

BASIC TEXTILE OPERATION

NTQF Level -I-

Learning Guide -88-

Unit of Competence: Package finished Textiles

Module Title: Packaging Finished Textiles

LG Code: IND BTO1 M23 LO1-LG-88

TTLM Code: IND BTO1 M23 TTLM 09 19v1

**LO1: Prepare work pieces and
Workstation**

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics –

- ❖ Keeping the materials laid out in sequentially
- ❖ Preparing work set up according to OHS practices
- ❖ Setting up the machine according to the processes
- ❖ Performing routine minor maintenance
- ❖ Reporting and recording types of work problems

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, upon completion of this Learning Guide, you will be able to:

- ❖ Keep the materials laid out in sequentially
- ❖ Prepare work set up according to OHS practices
- ❖ Set up the machine according to the processes
- ❖ Perform routine minor maintenance
- ❖ Report and recording types of work problems



Learning Instructions:

1. Read the specific objectives of this Learning Guide **-88-**
2. Follow the instructions described in number on page **-2-**
3. Read the information written in the “Information Sheets 1”, sheet 2, Sheet 3, sheet 4 and Sheet 5 on page 3, 8, 14, 21 and 27 respectively
4. Accomplish the “Self-check 1”, Self –check 2, Self –check 3, Self- check 4 and self –check **on page 6, 12, 19, 26, and 30** respectively
5. Ask from your **trainer’s** the key to correction (key answers) or you can request your **trainer’s** to correct your work.
6. If you earned a satisfactory evaluation proceed to “**Information Sheet**”. However, if your rating is unsatisfactory, see your **trainer’s** for further instructions or go back to Learning Activity #1.
7. Submit your accomplished Self-check. This will form part of your training portfolio.



Information Sheet-1

Keep the materials laid out in sequentially

1.1. Introduction

In manufacturing, facility layout consists of configuring the plant site with lines, buildings, major facilities, work areas, aisles, and other pertinent features such as department boundaries. While facility layout for services may be similar to that for manufacturing, it also may be somewhat different as is the case with offices, retailers, and warehouses. Because of its relative permanence, facility layout probably is one of the most crucial elements affecting efficiency. An efficient layout can reduce unnecessary material handling, help to keep costs low, and maintain product flow through the facility.

Firms in the upper left-hand corner of the product-process matrix have a process structure known as a jumbled flow or a disconnected or intermittent line flow. Upper-left firms generally have a process layout. Firms in the lower right-hand corner of the product-process matrix can have a line or continuous flow. Firms in the lower-right part of the matrix generally have a product layout. Other types of layouts include fixed-position, combination, cellular, and certain types of service layouts.

1.2. Process layout

Process layouts are found primarily in job shops, or firms that produce customized, low-volume products that may require different processing requirements and sequences of operations. Process layouts are facility configurations in which operations of a similar nature or function are grouped together.

Their purpose is to process goods or provide services that involve a variety of processing requirements. A manufacturing example would be a machine shop. A machine shop generally has separate departments where general-purpose machines are grouped together by function (e.g., milling, grinding, drilling, hydraulic presses, and lathes). Therefore, facilities that are configured according to individual functions or processes have a process layout. This type of layout gives the firm the flexibility needed to handle a variety of routes and process requirements. Services that utilize process layouts include hospitals, banks, auto repair, libraries, and universities. Improving process layouts involves the minimization of transportation cost, distance, or time.

1.2.1. Advantages of process layouts include

- ❖ **Flexibility:** The firm has the ability to handle a variety of processing requirements.
- ❖ **Cost. Sometimes:** the general-purpose equipment utilized may be less costly to purchase and less costly and easier to maintain than specialized equipment.



- ❖ **Motivation:** Employees in this type of layout will probably be able to perform a variety of tasks on multiple machines, as opposed to the boredom of performing a repetitive task on an assembly line. A process layout also allows the employer to use some type of individual incentive system.
- ❖ **System protection:** Since there are multiple machines available, process layouts are not particularly vulnerable to equipment failures

1.2.2. Disadvantages of process layouts include:

- ❖ **Utilization:** Equipment utilization rates in process layout are frequently very low, because machine usage is dependent upon a variety of output requirements.
- ❖ **Cost:** If batch processing is used, in-process inventory costs could be high. Lower volume means higher per-unit costs. More specialized attention is necessary for both products and customers. Setups are more frequent, hence higher setup costs. Material handling is slower and more inefficient.
- ❖ **Confusion.** Constantly changing schedules and routings make juggling process requirements more difficult.

1.3. Product layout

Product layouts are found in flow shops (repetitive assembly and process or continuous flow industries). Flow shops produce high-volume, highly standardized products that require highly standardized, repetitive processes. In a product layout, resources are arranged sequentially, based on the routing of the products. In theory, this sequential layout allows the entire process to be laid out in a straight line, which at times may be totally dedicated to the production of only one product or product version. The flow of the line can then be subdivided so that labor and equipment are utilized smoothly throughout the operation.

Product layout efficiency is often enhanced through the use of line balancing. Line balancing is the assignment of tasks to workstations in such a way that workstations have approximately equal time requirements. This minimizes the amount of time that some workstations are idle, due to waiting on parts from an upstream process or to avoid building up an inventory queue in front of a downstream process.

1.3.1. Advantages of product layouts include:

- ❖ **Output:** Product layouts can generate a large volume of products in a short time.
- ❖ **Cost:** Unit cost is low as a result of the high volume. Labor specialization results in reduced training time and cost. A wider span of supervision also reduces labor costs. Accounting, purchasing, and inventory control are routine. Because routing is fixed, less attention is required.



❖ **Utilization:** There is a high degree of labor and equipment utilization.

1.3.2. Disadvantages of product layouts include:

- ❖ **Motivation:** The system's inherent division of labor can result in dull, repetitive jobs that can prove to be quite stressful. Also, assembly-line layouts make it very hard to administer individual incentive plans.
- ❖ **Flexibility:** Product layouts are inflexible and cannot easily respond to required system changes especially changes in product or process design.
- ❖ **System protection:** The system is at risk from equipment breakdown, absenteeism, and downtime due to preventive maintenance



Self-Check -1	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is meant by Process layout (5 points)
2. Write down the difference b/n advantages and disadvantages of process layouts (6 Points)
3. What is difference between n advantages and disadvantages product layouts (9 Points)



Note: Satisfactory rating –18 and above points

Unsatisfactory – below 18 points

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date: _____

Short Answer Questions

1. _____

2. _____

3. _____



Information Sheet-2	Prepare work set up according to OHS practices
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2.1. Introduction

To provide responsible employers, workers, and worker representatives with a sound, flexible framework for addressing safety and health issues on diverse construction job sites. They may be used by any construction company or job site, but they will be particularly helpful to small and medium-sized contractors. They also include guidance specifically aimed at general contractor employment, staffing agency employment, and multiemployer work situations. These recommended practices have been developed solely for the construction industry. Separate recommended practices are available for all other industries. The recommended practices emphasize a proactive approach to managing occupational safety and health. Traditional approaches are often reactive—that is, actions are taken only after a worker is injured or becomes sick, a new standard or regulation is published, or an outside inspection finds a problem that must be fixed. Finding and fixing hazards before they cause injury or illness is a far more effective approach. Doing so avoids the direct and indirect costs of worker injuries and illnesses, and promotes a positive work environment

2.2. What is a Safety and Health Management System?

A safety and health management system mean the part of the Organization's management system which covers:

- ❖ The health and safety work organization and policy in a company
- ❖ The planning process for accident and ill health prevention
- ❖ The line management responsibilities and
- ❖ The practices, procedures and resources for developing and implementing, reviewing and maintaining the occupational safety and health policy.

The system should cover the entire gambit of an employer's occupational health and safety organization. The key elements of a successful safety and health management system are:

1. Policy and commitment

The workplace should prepare an occupational safety and health policy program me as part of the preparation of the Safety Statement required. Effective safety and health policies should set a clear direction for the organization to follow. They will contribute to all aspects of business performance as part of a demonstrable commitment to continuous improvement. Responsibilities to people and the working environment will be met in a way that fulfils the spirit and letter of the law. Cost-effective approaches to preserving and developing human and physical resources will reduce financial losses and liabilities. In a wider context,



stakeholders' expectations, whether they are shareholders, employees or their representatives, customers or society at large, can be met.

2. Planning

The workplace should formulate a plan to fulfil its safety and health policy as set out in the Safety Statement. An effective management structure and arrangements should be put in place for delivering the policy. Safety and health objectives and targets should be set for all managers and employees.

3. Implementation and operation

For effective implementation, organizations should develop the capabilities and support mechanisms necessary to achieve the safety and health policy, objectives and targets. All staff should be motivated and empowered to work safely and to protect their long-term health, not simply to avoid accidents. These arrangements should be:

- ❖ underpinned by effective staff involvement and participation through appropriate consultation, the use of the safety committee where it exists and the safety representation system and,
- ❖ Sustained by effective communication and the promotion of competence, which allows all employees and their representatives to make a responsible and informed contribution to the safety and health effort.

There should be a planned and systematic approach to implementing the safety and health policy through an effective safety and health management system. The aim is to minimize risks. Risk Assessment methods should be used to determine priorities and set objectives for eliminating hazards and reducing risks. Wherever possible, risks should be eliminated through the selection and design of facilities, equipment and processes. If risks cannot be eliminated, they should be minimized by the use of physical controls and safe systems of work or, as a last resort, through the provision of PPE. Performance standards should be established and used for measuring achievement. Specific actions to promote a positive safety and health culture should be identified. There should be a shared common understanding of the organization's vision, values and beliefs on health and safety. The visible and active leadership of senior managers fosters a positive safety and health culture.

4. Measuring performance

The organization should measure, monitor and evaluate safety and health performance. Performance can be measured against agreed standards to reveal when and where improvement is needed. Active self-monitoring reveals how effectively the safety and health management system are functioning. Self-monitoring looks at both hardware (premises, plant



and substances) and software (people, procedures and systems, including individual behavior and performance). If controls fail, reactive monitoring should find out why they failed, by investigating the accidents, ill health or incidents, which could have caused harm or loss. The objectives of active and reactive monitoring are:

- ❖ To determine the immediate causes of substandard performance
- ❖ To identify any underlying causes and implications for the design and operation of the safety and health management system.

5. Auditing and reviewing performance

The organization should review and improve its safety and health management system continuously, so that its overall safety and health performance improves constantly. The organization can learn from relevant experience and apply the lessons. There should be a systematic review of performance based on data from monitoring and from independent audits of the whole safety and health management system. There should be a strong commitment to continuous improvement involving the development of policies, systems and techniques of risk control. Performance should be assessed by:

- ❖ Internal reference to key performance indicators
- ❖ External comparison with the performance of business competitors and best practice in the organizations' employment sector.

An organization should carry out an initial review of the safety and health management system, and follow this up with periodic reviews. The initial review should compare existing safety and health practice with:

- ❖ The requirements of safety and health legislation
- ❖ The provisions set out in the organizations' safety statement
- ❖ Safety and health guidance in the organization
- ❖ Existing authoritative and published safety and health guidance
- ❖ Best practice in the organizations' employment sector

These best practices present principles and approaches to implementing and maintaining a safety and health program for the entire construction company. OSHA recognizes that a wide variety of small and large construction job sites exist. Some are short-duration, while others may take years to complete; some sites are characterized by frequently changing conditions, while other sites' conditions may change less often. An effective program emphasizes top-level ownership, participation by employees, and a "find and fix" approach to workplace hazards.



The importance of worker participation throughout these recommended practices, OSHA emphasizes the importance of worker participation in the safety and health program. For a program to succeed, workers (and, if applicable, their representatives) must participate in developing and implementing every element of the safety and health program. This emphasis on worker participation is consistent with the OSH Act, OSHA standards, and OSHA enforcement policies and procedures, which recognize the rights and roles of workers and their representatives in matters of workplace safety and health



Self-Check -2	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is a Safety and Health Management System? (3 Points)
2. What is meant by Measuring performance (2 Points)
3. Mention elements of a successful safety and health management system? (5 Points)



Note: Satisfactory rating - 8 and above points

Unsatisfactory - below 8 points

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Short Answer Questions

1. _____

2. _____

3. _____



Information Sheet-3

Set up the machine according to the processes

3.1. Introduction

What is packaging?

All products made of any materials of any nature to be used for the containment, protection, handling delivery and preservation of goods from the producer to the user.

Packaging machinery: is used throughout all packaging operations, involving primary packages to distribution packs. This includes many packaging processes: fabrication, cleaning, filling, sealing, combining, labeling, overwrapping, palletizing. Packages include heat seals to prepare or seal a package. Heat sealers are needed, even in slow labor-intensive operations. With many industries, the effectiveness of the heat seal is critical to product safety so the heat sealing operation must be closely controlled with documented Verification and validation protocols. Food, drug, and medical regulations require consistent seals on packages. Proper equipment is needed.

3.2. Choosing packaging machinery

Choosing packaging machinery includes an assessment of technical capabilities, labor requirements, worker safety, maintainability, serviceability, reliability, ability to integrate into the packaging line, capital cost, floor space, flexibility (change-over, materials, multiple products, etc.), energy requirements, quality of outgoing packages, qualifications (for food, pharmaceuticals, etc.), throughput, efficiency, productivity, ergonomics, return on investment, etc. Packaging machinery can be:

- a. Purchased as standard, off-the-shelf equipment
- b. Purchased custom-made or custom-tailored to specific operations
- c. Purchased refurbished and upgraded
- d. Manufactured or modified by in-house engineers and maintenance staff



Fig. Double chamber Vacuum packer



Machinery needs to keep control of the product being packaged. For example, powders need to be stable, liquids cannot slosh out. Some manufacturers decide not to do their own packaging but to employ contract packagers to perform all or some operations. Capital, labor, and other costs are outsourced.

3.2.1 Purposes of packaging and Labeling

a. Containment

- ❖ To hold the product directly, this is primary packaging



b. Information Transmission

- ❖ Identify the brand and any related companies
- ❖ Explain how it should be used
- ❖ Warn about the hazards for misuse
- ❖ reveal product contents

c. Physical and Barrier protection

- ❖ To prevent spoilage, leakage, breakage, moisture changes, and tampering



d. Transport

- ❖ To easily and safely move the product from the manufacturer then to the retailer and finally to the consumer



e. Display

- ❖ To attractive display
- ❖ To sell



3.2.2 Types of packages:

a. Primary Package

- ❖ It is the material that first envelops the material and holds it.



b. Secondary package

- ❖ Used to group primary packages together



c. Tertiary package

- ❖ Used for bulk handling, warehouse storage and transport shipping
- ❖ Most common is a pelletized unit load that packs tightly in to containers.



3.2.3 Packaging process

- ❖ Filling section
- ❖ Sealing section
 - Labeling and equipment
 - End of line section

3.3. Packaging machine or a complete packaging line

We deliver individual packaging machines and complete packaging lines for food-, bakery and dairy products as well as pharmaceutical products, techno chemical products, cosmetics, medical devices and technical components and devices. Machines for products like feeding, seeds, powder, sugar, malt, plastic granulates, chalk and a lot more products are also included in our sales program

3.4. Packaging machines for different packaging styles

We offer vertical baggers, Flow pack machines, Pick & Place robot solutions, cartoning machines, top loader solutions and case packers. For vertical baggers we deliver, depending on the product, auger fillers, multi head weighers, linear weighers, counters and volumetric fillers. For packaging lines and systems we also integrate third party machines and equipment. Our principals take full responsibility for the layout and the integration of these machines to a functioning packaging system.

3.5. Packaging machines for consumer products





3.6. Flexible packaging machines for different styles of packages

With most of the package machines we deliver you can produce different styles of packages with the same machine. Packaging machine you can produce pillow bags, bags with side gussets, block bottom bags, block bottom with corner sealing and Day-bags with or without ZIP-reclosing. All these bags styles are produced with the same packaging machine. . With our packaging machines we also make portion bags/sachet for dry and fluid products. Labeling machines for bags, bottles and cartons can be integrated to the packaging machines.

3.7. Maintenance, service and spare parts for the packaging machines

We offer maintenance for all packaging machines we deliver. Our local engineers and the service organizations from our principals are in charge for the service and maintenance. We also offer service contracts to give our customers a good tool for planning and budgeting for service activities and service expenses

3.8. Function:

Packaging is necessary to protect products, and is now done mainly through the use of packaging machinery. Machinery plays increasingly important roles such as:

- ❖ Improve labor productivity. Sliding blister sealing machine packaging machinery is much faster than manual packaging. One good example of this is the candy packing machine. Here, hundreds to thousands of candies can be wrapped in minutes.
- ❖ Ensure packaging quality. Mechanical packaging is particularly important for exported goods to achieve consistent packaging.
- ❖ Handle specialized requirements, such as vacuum packaging, inflatable packaging, skin packaging and pressure filling.
- ❖ Reduce labor and improve working conditions for bulky/heavy products.
- ❖ Protect workers from health effects brought by dust, toxic/hazardous products and prevent environmental contamination.
- ❖ Reduce packaging costs and save storage costs for loose products, such as cotton, tobacco, silk, linen, etc., by simply using compression packaging.
- ❖ Reliably ensure product hygiene by eliminating hand contact with food and medicines.



Self-Check -3	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is packaging? (5 Points)
2. What is the function of Packaging? (6 Points)
3. What is meant by Packaging process (5 Points)



Note: Satisfactory rating – 8 and above points

Unsatisfactory - below 8 points

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date: _____

Short Answer Questions



Information Sheet-4

Perform routine minor maintenance

4.1. Introduction

The maintenance of buildings and equipment may be the most important element of good housekeeping. Maintenance involves keeping buildings, equipment and machinery in safe, efficient working order and in good repair. It includes maintaining sanitary facilities and regularly painting and cleaning walls. Broken windows, damaged doors, defective plumbing and broken floor surfaces can make a workplace look neglected; these conditions can cause incidents and affect work practices. So it is important to replace or fix broken or damaged items as quickly as possible. A good maintenance program provides for the inspection, maintenance, upkeep and repair of tools, equipment, machines and processes

4.2. The importance of a clean workplace

The workplace environment influences employees' productivity, performance and well-being. No matter the industry, maintaining a clean workplace may help keep staff members safe, healthy and efficient. However, busy production schedules and increasing workloads may cause standards to dip. While it may be tempting to put off dusting or other types of cleaning around the office or worksite, doing so may put employees at risk of suffering an injury or illness and may even impact performance levels. Maintaining a clean workplace is vital for employers to reduce their workers compensation claims and keep efficiency high

4.3. Cleaning work area

Effective housekeeping can help control or eliminate workplace hazards. Poor housekeeping practices frequently contribute to incidents. Housekeeping is not just cleanliness. It includes keeping work areas neat and orderly, maintaining halls and floors free of slip and trip hazards, and removing of waste materials (e.g., paper, cardboard) and other fire hazards from work areas. It also requires paying attention to important details such as the layout of the whole workplace, aisle marking, the adequacy of storage facilities, and maintenance. Good housekeeping is also a basic part of incident and fire prevention. Effective housekeeping is an ongoing operation: it is not a one-time or hit-and-miss cleanup done occasionally. Periodic "panic" cleanups are costly and ineffective in reducing incidents.

4.3.1. Effective housekeeping results in:

- ❖ Reduced handling to ease the flow of materials
- ❖ Fewer tripping and slipping incidents in clutter-free and spill-free work areas
- ❖ Decreased fire hazards
- ❖ Lower worker exposures to hazardous products (e.g. Dusts, vapours)
- ❖ Better control of tools and materials, including inventory and supplies



- ❖ More efficient equipment cleanup and maintenance
- ❖ Better hygienic conditions leading to improved health
- ❖ More effective use of space
- ❖ Reduced property damage by improving preventive maintenance
- ❖ Less janitorial work
- ❖ Improved morale
- ❖ Improved productivity (tools and materials will be easy to find)

4.3.2. Poor housekeeping can be a cause of incidents, such as:

- ❖ Tripping over loose objects on floors, stairs and platforms
- ❖ Being hit by falling objects
- ❖ Slipping on greasy, wet or dirty surfaces
- ❖ Striking against projecting, poorly stacked items or misplaced material
- ❖ Cutting, puncturing, or tearing the skin of hands or other parts of the body on projecting nails, wire or steel strapping

To avoid these hazards, a workplace must "maintain" order throughout a workday. Although this effort requires a great deal of management and planning, the benefits are many

4.3.3. A good housekeeping program identifies and assigns responsibilities for the following:

- ❖ Clean up during the shift
- ❖ Day-to-day cleanup
- ❖ Waste disposal
- ❖ Removal of unused materials
- ❖ Inspection to ensure cleanup is complete

Do not forget out-of-the-way places such as shelves, basements, sheds, and boiler rooms that would otherwise be overlooked. The final step to any housekeeping program is inspection. It is the only way to check for deficiencies in the program so that changes can be made. Examples of checklists include inspecting offices and manufacturing facilities.

4.4. Employee Facilities

Employee facilities need to be adequate, clean and well maintained. Lockers may be necessary for storing employees' personal belongings. Washroom facilities require cleaning once or more each shift. They also need to have a good supply of soap, towels plus disinfectants, if needed.

If workers are using hazardous products, employee facilities should provide special precautions as needed such as showers, washing facilities and change rooms. Some



facilities may require two locker rooms with showers between. Using such double locker rooms allows workers to shower off workplace contaminants and reduces the chance of contaminating their "street clothes" by keeping their work clothes separated from the clothing that they wear home.

4.5. Storage

Good organization of stored materials is essential for overcoming material storage problems whether on a temporary or permanent basis. There will also be fewer strain injuries if the amount of handling is reduced, especially if less manual material handling is required. The location of the stockpiles should not interfere with work but they should still be readily available when required. Stored materials should allow at least one meter (or about three feet) of clear space under sprinkler heads. Stored materials should not obstruct aisles, stairs, exits, fire equipment, emergency eyewash fountains, emergency showers, or first aid stations. All storage areas should be clearly marked

4.6. Minor adjustments to machine settings or components

4.6.1. Total productive maintenance in spinning industry

The manufacturing technique in spinning industry of 21st century is characterized by higher degree of automation with minimum human interference both in production and quality control. A complete automation of material handling has become reality. With auto doffing, auto can changing and transport, automatic yarn piecing and linking the ring frame with the automatic winding machine, it is possible to cut down ever-increasing labour cost. Though the operations have been automated, maintenance still to a greater degree depends on human input. The advantage of automation, which needs considerable capital investment, cannot be reaped fully by the mills unless effective utilization of equipment both in terms of quality and productivity is ensured. Total Productive Maintenance aims to maximize overall equipment effectiveness.

4.6.2. Definition and concept of Total Productive Maintenance (TPM)

TPM is defined as a company-wide team-based effort to build quality into equipment and to improve Overall Equipment Effectiveness (OEE). The word Total in TPM signifies the following three aspects of TPM:

- ❖ Entire maintenance system, which includes corrective maintenance, preventive maintenance and predictive maintenance through conditioned-based monitoring.
- ❖ Total involvement of all the employees in the organization.
- ❖ Elimination of all accidents, defects,



The word productive in TPM stands for elimination of downtimes losses arising out of breakdown and set-up and adjustment required during lot change. The term maintenance refers to activities carried out to increase functional reliability and life of the equipment in order to improve overall equipment effectiveness. The six big losses that arise in manufacturing industries with special reference to spinning industry are mentioned below

4.6.3. Downtime

- a. Equipment failure from breakdown of a machine part or component.
- b. Adjustment and setting of machine parameters at the time of count change or lot change. **Production losses**
- c. Reduced speed, eg, ring frame has to run at lower spindle speed than recommended.
- d. Idle spindles in ring frame because of missing spare parts.
- e. Reduced yarn realization percentages because of waste extraction at opening and cleaning unit. **Defects**
- f. Process defects, eg, de-shaped bobbin in ring frame, poor nep removal efficiency at carding.

4.7. Oiling or Lubricant

4.7.1. Oil

Oils are thin liquids made of long polymer chains, with additives for various extra properties. Common additives include antioxidants to keep the oil from oxidizing, corrosion inhibitors to prevent parts from corroding, and detergents to keep deposits from forming. These long chains are hard to squeeze out from between surfaces, making oils useful as a slippery barrier between them. Oils come in different “weights” (such as 5W or 10W), which correspond to viscosity. The lower the number, the thinner the oil, and the more easily it will flow.

4.7.2. Lubricant

Nature has been applying lubrication since the evolution of synovial fluid, which lubricates the joints and bursas of vertebrate animals. Prehistoric people used mud and reeds to lubricate sledges for dragging game or timbers and rocks for construction. Animal fat lubricated the axles of the first wagons and continued in wide use until the petroleum industry arose in the 19th century, after which crude oil became the chief source of lubricants. The natural lubricating capacity of crude oil has been steadily improved through the development of a wide variety of products designed for the specific lubricating needs of the automobile, the airplane, the diesel locomotive, the turbojet, and power machinery of every description. The improvements in petroleum lubricants have in turn made possible the increase in speed



and capacity of industrial and other machinery. There are three basic varieties of lubrication: fluid-film, boundary, and solid.

The most common application of a lubricant is to reduce friction between surfaces, but not all lubricants are equal. In this handy guide, we'll go over a few of the most common lubricants, how they work, and when to use them.

❖ **Penetrating Lubricants**

Any shade-tree mechanic would agree that these types of lubricants deserve their own special section. Penetrating lubricants are the saviors of many stuck-bolt combatants, loosening years of rust and debris in minutes. Contrary to the other substances covered here, penetrating oils are not designed for long-lasting lubrication. Instead, they are low-viscosity oils with additives that are specifically designed for one purpose: to infiltrate the tiny cracks between surfaces (such as screw threads), add lubrication, and break up rust.



Fig. Lubricants

- ❖ **Dry** lubricants are made up of lubricating particles such as graphite, molybdenum disulfide, silicone, or PTFE. At the molecular level, these particles are super slippery, so they reduce the friction between surfaces in contact with one another. It's common to find these lubricants in spray form, where they are mixed with water, alcohol, or some other solvent that will evaporate away after application.

4.7.3. Functional properties of Lubricant: Outcome from the physical properties

- ❖ Lubricant must be resist oxidation
- ❖ Lubricant must be resist carbon formation
- ❖ Lubricant must be resist rust formation
- ❖ Lubricant must anti-foaming
- ❖ Lubricant must be resist extreme load
- ❖ Lubricant must possess required viscosity
- ❖ Lubricant must act goods cleaning agent



Self-Check -4	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is meant by effective housekeeping? (6 Points)
2. What is the effect of poor housekeeping? (8 Points)
3. what are the functional of Lubricant ? (8 points)



Note: Satisfactory rating – 20 and above points

Unsatisfactory - below 20 points

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date: _____

Short Answer Questions



Information Sheet-5

Report and record types of work problems

a. Introduction

Record keeping is about the management of records from creation to either destruction or preservation. The computerization of organizations has resulted in the phenomenon of electronic records i.e., records *born digital* within computer based information systems

b. Types of records to be kept

- ❖ Types of records to be kept
- ❖ Members' access to the records
- ❖ Privacy and confidentiality of records
- ❖ Custody and handover of records
- ❖ Record keeping and Consumer Protection
- ❖ Record keeping systems
- ❖ Record keeping and the rules
- ❖ Sample Form - Statutory Declaration

c. Employment records

In addition to the records required by the common wealth industrial laws associations may wish to set up employment related record systems. These could include:

- ❖ Recruitment records such as job descriptions, selection criteria, related industrial agreements, advertisements, selection processes and outcomes;
- ❖ Formal records of any meeting or discussion related to issues of employee performance and position review;
- ❖ Formal documentation of all proceedings related to any grievance;
- ❖ Records on staff training and professional development; and
- ❖ Copies of all correspondence and memoranda relating to individual conditions of employment, changes or requests.

d. Safety records

The following health and safety records should be kept in a separate file for easy access and reference:

- ❖ Complaints;
- ❖ Incidents;
- ❖ Risk management analysis;
- ❖ Training details;
- ❖ Safety committee minutes; and
- ❖ Copies of specific management committee resolutions



- e. The model identifies three different purposes for using records:
- a. **business purposes;**
 - ❖ Records are by definition by-products of business transactions, so it is therefore to be expected that records will be used for business purposes. Examples of situations where records are used for business purposes exist in the organizations.
 - b. **accountability purposes; and**
 - ❖ Records are created when people are taken into custody either for criminal activities, intoxication, or disturbance of the public order. In each of these three cases the information.
 - c. **Cultural purposes**
 - ❖ Uses of records with a cultural purpose in the studied organizations are rare. Nevertheless there are many public organizations that either sell or give access for free to their public records to external users. External users either retrieve or use records to gain knowledge of the organizations that are responsible for preservation of records.



Self-Check -5	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are the types of records? (4 Points)
2. What is the importance of safety records (4 Points)
3. What are the three different purposes for using records (8 Points)



Note: Satisfactory rating – 14 and above points

Unsatisfactory - below 14 points

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date: _____

Short Answer Questions

1. _____

2. _____

3. _____

-



Operation Sheet 1	CONTENT-
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Method of preparation of work station:

Step 1- Prepare the class room for proper work

Step 2- Prepare the workstation in the class room

Step 3- Prepare work pieces for textile product work



LAP Test	Practical Demonstration
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Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within 3 hour for each work.

Task 1. Prepare the work pieces and workstation for knitting in the workshop

Task 2. Prepare the work pieces and workstation for weaving in the workshop

Task 3. Prepare the work pieces and workstation for Spinning in the workshop

Task 4. Prepare the work pieces and workstation for printing and dyeing in the Workshop

Task 5. Prepare the work pieces and workstation for ginning in the workshop



List of Reference Materials

1. Hemdan A A T and Ayatallah M S (2008): Online Fabric Defect Detection and Full Control in Circular Knitting Machine, AUTEX Research Journal, Vol 8, pp 21-29.
2. Garments Manufacturing Technology by Md. Saiful Azom.
3. www.textileschool.com/School/Apparel/ApparelManufacturing/FabricInspection.aspx