

DRAFTED ACCORDING TO THE PROVISIONS STIPULATED IN THE REGULATION ON THE COMPILING OF THE MATERIAL SAFETY DATA SHEET [EC No.1907/2006 (REACH), Annex II]

Name of the Product:	FRACTIONS OF AGGREGATE GENERATED BY CRUSHING OF THE SILICOMANGANESE AND FERROMANGANESE SLAG	Issued: 10.12. 2009. Edition: I
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1. IDENTIFICATION OF SUBSTANCE/COMPOUND AND INFORMATION ABOUT THE LEGAL OR NATURAL PERSON

1.1. Identification of substance or compound
 Name of the Product: **FRACTIONS OF AGGREGATE GENERATED BY CRUSHING OF THE SILICOMANGANESE AND FERROMANGANESE SLAG**
 Synonyms / Registration number: —
 Product code: 0/4 mm ; 4/8mm; 8/11mm; 11/16mm; 4/25mm
1.2. Use of substance / compound
 Purpose of the product: Aggregate for bituminous mixtures of pavement structures
 Way of use of the product: Mixing with the binder, laying(according to the purpose)

1.3. Information about the legal or natural person

Manufacturer and distributor:	„MLM group-Zagreb“ d.o.o. Vlaška 68 10000 Zagreb Hrvatska Tel/fax: 00385 1 4572 878 Mob: 00385 99 4572 871
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Izrada STL-a:  **TEHNIČKA SIGURNOST d.o.o.**
 Odgovorna osoba za STL:
 Ing. Mirko Kovač
 Tel: 098 192 35 86
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In case of accident: notify the Institute of medical research and occupational medicine, The Centre for the control of poisoning in Zagreb, Jordanovac 104, tel: 01 23 48 342 or the Emergency Service tel: 112

2. IDENTIFICATION OF HAZARDS

The biggest hazards and effects of the product

- on human health: - no
- on the environment: - no
- physical and chemical hazards: - no
- special hazards: - no

Main symptoms

- inhalation: - in case of exceeding the ELV coughing is possible, breathing with difficulty, irritation of upper respiratory tract
- skin: - dry skin, itching, redness (mechanical effects at higher concentrations of dust in the air)
- eyes: - possible blurred vision, redness, pain (mechanical effects at contact)
- swallowing: - swallowing not expected, if occurred, possible abdominal pain, nausea, vomiting

3. COMPOSITION / INFORMATION ABOUT THE INGREDIENTS

substance: compound: X
 Chemical composition of the compound: Aggregate generated by the silicomanganese and ferromanganese slag
Ingredients associated with product hazards: (for more information, see the Section 16., indication of warning marked with the letter R)

Name of ingredient	%	EINECS/CAS	Hazard marks	Warning marks	Registration number
Barium sulphate	—	231-784-4 7727-43-7	—	—	—
Graphite dust	—	231-955-3 7782-42-5	—	—	—
crystalline SiO ₂ (chrystobalite+quartz) Ø < 10 µm (respirable)	< 1	—	Xn	R: 48/20	—
kristalni SiO ₂ (chrystobalite) Ø > 10 µm	—	238-455-4 14464-46-1	—	—	—

crystalline SiO ₂ , quartz Ø > 10 µm	—	238-878-4 14808-60-7	—	—	—
Manganese and its anorganic compounds (as Mn)	—	231-105-1 7439-96-5	—	—	—
Iron-salts (as Fe)	—	—	—	—	—

4. FIRST AID MEASURES

- inhalation - if symptoms occur the person should be taken out for some fresh air, enabled to repose and in case symptoms remain (such as inhalation of possibly generated dust) medical advice should be provided.
- skin contact - in case of smaller contamination, blowing compressed air will help, in case of bigger contamination the person should take off the contaminated clothes and footwear and wash the area of the skin thoroughly with water. If redness occurs in the skin contact area, medical advice should be provided.
- eye contact - wash thoroughly with water with eyelids open(for 15 minutes) and in case symptoms remain, medical advice should be provided.
- swallowing - do not provoke vomit, rins the mouth with water and spit out. Drink a glass of water for the rinsing of throat and esophagus mucosa. In case symptoms remain, medical advice should be provided.

Note for the doctor / medical aid administrator: -

Special medical aid administration instruments: -

5. FIRE PROTECTION MEASURES

Fire extinguishing measures

- adequate - the product itself is not combustible. Fire extinguishing instruments should be adjusted to the environment.
- not allowed to use - water jets(aggregate)
- special exposure hazards - not known
- fire protection measures for special hazards - no special measures
- special fire extinguishing measures - not known
- special firemen protection equipment - adjust to the fire in the environment

6. PROTECTION MEASURES IN CASE OF ACCIDENTAL LEAKING

- personal protection measures - air the room, use personal protection means if necessary (see the Section 8.)
- environment protection measures - avoid getting the product in the environment
- way of cleaning and collecting - dry mechanical collecting, aspiration, avoid dust rising(see the Section 13.)
- additional advice - no additional advice

7. HANDLING AND STORAGE

7.1 Handling

Instructions for safe operation Do not dust, carry in closed packaging (if possible)
Protection measures Do not inhale dust, avoid contact with skin and eyes, use personal protection means if necessary (Section 8.)

7.2 storage: technical measures and conditions

adequate No conditions recommended
inadequate Not known

8. EXPOSURE CONTROL/PERSONAL PROTECTION

8.1 Exposure Limit Value

Name of hazardous substance	ELV – Exposure Limit Value	BLV - Biological Limit Value
Barium sulphate	10 (U) 4 (R) mg/m ³	

Graphite dust	10 (U) 4 (R) mg/m ³	
kristalni SiO ₂ ; chrystobalite	0.05 mg/m ³	
crystalline SiO ₂ , quartz	0.1 mg/m ³	
Manganese and its anorganic compounds (as Mn)	0.5 mg/m ³	
Iron-salts (as Fe)	1 mg/m ³	

8.2. Exposure control

- **summary of risk management measures:** adhere to the instructions set out in the Section 7. , using personal protection means if necessary

8.2.1. Exposure control at workplace

- description of work procedure and technological control:
 - there is no exposure scenario that accompanies the document, but it is expected that in handling the product adequate organizational and technical measures must be provided especially in handling the finest fraction, such as lower concentrations of the named substance in the air than the exposure limit values (avoiding the generation of dust). If it is not possible to do so, personal protection means for the protection of respiratory tract must be used.
- general protection measures:
 - airing(general) of the workplace

Personal protection equipment for:

- the protection of respiratory system
 - in case of dust, use filter half-masks P2(HRN EN 149)
- hand protection
 - use protective leather gloves (risk of mechanical injuries)(HRN EN 388 and 420) or protective cotton gloves lined with PVC, nitril or neopren (HRN EN 374)
- eye protection
 - in contact with dust, use protective glasses well-adhering to the face skin, not allowing for the dust particles to flow in from any direction whatsoever(HRN EN 166)
- skin and body protection
 - wear cotton clothes with long sleeves and legs, and adequate footwear that covers the entire foot(HRN EN 340)
- special hygienic measures
 - while handling the product, it is not allowed to eat, drink or smoke. It is necessary to wash hands after handling the product

8.2.2. Environment protection control

- **summary of risk management measures:** avoid getting of the product into sewage system, surface waters and groundwater

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. General information

- Physical state: solid
- Form: aggregate
- Colour: Depending on the batch
- Odour: characteristic

9.2. Information related to health, safety and environment

- Boiling point/boiling range: °C Not known
- Flaming point: °C Not known
- Combustion temperature: °C Not known
- Explosivity range: vol. % Not explosive
- Steam pressure: (at 23° C) hPa Very small
- Steam density: kg/m³ insignificant
- Density: (at 23° C) kg/dm³ 2.8-3.1
- Solubility (with type of solvent marked): g/L insoluble(water)
- Viscosity: Pas Not applicable
- pH value (water dispersion) 8.83
- Distribution coefficient – octanol/water logPow Not applicable

9.3 Other Information

No data

10. STABILITY AND REACTIVITY

stability

stable

10.1 Conditions to be avoided

Not known

10.2 Materials to be avoided

Not known

10.3 Hazardous decomposition products

Thermal decomposition at high temperatures can generate hazardous/poisonous vapours of metals/metal oxides

11. TOXICITY INFORMATION

Acute intake:

oral (LD 50): rat No data

inhaled (LC 50) : No data

dermal (LD 50): No data

Chronic intake:

oral (LD 50): No data

inhaled (LC 50) : No data

dermal (LD 50): No data

irritation/erosion:

skin Not irritating

eyes Not irritating

respiratory system: Not irritating

hypersensitivity:

skin Not irritating

respiratory system Not irritating

Permanent effects of acute or chronic exposure: Not known

Special effects: (carc., mutag., reproduction) No special effects

Toxic and kinetic properties: No data

limitations and restrictions: No

12. ECOLOGICAL DATA

12.1. Ecotoxicity

- organisms living in water No data

- organisms living in the ground No data

- for plants and land animals No data

12.2. Mobility

- known or expected distribution per segments of environment: Aggregate insoluble in water

- surface tension: Not applicable

- absorption/desorption: No data

- other physical and chemical properties: No data

properties:

12.3. Stability/degradability

- biodegradability Contains mostly anorganic substances

- other degradability processes No data

- degradability in wastewaters No data

12.4. Bioaccumulation potential

- bioconcentration factor (BCF) No data

12.5. Evaluation of Stability, bioaccumulation and toxicity

- data from the chemical safety report No data

13. DISPOSAL

Ways of waste disposal

Product waste

Dispose of the waste according to the national regulation (inert waste Nr- 10 02 99), the redundant material, contaminated with the binder, we carry away as civil construction waste (Nr- 17 02 01 or 17 03 01). At handling the product the end user must assign the appropriate key number in compliance with the Provision on the categories, types and classification of waste, together with the waste catalogue and list of hazardous waste

Contaminated packaging

Delivered in bulk

Local bylaws in force

Law on waste and its sublegal acts.

14. TRANSPORT DATA

Transport classification marks	
land	(ADR/RID)
water	(ADN)
sea	(IMDG)
air	(ICAO/IATA)
Sea contaminator	No
UN classification number	-
The product does not present hazardous freight as to national and international regulation	

15. REGULATION DATA

-Applicable Law on chemicals and its sublegal acts on chemicals classification and labeling, Regulation on exposure limit values of hazardous substances and biological limit values.
 - Chemical safety testing: Not carried out

- Information on safety and security measures :

Indication of risk and danger No

Indication of warning No

Notification marks S: 22 Do not inhale dust

16. OTHER DATA

The meaning of Indication of warning (R) for substances enumerated in the Section 3:
 R 48/20 Hazardous: danger of serious danger to health by prolonged exposure if inhaled.
 Information presented in this Material Safety Dana Sheet is based on laws and regulations on chemicals in force. Information contained in this document correspond to our present knowledge and experience in safety handling, storing, transport of chemicals and safe waste disposal. We shall not face any responsibility whatsoever for the consequences that could result from disregard of the above mentioned Material Safety Dana Sheet.

Drafted by:
 Ing. Mirko Kovac

The Material Safety Dana Sheet was drafted based on the following tests and research:

1. CSS d.o.o. - Central laboratory - Zagreb

The study on the adequacy assessment of aggregate fractions obtained by crushing of silicomanganese and ferromanganese slag and generated by the separation process in "Crnica" Šibenik

2. Institute "Ruđer Bošković" - Zagreb

Report on measuring of radioactivity of samples and expert opinion

3. Institute of public health - Zagreb

Report on testing physical and chemical properties of waste for permanent disposal

4. Mineralogical and petrographic Institute, o-petrografski zavod, The Faculty of Science - Zagreb

Analysis of the composition of slag from the area of Crnica in Šibenik