



LOCK TAG TRY (LTT) STANDARD

Purpose

At Himadri Speciality Chemical Limited this Standard implemented to ensure safety of the people engaged for doing work inside or outside of machines and equipment by applying proper Lock, Tag & Try (LTT) methods. This Standard is for internal purposes and does not fulfil or comply the requirements of ISO requirements or Local and National Legislations. In case of any conflict with Local and National Legislations later shall supersede this Standard.

Scope

Lock, Tag and Try Standard is applicable in specific activities where people are engaged for doing work inside or outside of machines and equipment in all manufacturing units, plants, offices, R&D Centres, Warehouses, Laboratories. In addition, it is also applicable to all machines and equipment owned by Himadri Speciality Chemical Limited, that are used for industrial purposes and operated by direct Himadri Speciality Chemical Limited's employees or by indirect employees whether supervised directly or indirectly. This Standard excludes hand tools, vehicles and office equipment like printers, copy machines.

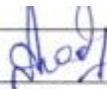

Operations with the following characteristics must be secured by Engineering Controls (e.g. interlock and manual restart button, safe mode), so that entry into the machine, intervention, exit and restart are safe and easy:

1. Part of normal manufacturing cycle (cleaning, tool/material changeover, setup and adjustments, troubleshooting); and
2. Occurring once or more per shift; and
3. Conducted by not more than one operator.

LTT is applicable only for tasks which are less frequent, more complex or involving multiple personnel.

1. General rules

An LTT procedure must be defined and applied for all interventions on a machine that:

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1.1 cannot be fully secured through engineering controls (eg: Interlock + manual restart button, safe mode)

1.2 or involve more than one person

The main purpose of LTT is to dissipate and isolate all relevant sources of energy so as to prevent any unintended release of energy or unexpected start-up of machinery while people are in machine or equipment or in the surrounding area.

Full LTT (locking all locking points) or Partial LTT (locking a few locking points) will be done depending on the nature and risks involved to the operations.

A “*Person Lock*” with name is mandatory for all persons working in or on machinery, or entering the area of a machine under LTT, and they must apply their respective “*Personal Lock*” prior to commencement of work. The purpose is to ensure that all keys to the machine locks must be rendered inaccessible by the personal locks of all the persons participating in the operation.

2. Rules for machinery and equipment

- a) All Machines and Equipment requiring LTT must be identified and listed and updated from time to time.
- b) All energy sources of machinery and equipment (whether electrical, mechanical, pneumatic, hydraulic, kinetic, gravity or in any combination) must be identified, categorized, and capable of being isolated with physical locks.
- c) Isolation must be by means of physical lock out devices.
- d) Procedure of LTT for all machines and equipment must be prepared explaining in detail the steps that need to be followed while applying LTT
- e) If some operations cannot be carried out under Full LTT, or do not require Full LTT, then an appropriate Partial LTT procedure must be defined. NB: different operations may require different Partial LTT procedures.
- f) If for some operations, complete physical isolation of the relevant energy sources is not possible, a risk assessment must be carried out and mitigating actions implemented before commencement.
- g) Locking points (points of isolation) must be indicated on equipment, visible and in good condition.

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- h) There must be one machine lock per locking point. The locking point must be indicated on the machine lock (label, tag, engraving...) and categorized (Electrical, Gas, or Mechanical 1, 2, 3... for example).
- i) There can be only one key per machine lock.
- j) All machines or equipment that have more than one locking point must be equipped with an LTT box.
- k) All machines or equipment with one locking point only must be equipped with an LTT box or a hasp (multiplier).

3. Rules for the LTT process

- a) The area of the machine or equipment under LTT must be identified by signage and cordoned off.
- b) All personal locks must have one key only. (Multiple keys must be destroyed)
- c) The owner of each personal lock must be easily identified (label, tag, engraving...)
- d) For machines and equipment that have only one locking point, then:
 - Either the machine lock is placed in the LTT box and all people entering the area place their personal locks on the LTT box
 - Or the hasp (multiplier) is placed on the locking point of the machine, and all people entering the area place their personal locks on the hasp.
- e) For all machines that have more than one locking point, once machine locks are applied, keys to the machine locks must be placed in the LTT box, and all personnel entering the area of the machine or equipment under LTT must apply their personal locks on the LTT box.
- f) No machine lock can be removed until everyone has exited the area and all personal locks have been removed.
- g) If LTT is carried out by a contractor, it must be done under the supervision of a direct employee of HSCL.

4. Standard Operating Practice (SOP)

SOP must be developed for Lock, Tag & Try (LTT) on all machines and equipment and shall be validated by site HSE and site maintenance / engineering manager. They should contain the following basic requirement:

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- a) The list of all operations requiring LTT, whether Full or Partial (eg: cleaning, preventive maintenance, inspections, repairs)
- b) Instructions for cordoning off the area and signage
- c) Order in which locks are applied and checks are carried out (Try) (for Full and Partial LTT procedures)
- d) Detailed instructions for the isolation of the machine, including Locking, Tagging, and Testing of each locking point
- e) Detailed instructions on where to place machine lock keys and personal locks. Clear instruction that personal keys MUST be kept by each participant
- f) For the return to operations after tasks are completed, checking that tools and locks have been removed and safety guards are in place
- g) Instructions for LTT operations that covers more than one shift
- h) Reaction rules in case something goes wrong (eg: lost key). In the event of lost keys, the lock shall be broken in the presence of Manager and a new loc shall be used.
- i) All Lock Tag and Try devices and work instructions must be reviewed at least every 12 months and formally documented.

5. Visual management and control of Lock Out Devices

Shadow Boards shall be used in Lock Stations, so that it is it is clearly understood if any locks are missing, one should able to find out which machines are being locked out, and who is in the area person of the LTT. The Shadow Bords must be displayed in a conspicuous place and orderly manner.

6. Training

All Lock Tag & Try (LTT) Applicators must be trained and authorized at least annually. Training and authorization must be based on the latest relevant machine specific LTT Standardized Work Instructions and documented.

7. Accountability

HODs are accountable for ensuring this Lock Tag & Try Standard is fully implemented.

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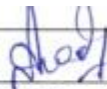

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8. Appendices

The following examples can be used as reference:

- Appendix 1- Site Equipment LTT List, Authorized Person List example.xls
- Appendix 2 - LTT Isolation Permit example.doc
- Appendix 3 - Lock Assignment Record example.doc
- Appendix 4 - LTT Record example.doc
- Appendix 5 - LTT Device examples.doc

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Himadri Speciality Chemical Ltd



LTT / ISOLATION PERMIT

Location Of Work:						PTW No:	
Description of Work:							
Commencement:				Date		Time	
Target Completion				Date		Time	
Associated Permits No:				Date		Duration:	
Names of Authorised Person/s who have issued Associated Permits							
What Needs to be Isolated	Method of Isolation	Lock No:	ISOLATED		RESTORED		
			Order of Isolation	Initial & Date	Order of Isolation	Initial & Date	
Electrical							
Pneumatic							
Hydraulic							
Process Fluid Oil /Resin/ Others							
Process Gas							
Stored Energy							
Water							
Other Source of Energy							
Plan Approved and Authorized by:				Restoration Authorized by:			
Name: Custodian Controller				Name: Custodian Controller			
Signature				Signature			
Date				Date			
Isolation Completed & Tested by:				Restoration Complete by:			
Name: Custodian Controller				Name: Custodian Controller			
Signature				Signature			
Date				Date			

LOCK TAG TRY DEVICES

<p>Padlock</p> 	<p>Tag</p> 	<p>Multi-Lock Hasp</p> 
<p>Cable Lock</p> 	<p>Ball Valve Lock</p> 	<p>Sluice Valve Lock</p>  <p>两锁可相互嵌套放置，使存放体积更小。图为警告红色两锁及便利双筒包。</p>
<p>Multifunctional Lock</p>    	<p>Wall switch lock</p> 	
<p>Mini Breaker</p>   	<p>Bucket Breaker</p> 	
<p>Pressure Release Valve lock</p> 	<p>Group Lock Box</p> 	
<p>Gas Cutting</p> 	<p>Crane Remote Control lock</p> 	