

TESTING LABORATORY  
LIMITED LIABILITY COMPANY  
“TESTING LABORATORY “KHARPLASTMAS”  
accredited by the National Accreditation Agency of Ukraine  
compliance DSTU EN ISO/IEC 17025:2019  
(EN ISO/IEC 17025:2017, IDT; ISO/IEC 17025:2017, IDT)  
Certificate of Accreditation № 20239  
till 24 of September 2023



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DSTU EN ISO/IEC  
17025

61177, Kharkiv, Zalyutynska, 4  
tel. 0675519433  
e-mail: [laba.hpm@gmail.com](mailto:laba.hpm@gmail.com)



TEST REPORT № 103  
27 “July” 2023

Testing within the product's conformity of the EU guidelines and standards:  
Polymer manhole garden (A15) with locking mechanism  
Polymer manhole (A50) with locking mechanism  
Polymer manhole square (A15) with locking mechanism  
Polymer inspection cover square (A15)

Manufacturer – LIMITED LIABILITY COMPANY  
«TOP DRAINAGE SYSTEMS» 61177, Ukraine, Kharkiv, Zalyutinskaya st, 4.

2023

1. **THE APPLICANT OF TESTS:** LIMITED LIABILITY COMPANY «TOP DRAINAGE SYSTEMS» 61177, Ukraine, Kharkiv, Zalyutinskaya st, 4.
2. **TEST ITEM:** Polymer manhole garden (A15) with locking mechanism – 3 items, Polymer manhole (A50) with locking mechanism – 3 items, Polymer manhole square (A15) with locking mechanism - 3 items, Polymer inspection cover square (A15) – 3 items. Manufacturer – LIMITED LIABILITY COMPANY «TOP DRAINAGE SYSTEMS» 61177, Ukraine, Kharkiv, Zalyutinskaya st, 4.
3. **REASON:** Letter of the director of LIMITED LIABILITY COMPANY «TOP DRAINAGE SYSTEMS» from 25 July 2023.
4. **DELIVERY DATE OF THE SAMPLE:** 25 July 2023
5. **ACT OF SELECTING OF THE SAMPLES:** LIMITED LIABILITY COMPANY «TOP DRAINAGE SYSTEMS» from 25 July 2023.
6. **IDENTIFYING OF THE SAMPLES:** The samples arrived at the Testing Laboratory in a condition suitable for testing.
7. **PURPOSE OF THE TEST:** Samples are tested on compliance with requirements of the standards:
  - EN 124-1: 2015 «Gully tops and manhole tops for vehicular and pedestrian areas. Part 1: Definitions, classification, general principles of design, performance requirements and test methods»;
  - EN 124-5: 2015 «Gully tops and manhole tops for vehicular and pedestrian areas. Part 5: Gully tops and manhole tops made of composite materials.
8. **DATE AND PLACE OF THE TEST:** TL LLC “TL “KHARPLASTMAS” 25 July 2023 - 27 July 2023.
9. **CONDITIONS OF THE TEST ROOM:**

- Air temperature:	<u>19-20 °C</u>
-Relative humidity	<u>67-68 %</u>
-Atmospheric air pressure	<u>990-1000 mbar</u>
10. **TECHNICAL CHARACTERISTICS OF THE TEST ITEM:**

The manhole top is made of composite material and designed for pedestrian areas and comparable areas, car parks or car parking decks.



## 11. TOOLS FOR TESTING:

THE FOLLOWING MEASURING EQUIPMENT (ME) AND TEST EQUIPMENT (TE) WERE USED DURING THE TESTING

Table 1

Name	Model of tool	Serial number	Measurement range	Expanded uncertainty, error
1	2	3	4	5
Hygrometer psychometric	ВИТ-1	31/H773	0÷25 °C 20÷90 %	$\Delta = \pm 0,2$ °C $\delta$ (dry, wet thermometer) $= \pm 6$ % $U = 0,06$ °C
Test blocks	TB	-	$\varnothing 250$	$\Delta = \pm 1$ mm
Testing machine with the Pressure-gauge	474 A МО	2448 37118	0-100 tn 0-97 atm	accuracy class – 0.4 $U = \pm 0,094$ kgf/cm <sup>2</sup>
Metal ruler	-	11/15	0÷300 mm	$\Delta = \pm 1$ mm $U = 0,12$ mm
Metal tape measure	Р 2У3К	17	0÷2000 mm	$\Delta = \pm 0,5$ mm $U = 0,2$ mm
Feeler gauge with indicator	ИЧ-25	5233	0-25 mm	$\Delta = \pm 0,01$ mm $U = 4\mu\text{m}$



## 12. TEST RESULTS:

Table 2

Measured parameter	Normative documents	Requirements of the EN to the parameters	Actual value of the parameters
1	2	3	4
Classification	EN 124-1: 2015 it.4.1	<p>Based on the test loads according to Table 4, gully tops or manhole tops shall be classified into one of the following classes: A 15, B 125, C 250, D 400, E 600 or F 900.</p>	The manhole tops class – A 15
	EN 124-1: 2015 it.4.2	<p>This clause provides the link of the classification and the place of installation. For different classes of manhole tops or gully tops provisions in the place of installation shall be taken into account. :</p> <ul style="list-style-type: none"> <li>-Group 1 (at least class A 15): Areas which can only be used by pedestrians and pedal cyclists.</li> <li>-Group 2 (at least class B 125): Pedestrian areas and comparable areas, car parks or car parking decks.</li> <li>-Group 3 (at least class C 250): For gully tops, installed in the area of kerbside channels of roads (Figure 5) which, when measured from the kerb edge, extends a maximum of 0,5 m into the carriageway and a maximum of 0,2 m into the pedestrian area.</li> <li>- Group 4 (at least class D 400): Carriageways of roads (including pedestrian streets), hard shoulders (Figure 6) and parking areas, for all types of road vehicles.</li> <li>-Group 5 (at least class E 600): Areas imposing high wheel loads, e.g. docks, aircraft pavements.</li> <li>- Group 6 (class F 900): Areas imposing particularly high wheel loads, e.g. aircraft pavements.</li> </ul>	The manhole tops are designed for pedestrian areas and comparable areas, car parks or car parking decks.



Table 2 continuation

1	2	3	4
<b>Related to the design</b>			
Vents in covers	EN 124-1: 2015 it.6.1	Covers can be designed with or without vents.	The covers of the manhole tops are designed without vents.
Clear opening of manhole tops for man entry	BS EN 124-1: 2015 it.6.2	The clear opening of manhole tops shall be declared in the product documentation.	the clear opening: - Polymer manhole garden (A15) with locking mechanism - 588 mm for man entry; - Polymer manhole (A50) with locking mechanism - 580 mm for man entry; - Polymer manhole square (A15) with locking mechanism - 555 mm for man entry; - Polymer inspection cover square (A15) - not intended for man entry.
Clearance	EN 124-1: 2015 it.6.4	The total clearance $\sum a$ , shall conform to the following requirements: a) for covers or gratings in one or two parts: 1) clear opening $CO \leq 400$ mm: $\sum a \leq 7$ mm, 2) clear opening $CO > 400$ mm: $\sum a \leq 9$ mm	The total clearance of the manhole $\sum a$ : - Polymer manhole garden (A15) with locking mechanism - 6 mm; - Polymer manhole (A50) with locking mechanism - 7 mm; - Polymer manhole square (A15) with locking mechanism - 6 mm; - Polymer inspection cover square (A15) - 5 mm.
Compatibility of seatings	EN 124-1: 2015 it.6.5	Gully tops and manhole tops of all classes shall be such as to ensure the compatibility of their respective seatings. This shall be assessed by assembling the cover/grating and the frame.	Is provided
Handling of covers and gratings	EN 124-1: 2015 it.6.7	Provision shall be made for the effective loosening and for the opening of the covers and gratings by means of usual tools. Additional lifting features and/or devices can be incorporated in the design of manhole tops and/or gully tops.	Is provided
Positioning of covers and gratings	EN 124-1: 2015 it.6.10	Where the cover or grating has to be in a predetermined position relative to the frame, this shall be ensured by an appropriate design.	Is provided



Table 2 continuation

1	2	3	4
Manhole tops with sealing features	EN 124-1: 2015 it.6.14	Manhole tops in accordance with this standard can be designed with sealing features to resist against accidental upward water pressure. In such a case the frame shall be designed to be securely anchored. Manhole tops according to this standard can also incorporate sealing features to prevent or limit: — the escape of odours through the manhole top (non-pressure); or — non-pressure surface water ingress (rain water). The design and performance of the sealing features are not covered by this standard	Is provided
Appearance	EN 124-1: 2015 it.7.1	Gully tops and manhole tops shall be free from visible defects which might impair their fitness for use.	The manhole tops do not have any visible defects which might impair their fitness for use.
<b>Related to the performance</b>			
Appearance	EN 124-1: 2015 it.7.1	Gully tops and manhole tops shall be free from visible defects which might impair their fitness or use	The manhole tops are free from visible defects
Load bearing capacity, kN	EN 124-1: 2015 it.7.2	The load bearing capacity shall be declared as corresponding class according to Table 4 ( $F_T = 15$ kN for class A 15)	After removal of the test load $F_T = 15$ kN there are no visible evidence of cracking. The load at which visible damage occurs: For the Polymer manhole garden (A15) with locking mechanism - 18,6 kN; - Polymer manhole (A50) with locking mechanism – 68,6 kN; - Polymer manhole square (A15) with locking mechanism – 17,7 kN; - Polymer inspection cover square (A15) - 17,7 kN
Permanent set, mm	EN 124-1: 2015 it.7.3	When tested according to 8.2, the permanent set of the cover or grating after the application of FP (2/3 of the test load $F_T$ ) shall not exceed the values given in Table 5. Covers/gratings and frames, made of materials according to EN 124-5, shall not show cracks or delaminations in the course of the test when viewed without magnification.	Do not show cracks or delaminations in the course of the test when viewed without magnification



Table 2 continuation

1	2	3	4
Securing of the cover/grating within the frame	EN 124-1: 2015 it.6.6 a) EN 124-5: 2015 it.5.2.8.3	The cover/grating shall be secured within its frame to meet the required conditions relevant to the intended place of installation defined in 4.2. This shall be achieved by at least one of the following methods (see also Table E.1): a) securing feature; b) mass per unit area; c) other methods.	This shall be achieved by: a) securing feature
Child safety	EN 124-1: 2015 it.7.5 EN 124-5: 2015 it.5.2.8.5	Where required by specific provisions in the place of intended use child safety features and/or devices shall be incorporated in the design of manhole tops and/or gully tops. The resistance of covers or gratings to removal by children shall be met by one of the following means: a) mass of the individual covers or gratings; b) securing feature; or c) locking accessory. Where a locking accessory or securing feature is used, it shall be designed so that the cover or grating cannot be easily opened with objects readily accessible by children.	The resistance of covers or gratings to removal by children shall be met by: a) mass of the individual covers or gratings c) locking accessory (for Polymer manhole garden (A15) with locking mechanism, Polymer manhole (A50) with locking mechanism, Polymer manhole square (A15) with locking mechanism )
a) covers with raised pattern	EN 124-1: 2015 it.7.4.2 b)	The upper surface of covers shall be in accordance with at least one of the following requirements: b) shall have a structured upper surface with a defined raised pattern or a coarse textured upper surface which permits free drainage/dispersion of water to the surrounding area and complies with the following dimensional requirements: — When measured from the total plan surface, the raised pattern shall have a height of 2 mm to 6 mm for classes A 15, B 125, and C 250 and a height of 3 mm to 8 mm for classes D 400, E 600, and F 900. — The raised pattern shall be distributed as far as possible evenly over the total plan surface area of the manhole top. — The total surface area of raised pattern ( $\Sigma A_n$ ) shall be not less than 10 % and not more than 70 % of the total projected surface area (AT2).	The covers have a structured upper surface with a defined raised pattern or a coarse textured upper surface which permits free drainage/dispersion of water to the surrounding area and complies with the following dimensional requirements



Table 2 continuation

1	2	3	4
Water absorption	EN 124-5: 2015 it.4.3.3	The water absorption of manhole tops or gully tops shall be less than 0.3% At the end of the test the manhole top or gully top shall meet the requirements of permanent set specified in EN 124-1: 2015, Table 5, and of the test load according EN 124-1: 2015, Table 4. There shall be no visible evidence of cracking after the test.	The water absorption is: - - Polymer manhole garden (A15) with locking mechanism - 0,22%; - Polymer manhole (A50) with locking mechanism – 0,25%; - Polymer manhole square (A15) with locking mechanism – 0,21%; - Polymer inspection cover square (A15) – 0,22%. Is provided
Resistance to fatigue	EN 124-5: 2015 it.5.2.3	Upon completion of the test according to 6/3, the manhole top or gully top shall meet the requirements for the permanent set specified in EN 124-1:2015 it.7.3, and of the test load according EN 124-1:2015 it.7.2. There shall be no visible evidence of cracking after the test without magnification.	There are no visible evidence of cracking after the test without magnification.
Creep resistance	EN 124-5: 2015 it.5.2.4	When tested according to 6.4 the creep resistance of the manhole top or gully top shall meet the requirements for permanent set specified in EN 124-1:2015, 7.3	Is provided

Tests conducted by:

Senior chemistOlha DoroshenkoDATE: 27.07.2023

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