



**Warsaw, 4 May 2022**

## **NATIONAL TECHNICAL ASSESSMENT**

**No. IBDiM-KOT-2022/0841, edition 1**

Pursuant to Article 9(2) of the Act of 16 April 2004 on construction products (i.e. Journal of Laws of 2021, item 1213, as amended), after conducting proceedings in accordance with the provisions of the Regulation of the Minister of Infrastructure and Construction of 17 November 2016 on national technical assessments (Journal of Laws of 2016, item 1968), upon request of:

**PHSC Chemicals Sp. z o.o.**

with registered office: **ul. Droga Dębińska 29, 61-492 Poznań**

**Road and Bridge Research Institute (Instytut Badawczy Dróg i Mostów)**

states a positive assessment of the performance of the construction product:

**Special coatings for surface protection of concrete against graffiti**

with a trade name of: **KTX 05, KTX 07**

for the intended use in traffic construction within the scope of this National Technical Assessment of the Road and Bridge Research Institute (Instytut Badawczy Dróg i Mostów — IBDiM).



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Date of issue of the National Technical Assessment:  
Date of expiry of the National Technical Assessment:

**04 May 2022.**  
**04 May 2027.**

## 1 TECHNICAL DESCRIPTION OF THE CONSTRUCTION PRODUCT

### 1.1 Technical name and trade name

The subject of the present assessment is the construction product of the technical name: **Special coatings for concrete surface protection against graffiti**

with trade names: **KTX 05, KTX 07,**

further referred to as the **KTX 05 and KTX 07 products.**

### 1.2 Name and address of the manufacturer as well as the name and address of the empowered representative if established

The manufacturer is **PHSC Chemicals Sp. z o.o.** based in **ul. Droga Dębińska 29, 61-492 Poznań.**

### 1.3 Manufacturing plant

The product is manufactured at: **PHSC CHEMICALS Sp. z o.o. ul. Droga Dębińska 29, 61-492 Poznań.**

### 1.4 Type identification and technical description of the product:

#### 1.4.1 Type identification

Based on the technical documentation of the product the IBDiM has identified the following types of the construction product:

1. **KTX 05;**
2. **KTX 07.**

#### 1.4.2 Technical description of the construction product and the applied materials and raw materials. Product identification

**KTX 05** – single-component, water preparation based on microcrystalline waxes, creating a sacrificial anti-graffiti coating;

**KTX 07** – single-component, silane and siloxane-based solvent product creating a permanent anti-graffiti coating

Requirements referring to identification properties of KTX 05 and KTX 07 products are presented in table 1.

Table 1

No	Properties	Units	Requirements	Test methods
1	2	3	4	5
1	Density - KTX 05 - KTX 07	g/cm <sup>3</sup>	0.976 ± 5% 0.899 ± 5%	PN-EN ISO 2811-2:2016-04
2	Viscosity - KTX 05 - KTX 07	mPa·s	36 ± 10% 652 ± 10%	PN-ISO 2555:2018-07
3	Infrared spectrum - KTX 05 - KTX 07	-	Identification test fig. Z-1 and Z-2 in the Annex	PN-EN 1767;2008

## **2 INTENDED APPLICATION OF THE PRODUCT**

### **2.1 Intended application**

KTX 05 and KTX 07 products are intended to be used in transport engineering in the scope determined in p. 2.2, in order to produce protective coatings against graffiti on concrete surfaces.

### **2.2 Scope of application**

The scope of application of the construction product encompasses:

#### **2.2.1 road and bridge constructions – unlimited**

in the meaning and in accordance with the conditions specified in the decree by the Minister of Transport and Maritime Affairs of May 30<sup>th</sup> 2000 on technical conditions which should be met by road constructions and their location (Journal of Laws No 63, item.735 as amended);

#### **2.2.2 railway constructions – unlimited**

in the meaning and in accordance with the conditions specified in the decree by the Minister of Transport and Maritime Affairs of Sept 10<sup>th</sup> 1998 on technical conditions which should be met by railway constructions and their location (Journal of Laws No 151, item.987, as amended);

#### **2.2.5 underground railway constructions, limited to**

- a) stations
- b) tunnels
- c) bridges, overpasses and viaducts of the underground railway
- d) technical stopover stations

in the meaning and in accordance with the decree by the Minister of Infrastructure of June 17<sup>th</sup> 2011 on technical conditions which should be met by underground railway constructions and their location (Journal of Laws of 2011 No 144, item.859, as amended).

### **2.3 Conditions of application**

KTX products can only be used in accordance with the valid application instructions provided by the manufacturer on concrete substrate which meets the following requirements:

- concerning the concrete substrate: concrete substrate must be dry and clean, at least 28 days old, lacking visible darkening caused by moisture and free from cement wash, loose aggregates, dust, stains, oil, grease and other impurities and must be pull-off resistant at the minimum of 1.5 MPa (“pull-off” test method);
- concerning air temperature:
  - KTX 05: from +7°C to +30°C;
  - KTX 07: from +5°C to +30°C
- concerning substrate temperature: substrate temperature should be at least 3°C higher than dew point temperature in the given surrounding temperature and humidity;
- concerning air humidity: relative air humidity cannot exceed: 80 %.

Product consumption on absorptive surfaces per 1 m<sup>2</sup> amounts to:

KTX 05 – from 3.3 m<sup>2</sup>/l to 5 m<sup>2</sup>/l;

KTX 07 – up to 6 m<sup>2</sup>/l.

Product consumption on non-absorptive surfaces per 1 m<sup>2</sup> amounts to:

KTX 05 – up to 6.5 m<sup>2</sup>/l;

KTX 07 – up to 10 m<sup>2</sup>/l.

KTX 05 and KTX 07 may be applied with a brush, paint roller or by spraying. Detailed conditions and methods of application of silicone hydrophobic materials are included in the manufacturer's instructions.

KTX 05 and KTX 07 must be applied in accordance with the requirements indicated in the technical data sheets. The product mixing proportions, product expiry date and the time lapse between the application of subsequent layers of the coating, as indicated by the manufacturer, must be absolutely adhered to.

The construction product must be applied in compliance with the intention scope and conditions determined in the National Technical Evaluation and:

- technical and construction regulations suitable for particular construction types in transport engineering
- road traffic regulations according to the decree of the Minister of Infrastructure of September 23<sup>rd</sup> 2003 on conditions of road traffic management and supervision of this management (i.e. Journal of Laws of 2017, item.784, as amended)
- regulations pertaining to environmental protection in compliance with the decree of the Minister of Maritime Affairs and Inland Shipping of July 12<sup>th</sup> 2019 concerning substances particularly hazardous to marine environment and the conditions to be met when discharging waste water into waters or into the soil and when discharging rainwater or snowmelt into waters or onto water facilities (Journal of Laws of 2019, item 1311, as amended)

Prior to application which is not compliant with the technical and construction instructions a permission to depart from these needs to be issued according to the procedure specified in article 9 of the Act of July 7<sup>th</sup> 1994 Construction Law (i.e. Journal of Laws of 2021, item 2351 as amended).

### **3 USAGE PROPERTIES OF THE CONSTRUCTION PRODUCT AND THE METHODS USED FOR THEIR ASSESSMENT**

Usage properties of the construction product are compiled in table 2.

Table 2

No	Identification of the construction product type	Essential characteristics of the construction product for intended application or applications	Usage properties as levels, classes or described	Units	Testing and calculation methods
1	2	3	5	4	6
1	1. KTX 05 2. KTX 07	Coating-covered surface condition after 200 cycles of freezing and defrosting in water in temperatures: $(-18\pm 2)^{\circ}\text{C}/(+18\pm 2)^{\circ}\text{C}$	No change	-	Procedure: IBDiM No PB/TM-1/13:2009
2		Capillary absorption	$\leq 0.1$	$\text{kg}\cdot\text{m}^{-2}\cdot\text{h}^{-0.5}$	PN-EN 1062-3:2008
3		CO <sub>2</sub> permeability	$\geq 50$	m	PN-EN 1062-6:2003
4		Water vapour permeability	$\leq 4$	m	PN-EN ISO 7783:2018-11
5		The number of graffiti removals depending on the coating durability KTX 05: sacrificial protection KTX 07: permanent protection	$= 1$ $\geq 8$	-	ASTM D6578M-13
6		Degree of graffiti removal S	V	-	ASTM D6578M-13
7		Water absorption limitation index	$\geq 50$	%	IBDiM research procedure No PB-TM-X5:2012
8		Time from application to gaining anti-graffiti protective properties (if applied according to valid instructions) - KTX 05, KTX 07	7 h	-	According to producer's declaration
9		Maximum time lapse between graffiti painting and its removal	unlimited	-	According to producer's declaration

## 4 PACKAGING, SHIPPING, STORAGE AND LABELLING METHODS OF THE PRODUCT

### 4.1 Packaging guidelines

KTX 05 and KTX 07 should be packed in tightly closed, branded containers, preventing spillage or alteration of technical and usage properties.

KTX products are delivered in the following volumes:

- KTX 05: plastic canisters: 5 l, 20 l or 30 l;
- KTX 07: cans, canisters weighing 1 kg, 5 kg or 20 kg.

KTX 05 and KTX 07 need to be stored in dry spaces, insulated against frost.

KTX 05 and KTX 07, if stored in closed containers, are suitable for use:

- KTX 05: for 6 months

- KTX 07: for 12 months.

## **4.2 Transport and storage guidelines**

KTX 05 and KTX 07 need to be transported according to haulage law, in covered means of transport, providing protection from sunshine, precipitation, frost, contamination or mechanical damage.

KTX 06 and KTX 07 need to be stored in original, tightly closed containers, in heated and dry areas, in temperature from +5 to +30°C.

The containers must be protected from direct sunshine and frost.

## **4.3 Labelling of construction product**

The product needs to be labelled with a construction sign according to the decree of the Minister of Infrastructure and Construction of Nov 17<sup>th</sup> 2016 on ways of declaring construction products' usage properties and ways of labelling them with a construction sign (Journal of Laws of 2016, item 1966, as amended).

Prior to labelling the product with a construction sign it is required to prepare a domestic declaration of usage properties of the construction product according to the sample document published as annex no 2 to the above mentioned decree as well as release it in the way described therein.

Attached to the construction product the manufacturer is obliged to provide information on:

- two last digits of the year in which the construction sign was first placed on the product
- name and office address of the construction product manufacturer or an identification sign which allows to unambiguously determine the name and office address
- name and labelling of the construction product type
- number and issue year of the National Technical Evaluation in accordance with which the usage properties have been declared
- number of the domestic declaration of usage properties
- level or class of the declared usage properties
- the name of the certification entity which participated in the assessment and verification of the product usage properties stability
- manufacturer's website address if the domestic declaration of usage properties is disclosed there

Along with the domestic declaration of usage properties it is required to deliver or disclose in eligible cases the product's safety data sheet and/or information about hazardous substances included in this construction product as mentioned in article 31 or 33 of the decree (EC) No 1907/2006 of the European Parliament and Council on registration, assessment, permissions granted and constraints applied on chemicals (REACH) and establishment of the European Chemicals Agency (EU Journal of Laws L 396 of 30<sup>th</sup> Dec 2006).

Moreover, labelling of the construction product which is a hazardous substance according to the REACH decree should be compliant with the requirements of the decree (EU) No 1272/2008 of the European Parliament and Council on classification, labelling and packaging of substances and mixtures (CLP) which amends and repeals the directives 67/548/EEC and 1999/45/EU and amending the decree (EC) No 1907/2006 (EU Journal of Laws L 353/1 of Dec 31<sup>st</sup> 2008).

# **5 ASSESSMENT AND VERIFICATION OF USAGE PROPERTIES STABILITY**

## **5.1 National system for assessment and verification of usage properties stability**

Pursuant to the annex to the decree of the Minister of Infrastructure and Construction of Nov 17<sup>th</sup> 2016 on the ways of declaring usage properties of construction products and labelling them with a construction sign (Journal of Laws of 2016 item 1966 as amended), the IBDiM indicates for the

construction product of the technical name **Special coatings for concrete surface protection against graffiti** and the trade name **KTX 05** and **KTX 07 the domestic system 4 of assessment and verification of usage properties stability**.

Manufacturer's activities pertaining to assessment and verification of the construction product's usage properties stability as well as the scope of the above assessment and verification are indicated in § 4 of the aforementioned decree.

## **5.2 Specification of the construction product type**

Specification of the construction product type includes assessment of usage properties referring to essential characteristics and of this product specified in section 3 intended applications as well as the identification characteristics according to p. 1.4.2 of the present National Technical Evaluation until the occurrence of alterations in raw materials, ingredients, production line or manufacturing plant.

## **5.3 Company production control**

The construction product, covered by the present National Technical Evaluation, should be manufactured according to company production control system.

The manufacturer should establish, document, implement and maintain a company production control system in order to ensure stability of the usage properties of the construction product specified in the present National Technical Evaluation.

Documentation of the company production control should include:

- a) organisational structure,
- b) staff requirements (qualifications, permissions, responsibility for particular elements of the company production control, training),
- c) internal audits, conducting corrective and preventive actions,
- d) supervision of documents and records
- e) raw materials control and test schedule, requirements,
- f) finished product control and test schedule,
- g) supervision of manufacturing facilities
- h) supervision of control and test facilities maintaining the measurement consistency
- i) supervision of the manufacturing process, including inspections and inter-operational tests,
- j) description of subcontracted tasks and their supervision,
- k) handling the non-compliant product and complaints,
- l) description of packaging, transport and storage as well as labelling of the product.

Regular checks and tests of materials, resources and the finished product should be recorded in documentation of the internal production control. The manufacturer should keep a ledger of this documentation, incl. the used forms and records made. Documentation should be updated whenever an alteration appears in the product itself, its production process or in the internal production control system. Procedures or instructions should specify how to:

- a) supervise documents and records
- b) check and prove conformity of raw materials and resources with established requirements
- c) supervise production process and conduct checks and tests in the course of manufacturing and of the finished product
- d) supervise devices and manufacturing machinery as well as equipment for checks and tests of the product, maintaining measurement cohesion,
- e) carry out product conformity assessment with the present Technical Approval requirements.
- f) handle a non-compliant product
- g) handle complaints with regard to quality of either the finished product or raw materials



and resources

- h) conduct corrective and preventive operations
- i) conduct internal audits and management reviews
- j) train personnel

The documentation of the company production control should be supplemented with technical documentation, technical specifications (product standards, research standards, European or domestic technical assessments etc.), legal regulations.

Quality management system applied in conformity with PN-EN ISO 9001:2015-10 requirements may be treated as the company production control system as long as it meets the requirements stated in the present National Technical Evaluation.

## **5.4 Tests of finished products**

### **5.4.1 Test agenda**

The finished product test agenda includes:

- a) current tests,
- b) tests of samples gathered in the production plant, conducted by the manufacturer according to the established test agenda.

### **5.4.2 Current tests**

Current tests include:

- a) density marking according to table 1, No 1,
- b) viscosity marking according to table 1 No 2 .

### **5.4.3 Sample testing at the production plant conducted by the manufacturer according to the test agenda**

Sample tests include:

- determining the infrared spectrum (FTIR analysis), acc.to table 1 No 3;
- determining the condition of the coating applied onto concrete substrate after 200 freezing and defrosting cycles in water, acc. to table 2 No 1;
- determining capillary absorption, acc. to table 2 No 2
- determining CO<sub>2</sub> permeability, acc. to table 2 No 3
- determining water vapour permeability, acc. to table 2 No 4
- determining the number of graffiti removal cycles, acc. to table 2 No 5
- determining the degree of graffiti removal, acc. to table 2 No 6

## **5.5 Sample taking**

- a) Samples for current tests should be taken according to the Polish Standards regulations enlisted in 5.4.2 with regard to particular tests as well as the company production control documentation.
- b) Samples for sample tests should be taken according to the Polish Standards regulations enlisted in 5.4.3 with regard to particular tests as well as the company production control documentation.

## **5.6 Test frequency**

- a) Current tests should be carried out for each product batch according to the test agenda included in the internal production control documentation. The batch size should be determined in the company production control documentation.



- b) Sample tests should be conducted according to the test schedule included in the company production control documentation, but at least once every three years.

## **5.7 Test result assessment**

Usage properties of the construction product are compliant with all the usage properties determined in the present IBDiM National Technical Evaluation.

## **6 CAUTION**

- 6.1** National Technical Evaluation is a document which does not make the construction product eligible for labelling with a construction sign.
- 6.2** The National Technical Evaluation can be repealed by the entity which has issued it, on its own initiative or upon request of the Chief Construction Supervisor, after a clarification procedure has been conducted with the participation of the applicant.
- 6.3** The National Technical Evaluation does not infringe the entitlements resulting from the Act of June 30<sup>th</sup> 2000 on Industrial Property Law (i.e. Journal of Laws of 2021, item 324 as amended).

## **7 LIST OF DOCUMENTS USED IN THE PROCEEDINGS**

Evaluation proceedings involved:

### **7.1 Regulations**

- a) Act of Apr 16<sup>th</sup> 2004 on construction products (i.e. Journal of Laws of 2021, item 1213, as amended);
- b) Act of July 7<sup>th</sup> 1994 Construction Law (i.e. Journal of Laws of 2021, item 2351, as amended);
- c) decree of Minister of Infrastructure and Construction of Nov 17<sup>th</sup> 2016 on national technical evaluations ((i.e. Journal of Laws of 2016, item 1968);
- d) decree of Minister of Infrastructure and Construction of Nov 17<sup>th</sup> 2016 on ways of declaring construction products' usage properties and ways of labelling them with a construction sign (Journal of Laws of 2016, item 1966) amended by decrees of:
  - Minister of Investments and Development of June 13<sup>th</sup> 2018 (Journal of Laws of 2018, item 1233);
  - Minister of Investments and Development of June 19<sup>th</sup> 2019 (Journal of Laws of 2019, item 1176);
  - Minister of Finance, Investments and Development of Nov 21<sup>st</sup> 2019 (Journal of Laws of 2019, item 2164);
  - Minister of Development, Labour and Technology of Dec 4<sup>th</sup> 2020 (Journal of Laws of 2020, item 2297);
  - Minister of Development and Technology of Dec 1<sup>st</sup> 2021 (Journal of Laws of 2021, item 2264)

### **7.2 Polish Standards and other Standards:**

- a) PN-EN 1062-3:2008 Paints and varnishes – varnish products and coating systems applied outdoor on walls and concrete. Part 3: determining water permeability
- b) PN-EN 1062-6:2003 Paints and varnishes – varnish products and coating systems applied outdoor on walls and concrete. Part 6: determining CO2 solubility
- c) PN-EN 1767:2008 Products and systems for protection and repair of concrete constructions -- research methods – infrared spectroscopy

- d) PN-EN ISO 2555:2018-07 Plastics – Polymers in liquid, emulsion or dispersion state – determining apparent viscosity with a rotational, single-cylinder viscometer.
- e) PN-EN ISO 2811-1:2012 Paints and varnishes – determining density. Part 1: pycnometric method
- f) PN-EN ISO 7783:2018-11 Paints and varnishes -- determining the property of water vapour permeability – cup method
- g) PN-EN ISO 9001:2015-10 quality management systems – requirements
- h) ASTM D6578M-13 Standard Practice for Determination of Graffiti Resistance

### **7.3 Research procedures:**

- a) Research procedure IBDiM No PB/TM-1/13:2009 assessment of the protective coating (or otherwise processed surface) condition following the frost resistance test
- b) Research procedure IBDiM PB-TM-X5:2012 Marking of water absorption limitation index

### **7.4 Construction product test reports**

- a) IBDiM tests, Warsaw 2022
- b) Tests provided by PHSC Chemicals Sp. z o.o.: WoodChem Marcin Skalski, of Oct 27<sup>th</sup> 2021

### **Annexes: 1**

#### **Received by:**

1. The applicant named **PHSC Chemicals Sp. z o.o.** based at Droga Dębińska 29, 61-492 Poznań (1 copy)
2. Technical Evaluation Unit of IBDiM ul. Instytutowa 1, 03-302 Warszawa, phone: +48 22 39 00 221/227; email [jot@ibdim.edu.pl](mailto:jot@ibdim.edu.pl) (1 copy, to file)

## ANNEX 1

. Graphs Z-1÷Z-2 present infrared spectrums of anti-graffiti products

