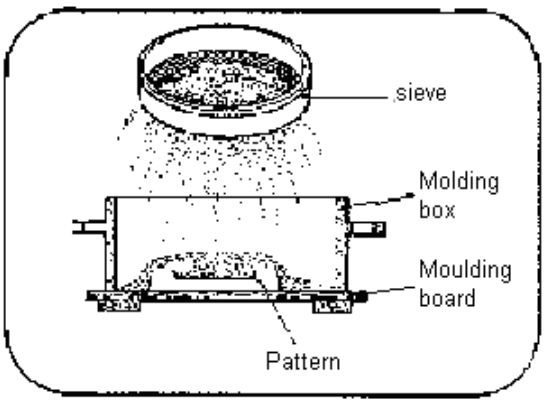


Figure 2.3: Using the facing sand.

2.2.3. The Backing Sand

Sand generally used for moulds, for filling in the mould behind the facings and layers (See, Fig. 2.4.).

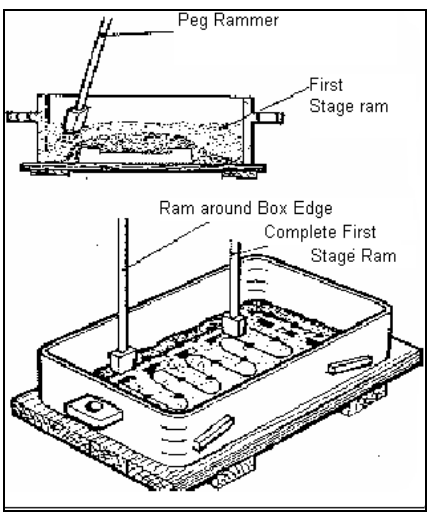


Figure 2.4: The Backing Sand

2.2.4. The Core Sand

Silica sand to which a binding material has been added in order to obtain good cohesion and porosity after drying for purpose of making cores.

2.3. The Feeding System

Supply hot metal to the feeder head of an ingot mould or to the riser of feeding head in a casting to prevent the formation of shrinkage cavities as the metal contracts on cooling

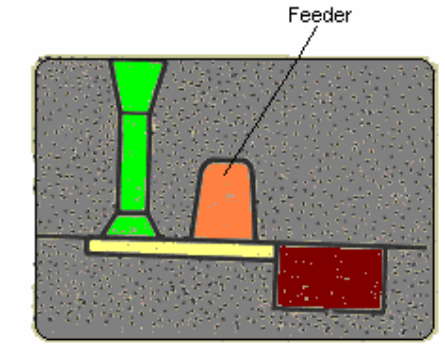


Figure 2.5: A typical feeder

2.4. The Gating System

That part of the running system through which molten metal enters the casting cavity. Sometimes it is used as a general term for the whole running or gating system. (See, Fig. 2.6.)

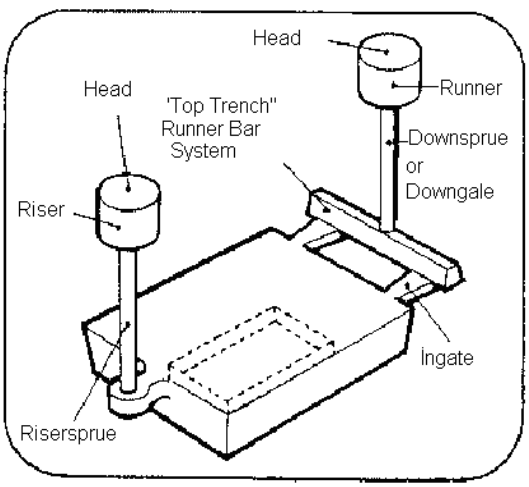


Figure 2.6: A Gating System

2.4.1. Downgate

A vertical channel is used for conveying molten metal from the top of the mould to the ingates of the casting. (Look at Figure 2.6)

2.4.2. Sprue Base

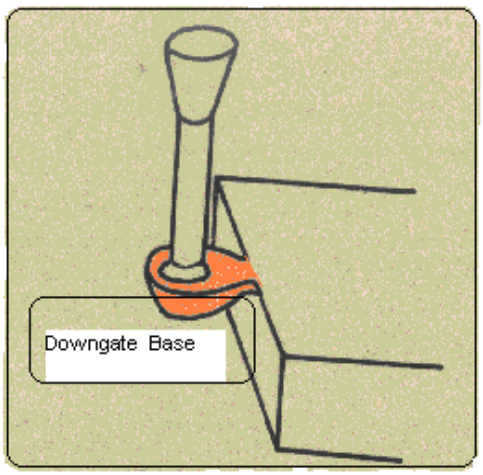


Figure 2.7 : Sprue Base

It is appearing a simple Gating System without top trench in figure. 2.7. Back part of the ingate was deepened. Under this part of sprue is called Sprue Base.

Sprue base is a place in which its speed is dimming of the molten metal that is falling down through the down sprue while it is changing its direction. Besides, solidifying metal drops are kept in the sprue base while the molten metal's being poured down for the first time.

2.4.3. Pouring Basin

A basin in the cope which the molten metal is poured and from where it passes down the gate. (Look at figure 2.6)

2.4.4. Top Trench

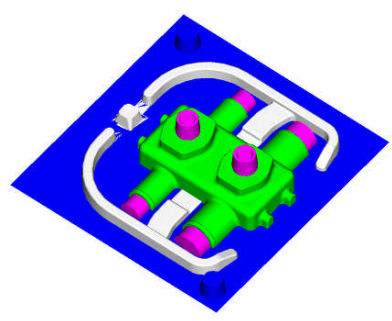
A channel through which molten metal or slag is passed from one receptacle to another. In a casting mould that portion of the gate assembly which connects the downgate or sprue to the casting. (Look at figure 2.6)

2.4.5. Ingate

The opening through which metal is poured into the mould. Then it passes along runners to the spaces made vacant by the withdrawal of the patterns. (Look at figure 2.6)

2.5. Pattern

A model of wood, metal, plaster, resin or other suitable material, around which the mould cavity is formed. (See, Picture.2.1.)



Picture. 2.1. A Typical Pattern

2.6. The ladle

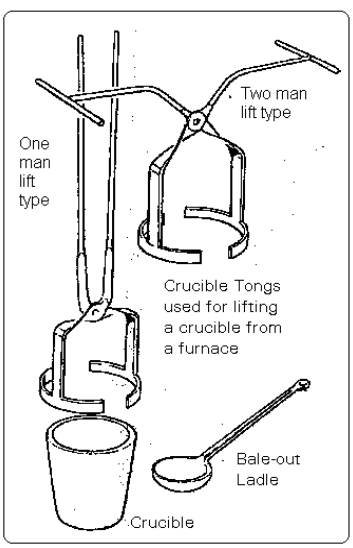


Figure. 2.8. Crucible and Bale out Ladle

In some furnaces, the metal is melted in a crucible, which can be lifted out of the furnace using crucible tongs and carried, using a shank.

There are two basic types of ladle: Bale-out, and refractory lined steel shell, plus carbon based crucibles. (See, Fig.2.8.)

- Bale-out ladle

These are usually in the size range 40 to 80cm (16-32in) diameter and are almost always carried by hand. They are mainly used for the hand pouring of light metals. (See, Fig.2.8.)

- Refractory lined steel shell

This type ranges in size from 10cm (4in) diameter x 20cm (8in) deep, which can be carried by one man, through the intermediate sizes which are fitted to a shank and carried by two men, to the largest sizes mounted on bogies, and those which can only be manipulated and carried by the help of a crane. This type is usually used for the eavier metals. (See, Fig.2.9)

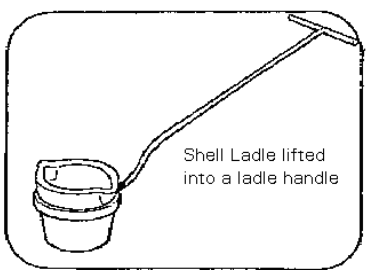


Figure. 2.9. Refractory lined steel shell

- Ladle securing straps

This is a simple latching device made of mild steel rod to suit the ladle. Formed to retain ladle in place in handle or shank. (See, Fig.2.10.)

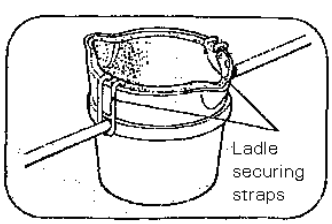


Figure. 2.10. Ladle securing straps

- Shanks
  - Single-ended shank; also used for crucibles. (See, Fig.2.11.)
  - Double-ended shank; also used for crucibles. (See, Fig.2.11.)

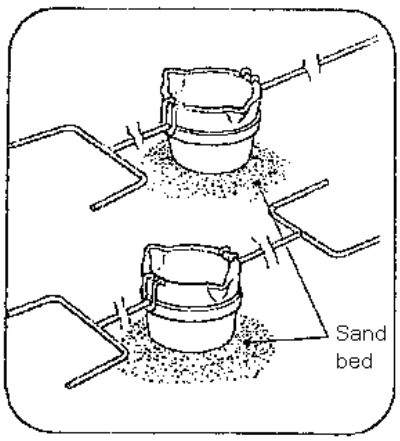


Figure. 2.11. Shanks

- Reducing collar

This fits into standard shank to enable a smaller ladle or crucible pot to be used. (See, Fig.2.12.)

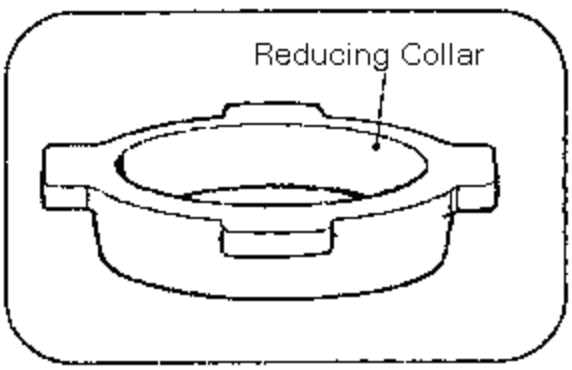


Figure. 2.12: Reducing collar

2.7. Melting Furnaces

A wide range of furnaces are used for melting metals, the type is used being determined by the metal to be melted. A foundry establishment will normally have a melting facility to suit its needs, whereas a foundry training centre will have a melting facility to cater for a range of casting alloys.

2.7.1. Crucible Furnaces

- Crucible furnaces utilize a refractory pot which can be fixed as a semi permanent feature, or removed from the furnace after each melt. (See, Fig.2.13.)
- There are several types of crucible furnace units in use:
  - Lift-out/Push out.
  - Bale-out.
  - Tilting.

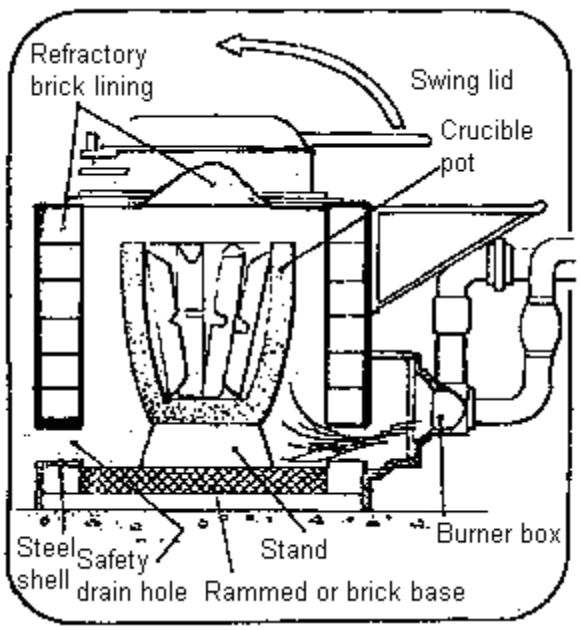


Figure. 2.13. A Crucible Furnace

- A lift-out Crucible Furnace

The lift-out crucible is sited either above floor or in a pit below floor level.

Fuel is coke, oil or gas burned with natural or forced draught/air supply for combustion.

Metals are all non-ferrous. (See, Fig.2.14.)

Push-out crucible furnaces provide an alternative method of removing the crucible from the furnace. Metals are all non-ferrous. (See, Fig.2.14.)

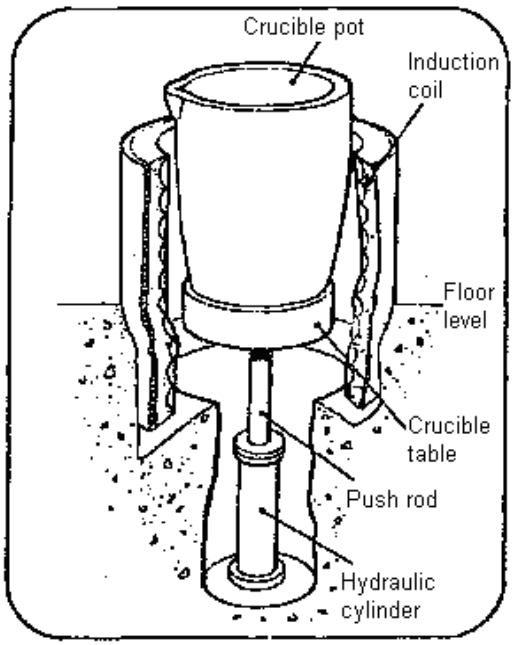


Figure. 2.14: A lift-out Crucible Furnace

- Automatic Bale-Out Furnace

The automatic bale-out furnace is ideally suited for melting small amounts of metal at frequent intervals, i.e., for gravity die casting or aluminum jobbing work. (See, Fig.2.15.)

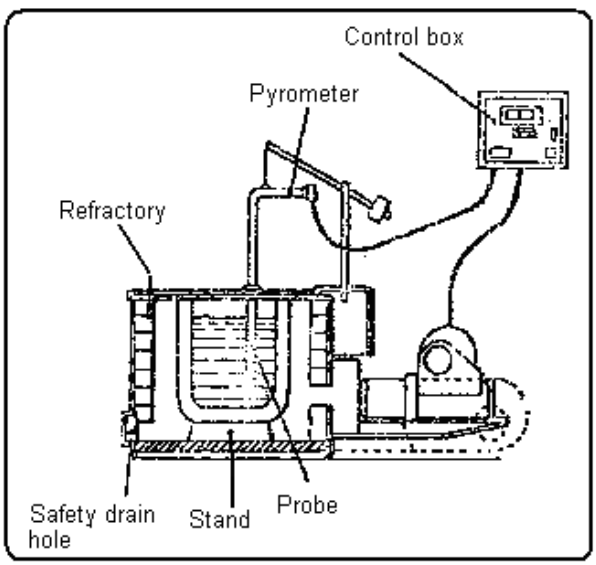


Figure. 2.15: An Automatic Bale-Out Furnace

- Manually Controlled Bale-Out Furnace

The manually controlled bale-out furnace has features similar to automatic control furnaces. (See, Fig.2.16.)

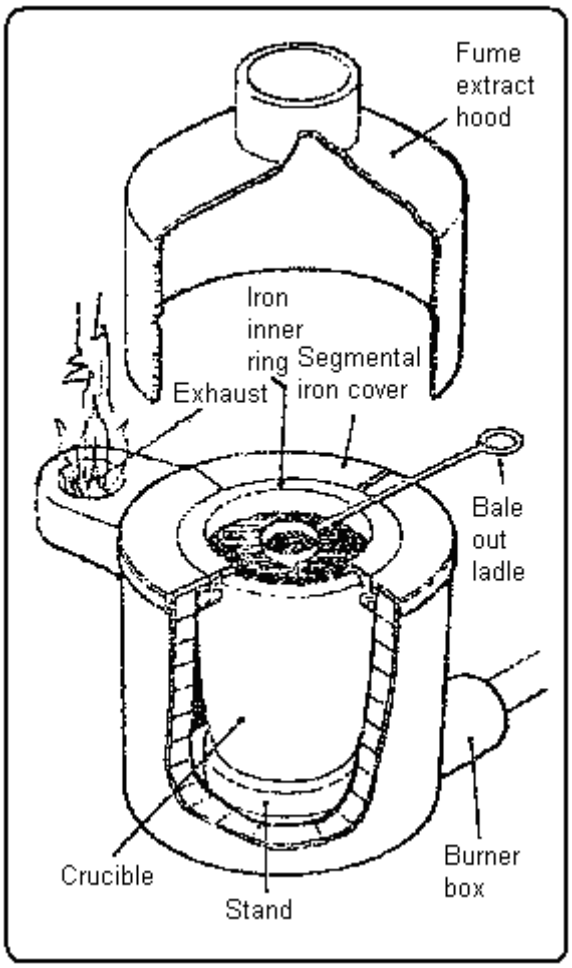


Figure. 2.16: A Manually Controlled Bale-Out Furnace

- The tilting crucible is suitable for larger quantities of metal.
- Batch production is made of different alloys by melting them.
- The furnace tilts about a central axis.
- Ideal metals are aluminum and copper based

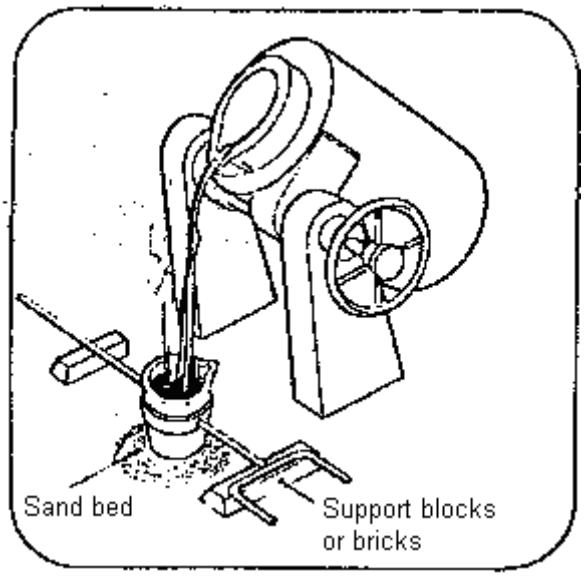


Figure. 2.17: A Tilting Crucible Furnace

- Alloys. Iron can be melted but other furnaces are more suitable.
- For removal of molten metal, the furnace is shut down and the tilting mechanism is operated. (See, Fig.2.17.)
- Reverberatory Furnace

This is a long horizontal furnace which uses either oil or gas for its source of heat. The floor, or hearth of the furnace is gently sloped and a tapping hole is located at the lowest point. (See, Fig.2.18.)

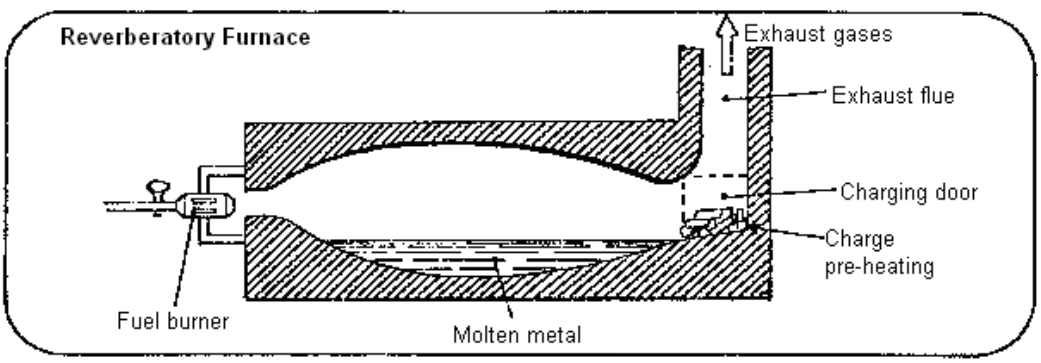


Figure. 2.18: A Reverberatory furnace

2.7.2. Cupola Furnace

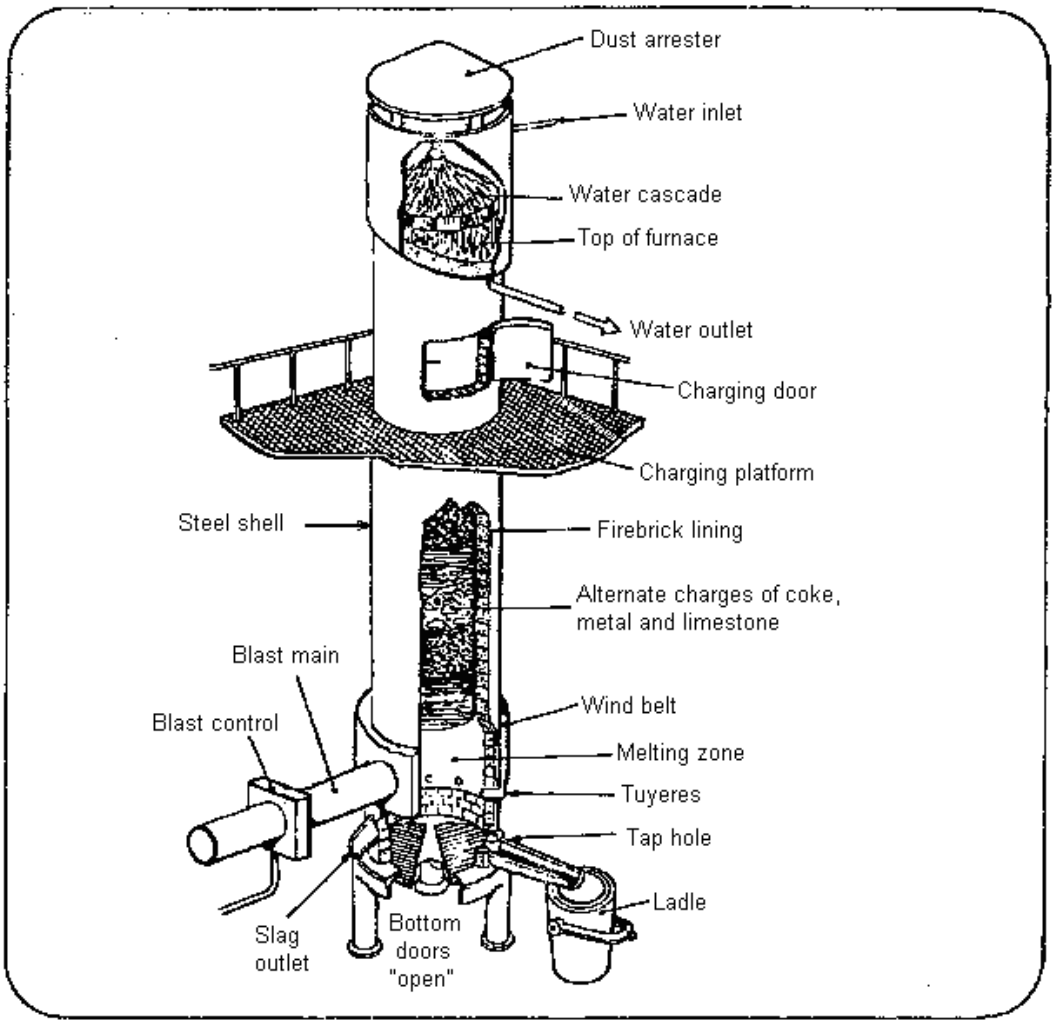


Figure. 2.19. A Cupola Furnace

- Reverberatory Furnace

This is a vertical shaft furnace consisting of a shell lined with refractory material in which the charge is fed in through a door at the top and molten metal is 'tapped-out' at the bottom.

The charge consists of metal (pig iron, steel scrap, cast iron scrap, foundry scrap) coke and limestone.

The cupola is a simple, uncomplicated furnace with the lowest capital cost per unit of output. It is easy to maintain and very versatile. The fuel is used efficiently because the charge is pre-heated by the hot waste gases.

Unfortunately, there is a high emission of fumes, smoke and grit and exhaust cleaning equipment is required to conform to present day environmental legislation. The most commonly used fume cleaning equipment is the 'wet arrester' as shown at the top of the furnace in the illustration.

The capacity of a cupola furnace is measured by the output rate of molten metal and can be from 1 to 35 tons per hour, dependent *on* the internal diameter of the shaft. Shaft diameters range from 1 to 9 feet (30 to 270cm) and shaft height from 10 to 80 feet (3 to 24m). (See, Fig.2.19.)

2.7.3. Induction Furnaces

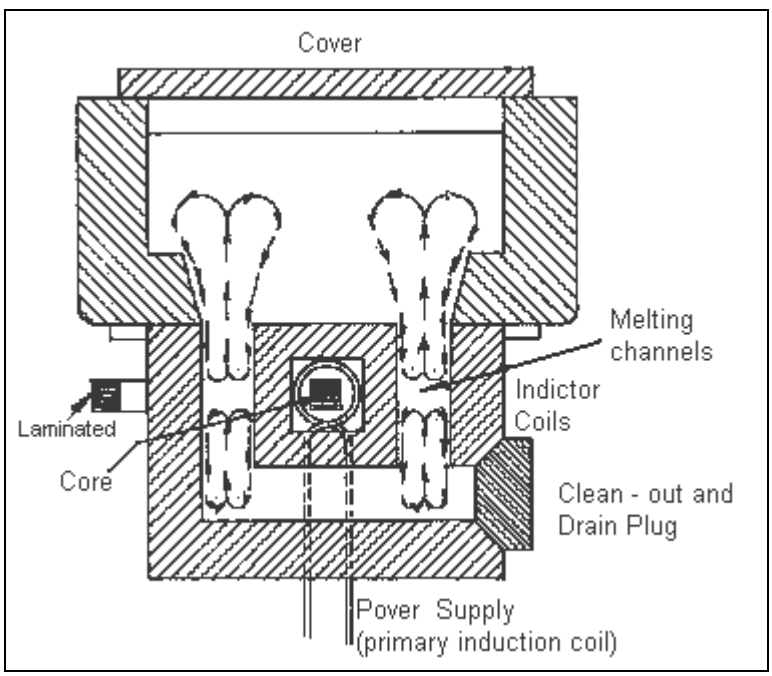


Figure.2.20. A Channel Induction Furnace

A high voltage electrical source from a primary coil induces a low voltage, high current in the metal (secondary coil) to be melted. The high induced current in the charge metal provides the necessary heat for melting. A crucible of high resistivity is used for preventing induced currents and therefore melting being produced in the crucible itself. The crucible is made of material with a high thermal conductivity to aid heat transfer.

Induction furnace arcs are ideal for melting and alloying with minimum metal loss, but little refining of the metal is possible. Therefore, these furnaces are not normally used with a slag, although a protective flux covering may be used. There are two main types of induction furnace: channel and coreless.

The channel induction furnace (See, Figure 2.20) has an iron core in the form of a ring. A primary induction coil is wound round this at some convenient positions. The current from this induction coil produces a changing magnetic flux in the core. The core and furnace are so designed that channels, carrying the molten metal, form a loop which passes close to, and through the core. The changing magnetic flux in the core induces a secondary current in the loop of molten metal generating heat which is then circulated into the main well of the furnace, which is situated above the channels.

The rapid circulation of molten metal, due to electrical and thermal effects, provides a useful mixing action. It is essential to maintain the furnace at least one third full of metal; solid charge being added above the heel of molten metal. Occasionally, the metal core and associated channel are positioned on the side of the main furnace well, but this design takes up more floor space. Other types of channel furnaces have two separate chambers; one for melting, and the other for holding the metal prior for casting. The latter type is particularly useful for die-casting operations. Channel induction furnaces are normally used for melting lower melting point alloys, e.g., aluminum, copper-based alloys of low melting point, or as a holding for the higher melting point metals e.g., cast iron.

- Coreless Induction Furnace

Coreless induction furnaces (See, Figure 2.22.) normally have a cylindrical steel shell and do not employ internal iron cores and therefore no internal molten metal channel. Basic or acidic linings can be used and capacities vary from less than a kilogram for precious metals and laboratory work to more than 15 tones for large steel casting requirements. A helical coil of flattened copper tubing is wound round the lining. This coil carries the electric current which induces a current in the metal charged to the furnace. The induced current produces the heat required to melt the charge and also provides a vigorous stirring action of the metal once molten. The induction coil is normally protected with insulating varnish and asbestos tape. To prevent heating of the steel shell due to the effect of stray currents and the fact that the steel shell will have magnetic properties, magnetic shielding, using packets of silicon steel laminations is employed. These laminations take the form of a yolk around the shell. Alternatively, the shell can be made from non-magnetic materials. The furnaces usually have tilting facilities and the frequencies vary from 500 cycles per second (medium frequency) to in excess of 1,000 cycles per second (high frequencies) while a few furnaces operate from a medium frequency supply on as low as 15 cycles per second.

The coreless induction furnace has largely replaced the crucible furnace, especially for melting high melting point metals and alloys; the higher the melting point the higher the frequency required. Hence this furnace is used for melting steels, high alloy steels, stainless and magnetic steels, nickel chromium heat resisting alloys and alloys containing expensive alloying elements, e.g., cobalt, tungsten, vanadium, nickel and chromium, and applications in which low carbon content and the avoidance of carbon pickup is a necessity. Recently, the coreless induction furnace has replaced some cupola melting operations due to the improved pollution control.

The coreless induction furnace is ideal for straight remelting and alloying, since a high degree of control over temperature, furnace atmosphere and metals can be achieved while the induction current provides good circulation of the melt. However, it is of little use where metal-slag refining is required, since the slag is not effectively heated by the induced current. (See, Figure 2.22.)

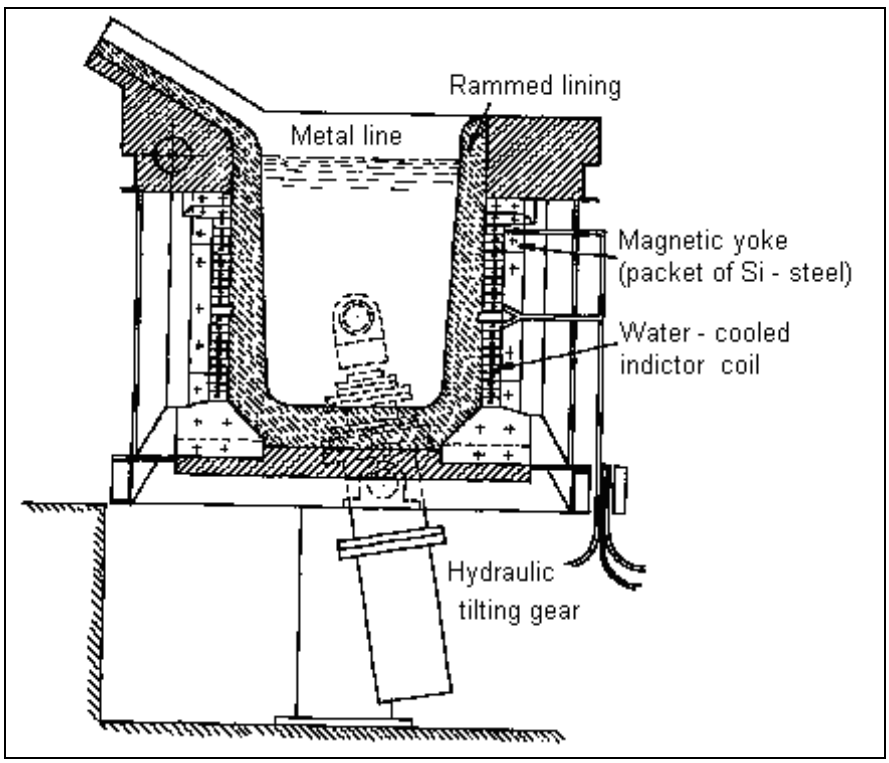


Figure. 2.22. A Coreless Induction Furnace

2.8. Hand Tools And Equipment

- Rammers

The hand rammer, or peg, pin or peen rammer, is used for packing sand into the moulding box.

The flat or floor rammer is used for consolidating the final layer of sand. Usually has a steel shaft with a cast-on bottom section. (See, Figure. 2.23.).

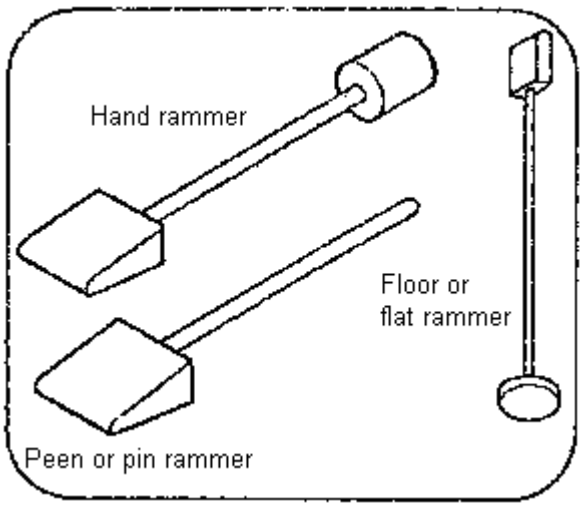


Figure 2.23: Rammers

2.8.1. Gate knife

- Similar to heart and square, it is used for cutting ingates and feeders and for repairing moulds. Made of spring steel, it is used in two different ways:
- The tool is held in the same way like a pencil, with fingers positioned towards the end being used. The thumb and second finger support and position the tool. The first finger is held on top. The end of the tool not in use rests in the 'V' between the thumb and first finger.

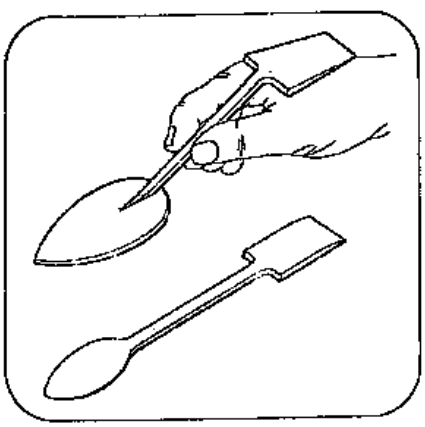


Figure.2.24. Gate Knife

- The tool is held with the first finger extended on top of the end being used, with the thumb resting along one side of the centre portion with the second, third and little fingers are folded under to support the tool between themselves and the palm of the hand, the end of the tool not in use passing up the centre of the hand to rest at the junction of the base of the thumb and wrist. (See, Figure 2.24.)

Heart and square

This tool is used for finishing mould surfaces and shaping joints. It is usually made of steel and is useful if the areas to be sleeked are too small to allow a trowel blade to be used. It is normally held in the same way like a trowel.

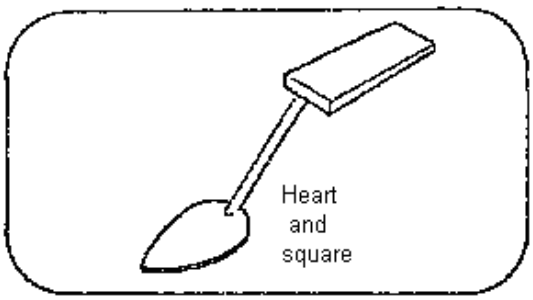


Figure.2.25. Heart and square

Corner sleekers

Used to sleek internal and external 90° corners. The action is to draw the sleeker along the corner, holding it up at the leading edges so that the smoothing action is achieved with the back edge

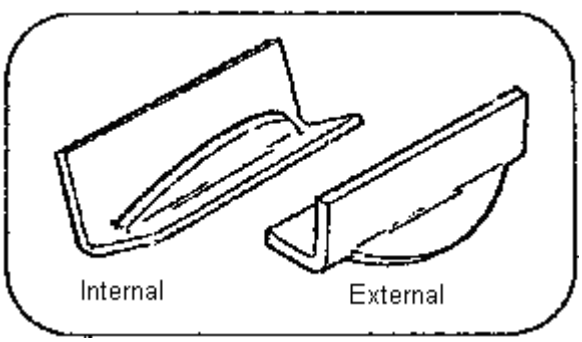


Figure.2.26. Corner sleekers

2.8.2. Trowels

The trowel is the most widely used moulder's tool. It is used for finishing and repairing moulds, cutting ingates and making joints. It is made of steel with a wooden handle. It can be moved in any direction provided the leading edge is always tilted slightly upwards to clear the sand surface, the smoothing action is achieved with the back edge.

The trowel is also used for cutting and finishing ingates and runners. It needs a sharp edge for these tasks since it will be used as a knife to make vertical cuts in the sand. It is used in the repair of damaged areas and parts that have broken away. Fresh sand is built up on the part that has broken away; it is then shaped to the required profile.

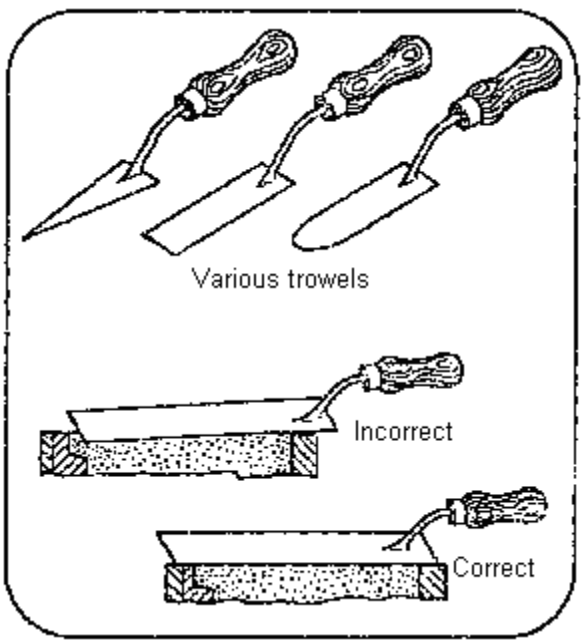


Figure.2.27. Trowels

2.8.3. Vent Tools

The simplest one is made of stiff wire 1/16 in diameter, pointed at one end and may have a wooden handle fitted to larger diameter types. It's used for making holes in the mould after ramming up to permit the escape of gasses generated during pouring.

Flexible venting material may be used where complex shapes have to be vented. It is put in position during ramming up operation.

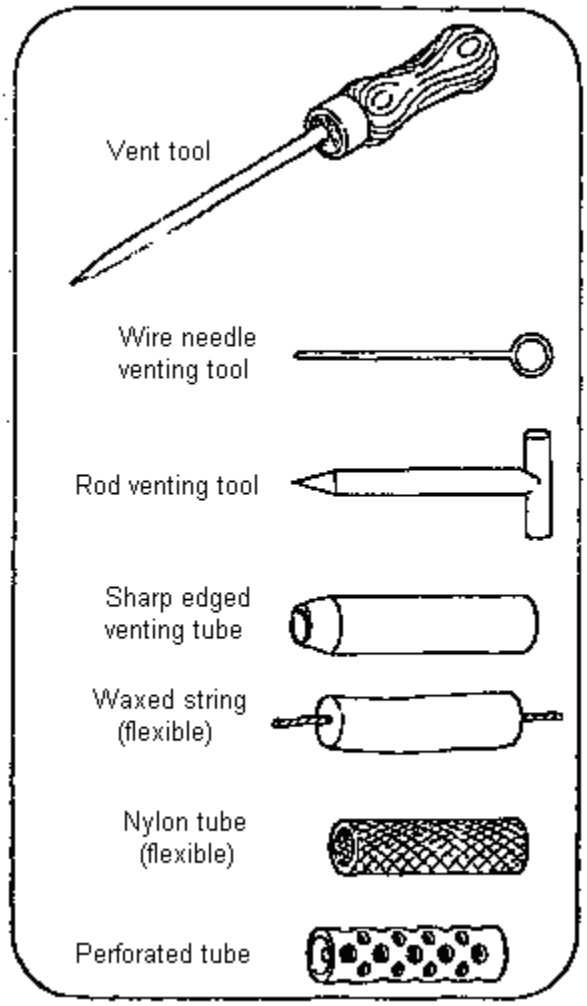


Figure.2.28. Vent tools

2.8.4. Cleaner And Boss Tool

- Cleaner

This tool is used for lifting dirt or loose sand out of the mould, and for finishing the bottom and sides of deep, narrow, openings. It is made of spring steel. It is held in a similar way to a pencil, with fingers around the flat surfaces. Both ends of the cleaner, foot and flat, are used for finishing moulds. The foot end is used for lifting out dirt from the bottom of deep sections and cut sections of sand from narrow ingates. The cleaner is used for sleeking surfaces where no other tools can reach.

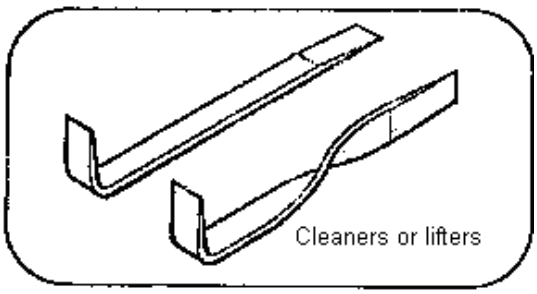


Figure.2.29. Cleaner

- Boss tool This tool is used for sleeking around a boss and making up prints around a core.

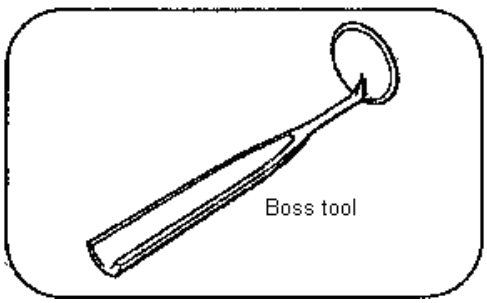


Figure.2.30. Boss tool

- Quick make gate knife tools

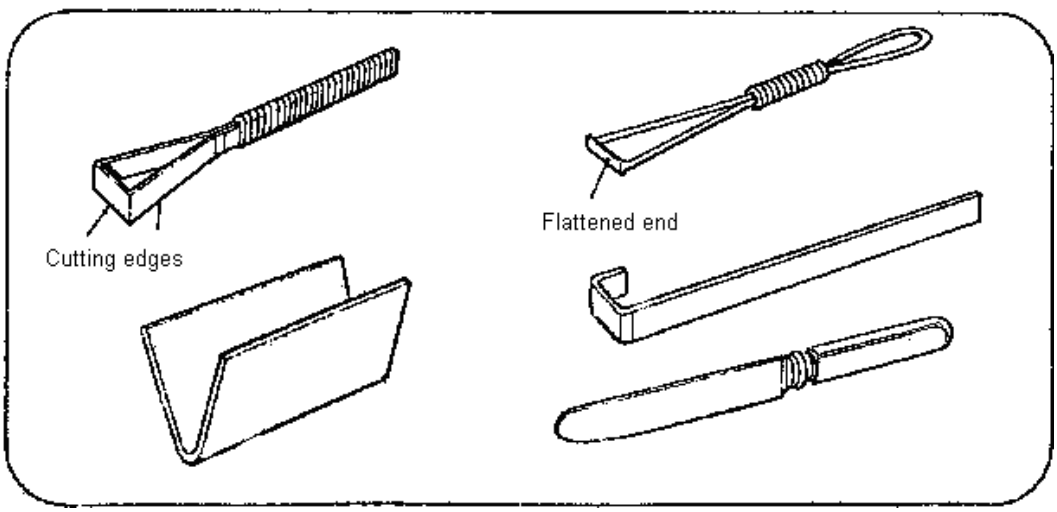


Figure.2.31. Quick make gate knife tools.

- Spoon tools

These are double ended tools in various shapes and sizes, having a spoon or scoop shape at each end. They are used for scooping and finishing curved surfaces for which flat tools would be unsuitable.

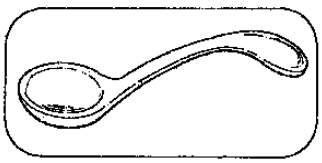


Figure.2.32. Spoon tools

- Hand bellows

These are used for removing waste sand from the mould cavity, after withdrawal of the pattern. Air lines may be used,but bellows are useful as a standby.

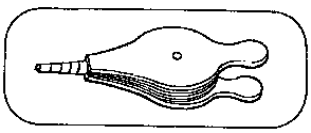


Figure.2.33. Hand bellows

- Moulding Box

A container, generally made of metal, into which sand is rammed around a pattern, to produce a mould.

The topmost section is known as the 'cope'.

The middle section (if used) is known as the cheek or mid-part.

The bottom section is known as the 'drag'.

Lugs are fixed to each end of the boxes to take locating or box pins to ensure proper registration of the parts of the mould.

Clamping slides are provided on the sides of the boxes to enable them to be securely clamped together using dovetail clamps**.**

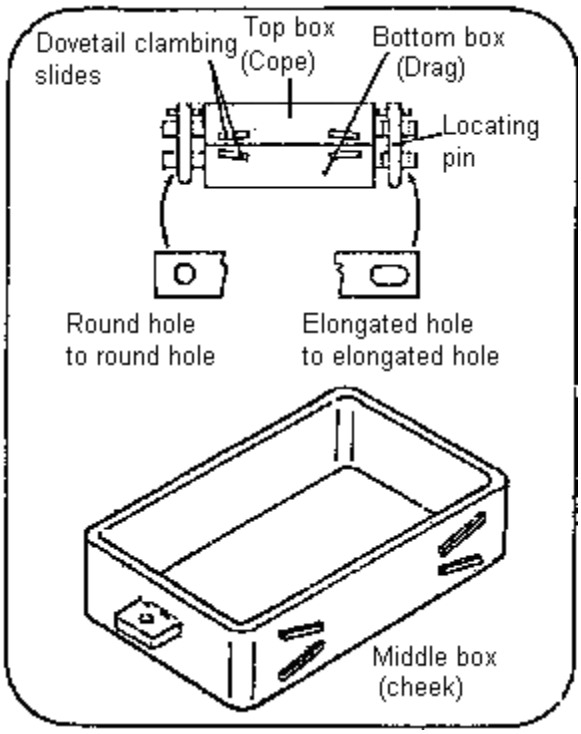


Figure.2.34. Moulding Box

- Rapping/lifting plate

A metal plate having one plain and one tapped hole, to accept rapping or lifting irons.

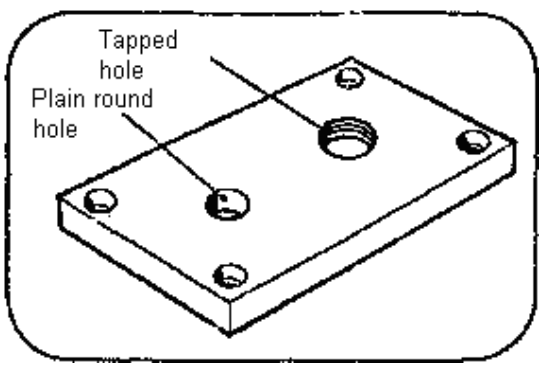


Figure.2.35. Rapping/lifting plate

- Rapping bar and spike

A metal rod inserted into the plain hole of the rapping plate is then struck sharply to loosen the pattern from the mould.

- Lifting screw

An iron or steel rod used for lifting or drawing the pattern from the moulding sand. One end screws into the threaded hole in the lifting plate, the other end is eye-shaped to facilitate ease of handling.

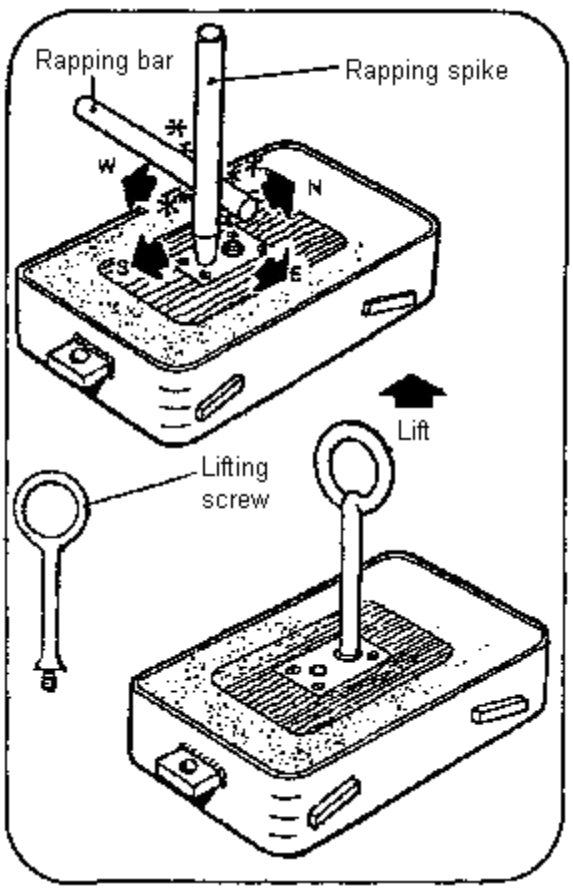


Figure.2.36. Rapping bar and spike

2.8.5. Shovels And Spades

These are necessary for handling sand and other materials, like a wheelbarrow.

The fork is used for coke and stone handling.

The rake is used for removing foreign objects from sand piles, and for leveling moulding beds.

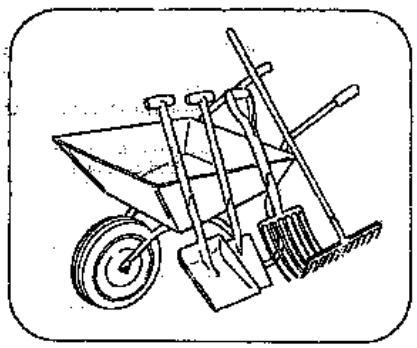


Figure.2.37. Shovels and spades

2.8.6. Sieves And Riddles

A sieve is necessary for preparing fine sand for facings and other purposes. Riddles are coarse, having mesh sizes from 3-13mm ('/8" to 1/2") or more. Sieves are fine, having mesh sizes from six to twenty holes per inch.

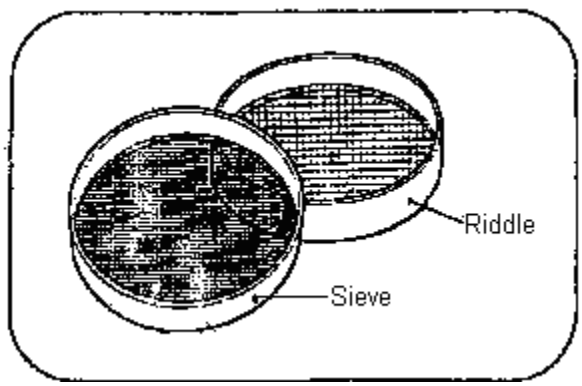


Figure.2.38. Sieves and riddles

2.9. The Riser

The opening leading from the mould cavity which, among other things, indicates when the mould has been filled. This function should not be confused with that of feeding.

2.10. Melting Metals

2.10.1. Cast İron

Grey cast iron is widely used general purpose Cl.

- SG (spheroidal-graphite) cast iron – also known as nodular iron.
- Malleable cast iron is produced in three types:
- Blackheart, after the colour of a fractured section after heat treatment.
- White heart, after the steely white colour of a fractured section after heat treatment.
- Pearlitic, produced from fettled white Cl castings are similar in composition to that used for blackheart.
- Wear resistant for special applications.

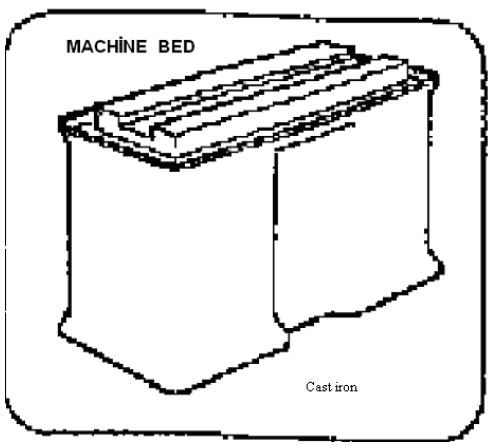


Figure.2.40.Cast iron

2.10.2. Steel

An alloy of iron and carbon that may contain other elements, and in which th e carbon does not exceed 1.7%. (See also BS 3100.)

Only the more commonly used steels are described, due to the great variety and metallurgical complexity of the steels available.

- Mild steel has a low carbon content.(0.1%C).
- Medium carbon steel is harder than mild steel,(0.35%C).
- High carbon steel is hard (0.6%C).

2.10.3. SG (Spheroidal-Graphite) Cast İron

Cast iron containing graphite in the form of substantiall y spheroidal particles, produced by suitable molten metal treatment and not by heat treatment .

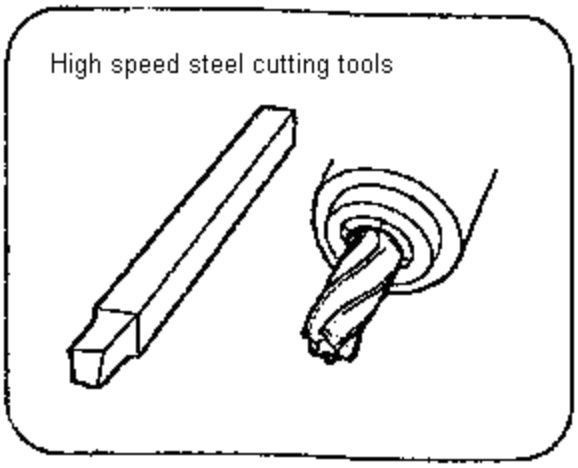


Figure.2.41. Steel

2.10.4. Malleable Cast İron

Malleable cast iron is produced in three types:

Blackheart, after the colour of a fractured section after heat treatment. White heart, after the steely white colour of a fractured section after heat treatment.

Pearlitic, produced from fettled white Cl castings, similar in composition to that used for blackheart.

2.10.5. Aluminum

This is a light metal, white in color, with a melting point of approximately 660° C.

- The principal aluminum casting alloys are:
  - Aluminum/silicon alloys.
  - Aluminum/magnesium alloys.
  - Aluminum/copper alloys.
  - Aluminum/copper/nickel/magnesium alloys.

These alloys are usually referred to by a British standards number, e.g., LM6, LM24, which are specified in BS 1490.

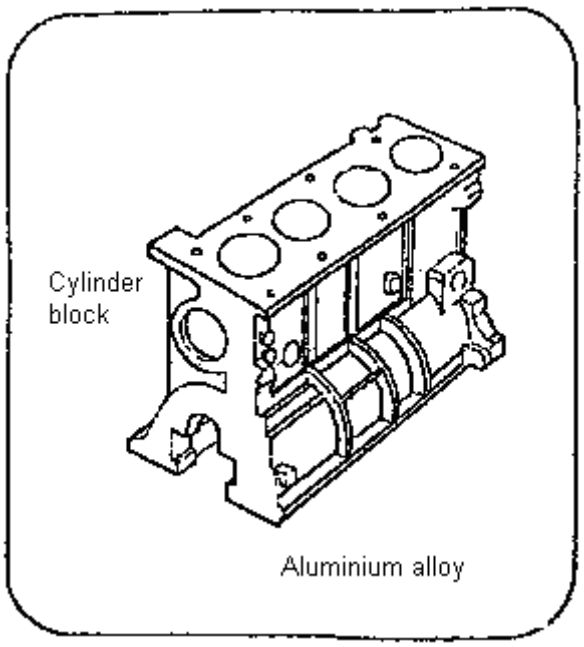


Figure.2.42. Aluminum Alloy

2.10.6. Copper Based Alloys

- This is a heavy metal with a melting point of 1083° C.

It is the major metal used in the group of alloys known as brasses, bronzes and gun-metal.

- Brass, an alloy of copper and zinc. It casts well and is easily machined.
- Bronze, an alloy of copper and tin, with phosphor makes excellent bearing/bushing material.
- Gun-metal, an alloy of copper, tin and zinc.

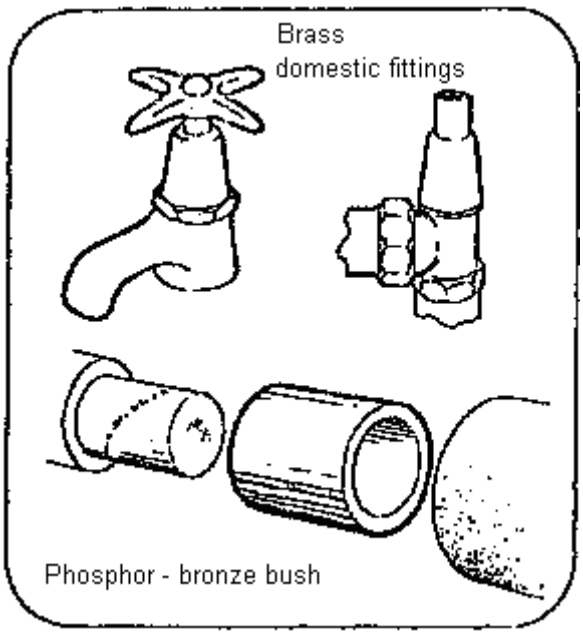


Figure.2.43. Copper based alloys

2.10.7. Zinc

This is a heavy, with low melting point metal, usually alloyed with aluminum for die casting.

2.10.8. Magnesium

This is a very light, strong metal with a melting point of 659°C.

2.11. The Machines Used İn Foundry

2.11.1. Sand Mill Or Muller

- A mechanical mixer used in the preparation of facing sand.
- Fresh sand is mixed with recycled sand and other additives. It is then milled to distribute the bonding agent and any other additives uniformly throughout the mix.

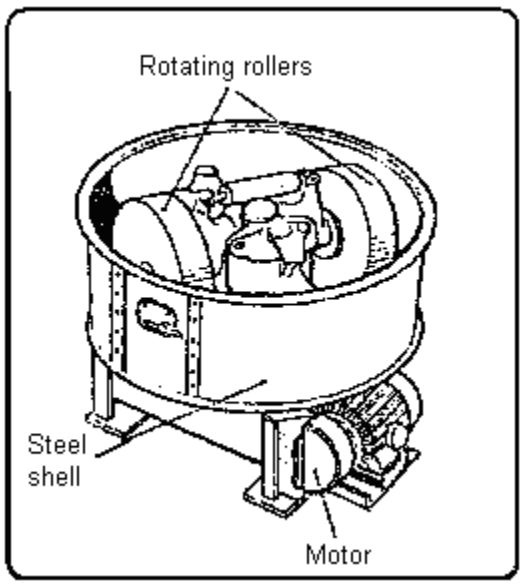


Figure.2.44. Sand mill or muller

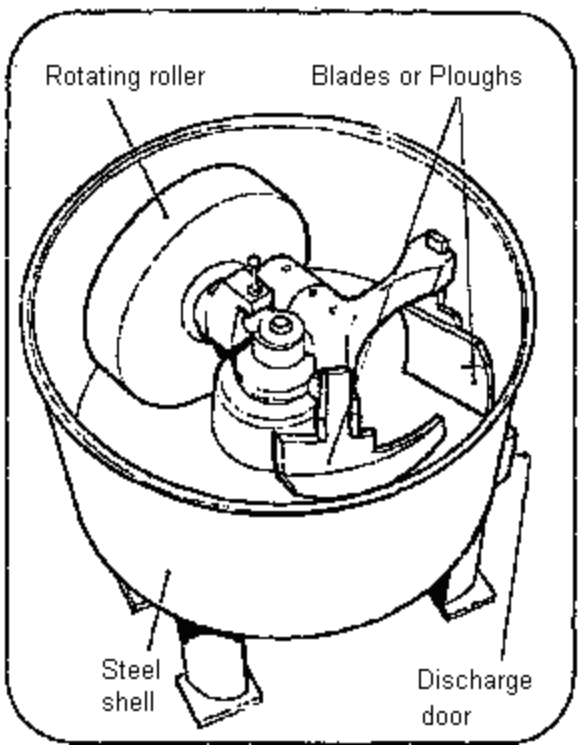


Figure.2.45.A kind of sand mil

- It can be identified by the heavy roller/s necessary for the energy requirements needed to ensure dispersion of the bonding agent.

2.11.2. Sand Mixer

- A mechanical mixer having rotating paddles and static spiral ribs which roll (turn) the sand to evenly disperse additives throughout the sand mass.
- Commonly used for mixing core sands (oil sand).

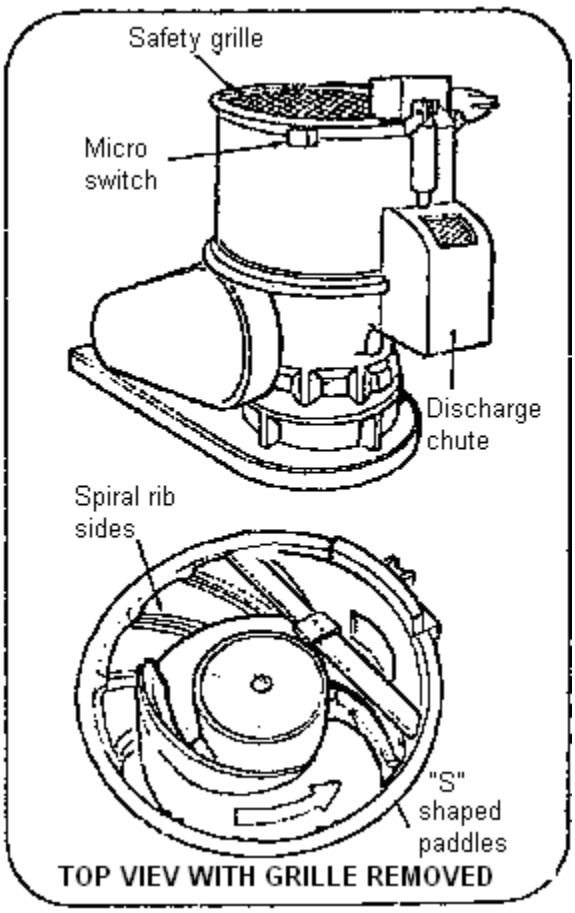


Figure.2.46. Sand mixer

2.11.2. Moulding Machines

Picture.2.2. Moulding machine

Picture.2.3. A kind of moulding machine

2.11.3. Cranes

Nearly all foundries have a crane to lift and move heavy objects.

Types of crane are:

- **Rope pulley blocks:** These are light and easily mounted, but are generally only suitable for light loads.
- **Chain pulley blocks:** These are normally portable, and are used for heavier loads than rope blocks.

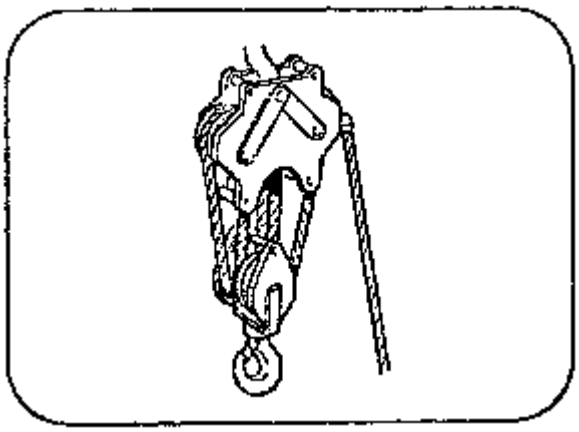


Figure.2.47. Rope pulley block

- Powered chain pulley blocks.

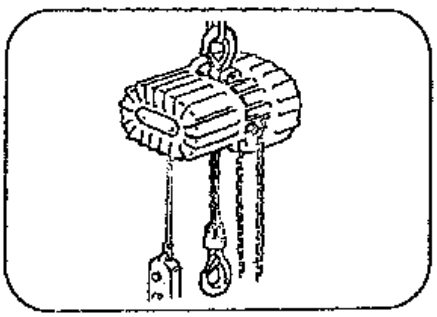


Figure.2.48. Powered chain pulley block

These may be powered by either electricity or compressed air. They are faster and can carry much heavier loads than hand operated blocks.

- **Full mechanized overhead:** These are usually large, heavy duty cranes which move on steel tracks mounted in the roof of the foundry, along its length. A gantry spans the width of the foundry. Thus loads can be lifted from most parts of the foundry floor.
- **Jib cranes:** These are marked to show safe working loads at any point on the beam.

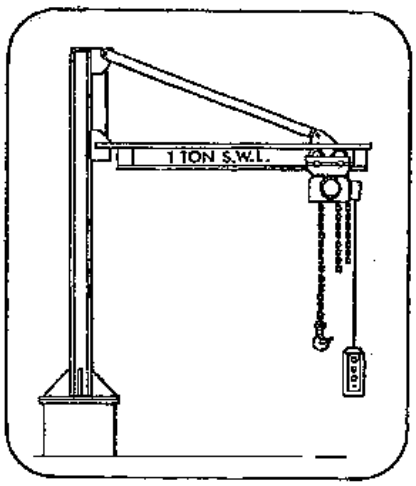


Figure.2.49. Jib cranes

- **Hydraulic lifts:** Look for load figures or marks on the telescopic beam
- **Slings:** Types of sling in common use are:
  - **Chain slings:** These are used for lifting loads, having sharp edges such as rolled steel joists, or for lifting hot materials.
  - **Wire rope slings:** These are the most widely used.
  - **Fibre rope slings:** These are generally used for lifting light articles.
  - **Belt slings:** These give a breadth of bearing, reducing the risk of damage to the load.

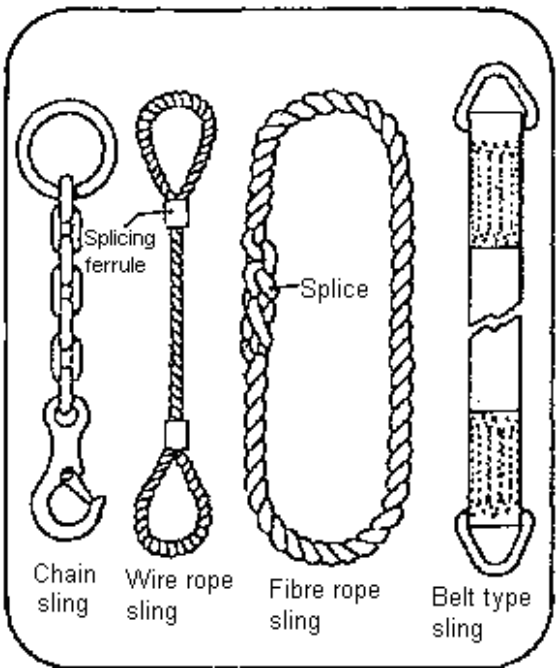


Figure.2.50: Types of sling in common use

- **Leg chains**

These consist of a lifting ring to which is attached two or more chains, each with a hook at the end.

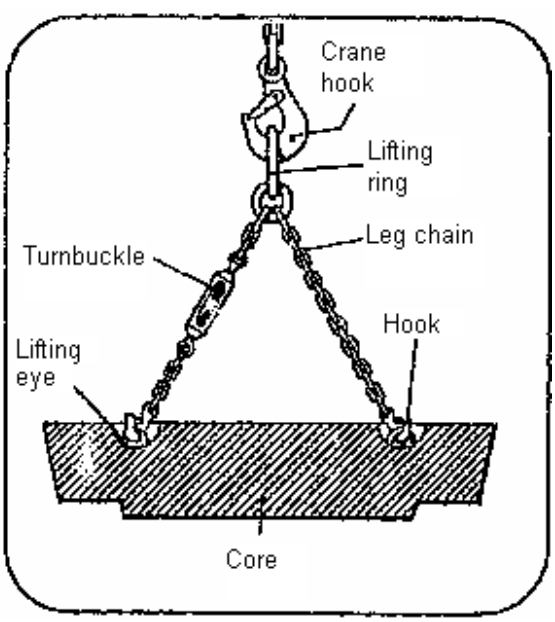


Figure.2.51. Leg chains

➢ **Belts**

These are usually made of canvas in widths varying from 30mm to 150mm (1¼ 6in). They are used where damage to a sand surface must be avoided.

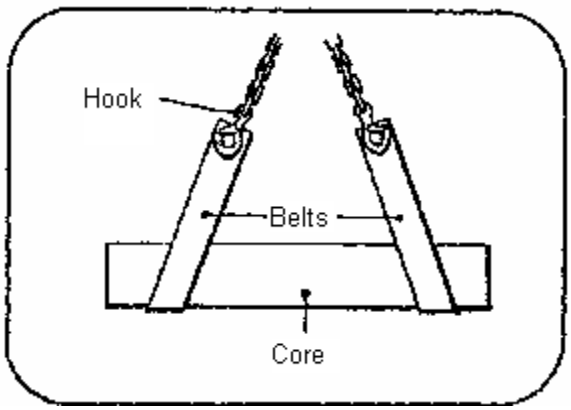


Figure.2.52. Belts

➢ **Lifting beams**

These consist of a horizontal bar with a central lifting ring or shackle which is placed over the crane hook. The beam has notches equally spaced at each end, into which the lifting rings or slings or leg chains are placed.

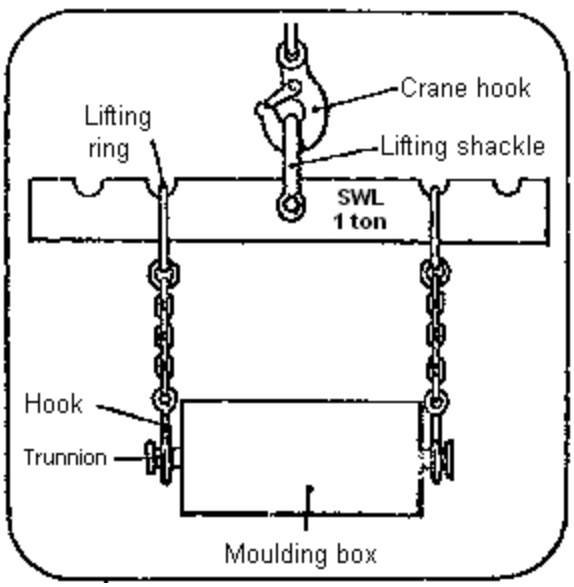


Figure.2.53.Lifting beams

2.11.4. Compressor

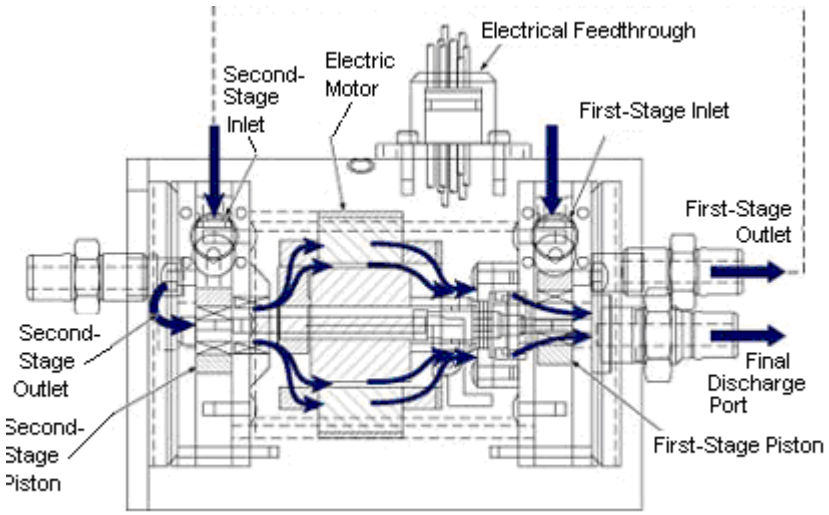
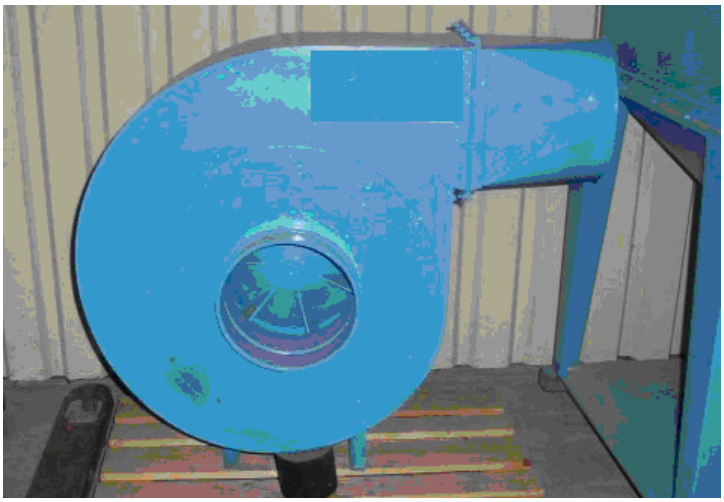


Figure.2.54. The details of a compressor

Picture .2.4. A two stages compressor

2.11.5. Ventilator

Picture .2.5. Ventilator

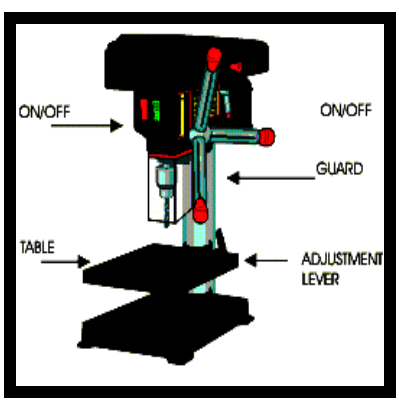


Picture .2.6. A kind of ventilator

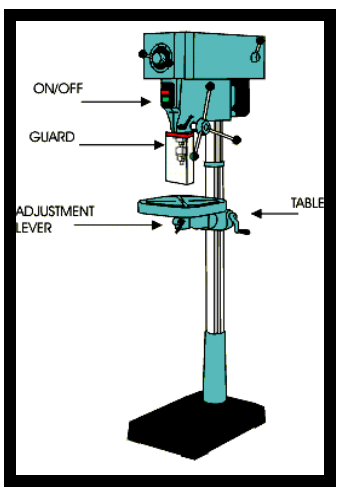
2.11.6. Drilling Application

There are two types of machine drill, the bench drill and the pillar drill. The bench drill is used for drilling holes through materials including a range of woods, plastics and metals. It is normally bolted to a bench so that it cannot be pushed over and that larger pieces of material can be drilled safely.

The larger version of the machine drill is called the pillar drill. This has a long column which stands on the floor. This can do exactly the same work as the bench drill but because of its larger size it is capable of being used for drilling larger pieces of materials and produce larger holes



Picture. 2.7. Pillar Drill



Picture .2.8. Bench Drill

➢ **Application:**

Picture .2.9: Drilling Machine

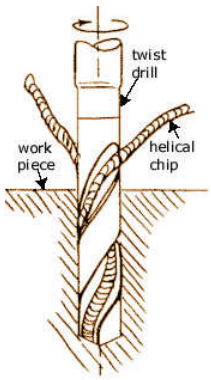
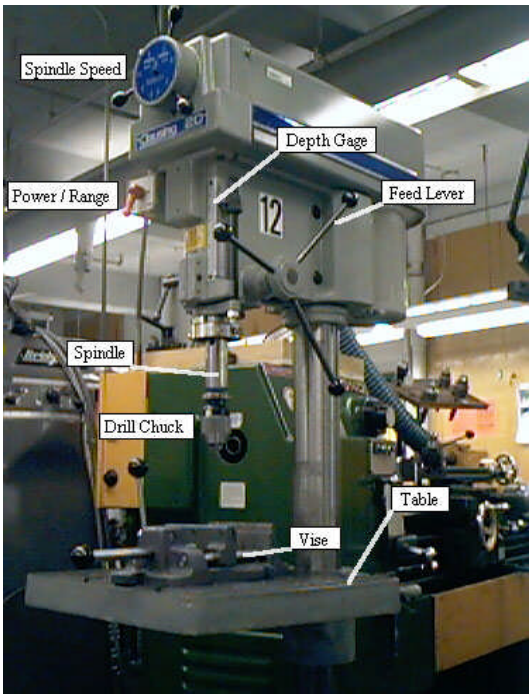


Figure .2.53. The drill is making a hole by twisting helically on a work piece.

This machine is designed for drilling, counter-boring, reaming, taping, spot-facing, etc. It's widely used in machine works.

➢ **Parts of A Drilling Machine**

- Spindle Speed
- Power
- Spindle
- Feed lever
- Drill Chuck
- Vise
- Table
- Dept Gage



Picture .2.10. Parts of A Drilling Machine

APPLICATION ACTIVITY

Read the English equivalents of the tools and equipment in the Foundry correctly.

Steps of Pocess	Suggestions
➢ Write the English Words those are used on the subject of the tools and equipment in the Foundry. ➢ Pronounce the industrial molding terms in English. ➢ Write various of the sand which is used for making a Green Sand Mould. ➢ Write the part of the Gating System. ➢ Write the name of the Melting Furnaces that you know.	➢ Repeat the terms that you have just learnt. ➢ Prepare a pocket dictionary with these terms. ➢ You can follow the foundry and different foundry methods on the internet. ➢ Following the terms from internet you learnt before you can acquire actual and updated knowledge.

CHECKLIST

If you have behaviors listed below, evaluate yourself putting (X) in “Yes” box for your earned skills within the scope of this activity otherwise put (X) in “No” box.

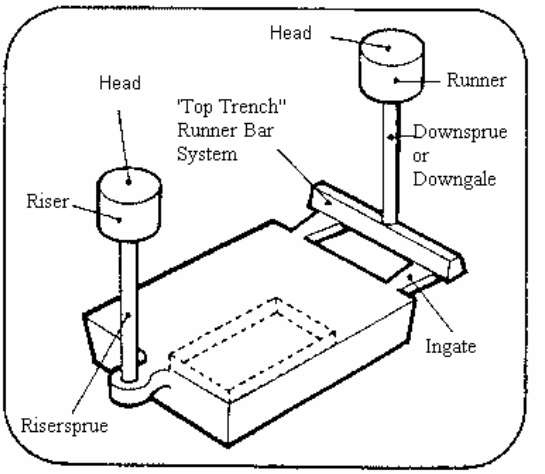
	Evaluation Criteria	Yes	No
1.	Have you written the English terms of the tools and equipment in the Foundry?		
2.	Have you learnt the correct forms of the terms by writing ythem repeatedly?		
3.	Have you written the types of the sand in order to make a sand mould?		
4.	Have you written the parts of the gating system in English?		
5.	Have you written the English equivalents of the melting furnaces that you know?		

EVALUATION

Please review your"No" answers in the form at the end of the evaluation. If you do not find yourself enough, repeat learning activity. If you give all your answers "Yes" to all questions, pass to the "Measuring and Evaluation".

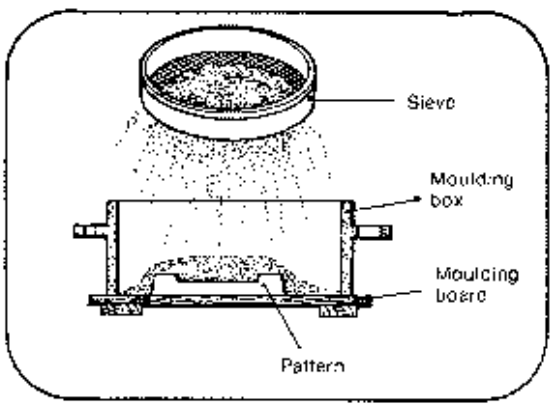
Match the figures below:

1. Moulding Box



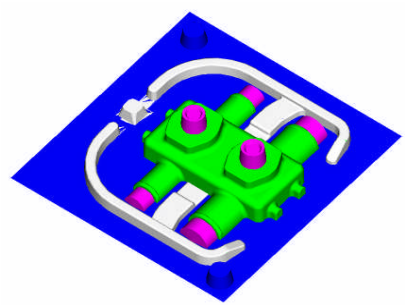
A

2. A Facing Sand



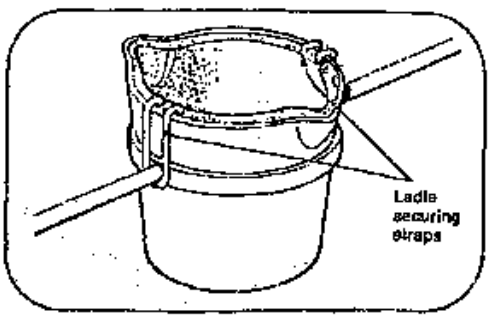
B

3. Feeder



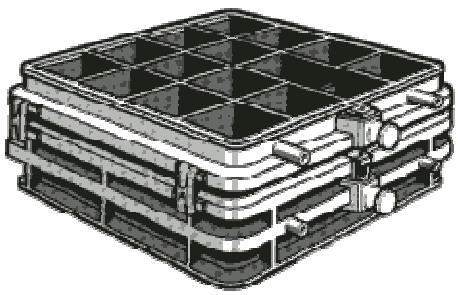
C

4. A Gating System



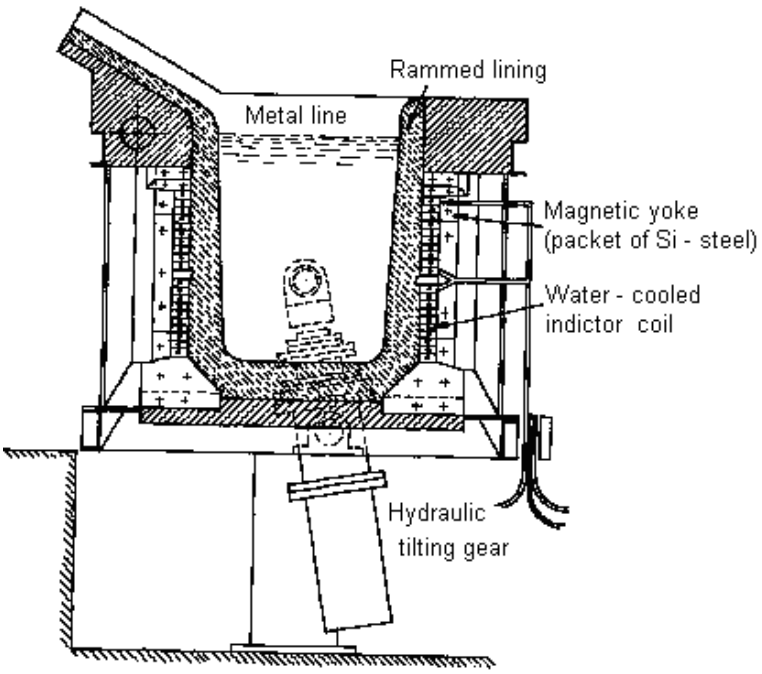
D

5. A Pattern



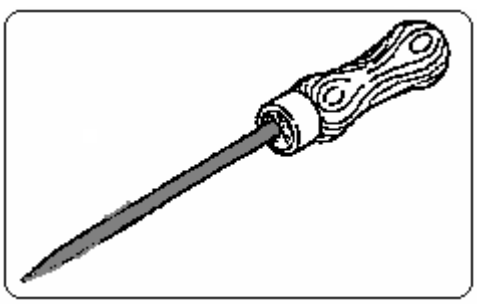
E

6. **A Ladle**



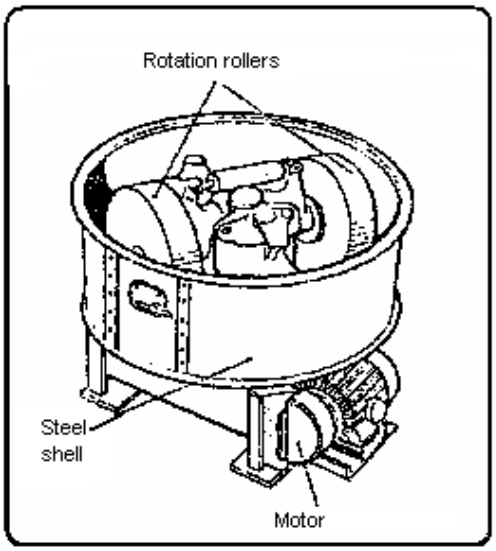
F

7. **A Vent Tool**



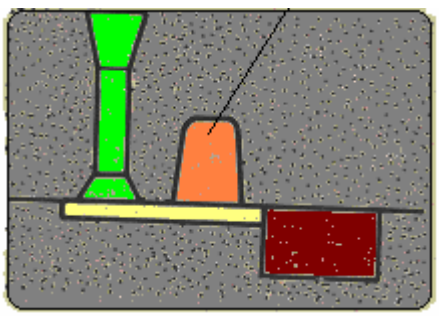
G

8. Induction Furnace



H

9. **A sand Mill**



MODULE EVALUATION

PERFORMANCE TEST

Check your knowledge that you acquire from the module. Is it true or false?

Evaluation Criteria		True	False
1.	Mould: The form, usually made of sand, which contains the cavity into which is poured to make a casting		
2.	Element: It's a pure material that cannot be decomposed into materials by chemical methods. Iron, nickel, chrome, carbon, aluminum, copper are all elements.		
3.	The moulding box is used for making a mould.		
4.	A Tilting Crucible furnace tilts about a central axis.		
5.	The Riser: The opening leading from the mould cavity, which is among other things, indicates when the mould has been filled.		
6.	Cast Iron: This is a light metal, white in color, with a melting point of approximately 660° C.		
7.	Rope pulley blocks: These are normally portable, and are used for heavier loads than rope blocks		

EVALUATION

Please compare the answers with the answer key. If you have wrong answers, you need to review the Learning Activity. If you give right answers to all questions, consulting your instructor proceed to the next learning activity.

ANSWER KEY

LEARNING ACTIVITY-1

1.	**Yes**
2.	**Yes**
3.	**Yes**
4.	**No**
5.	**Yes**
6.	**No**

LEARNING ACTIVITY-2

1	**E**
2	**B**
3	**I**
4	**A**
5	**C**
6	**D**
7	**G**
8	**F**
9	**H**

MODULE EVALUATION

1	**True**
2	**True**
3	**True**
4	**True**
5	**True**
6	**False**
7	**False**

TECHNICAL DICTIONARY

abrasive disk	zımpara taşı
abrasive machining	aşındırma ile talaş kaldırma
acceptance sampling	kabul için örnek alma
accessory	aksesuar, yardımcı teçhizat
accuracy	hassasiyet, doğruluk
acetylene gas	asetilen gazı
acorn nut	tırtıllı somun, taçlı somun
actuator	uyarıcı
adapter	adaptör (ara rakor; birbirinden ayrı cins iki dişli ucu birleştiren ara parça)
addendum	diş ucu (dişlide)
adhesion	tutma, adezyon
adhesive joining	yapıştırma yolu ile birleştirme
adjustment	ayarlama
age hardening	yaşlandırarak sertleştirme
air furnace	hava fırını
allen screw	alyen vida; altı köşeli gömme başlı vida
allen wrench	alyen anahtar, gömme anahtar, altı-köşe "L" şeklinde anahtar
allotropic changes	allotropik değişme, eşözdek değişimi
allowance	pay, tolerans
alloy	alaşım
anchor bolt	tesbit civatası, ankraj bulonu
angle	köşebent demiri, köşebent, korniye; açı
angle milling cutter	açı frezesi, konik freze bıçağı
annealing	normalleştirme tavı, menevişleme
annular gear	içten dişli
anodizing	anotlama, anotsal işlem, anotlama usulü ile oksitleme
anvil	örs
apparatus	cihaz, aygıt, alet
apron	araba önlüğü
arbor	malafa
arch press	kemerli pres
arc spot welding	arklı nokta kaynağı
artificial aging	suni yaşlanma
assemble	monte etmek
assembly	takım; birkaç parçadan meydana gelen parça grubu; komple, montaj
attachment	yardımcı teçhizat, ataşman

austempering	ösmenevişleme
austenite	östenit
automatic screw machine	index tezgahı
axial	eksenel

B

bainite	bainit, alçak derecede sulanmış çelik
bakalite	bakalit
band sawing machine	şerit testere
barrel finishing	dolaplama
base	taban, kaide, temel
base circle	diş dibi dairesi (dişlide)
batch production	küme üretimi
batch size	küme büyüklüğü
batch furnace	yığım fırını
beam	kiriş
I-beam	I profilli demir, I-kirişi
U-beam	U profilli demir, U-kirişi
bearing	yatak, rulman
ball-bearing	bilyalı rulman
needle bearing	iğneli rulman
roller bearing	makaralı yatak
tapered roller bearing	konik makaralı yatak
bearing cone	yatak göbeği, iç yatak
bearing cup	rulmanların dış çemberi, yatak kabı
bellows	körük, körük biçiminde
belt	kayış
belt polishing	kayışlı parlatma
bench lathe	masa tornası, saatçi tornası
bench molding	tezgah kalıplaması
bending	bükme, eğme
bentonite	yumuşak balçık
bessemer converter	bessemer potası
bevel gear	konik dişli
bevel protractor	dereceli gönye
bilateral	çift yönlü
billet	bilet, ham demir çubuk
bit	uç, matkap ucu, kalem ucu
blast furnace	yüksek fırın

blind riser	kör oluk
blister copper	saf bakır
bloom	demir kütüğü
blow molding	hava basınçlı kalıplama
bluing	menevişleme
board hammer	tahtalı şahmerdan
bolt	civata
bonding	yapıştırma, bağlama
boring machine	oyma tezgahı, delik işleme tezgahı
boring mill	delik tezgahı
bottom board	faraş tahtası
brace	el matkabı
bracket	konsol, çıkma, destekli raf, dirsek
brass	pirinç
brazing	sert lehim, pirinç kaynağı
break corner	kırma ağız
brittle	gevrek, kırılgan
broaching	broşlama, tığ çekme, boşaltma
broaching machine	boşaltma tezgahı
broaching tools	boşaltma kalemleri, boşaltma tığları
bronze	bronz, tunç
buffing	perdahlama
built-up edge	yığma ağız
burnishing	çapak temizleme
burr	çizik, kazıntı, torna taleminin bıraktığı iz, çapak
bushing	burç
butterfly nut	kelebek somun
button	kontrol düğmesi, düğme
butt welding	düz ek kaynağı, alın kaynağı

C

calibration	kalibrasyon, ayar
calliper	kumpas
calorizing	sementasyon ile aluminyum kaplama
cam	kam, eksantrik, armutçuk, mil dirseği, boynuz
cap screw	civata başlı vida; altı köşe başlı somunsuz vida, kapak vidası, başlık vidası
carbide	karbür
carbide tools	sert maden takımlar

course	kaba, kalın
coating	örtme, kaplama
coining press	darp presi
cold heading	soğuk baş yapma
cold sawing	soğuk kesme
cold welding	soğuk kaynak
cold working	soğuk işlem
collar	bir parçanın etrafını saran blok bilezik, yaka, halka
collet	bilezik, esnek kovan, freze çakısı tutacağı (pens)
collet holder	esnek kovan (pens) tutacağı
column	sütun
combination die	keser basar kalıp
combination chuck	üniversal ayna
combined cut	birleşik kesim, kombine kesim
compass	pergel, pusula
compensation	denkleştirme
compound rest	takım kızağı
compression molding	basınçlı döküm
compressive strength	sıkıştırma dayanımı
computer	bilgisayar
Computer Numerical Control (CNC)	bilgisayarlı sayısal denetim
concentric	eş merkezli
continuous casting	sürekli döküm
continuous chip	akma talaş
contour	çevre yolu
converter	konverter, değiştirici
coolant	soğutucu
cope	örtme, üst döküm derecesi
copper (or cupper)	bakır
core	maça (dökümcülükte)
core diameter (drills)	öz çapı
core print	maça yatağı, maça yuvası
corrosion	yenim, paslanma
cost	maliyet
cotter pin	maşalı pim, kopilya
cotton waste	üstüpü
counter boring	düz havşa açma
counter sinking	konik havşa açma
coupling	kavrama, kaplin

crest	vida dişinin tepesi
cross-slide	çapraz kızak
cross-wise	enlemesine
crown gear	akış dişlisi
crusible	pota
cupola	kupola, döküm ocağı
curling	saç kıvırma, kenar kıvırma
cutting edge	kesme yüzü, kesme ağzı
cutting fluid	kesme sıvısı
cutting force	kesme kuvveti
cutting speed	kesme hızı
cyaniding	siyanürle sertleştirme

D

dedendum	diş dibi (dişlide)
deep drawing	derin çekme
deep-hole drilling machine	derin delik delme tezgahı
deformation processes	bozundurma süreçleri
depreciation	amortisman, aşınma, kıymetten düşme
depth gage	derinlik mastarı
depth of cut	kesme derinliği
dial	kadran, kontrol saatlerinin yüzü
dial indicator	komparatör
diametral pitch	kutur diş arası
diamond tools	elmas takımlar
die	kalıp; pafta kalıbı (erkek diş açma aleti)
die casting	pres döküm
diffusion	yayınım, difüzyon
direct arc furnace	ark fırını
disc	disk, yuvarlak plaka, kurs
discontinuous chip	kesme talaş
disposable pattern	harcanır model
distortion allowance	çarpılma payı, bozulma payı
dividing head	bölüm aynası, divizör
dog	fırdöndü, kanca, tornalamada kullanılan ara mesnet
double housing planer	çift sütunlu planya
double margin drill	çift zırhlı matkap
down milling	eş yönlü frezeleme
draft allowance	çekme payı

drag	alt döküm derecesi
draw bar	çekme çubuğu, çektirme
draw-cut shaper	çeker keser vargel
drawing	çekme
drawing die	çekme kalıbı
drill chuck	matkap aynası, mandren
drill performance	matkap verimi
drill point	matkap ucu
drilling machine	delme tezgahı, matkap tezgahı
drive	tahrik
drop forging	şahmerdanda dövme
drop hammer	serbest düşüşlü tokmak, şahmerdan
drug	alt derece
drum	tambur
drum lathe	kampana tornası
ductility	yumuşaklık, süreklilik
duplicating machine	kopye makinası
dye	boya, boyamak
dynamometer	dinamometre

Æ

eccentric	eksantrik, dış merkezli; kam
elastic	esnek, elastik
elastic limit	esneklik sınırı
elasticity	esneklik
electric discharge machining	kıvılcımla malzeme işleme
electrode	elektrot, elektrik kaynak çubuğu, elektrik kutup çubuğu
electromechanical grinding	elektro mekanik taşlama
electroforming	elektrikle şekillendirme
electrohydraulic forming	elektrohidrolik şekillendirme
electroplating	elektroliz yoluyla kaplama (galvanoplasti)
electroslag welding	cürufaltı kaynağı
electrotinning	elektrikle kalaylama
element	öğe, eleman
elongation	uzama
embedding	gömülme
embossing	kabartma
emery	zımpara
emery paper	zımpara kağıdı

emulsion	sütsü, sübye, emülsiyon
enamel	emaye
end clearance angle	uç boşluk açısı
end cutting edge angle	yan ağız açısı
end-mill cutter	parmak freze
endurance	dayanım, sürme
engine lathe	torna tezgahı
equipment	aygıt, aparat, ekipman
etching	asitle aşındırma, dağlama
expansion	genişleme
expansion reamer	genişletme raybası
explosive forming	patlama yoluyla şekillendirme, patlama kalıplaması
extract	özüt
extraction	özütleme
extrusion	ekstrüzyon, kalıptan basma, darçıkım

F

face	alın, yüz
face milling	alın frezeleme
face milling cutter	alın frezesi, alın işleme çıkısı
face plate	fırdöndü aynası
facing	alın tornalama işlemi
fastening	sıkıştırma, bağlama
fatique	yorulma, hareket halindeki aksamın yorulması
feed	ilerleme, besleme
feedback	geriye besleme
feedrate	talaş kaldırma hızı, ilerleme hızı
feed rod	talaş mili
feeler gage	hassas mastar
ferrous metal	demirli, demirden oluşan metal
file	eğe, törpü
coarse file	kaba eğe
bastard file	orta kalın dişli eğe
needle file	saatçi eğesi
slitting file	oluk eğesi
square file	dörtköşe eğe
superfine file	ince perdah eğesi
triangular file	üçköşe eğe
round file	yuvarlak eğe

taper file	konik eğe, fare kuyruğu eğe
parallel file	düz eğe
flat file	yassı eğe
drill file	delik tesviye eğesi
filing	törpüleme, eğeleme
fillet	pervaz
fillet weld	pervaz kaynağı
fillister head screw	yıldız başlı vida
fillister head screw driver	yıldız uçlu tornavida
fine	ince
finish allowance	işleme payı
finishing	son işleme
finishing cut	ince işleme
finishing teeth	kalibre ağızları
fit	alıştırma, geçme
transition fit	ara geçme
interference fit	sıkı geçme, temaslı alıştırma
clearance fit	bol geçme
medium fit	orta sıkı alıştırma, tatlı alıştırma, tatlı geçme
running fit	döner alıştırma, oynar alıştırma
sliding fit	kayar alıştırma, kayar geçme
shrink fit	sıkı geçme, sıkma alıştırma
fixture	bağlama aygıtı, bağlama düzeni
flame cutting	oksijenle kesme
flama hardening	alevle sertleştirme
flange	flanş; bağlantı, birleşme yüzü
flank (gear)	diş yanı
flank wear	serbest yüzey aşınması
flash welding	yakma alın kaynağı
flexibility	esneklik
floor molding	yer dökümü
flute	yiv, oluk (matkapta)
fly-cutter	yaprak çakı
fly nut	kelebek somun
follower rest	gezer yatak
forging	dövme
form milling cutter	modül freze bıçağı, profil frezesi
forming	şekillendirme
foundary process	dökümcülük

foundation	temel
fracture	kırılma, kopma
fracture point	kopma dayanımı
frame	iskelet, çerçeve, şasi, gövde
friction disc	sürtünme aynası
friction drive	sürtünmeli tahrik, sürtünme mekanizması
front pilot (broaches)	ön kılavuz
furnace	tav fırını, ocak
fuse	sigorta; madenin sıcaklık dolayısıyla sıvı haline gelmesi; kaynayıp birleşme

G

gage (or gauge)	mastar, ölçü, birim, gösterge, ölçü aleti
gage block	johnson mastarı
galvanizing	galvanizleme
gang drilling machine	çok milli delme tezgahı
gasket	conta
gasket ring	conta bileziği, salmastra bileziği
gate	aralık, kapı
gear	dişli
gear-cutting machine	çarklara diş açma makinası
gear train	dişli düzeni; birbirine geçmiş müteaddit dişli tertibatı
girder	kiriş, payanda, putrel, kuşak
goggles	kaynakçı gözlüğü
grain	tane
grain size	tane büyüklüğü
graphite	grafit; saf ve yumuşak karbon
gravity sintering	ağdırmalı külçeleme
gray cast iron	kır dökme demir
grease	gres yağı
grease gun	gres pompası
grinding	taşlama
grinding machine	taşlama tezgahı
grinding wheel	zımpara taşı, taşlama taşı
grinding wheel dresser	zımpara taşı düzelticisi
grindstone	bileyi taşı
grit	maden talaşı, maden kırıntısı; iri taneli kum
grub screw	yarık başlı makina vidası, saplama vidası
gun drill	namlu matkabı

H

hacksaw blade	el testere bıçağı
hacksaw machine	kollu testere makinası
hammer	çekiç
hand milling machine	el freze tezgahı
hardenability	sertleşebilme
hardness	sertlik
headstock	tornada başlık tarafı, torna aynası, torna feneri, tahrik tertibatı
heat treatment	ısıl işlem
helical gear	helis dişli
helical spring	helezoni yay
helix angle	helis açısı
herringbone gear	çavuş dişli
high speed steel	hava çeliği, yüksek hız çeliği
hobbing	azdırma
honing	honlama, ince taşlama, parlatma, bileme
horn press	mahmuzlu pres
hot spinning	sıcak sıvama
hot working	sıcak işleme
hose	hortum
hub	göbek (kasnak, dişli vb. göbeği)
hydraulic press	hidrolik pres
hydraulic shaper	hidrolik vargel
hypoid gear	hipoid dişli

I

idler gear	avara dişli
impact	çarpma, darbe, şok
impurity	pislik, kir, yabancı madde
inclined press	eğik pres
indentation	çukuriz
independent chuck	çeneleri ayrı sıkılır ayna, mengeneli ayna
index head	bölümlü başlık
indicator	gösterge, sayaç
induction hardening	endüksiyonla sertleştirme
ingot	ingot, külçe
injection molding	enjeksiyonlu kalıplama

lead	kurşun
lead screw	vida açma mili (tornada)
leather	deri
lever	levye, kol, manivela, kumanda kolu
linkage	bağlantı, mekanizma, düzen
lip angle	kenar açısı
lock nut	kontra somunu
longitudional	boyuna, uzunlamasına
lubricant	yağlama maddesi
lubricating gun	yağ tabancası
lubrication	yağlama
lubricator	yağdanlık, gresörlük

M

machinability	işlenebilirlik
machine bed	tezgah gövdesi
machine frame	tezgah gövdesi
machine molding	makinalı kalıplama
machine screw	makina vidası, civata başlı vida, somunlu vida
machine shop	atelye, işlik
machine tool	takım tezgahı
machining time	işleme zamanı
magnet	mıknatıs
magnetic chuck	mıknatıslı ayna
maintenance	bakım
malleable	dövülgen
malleable iron	dövülgen demir
mandrel	mandrel, malafa, torna punta veya matkap başlığı
manual	elle işleyen, elle çalıştırılan; el kitabı
manufacturing processes	imalat yöntemleri
margin (drills)	faz, zırh
martensite	martensit
mash seam weld	ezme dikiş kaynağı
masking	maskeleme
mass production	seri imalat
material	gereç, malzeme
measurement	ölçme, ölçü
measuring instruments	ölçme aletleri, ölçme cihazları
mechanism	mekanizma, tertibat

mesh	tel örgü, örgü süzgeç; birbirine geçme, dişlilerin temas halinde olması
metal	metal
metal removing	talaş kaldırma
metal spinning	sıvama
metal spraying	metal püskürtme
metrology	ölçme bilimi
mica	mika
micrometer	mikrometre
mild steel	yumuşak çelik
milling cutter	freze çakısı
milling machine	freze tezgahı
monel metal	monel pirinçi
morse taper	mors konikliği
mould (or mold)	döküm kalıbı, kalıp dökme
multiple cut	çoklu kesme
multipoint	çok ağızlı takım

N

nail	çivi
nail puller	kerpeten
natural	doğal, tabii
neck (drills)	boyun
needle	iğne, ibre
nipple	nipel, boru rakoru, meme, meme ucu
nitriding	nitritleme
nodular iron	yumrulu demir
nominal size	nominal ölçü
nonferrous metal	demir içermeyen metal
normalizing	normalleştirme tavı
notching	kertikleme
numerical control	sayısal denetim
nut	somun

O

offset	kaçıklık, sapma, yerinden kaçma
oil	yağ
oil bath	yağ banyosu
oil screw gun	vidalı yağ pompası

oil tempered	yağda tavlanmış
open-end wrench	açık ağız anahtar
open-hearth furnace	siemens-martin fırını
operation	işlem
ore	cevher
oxidation	oksitlenme, paslanma
oxy-acetylene welding	oksijen kaynağı

P

panel	pano, tablo, şalter veya kontrol saatleri panosu; plaka
parkerizing	parkerleme
pattern	model (dökümcülükte)
pattern allowance	kalıp payı
pellet	topak
penetration	girinim, penetrasyon
percussion press	vurgu presi
perforating	delikleme
permeability	geçirgenlik
piercing	delme (Mannesman metodu)
pig iron	pik demir
pin	pim, perno, muylu, şiş, iğne
pincers	kerpeten, kıskaç, pense
pinion	küçük dişli
pipe	boru
pipe wrench	boru anahtarı
pit molding	kuyu dökümü
pitch	hatve, vidanın her dişte ilerleme miktarı, iki diş arasındaki uzaklık, adım
pitch circle	diş açıklığı dairesi, bölme dairesi (dişlide)
plain milling cutter	silindirik freze bıçağı
plain milling machine	düz freze tezgahı
planer	planya
planetary gear	gezegen dişli, gezer dişli, planet dişli
planetary milling machine	gezegen başlı freze tezgahı
plant	fabrika, tesis, atölye
plastic	plastik
plate	levha, plaka
plating	kaplama

pliers	pense
ploughing force	sürtme kuvveti, kazma kuvveti
plug	tapa, tıkaç, elektrik fişi
plug gage	delik mastarı
plumber	tesisatçı
pneumatic gage	havalı mastar
pneumatic hammer	havalı tokmak
pneumatic rammer	havalı (pnömatik) şahmerdan; basınçlı hava tokmağı
point angle (drills)	uç açısı
pointer	gösterge, ibre
polishing	parlatma, polisaj
porosity	gözeneklilik
powder metallurgy	toz metal bilimi
precipitation hardening	çökelterek sertleştirme
precision	hassasiyet
press	pres, cendere, presle basma
pressing	presle şekillendirme, presle basma işlemi
process	süreç
product	ürün
production	üretim
profiling machine	kopye tezgahı
protractor	açı ölçer
puller	çektirme
pulley	kasnak, makara
punch	zımba
punching	zımba ile delme, presle delme

Q

quality control	kalite kontrolu
quantity	miktar, nicelik
quench hardening	su verme sertleştirmesi
quenching	su verme
quick return mechanism	vargel mekanizması

R

rack	kremayer dişli
ram	şahmerdan tokmağı, pres kütüğü
rammer	şahmerdan

raw	ham, işlenmemiş, tabii
reamer	rayba
reaming	raybalama
recess	oluk, oyuk, girinti
red hardness	kızıl sertlik
refractory	tuğlamsı
reinforce	takviye etme, kuvvetlendirme, sağlamlaştırma
relief angle	freze bıçağının arka yüzü ile kesilen parça arasındaki açı
remote control	uzaktan kontrol
removable pattern	sökülebilir model
residual stress	artık gerilme
resin	reçine, akındırık
resistance welding	direnç kaynağı
retaining ring	tesbit segmanı, tesbit bileziği
revolver head	döner kafa, döner başlık
rigid	esnemez
ring	bilezik, halka, piston segmanı
ring gage	yüzük mastar
riser	oluk
riveting	perçinleme
rod	çubuk, kol
roller	merdane, rulo, silindir
roll forging	dövmeli hadde
roll forming	haddeleme
rolling	haddeleme
rolling mill	hadde makinası
rotation	dönme, bir eksen etrafında dönme, rotasyon
roughing cut	kaba işleme
roughing teeth (for broach)	kaba kesme ağızları
roughness	pürüzlülük
rubber	lastik, kauçuk
run-out	salgı
rupture strength	kopma dayanımı
rust	pas, paslanma

S

saddle	oturak, eyer, boyun
safety pin	emniyet pimi
sampling	örnek alma

sand	kum
saw milling cutter	testere ağızlı freze çakısı
saw type cutter	testere tipi çakı
sawing machine	testere tezgahı
scale	ölçek
scissors	makas
scrap	hurda
screw cutting	vida açma
screw driver	tornavida
screw machine	civata makinası
seal	keçe, yağ keçesi
seaming	ekleme, dikiş
seam welding	dikiş kaynağı
sensitivity	duyarlık, hassasiyet
set screw	tesbit vidası, kontra vida
set-up time	hazırlık zamanı
shaft	döner mil, şaft
shake allowance	tıklama payı
shank	kesici kalem sapı, şaft
shank cutter	parmak freze
shaper	vargel
shaving	traşlama
shear angle	yarma açısı
shearing	(preste, makasta) kesme
shear strength	kesme dayanımı, kayma dayanımı
sheathing	kaplama
sheave	oluklu kasnak, makara
sheet	levha
sheet metal screw	saç vidası
sheet metal shears	teneke makası
shell reamer	takma rayba, kovan rayba
shearadizing	toz çinko ile galvanizleme, çinko emdirme
shift	vardiya; yerinden oynatma, yer değiştirme, vitese geçirme
shim	şim; dişliler veya hareketli yüzeyle arasındaki açıklığı ayarlamak için kullanılan madeni levhalar
shock resistance	sarsım direnci
shot peening	bilyalı yüzey dövme
shrinkage allowance	çekilme payı
side milling cutter	silindirik alın freze bıçağı

side rake angle	yan talaş açısı
sieve	elek
silicon	silisyum
silver	gümüş
sine bar	sinüs çubuğu
sintering	külçeleme, sinterleme
skilled	kalifiye
slab	slab, yassı kütük
slab milling	vals frezeleme
slag	cüruf, dışık
sleeve	gömlek, kovan, mil üzerine bilezik gibi geçen parça; manşon (boruda)
slide	kızak
slideway	kızak
slip plane	kayma düzlemi
slitting	dilme, yarma
slotter	yarma frezesi
snap gage	çeneli mastar
snap ring	tesbit segmanı, yaylı tutturma bileziği
soaking pit	çelik demlendirme fırını
socket	yuva, soket, priz
socket adapter	cırcır anahtarı
socket wrench	lokma anahtarı
soldering	lehimleme
spanner	civata anahtarı
spare	yedek, fazla
specific	özgül
specification	specifikasyon; makina veya cihazın özellikleri, kendine has ölçüleri
specimen	numune, örnek
spindle	fener mili
spindle support	mil desteği
spinning	sıvama
spirit level	düzeç, kabarcıklı düzeç, su terazisi, tesviye ruhu
spline	freze oluklu kayar geçme yapma; iç ve dış dişlileri birbirine geçirmek suretiyle birleştirme
spot face	pul yatağı
spot welding	punta kaynağı
spraying	püskürtme

spring	yay
spring lock washer	yaylı rondela
spring washer	yaylı rondela
spring winding	yay sarma
sprocket	zincir dişlisi, cer dişlisi
sprue	döküm deliği
spur gear	düz dişli
square nut	dörtköşe somun
stainless steel	paslanmaz çelik
stability	dengelilik
standard	standart, tek biçim, ölçünlü
standard deviation	standart sapma, tek biçim sapması
stem	sap, gövde
step drill	kademeli matkap
stiff	bükülmez
storage	depolama
strain	gerinim
strain hardening	uzama sertleşmesi, gerinim sertleşmesi
strength	direnç, mukavemet, dayanım
stress	gerilim
stretch forming	uzatarak, gererek şekillendirme
strip	şerit, lime, kuşak, band
stripping machine	sıyırma makinası, soyma makinası
stroke	kurs
structure	yapı
stud	saplama, başlıksız civata
submerged are welding	toz atı kaynağı
super finishing	hassas perdahlama
surface finishing	yüzey perdahlama
surface hardening	yüzey sertleştirme, semente etmek
swaging	tokaçlama
sweep pattern	silmeli model
synchronization	senkronize etme; aynı anda ve beraber çalışır duruma getirme, eşleme, eş zamanlı

T

T-slot cutter	yarık freze bıçağı, T-kanalı açma bıçağı
tailstock	torna punta başlığı
tang (drill)	sökme ucu (konik şaftlı)

torque	burulma momenti, tork
torque wrench	civata sıkma torkunu ölçen anahtar
torsion	burulma, torsiyon
torsional strength	burulma dayanımı
toughness	tokluk
tracing	konye etme
transparent	saydam, şeffaf
transverse	enlemesine
trimming machine	kordon makinası
T-slot	T-kanalı, T-oluğu
tumbling mill	döner değirmen
tungsten	volfram
turning machine	torna tezgahı
turret lathe	revolver torna, yarı-otomatik torna
twist drill	helisel matkap

U

ultimate strength	maksimum mukavemet
ultrasonic machining	ses üstü dalgalarıyla talaş alma
uniform	düzgün, tek biçimli
unilateral	tek yönlü
upcut milling	aksi yönlü frezeleme
upright drill	sütunlu matkap
upset forging	şişirme

V

valve	valf, vana, süpap, ventil
V-block (Vee-block)	V-yatağı
vernier caliper	sürgülü kumpas
vise	mengene
void	boşluk
volatile	uçucu

W

washer	pul, rondela
waviness	dalgalılık
wear	aşınma
welded steel	kaynaklı çelik
welding	kaynak

electric arc welding	elektrik ark kaynağı
fusion welding	erime kaynağı
oxy-acetylene welding	oksijen kaynağı, asetilen kaynağı
spot welding	nokta kaynağı
thermit welding	termit kaynağı
welding rod	kaynak çubuğu, kaynak elektrodu
welding powder	kaynak tozu
welding machine	kaynak makinası
welding helmet	kaynak başlığı
white cast iron	beyaz pik
wind nut	kelebekli somun
wire drawing	tel çekme
wiring	elektrik şebekesi tel düzeni
wood screw	ağaç vidası
work hardening	işleme sertleşmesi
work piece	iş parçası
work table	iş tablası
worm gear	sonsuz dişli, salyangoz dişli
wrench	anahtar
wrought iron	dövme demir, dörük demir

Y

yield point	akma dayanımı
yoke	çatal, mafsal çatalı

Z

zinc	çinko
zone	bölge

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