SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier: Ready-mix concrete
Slovak equivalent of the product identifier/MSDS: Transportbetón

1.2 Relevant identified uses of the substance or mixture and uses advised against: Construction product. The identified uses of cement containing mixtures (hydraulic binders) include both dry products, and the products in a wet suspension (paste):

PROC	Process categories - Identified uses (use description)	Manufacture / Formulation of building materials	Professional / Industrial use of building materials
2	Use in closed, continuous process with occasional controlled exposure	x	x
3	Use in closed batch process (synthesis or formulation)	x	x
5	Mixing or blending in batch process for formulation of preparations and articles (contact in various phases and/or significant contact)	x	x
7	Industrial spraying		x
8a	Transfer of substance or preparation (*) (filling/emptying) from / to vessels /large containers at non-dedicated facilities		x
8b	Transfer of substance or preparation (*) (filling/emptying) from / to vessels /large containers at dedicated facilities	x	x
9	Transfer of substance or preparation (*) into small containers (dedicated filling line, including weighing)	x	x
10	Roller application or brushing		x
11	Non-industrial spraying		x
13	Treatment of articles by dipping and pouring		x
14	Production of preparations (*) or articles by tabletting, compression, extrusion, pelletisation	x	x
19	Hand mixing with intimate contact, only using personal protective equipment (PPE)		x
22	Potentially closed processing operations with minerals/metals at elevated temperature Industrial setting		x
26	Handling of solid inorganic substances at ambient temperature	x	x

1.3 Details of the supplier of the safety data sheet:

IN VEST s.r.o.
Areál Duslo a.s.
927 03 ŠAĽA
Slovak Republic
Tel.: +421 905 606 639
Email of person responsible for the SDS: malarik@invest-in.sk

1.4 Emergency telephone number:

Národné toxikologické informačné centrum
00421-(0)2-547 741 66
24-hour consulting services in case of acute intoxication

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture:

2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]:

Skin irritation: Skin Irrit. 2, H315
Skin sensitization: Skin Sens. 1, H317
Serious eye damage: Eye Dam. 1, H318
Specific target organ toxicity — single exposure: STOT SE 3, H335

2.1.2 Additional information: For the full text of the listed hazard statements see section 16.

2.2 Label elements:

Labelling according to Regulation (EC) No 1272/2008 [CLP]

Hazard pictogram(s):

Signal word(s): Danger

Hazard statement(s):

H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.

Precautionary statement(s):

P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302 + P352 IF ON SKIN: Wash with plenty of water.
P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/doctor.

P501 Dispose of contents/container in accordance with applicable regulations.

Label elements:

Contain: cement, portland, chemicals

2.3 Other hazards: Prepared concrete/mortar is highly alkaline mixture. Due to increased alkalinity concrete/mortar may cause serious eye damage. Cement contained in the concrete/mortar contains slightly soluble chromium (VI). Reducing agents was added to the cement, which maintain the concentration of soluble chromium (VI) on value 2 mg/kg (0,0002% of the total dry weight of the cement ready for use). In the case of a mixture, the concentration of soluble chromium (VI) is lower.

Sensitive persons may experience an allergic reaction to the skin due to the content of soluble chromium (VI).

After contact of fresh concrete or mortar on the skin may cause irritation, dermatitis or burns.

After contact of fresh concrete or mortar with products manufactured from aluminum or other metals (except noble) may cause their depreciation.

The mixture does not contain substances classified as PBT or vPvB.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances: Not applicable.

3.2 Mixtures: The mixture contains the following substance classified as hazardous:

Substance name	EC/CAS	Classification according to Regulation (EC) No 1272/2008:			% content
		Hazard class	Hazard category	Hazard statements	
[1,2] cement, portland, chemicals	266-043-4 / 65997-15-1	Skin irritation, Skin sensitization, Serious eye damage, Specific target organ toxicity — single exposure	Skin Irrit. 2 Skin Sens. 1 Eye Dam. 1 STOT SE 3	H315 H317 H318 H335	10 - 20

1 Substance is not classified under Regulation (EC) No 1272/2008.
2 Substance with workplace exposure limits.
Note: For the full text of the listed hazard statements see section 16.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures:

- general notes: PPE for First Aid providers are not necessary. First Aid responders should avoid contact with the unhardened mixture.

- following inhalation: Remove the affected person to fresh air. Powder (from the hardened mixture) which enters the throat or nasal passages is able to remove spontaneously. In case of persistent or delayed irritation, tenacious difficulties, cough or other symptoms, seek medical attention.

- following skin contact: Hardened concrete remove from the skin and rinse the surface with plenty of water. In the case of wet concrete flush skin with plenty of water. Remove contaminated clothing, footwear, watches, etc. and thoroughly clean before reuse. In case of any irritation or burns consult a doctor.

- following eye contact: Do not rub eyes, mechanical pressure can damage the cornea. Remove contact lenses! Tilt the head in the direction of injured eye and keep the lids wide open and immediately rinse eyes thoroughly with plenty of clean water, do it at least 20 minutes to remove all particles. Avoid flushing particles to non-injured eye. If it is possible, use isotonic water (NaCl 0.9). Get help from a health specialist at work or from an ophthalmologist.

- following ingestion: Rinse mouth and give plenty of water to drink. Never give anything by mouth to an unconscious person. Do not induce vomiting! Immediately call a poison center or a physician.

4.2 Most important symptoms and effects, both acute and delayed:

- following ingestion: Prolonged inhalation of dust (from the hardened mixture) increases the risk of lung diseases.

- following skin contact: Prolonged contact may irritate wet skin (sweating or moisture). In case of repeated contact may cause contact dermatitis. Prolonged contact with the mixture may cause burns - injuries occurs without pain (eg. when kneeling on the wet concrete, despite wearing trousers).

- following eye contact: May cause serious and irreversible damage.

4.3 Indication of any immediate medical attention and special treatment needed:

Show this safety data sheet or label to the doctor.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media:

Suitable extinguishing media: The product is not flammable. Extinguishing materials adapt to the nature of materials in the area.

Unsuitable extinguishing media: No information available.

5.2 Special hazards arising from the substance or mixture: The product is non-flammable, non-explosive and does not support combustion of other materials.

5.3 Advice for firefighters: No special measures needed.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel: Use personal protective equipment described in the section 8.

For emergency responders: No special measures needed. In case of high dust concentrations use respiratory protection.

6.2 Environmental precautions: Avoid release to the soil, sewers, ground and surface water.

6.3 **Methods and material for containment and cleaning up:** Prevent further leakage if it is safe and possible. Collect mechanically or by pumping. Place in suitable and properly labeled containers. Leakage site clean thoroughly. Let product to harden before disposal. Dispose of in accordance with existing legislation on waste management.

6.4 **Reference to other sections:** See sections 7, 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 **Precautions for safe handling:** Avoid contact with eyes, skin and clothing. Use personal protective equipment. Remove contaminated clothing and wash before reuse. At the workplace and during use of the product do not eat, drink or smoke.

7.2 **Conditions for safe storage, including any incompatibilities:** Store in a tightly closed container in a well ventilated place. Do not store in aluminum containers due to incompatibility of mixture.

7.3 **Specific end use(s):** See section 1.2.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 **Control parameters:** Occupational Exposure Limits/Najvyššie prípustné expozičné limity (NPEL) according to Annex No. 1 of regulation No. 355/2006 Coll., as amended, for the substances contained in the mixture:
Solid aerosols with mainly non-specific effects:

Factor	NPELc (mg.m^{-3})
cement	10

NPEL for solid aerosols (dust) is established as 8-hour average total exposure value (inhalable) of concentration of solid aerosols (NPELc) or respirable fraction (NPELr). Correct evaluation of exposure should have both values of NPEL for the same type of the solid aerosol. In the case of a mixture must also be respected term value for the individual components of the mixture.

Biological limit values /Biologické medzné hodnoty (BMH) according to Annex No. 2 of regulation No. 355/2006 Coll., as amended, for the substances contained in the mixture are not set.

DNEL values for substance: cement, portland, chemicals:
DNEL, systemic-long term effects, inhalation: 3 mg/m^3 (8 h)

Exposure scenario for the mixture "cement, portland, chemicals (CAS: 65997-15-1) 89-94% + ferrous sulfate (CAS: 7782-63-0) <1%" represented in this product in a concentration of 10-20%:

Exposure scenario	PROC - identified uses (see section 1.2.)	Exposure	Localised controls	Efficiency
Industrial production / formulation of hydraulic building and construction materials	2, 3	Duration is not restricted (up to 480 minutes per shift, 5 shifts a week)	Not required.	N
	14, 26		A) Not required. or B) Generic local exhaust ventilation	N 78 %
	5, 8b, 9		A) General ventilation alebo B) Generic local exhaust ventilation	17 % 78 %
Industrial uses of dry hydraulic building and construction materials (indoor and outdoor)	2		Not required.	N
	14, 22, 26		A) Not required. or B) Generic local exhaust ventilation	N 78 %
	5, 8b, 9		A) General ventilation alebo B) Generic local exhaust ventilation	17 % 78 %
Industrial uses of wet suspensions of hydraulic building and construction materials	7		A) Not required. or B) Generic local exhaust ventilation	N 78 %
	2, 5, 8b, 9, 10 ,13, 14		Not required.	N
Professional uses of dry hydraulic building and construction materials (indoor and outdoor)	2		Not required.	N
	9, 26		A) Not required. or B) Generic local exhaust ventilation	N 78 %
	5, 8a, 8b, 14		A) Not required. alebo B) Integrated local exhaust ventilation	N 87 %
	19		Localised controls are not applicable. The processes may be carried out only in well-ventilated areas or outdoors.	50%
Professional uses of wet suspensions of hydraulic building and construction materials	11		A) Not required. or B) Generic local exhaust ventilation	N 78 %
	2, 5, 8a, 8b, 9, 10, 13, 14, 19		Not required.	N

The localised controls must be defined based on the effective plant-engineering situation, and then the personal protective equipment, specified in the table in Subsection 8.2.2, will be identified accordingly.

8.2 Exposure controls:

8.2.1 Appropriate engineering controls: Ensure adequate ventilation, especially in confined areas.

8.2.2 Individual protection measures, such as personal protective equipment:

Exposure scenario for the mixture "cement, portland, chemicals (CAS: 65997-15-1) 89-94% + ferrous sulfate (CAS: 7782-63-0) <1%" represented in this product in a concentration of 10-20%:

Exposure scenario	PROC - identified uses (see section 1.2.)	Exposure	Specification of respiratory protective equipment (RPE)	RPE efficiency – Assigned Protection Factor (APF)
Industrial production / formulation of hydraulic building and construction materials	2, 3	Duration is not restricted (up to 480 minutes per shift, 5 shifts a week)	Not required.	N
	14, 26		A) P1 mask (FF, FM) or B) Not required.	APF = 4 N
	5, 8b, 9		A) P2 mask (FF, FM) or B) P1 mask (FF, FM)	APF = 10 APF = 4
Industrial uses of dry hydraulic building and construction materials (indoor and outdoor)	2		Not required..	N
	14, 22, 26		A) P1 mask (FF, FM) or B) Not required.	APF = 4 N
	5, 8b, 9		A) P2 mask (FF, FM) or B) P1 mask (FF, FM)	APF = 10 APF = 4
Industrial uses of wet suspensions of hydraulic building and construction materials	7		A) P1 mask (FF, FM) or B) Not required.	APF = 4 N
	2, 5, 8b, 9, 10 ,13, 14		Not required.	N
Professional uses of dry hydraulic building and construction materials (indoor and outdoor)	2		P1 mask (FF, FM)	APF = 4
	9, 26		A) P2 mask (FF, FM) or B) P1 mask (FF, FM)	APF = 10 APF = 4
	5, 8a, 8b, 14		A) P3 mask (FF, FM) or B) P1 mask (FF, FM)	APF = 20 APF = 4
	19		P2 mask (FF, FM)	APF = 10
Professional uses of wet suspensions of hydraulic building and	11		A) P2 mask (FF, FM) or B) P1 mask (FF, FM)	APF = 10 APF = 4

construction materials	2, 5, 8a, 8b, 9, 10, 13, 14, 19		Not required.	N

Avoid direct contact with the mixture. In the case of emergency contact use suitable watertight protective equipment. Do not eat, drink or smoke when working with a mixture. It is recommended to use protective cream before starting work. Immediately wash or take a shower after stop working with the mixture. Remove contaminated clothing, footwear, watches etc. and thoroughly clean before reuse.

8.2.2.1 Eye/face protection: Wear appropriate protective eyeglasses or chemical safety goggles EN166.

8.2.2.2 Skin protection:

Hand protection: Impermeable gloves with a cotton lining that is resistant to alkali (with no content of chrome) should be used for skin protection against prolonged contact with the mixture.

Other: Safety shoes and/or boots and work clothing (long-sleeved and long legged), as well as skin care products (including moisturising creams) to ensure maximum skin protection against prolonged contact with wet concrete.

8.2.2.3 Respiratory protection: When a worker may potentially be exposed to dust levels above exposure limits, use appropriate respiratory protection, proportionate to the level of dust and compliant with the relevant technical standards (such as filtering face pieces certified according to EN 149, EN 140, EN 14387, EN 1827).

8.2.2.4 Thermal hazards: Not applicable.

8.2.3 Environmental exposure controls:

All appropriate engineering-organisational steps must be taken in order to prevent the dispersion or accidental release of concrete dust during the various production and use phases, mainly to prevent dumping onto the soil or into watercourses or the sewage and drainage systems. The aquatic effect and risk assessment cover the effect on organisms / ecosystems due to possible pH changes related to hydroxides discharges. The eco-toxicity of the other dissolved inorganic components (ions) is negligible compared to the negative pH effect. Any effects that might occur during production and use of the concrete would be expected to take place on a local scale at the industrial installation. The pH of the effluent and surface water should not exceed 9. Otherwise it could have an impact on municipal sewage treatment plants (STPs) and industrial waste water treatment plants (WWTPs). For assessment of the exposure, a stepwise approach is recommended:

- Step 1: Retrieve information on effluent pH and the contribution of the concrete dust on the resulting pH. Should the pH be above 9 and be predominantly attributable to concrete dust, then further actions are required to demonstrate safe use.
- Step 2: Retrieve information on receiving water pH after the discharge point. The pH of the receiving water must not exceed the value of 9.

- Step 3: Sample and measure the pH in the receiving water after the discharge point. If the pH is below 9, safe use is reasonably demonstrated. If the pH is found to be above 9, risk management measures have to be implemented: the effluent has to undergo neutralisation, thereby ensuring safe use of concrete during production and/or use phases.

No special preventive measures are necessary for the exposure to the terrestrial environment, except for correct application of ordinary, effective managerial practices.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance: Gray slurry material (before hardening)
Gray solid material (after hardening)
Odour: Without odour.
Odour threshold: No information available.
pH: > 7 (depending on the concentration of the components in the mixture)
Melting point/freezing point: No information available.
Initial boiling point and boiling range: No information available.
Flash point: No information available.
Evaporation rate: No information available.
Flammability (solid, gas): No information available.
Upper/lower flammability or explosive limits: No information available.
Vapour pressure: No information available.
Vapour density: No information available.
Relative density: max. 2430 kg/m^3
Solubility(ies): No information available.
Partition coefficient: n-octanol/water: No information available.
Auto-ignition temperature: No information available.
Decomposition temperature: No information available.
Viscosity: No information available.
Explosive properties: No information available.
Oxidising properties: No information available.

9.2 Other information: No information available.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity: Hardened concrete is chemically stable and compatible with most other building materials.

10.2 Chemical stability: Wet concrete is alkaline and incompatible with acids, ammonium salts, aluminium and other non-noble metals.

10.3 Possibility of hazardous reactions: Concrete (due to presence of cement) dissolves in hydrofluoric acid to produce corrosive silicon tetrafluoride gas. Cement also reacts with

water to form silicates and calcium hydroxide. Silicates in cement react with powerful oxidisers such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride and oxygen difluoride.

10.4 Conditions to avoid: Not indicated.

10.5 Incompatible materials: Contact with acids, ammonium salts, aluminium or other non-noble metals may cause exothermic reactions (temperature increase). Furthermore, hydrogen is produced when aluminium powder comes into contact with wet cement.

10.6 Hazardous decomposition products: None.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

a) acute toxicity: Based on available data the classification criteria are not met.

b) skin corrosion/irritation: Causes skin irritation.

In contact with wet skin may cause thickening, cracking or fissuring of the skin. Prolonged contact in combination with existing abrasions may cause severe burns.

c) serious eye damage/irritation: Causes serious eye damage.

Direct contact with wet product may cause corneal damage from mechanical stress, immediate or delayed irritation or inflammation (e.g. conjunctivitis or blepharitis) to chemical burns and blindness.

d) respiratory or skin sensitisation: May cause an allergic skin reaction.

Some individuals may develop eczema upon exposure to wet cement dust, caused either by the high pH which induces irritant contact dermatitis after prolonged contact, or by an immunological reaction to soluble Cr (VI) which elicits allergic contact dermatitis. The response may appear in a variety of forms ranging from a mild rash to severe dermatitis and is a combination of the two abovementioned mechanisms.

e) germ cell mutagenicity: Based on available data the classification criteria are not met.

f) carcinogenicity: Based on available data the classification criteria are not met.

g) reproductive toxicity: Based on available data the classification criteria are not met.

h) STOT-single exposure: May cause respiratory irritation.

Concrete dust may irritate the throat and respiratory tract. Coughing, sneezing and shortness of breath may occur.

i) STOT-repeated exposure: Based on available data the classification criteria are not met.

j) aspiration hazard: Based on available data the classification criteria are not met.

Further informations: Prolonged inhalation of dust (from the hardened mixture) increases the risk of lung (for example emphysema, asthma) or skin/eyes diseases.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity: The mixture is not classified as dangerous for the environment. pH > 7 (depending on the concentration of the mixture components) can in certain circumstances have a toxic effect on aquatic organisms.

12.2 Persistence and degradability: Not relevant, mixture composes of inorganic materials. After hardening, presents no toxicity risks.

12.3 Bioaccumulative potential: Not relevant, mixture composes of inorganic materials. After hardening, presents no toxicity risks.

12.4 Mobility in soil: Not relevant, mixture composes of inorganic materials. After hardening, presents no toxicity risks.

12.5 Results of PBT and vPvB assessment: Not relevant, mixture composes of inorganic materials. After hardening, presents no toxicity risks.

12.6 Other adverse effects: No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods: Dispose off in accordance with regulation No. 79/2015 Coll., as amended:
Waste codes:
10 13 14 Waste concrete and concrete sludge
17 01 01 Concrete
Allow mixture to harden. Prevent from entering sewers and drainage systems or water.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number: Not subject to the requirements of transport.

14.2 UN proper shipping name: No data available.

14.3 Transport hazard class(es): No data available.

14.4 Packing group: No data available.

14.5 Environmental hazards: No data available.

14.6 Special precautions for user: No data available.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code: No data available.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture: The substances in the mixture are not subject to the authorisation under Title VII. *Cement, portland, chemicals (CAS: 65997-15-1)* is subject of restrictions under Title VIII of Regulation (EC) No. 1907/2006:

1. Cement and cement-containing mixtures shall not be placed on the market, or used, if they contain, when hydrated, more than 2 mg/kg (0,0002 %) soluble chromium VI of the total dry weight of the cement.

2. If reducing agents are used, then without prejudice to the application of other Community provisions on the classification, packaging and labelling of substances and mixtures, suppliers shall ensure before the placing on the market that the packaging of cement or cement-containing mixtures is visibly, legibly and indelibly marked with information on the packing date, as well as on the storage conditions and the storage

period appropriate to maintaining the activity of the reducing agent and to keeping the content of soluble chromium VI below the limit indicated in paragraph 1.

3. By way of derogation, paragraphs 1 and 2 shall not apply to the placing on the market for, and use in, controlled closed and totally automated processes in which cement and cement-containing mixtures are handled solely by machine and in which there is no possibility of contact with the skin.

15.2 Chemical safety assessment: No data available.

SECTION 16: OTHER INFORMATION

Full text of the listed hazard statements:

H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.

Instructions for the training: Product handling instruction shall be included into the educational system about the safety work (initial training, training at the workplace, repeated training) according to specific conditions at the workplace.

Recommended restrictions on use: Mixture should not be used for any other purpose than for which is appointed (point 1.2). Because of the fact that specific conditions of use of substance are out of supplier's control, it is responsibility of the user to adjust the prescribed warnings to local laws and regulations. Safety information describes the product in terms of safety and it cannot be considered as technical information about product.

Purpose of SDS: Purpose of this SDS is to provide relevant information for users of product to ensure proper handling and control of risks/hazards.

Sources of key data used to compile the Safety Data Sheet: SDS was elaborated according to requirements set in Annex II of Regulation (EC) No 1907/2006 of the European Parliament and of the Council. SDS was prepared using data from the producer: IN VEST s.r.o.

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]: The product was classified on the basis of classification for the substance under Regulation (EC) No 1272/2008 [CLP].

Revision changes: -

Key to abbreviations and acronyms used in the safety data sheet:

ADR - European Agreement concerning the International Carriage of Dangerous Goods
DNEL - Derived No Effect Level
OEL - Occupational Exposure Limits
PBT – Persistent, bioaccumulative, toxic substances.
vPvB - Very persistent, bioaccumulative, toxic substances.