Technický a zkušební ústav stavební Praha, s. p.,
odštěpný závod Zkušební ústav lehkého průmyslu
Čechova 59, 370 65 České Budějovice

Zkušební laboratoř 1018.9
Akreditována Českým institutem pro akreditaci, o.p.s. podle ČSN EN ISO/IEC 17025:2005

T E S T P R O T O C O L

Number: 100-055153
dated: 2016-01-12

Name and address of the customer: **LLC "Research-and-Production enterprise "Ukrmagnesit"**
40022, Ukraine,
Sumy, Srkyabin Street, 7

Product name: **Magnesit Board "Standard" – VZ010150523**
Magnesit Board "Premium" – VZ010150524

Test subject and method:

Determination of heavy metals in mineralize of sample: Method No. 100611-01
- AAS

Determination of volatile organic compounds (VOC): Method No. 100660
- GC-MS with thermodesorption

According to ČSN EN ISO 16000-10, Indoor air - Part 10: Determination of the emission of volatile organic compounds from building products and furnishing - Test chamberl method
- Preparation and sampling has been coming from ČSN EN ISO 16000-11, sample analysis has been coming from ISO 16000-6 and ISO 16000-3.
-Scope of test: VOC-C6-C16, SVOC-C16-C22
Test legal basis:
- PB LS-002/5/12-2011 – the concentration of solvents and unsaturated monomers in the range (2÷5000), method pg/m^3 gas chromatography.
- PB LS-013/2/09-2004 – The content of lead and cadmium, the method of AAS.

Date of sample receipt for testing: 2015-12-02
Tests were carried out: **from:** 2015-12-02 **to:** 2016-01-12
Test was carried out by the laboratory: Analytic Chemistry Laboratory
Name and function of the person entitled to sign this Test Protocol:

TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, S. P. akreditovaná zkušební laboratoř č. 1018.9 Odštěpný závod - ZÚLP České Budějovice -2-

Libuše Pražáková, M.Sc.
Technical Head of Laboratory

ilac-MRA L 1018.9

Description and identification of the sample: Magnesit Board "Standard" – VZ010150523
Magnesit Board "Premium" – VZ010150524

Devices used: gas chromatograph GC-MS FOCUS with thermodesorption, AAS PU 9400, AAS UNICAM 939

Test results:

Determination of heavy metals:

In mineralized sample were determined these values by AAS method on PU 9400.

Sample No. 786 – Magnesit Board "Standard" – VZ010150523			
Parameters measured	**Units**	**Results**	**Extended uncertainty in % rel.**
Cd	mg/kg	< 0.2	-
Pb	mg/kg	< 0.2	-

Sample No. 787 – Magnesit Board "Premium" – VZ010150524			
Parameters measured	**Units**	**Results**	**Extended uncertainty in % rel.**
Cd	mg/kg	< 0.2	-
Pb	mg/kg	< 0.2	-

Determination of volatile organic substances :

Centre of test was determination of VOC (volatile organic substances) specific emissions released from surface of the building material sample tested. The test was carried out by using a testing cell that was put on building material sample surface tested by a constant temperature, relative humidity and specific air flow.

Total values of VOC were measured on gas chromatograph GC-MS using thermodesorption by ISO 16000-6.

Formaldehyde and other aldehydes and ketones were measured on liquid chromatograph HPLC by ISO 16000-3.

Sampling after 3 days at the temperature of 23°C and relative humidity of 50%.

Sample size for the test: 20 x20 cm

Sample No.: 786 - Magnesit Board "Standard" – VZ010150523			
Parameters measured	**Units**	**Results**	**Extended uncertainty in % rel.**
Type of VOC			
- formaldehyd	mg/m^3	< 0.002	-
- aldehydy, ketony	mg/m^3	< 0.01	-
- benzen	mg/m^3	< 0.001	-
- toluen	mg/m^3	< 0.01	-
- xylen	mg/m^3	< 0.01	-
- styren	mg/m^3	< 0.01	-
- etylbenzen	mg/m^3	< 0.01	-

- trichlorethylen	mg/m^3	< 0.01	-
- tetrachlorethylen	mg/m^3	< 0.01	-
VOC-C6-C16	mg/m^3	< 0.01	-
SVOC-C16-C22	mg/m^3	< 0.01	-
VOC - other volatile organic substances			
TVOC - total volatile organic substances	mg/m^3	< 10	-

Sample No.: 787 - Magnesit Board "Premium" – VZ010150524			
Parameters measured	**Units**	**Results**	**Extended uncertainty in % rel.**
Type of VOC			
- formaldehyd	mg/m^3	< 0.002	-
- aldehydy, ketony	mg/m^3	< 0.01	-
- benzen	mg/m^3	< 0.001	-
- toluen	mg/m^3	< 0.01	-
- xylen	mg/m^3	< 0.01	-
- styren	mg/m^3	< 0.01	-
- etylbenzen	mg/m^3	< 0.01	-
- trichlorethylen	mg/m^3	< 0.01	-
- tetrachlorethylen	mg/m^3	< 0.01	-
VOC-C6-C16	mg/m^3	< 0.01	-
SVOC-C16-C22	mg/m^3	< 0.01	-
VOC - other volatile organic substances			
TVOC - total volatile organic substances	mg/m^3	< 10	-

The uncertainty mentioned is the extended uncertainty calculated by using the extension coefficient equalling 2 and so it corresponds to the significance level by approx. 95%.

Tests carried out by: J. Motis, M.Sc., J. Malkovská, P. Vodrážka, M.Sc.
Protocol completed by: T. Salivarová

Note:
This Test Protocol can be copied as the whole only, in case of using its part, a written approval is necessary of the testing laboratory. Test results are valid for the sample tested only and this Test Protocol does not replace any other documents.

- END OF TEST PROTOCOL -

Technický a zkušební ústav stavební Praha, s. p.,
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Čechova 59, 370 65 České Budějovice

Zkušební laboratoř 1018.9

TEST REPORT

100150777
dated: 2016-01-15

Name and address of the customer: **LLC "Research-and-Production enterprise "Ukrmagnesit"**
40022, Ukraine,
Sumy, Srkyabin Street, 7

Product name: **Magnesit Board "Standard" – VZ010150523**
Magnesit Board "Premium" – VZ010150524

Test subject and method:

Determination of heavy metals in mineralize of sample: Method No. 100611-01
- AAS

Determination of volatile organic compounds (VOC): Method No. 100660
- GC-MS with thermodesorption

According to ČSN EN ISO 16000-10, Indoor air - Part 10: Determination of the emission of volatile organic compounds from building products and furnishing - Test chamberl method
- Preparation and sampling has been coming from ČSN EN ISO 16000-11, sample analysis has been coming from ISO 16000-6 and ISO 16000-3.
-Scope of test: VOC-C6-C16, SVOC-C16-C22

Test legal basis:
- PB LS-002/5/12-2011 – the concentration of solvents and unsaturated monomers in the range (2÷5000), method pg/m^3 gas chromatography.
- PB LS-013/2/09-2004 – The content of lead and cadmium, the method of AAS.

This Test Report has been issued on the basis of the Test Protocol No.100-055153 dated 12th January 2016, issued by the TZÚS Prague - Branch Testing Institute of Light Industries, České Budějovice.

Description and identification of the sample: Magnesit Board "Standard" – VZ010150523
Magnesit Board "Premium" – VZ010150524

Evaluation:

The samples were evaluated according to Commission Regulation (EU) č.835 / 2012 of 18th September 2012 amending Regulation of the European Parliament and Council Regulation (EC) no. 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) , as regards Annex XVII. Cadmium has been judged according to item no. 23 and lead according to item no. 63.

Sample No.: 786 - Magnesit Board "Standard" – VZ010150523				
Parameters measured	**Units**	**Results**	**Limit**	**Evaluation**
Cd	%	< 0.00002	< 0.1	compliant
Pb	%	< 0.00002	< 0.05	compliant

Sample No.: 787 - Magnesit Board "Premium" – VZ010150524				
Parameters measured	**Units**	**Results**	**Limit**	**Evaluation**
Cd	%	< 0.00002	< 0.1	compliant
Pb	%	< 0.00002	< 0.05	compliant

Samples were assessed the Decree No. 6/2003 Coll. that determines hygienic limits of chemical, physical and biological characteristics for indoor residential rooms of some buildings.

Sample No.: 786 - Magnesit Board "Standard" – VZ010150523				
Parameters measured	**Units**	**Results**	**Limit**	**Evaluation**
Druh VOC				
- formaldehyd	mg/m^3	< 0.002	< 0.06	compliant
- aldehydy, ketony	mg/m^3	< 0.01	-	compliant
- benzen	mg/m^3	< 0.001	< 0.007	compliant
- toluen	mg/m^3	< 0.01	< 0.3	compliant
- suma xylenů	mg/m^3	< 0.01	< 0.2	compliant
- styren	mg/m^3	< 0.01	< 0.04	compliant
- etylbenzen	mg/m^3	< 0.01	< 0.2	compliant
- trichlorethylen	mg/m^3	< 0.01	< 0.15	compliant
- tetrachlorethylen	mg/m^3	< 0.01	< 0.15	compliant
VOC-C6-C16	mg/m^3	< 0.01	-	
SVOC-C16-C22	mg/m^3	< 0.01	-	
VOC - other volatile organic substances				
TVOC - total volatile organic substances	mg/m^3	< 10	< 10	compliant

Sample No.: 787 - Magnesit Board "Premium" – VZ010150524				
Parameters measured	**Units**	**Results**	**Limit**	**Evaluation**
Druh VOC				
- formaldehyd	mg/m^3	< 0.002	< 0.06	compliant
- aldehydy, ketony	mg/m^3	< 0.01	-	compliant
- benzen	mg/m^3	< 0.001	< 0.007	compliant
- toluen	mg/m^3	< 0.01	< 0.3	compliant
- suma xylenů	mg/m^3	< 0.01	< 0.2	compliant
- styren	mg/m^3	< 0.01	< 0.04	compliant
- etylbenzen	mg/m^3	< 0.01	< 0.2	compliant
- trichlorethylen	mg/m^3	< 0.01	< 0.15	compliant
- tetrachlorethylen	mg/m^3	< 0.01	< 0.15	compliant
VOC-C6-C16	mg/m^3	< 0.01	-	
SVOC-C16-C22	mg/m^3	< 0.01	-	
VOC - other volatile organic substances				
TVOC - total volatile organic substances	mg/m^3	< 10	< 10	compliant

Conclusion:
The samples of Magnesit Board "Standard" – VZ010150523 a Magnesit Board "Premium" – VZ010150524 **comply** with requirements.

Test Report made out by:

Technický a zkušební ústav stavební Praha, s.p.
Odštěpný závod ZÚLP
-2-
České Budějovice

Libuše Pražáková, M.Sc.
Technical Head of Laboratory