APPROVED BY Director of Quality, Labour Safety and Environmental Control

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OCCUPATIONAL HEALTH AND SAFETY PROCEDURE BDS-3 'PERMANENT MEANS OF ACCESS TO HEIGHT'

I. GENERAL

Purpose and Scope of Application

1. Occupational Health and Safety Procedure BDS-3 'Permanent Means of Access to Height' (hereinafter, the Procedure) defines occupational health and safety (OHS) requirements for use and maintenance of permanent means of access to height at Public Company ORLEN Lietuva (hereinafter, the Company).

2. This Procedure shall apply to employees of the Company and contractors (to the extent required by a relevant contract concluded with the Company) involved in using permanent means of access to height in the Company.

II. REFERENCES

3. This Procedure has been developed in line with effective revisions of the following standards:

3.1. LST EN ISO 14122-1 Safety of machinery. Permanent means of access to machinery. Part 1. Choice of fixed means and general requirements of access;

3.2. LST EN ISO 14122-2 Safety of machinery. Permanent means of access to machinery. Part 2. Working platforms and walkways;

3.3. LST EN ISO 14122-3 Safety of machinery. Permanent means of access to machinery. Part 3. Stairs, stepladders and guardrails;

3.4. LST EN ISO 14122-4 Safety of machinery. Permanent means of access to machinery. Part 4. Fixed ladders;

3.5. ORLEN S.A. Standard S4 T1. Working platforms and walkways.

III. TERMS AND DEFINITIONS

4. Terms and definitions used herein:

Machinery – any installation, apparatus, pipeline, etc.

Permanent means of access to height – working platforms (access platforms), walkways, stairs, stepladders, stair landings, guardrails, and fixed ladders.

Guardrail – a barrier designed to prevent people from accidental falls from elevated areas such as stairs, stepladders, platforms and walkways or accidental contact with hazard.

Working platform – horizontal level surface used for the operation, maintenance, inspection, repair, sampling, and other phases of work in connection with the machinery.

Walkway – level or inclined surface used for moving from one point to another.

Head-height – minimum vertical distance, clear of all obstacles (such as beams, ducts, etc.) above the pitch line.

Stair – fixed means of access with an angle of pitch from more than 20 ° up to 45 °, whose horizontal elements are steps.

Toe plate – a rigid vertical barrier installed on the edge of landing platform or working (access) platform to prevent the fall of objects from a floor level.

Stepladder – fixed means of access with an angle of pitch from more than 45 °up to 75 °, whose horizontal elements are steps.

Fixed ladder – fixed means of access with an angle of pitch from more than 75 ° to 90 °, whose horizontal elements are rungs.

Safety cage - an element of fixed ladder used to protect employees from fall.

IV. DUTIES

5. Head of Organizational Unit must carry out inspections of permanent means of access to height to ensure that they are in good condition and safe for use at all times, and ensure that such inspections are carried out by own subordinates and that any identified defects or non-conformities are reported via Hazard Reporting E-System and registered in section 'FAILURES' of TP Shell program in accordance with the requirements of Regulations for Maintenance and Repair of Access Platforms;

6. Employee shall:

6.1. Make sure that permanent means of access to height used by employee are in good condition and safe for use;

6.2. Carry out inspections of permanent means of access to height and report any defects or non-conformities to the Head of Organizational Unit and register them with Hazard Reporting E-System as well as in section 'FAILURES' of TP Shell program in accordance with the requirements of Regulations for Maintenance and Repair of Access Platforms.

7. **Mechanical Engineers of Maintenance Department** shall carry out inspections of permanent means of access to height and organize rectification of any identified defects or non-conformities in accordance with the requirements of Regulations for Maintenance and Repair of Access Platforms.

8. **Contractor employees** shall make sure that the permanent means of access to height used by them are in good condition and safe for use, shall report any identified defects or non-conformities to respective Head of Organizational Unit of the Company and shall register them with Hazard Reporting E-System.

V. MAIN POTENTIAL HAZARDS

9. Main hazards occurring during use of permanent means of access to height:

9.1. Musculoskeletal strain (e.g. as experienced during vertical ladder climbing);

9.2. Fall from height, e.g. ladder, stairs, platform;

9.3. Fall of objects from height;

9.4. Tripping, slipping, and falling.

VI. REQUIREMENTS FOR WORKING PLATFORMS AND WALKWAYS

10. Unless exceptional circumstances exist, the minimum head-height over working platforms and walkways shall be 2100 mm.

11. If an obstacle (e.g. pipe) is crossing the walkway at the head-height, the minimum head-height may be reduced to no less than 1 900 mm. Such places shall be marked with warning signs.

12. Clear width of walkway shall be at least 800 mm. When the walkway is usually subject to passage or crossing of several persons simultaneously, the clear width shall be increased to at least 1000 mm.

13. Guard-rails shall be provided if there is a risk of falling from walkways or working platforms from a height of 500 mm or more. Guard- rails are also required at places where there is a risk of sinking or an adjacent structure collapsing.

14. Floorings shall be designed in such a way that neither dirt, snow, ice, etc., nor may other substances accumulate. Therefore, permeable floorings, such as gratings or cold formed planks shall be used. If this is not possible, and permeable floorings are not used, facilities for removing the accumulated substances shall be provided.

15. To avoid trip hazards, the greatest difference between the tops of neighboring flooring surfaces shall not exceed 4 mm in height.

16. Floorings of working platforms or walkway shall only have such maximum openings that a ball with a diameter of 35 mm cannot fall through. Floorings above a place where people are working, as opposed to occasional passage, shall have such maximum openings that a ball with a diameter of 20 mm cannot fall through.

17. In cases where the risk assessment concludes that hazards caused by objects or other materials falling or passing through the flooring are more significant than the slipping, falling, and other hazards, the flooring shall have no opening.

18. If gap between the edge of flooring and other adjacent structural elements exceeds 30 mm, a toe plate is required around the edges of flooring and openings of structural elements (e.g., pipelines, collectors, or supports) crossing them.

19. If flooring is made of detachable elements, i.e. removable, for example, where required for maintenance of auxiliary equipment mounted below flooring:

19.1. Any hazardous movement of these elements shall be prevented, e.g. by fasteners;

19.2. It shall be possible to inspect fixings in order to detect any corrosion or any hazardous loosening or change of position of clamps.

VII. REQUIREMENTS FOR STAIRS, STEPLADDERS AND GUARDRAILS

20. Safety requirements for stairs:

20.1. Going (g) and rise (h) (see Fig. 1) shall meet this formula:

 $600 \le g + 2h \le 660$ (dimensions in millimeters)

20.2. The overlap (r) of the step shall be \geq 10 mm and shall apply equally to landings and floors (see Fig. 1).

20.3. The uppermost step shall be level with the landing.



Fig. 1. Parts of stairs and stepladders

- H climbing height, height of stairs;
- g going;
- e head-height;
- h rise;
- I stair platform length;
- r overlap;
- α angle of pitch;
- w width;
- p pitch line;
- t depth of step;
- c clearance.

20.4. The clear width (w) of a stair shall be a minimum of 800 mm. When the stairway is usually subject to the passage or crossing of several persons simultaneously, the clear width shall be increased to 1000 mm. Due to occasional use, e.g. less than 30 days/year and less than two hours/day, the clear width (w) may be reduced from 800 mm to 600 mm. If the available space at the floor level is

rail;

Fig. 2).

restricted due to pipework, electric, or constructive reason of machinery, the stair width at floor level may be reduced to 500 mm minimum.

20.5. In the case of a single straight flight, the climbing height (H) (see Fig. 1) shall not exceed 4 000 mm.

20.6. In case of multiple flights, the climbing height (H) of the individual stairs shall not exceed 3000 mm and a landing is necessary before continuing on to another flight. The length of the landing shall be equal or greater than the width of the stair but at least 800 mm.

21. Safety requirements for guardrails of platforms, walkways and stair landings:

21.1. When the height of the possible fall exceeds 500 mm, a guard-rail shall be installed;

21.2. A guard-rail shall be provided when the gap between a platform and the structure of a machine or wall is greater than 180 mm or if the protection of the structure is not equivalent to a guard-rail. However, a baseboard or toe-plate shall be provided when the gap between the platform and neighboring structure is greater than 20 mm;

21.3. The minimum height of the guard-rail shall be 1100 mm;

21.4. The guard-rail shall include at least one intermediate knee rail. The clear space between the handrail and the knee rail, as well as between the knee rail and the toe-plate, shall not exceed 500 mm;

21.5. A toe plate with a minimum upstand of 100 mm shall be placed 12 mm maximum from the walking level and the edge of the platform, as well as stair landings.

21.6. Where access through the guard-rail is required, a gate shall be used. The gate shall have the handrail and the knee rail at the same level as adjacent guardrail if extended;

21.7. Gates shall be self-closing and designed to open onto the platform or floor and close against a firm stop to prevent users pushing against them and falling through the opening. The load capacity of the gate shall meet the requirements of the adjacent guard-rails;

21.8. The ends of the handrail shall be designed so that shear and crushing points (risk of injury caused by sharp edges of the handrail or risk of clothing getting caught) are avoided.

22. Safety requirements for guardrails of stairs and stepladders:

22.1. Stairs shall have two handrails. The handrails of stairs shall be continuous with knee

22.2. If the stairs are adjacent to a wall, or some other solid structure, and less than 1 200 mm wide, then one handrail, on the otherwise unprotected side, is permitted, provided that any gap between the stair and the wall or structure is not greater than 120 mm.

22.3. The vertical height of the handrail on a stair shall be between 900 mm and 1000 mm above the nosing on the step of the flight and be a minimum of 1100 mm above the walking level on the landing.

VIII. REQUIREMENTS FOR FIXED LADDERS

23. To protect users from falling from height safety cages of ladders shall be installed (see

24. The lowest part of safety cage, e.g. the lowest hoop, shall be at a height of 2200 mm and 3000 mm above the departure area. Below the cage on the chosen access side, the safety cage shall not have elements likely to obstruct access to the area situated in front of the ladder. At the arrival area, the safety cage shall be extended up to the height of the guardrail of the arrival area.

25. Clearances distances within the cage shall be from 650 mm to 800 mm. This applies equally to non-rounded and rounded safety cages.

26. The distance between hoops shall not exceed 1500 mm and the distance between two uprights on the cage shall not exceed 300 mm. The hoops shall be places perpendicular to the uprights of the cage. The uprights of the safety cage shall be equally spaced and fixed to the inside of the hoop.

27. If the horizontal distance from the fixed ladder, equipped with a safety cage, to the guardrail of an elevated departure area is greater than 1500 mm, the safety handrail shall be extended or the cage shall be extended downwards to the safety handrail (see Fig. 3).



Fig. 2. Front view of ladder with safety cage (2 – gate, 5 – intermediate platform)







Side view with extension

Fig. 3. Safe departure/arrival areas

30. Ladders may have front or side exit to arrival area. The width of exit shall be from 500 mm to 700 mm.

31. The exit shall be equipped with gate to prevent fall into the opening of arrival area. The gates shall meet the following requirements:

31.1. The gates must close against a firm stop to prevent users pushing against them and falling through the opening;

31.2. The gates shall be designed to open easily;

31.3. The gates must be self-closing for example, by spring or gravity force;

31.4. The gates must have a handrail and a knee rail.

32. Departure and arrival areas, as well as intermediate platforms shall comply with the requirements of LST EN ISO 14122-2.

33. If required for technical reasons, the platform may have an opening for access to/from ladders below the platform. To protect against the risk of fall through such opening, it must have a self-closing trap door or a guardrail with gate.

34. The trap door should not open downwards; it should move upwards or horizontally, and be easy to open and close by hand without excess effort by the user (e.g. by spring or hydraulic force).

35. Warning sign shown in Fig. 4 should be placed in clearly visible location next to the hatch door.

36. Normally, fixed ladders with the rise greater than 6000 mm shall be equipped with one or more intermediate rest platforms.



Fig. 4. Warning Sign

IX. REQUIREMENTS FOR INSPECTION OF PERMANENT MEANS OF ACCESS TO HEIGHT

37. The following to be checked during inspection:

37.1. Technical condition of working platforms, walkways, floorings of platforms (visually inspect if flooring fittings are secure, if flooring is free of deformations, holes, if the surface is firm and stable);

37.2. Technical condition of guardrails (if they are not cracked, unattached, broken, deformed or bended);

37.3. Technical condition of the stairs and steps (if they are not cracked, unattached, bended, broken).

X. FINAL PROVISIONS

38. Responsibility for periodic review and updating of this Procedure, if needed, shall lie with the Director of Quality, Labour Safety and Environmental Control of the Company.

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