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TECHNO METAL S.A.E.

TEST REPORT

SCOPE OF WORK
ANSI/UL 181-2013(R2017) BURNING TEST AND TENSION TEST ON FLEXIBLE AIR DUCTS

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220128002SHF-001

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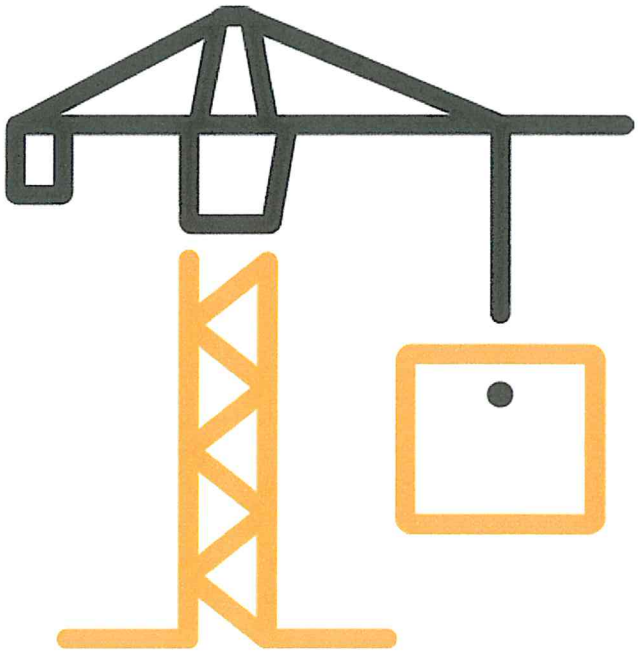

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REPORT ISSUED TO
Techno Metal S.A.E.

Block 13037, Piece 54, First Industrial Zone, Obour City, Cairo, Egypt.

SECTION 1
GENERAL INFORMATION

Intertek Building & Construction (B&C) was contracted by Techno Metal S.A.E. to evaluate the performance of burning test and tension test of flexible air ducts. This evaluation began on January 28, 2022 and was completed on February 28, 2022. The test was conducted from February 17, 2022 to February 24, 2022.

The test was conducted in accordance with ANSI/UL 181-2013(R2017), Standard for Factory-Made Air Ducts and Air Connectors.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

SECTION 2
SUMMARY OF TEST RESULTS

The sample identified as flexible air ducts was evaluated according to the ANSI/UL 181-2013(R2017) section 11 Burning Test and section 21 Tension Test, and the results are shown in the following page.

For INTERTEK B&C:

COMPLETED BY:	Lu Cheng	REVIEWED BY:	Harrison Li
TITLE:	Project engineer	TITLE:	Asst. Technical Manager
SIGNATURE:	Lu Cheng	SIGNATURE:	Harrison Li
DATE:	2022/2/28	DATE:	2022/2/28

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SECTION 3
TEST METHOD

The specimen was tested in accordance with the following:

ANSI/UL 181 2013(R2017), *Standard for Factory-Made Air Ducts and Air Connectors, section 11 Burning Test and section 21 Tension Test*

SECTION 4
PRODUCT INFORMATION

Test specimen was provided to Intertek directly by the client and was not independently selected for testing. Test specimen was received at the Evaluation Center on January 25, 2022. A description of the specimen is given in the table below and information provided by the sponsor of the test.

SPECIMEN DESCRIPTION	
Product Name	Flexible air ducts
Brand	Perfect Flex™
Model	/
Specimen ID	S220128002SHF.004~012

SECTION 5
BURNING TEST

5.1 TEST METHOD

The six samples are to be mounted as follows: one in the Interior Horizontal position, one in the Exterior Horizontal position, two in the Vertical position, one in the Interior 45-degree position, and one in the Exterior 45-degree position. Prior to the application of the burner to the sample, the burner is to be adjusted to produce a flame 2-1/2 inches (63.5 mm) high. The air and fuel input are to be adjusted such that the flame has equal parts of blue and yellow. The valve then is to be turned off and the burner positioned such that 1-1/4 inches (31.75 mm) of the test flame impinges the test sample 3 inches (76.2 mm) from the end of the sample. The valve then is to be turned on and the flame ignited.

The outside surface of three samples oriented in the three positions is to be exposed to the flame for 1 minute and then the flame is to be withdrawn. When flaming or glowing combustion of the sample ceases 60 seconds or less after removal of the test flame, the test flame is to be reapplied at the same place for 1 minute immediately after flaming or glowing combustion of the sample stops. The test flame again is to be withdrawn and the duration of flaming or glowing combustion

of the sample noted. During the test of an individual sample, the original size and characteristic of the test flame is not to be changed.

When particles drop from the sample that is oriented horizontally and 45-degrees from the horizontal during the exterior exposure tests, these particles are to be allowed to fall onto a horizontal plane 1 foot (305 mm) below the nearest part of the test sample. The plane is to be covered with a layer of untreated surgical cotton except for that portion of the area directly below the burner extending for a distance of 6 inches (152.4 mm) measured horizontally in all directions from a vertical axis through the tip of the burner flame.

Following exposure of the exterior surface of the first three samples, similar tests are also to be conducted on the remaining three samples of the set by applying flame to the inside surface. When required based on size and orientation of the sample, it shall be necessary, in some cases, to cut away part of the sample in order to apply the test flame to the interior surface. These samples are to be observed for flaming or glowing combustion only and surgical cotton is not to be placed beneath the samples during this test.

5.2 TEST RESULT

Direction	Exposed surface	Occurrence of ignition	Whether the flaming or glowing exceeds to 60s after test flame withdraw	Whether flame reaches the farthest end	Ignited cotton or not
Horizontal	Exterior	Yes	No	No	No
	Interior	Yes	No	No	N/A
Vertical	Exterior	Yes	No	No	N/A
	Interior	Yes	No	No	
45-Degree	Exterior	Yes	No	No	No
	Interior	Yes	No	No	N/A

5.3 CONDITIONS OF ACCEPTANCE

1. The duration of flaming or glowing of any sample after withdrawal of the test flame is not to exceed 60 seconds.

2. Flaming or glowing is not to travel to the end of the sample farthest from the point of application of the test flame.

3. Particles dropped from the exterior surface of the sample during the horizontal and 45-degree exterior exposures are not to ignite the surgical cotton.

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5.4 CONCLUSION

Based on above test results, the submitted sample was found to comply with the requirement of burning test.

SECTION 6

TENSION TEST

6.1 TEST METHOD

Samples previously untested are to be used for this test. Samples, 8 feet (2.43 m) long are to be required. Sections of air ducts and air connectors are to be prepared in accordance with 17.3 of UL181. Steel collars that meet the intent of the requirement, when not part of the assembly, are to be attached to each end of the test sample in accordance with the manufacturer's instructions. One end collar then is to be secured to an overhead support to allow the sample to be suspended vertically. A 25-pound-mass (11.3-kg) weight is to be attached to the lower end collar and shall remain for 24 hours.

6.2 TEST RESULT

Specimen	1	2	3
Rupture, break, tear, rip, collapse, or separate	No	No	No
Joining material remain intact (Yes/no)	N/A	N/A	N/A
Evidence of other damage causes not capable of further use	No	No	No

6.3 CONDITIONS OF ACCEPTANCE

1. The sample shall not rupture, break, tear, rip, collapse, or separate.

2. Any joining material shall remain intact to the extent that materials such as tapes do not become displaced more than a total for both edges of 1/8 inch (3.2 mm) from their initial position, disregarding movement due to slack or stretch which does not produce a separation of materials.

3. There shall be no evidence of other damage to the sample which causes it to be not capable of further use.

6.4 CONCLUSION

Based on above test results, the submitted sample was found to comply with the requirement of tension test.

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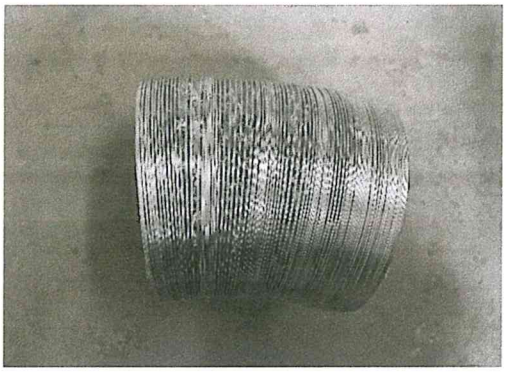
SECTION 7

SAMPLE RECEIVED PHOTO



SECTION 8

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	2022-02-28	N/A	Original Report Issue