



SAFETY DATA SHEET

Revision: 6 of 01.03.25

Replaces previous editions

“High Pressure Water Jet” RubberJet Granule RJG™ 4000

Section 1: IDENTIFICATION OF THE MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Trade name:	“High Pressure Water Jet” RubberJet Granule -RJG™ 4000
Mixture designation:	Rubber granule made of vulcanized rubber polymer derived from End-of-Life Tyres (ELTs) treatment (3.3-4.0mm)
Synonyms	N/A
CAS number	N/A
EC number	N/A
Index number	N/A
Registration number	N/A
Chemical formula	N/A
Molecular weight	N/A

1.2 Relevant identified uses of the substance or mixture and uses advised against

Description of common uses:	a) production of articles and/or components of articles in rubber, rubber conglomerates, rubber and rubber-plastic compounds provided that they are intended for structural and finishing elements for the building industry, mechanical industry, components of means of transport external to the passenger compartment, railway and port construction and infrastructure, signs and roads, weights and counterweights; b) flooring for play and sport facilities. c) infill material used in sport fields; d) bituminous composite materials such as modified bitumen, membrane bituminous, rubber-based asphalt additives, mastics and sealants; e) bituminous conglomerates and cement conglomerates; f) foaming agents for steelworks
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Sectors of use	• Manufacture of rubber product; (SU11) • Manufacture of plastics products, including compounding and conversion (SU12) • Manufacture of other non-metallic mineral products, e.g. plasters, cement (SU13) • Manufacture of basic metals, including alloys (SU14) • Building and construction work (SU19)
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Uses advised against:	The product is specifically designed for the uses identified in this SDS and it contains substances that may be incompatible with other uses. So, uses not specifically mentioned in this SDS, especially uses which involve use of the product as its own or in mixtures in a concentration equal to or greater than 0,01 % by weight other than uses at industrial sites, uses involving the permanent modification of physical properties of the product during intended end use in such a way that the polymer no longer falls within the scope of the restriction, uses involving the use of product permanently incorporated into a solid matrix during intended end use.
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If intended to use for purposes other than those identified, it is recommended to contact the supplier.

Reason why uses advised against:	In accordance with point 1 of the Restriction N.78 of Annex XVII of REACH, product from 17 October 2023 shall not be placed on the market on its own or in mixtures in a concentration equal to or greater than 0,01 % by weight, if is intended for uses other than those in derogation: uses at industrial sites (derogation point 4.a), uses involving the permanent modification of physical properties of the product during intended end use in such a way that the polymer no longer falls within the scope of the restriction (derogation point 5.b), uses involving the use of product permanently incorporated into a solid matrix during intended end use (derogation point 5.c).
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If the product is intended for such uses, placing on the market is allowed, provided that the communication obligations referred to in points 8,10,11,12,14 of the restriction are fulfilled. In accordance with point 6.j of the restriction, placing on the market of the product for use as granular infill on synthetic sports surfaces is prohibited from 17 October 2031. Until that date, placing on the market is permitted without further associated communication obligations.

1.3 Details of the supplier of the safety data sheet

Company name	RUBBERJET VALLEY SRL
Address	Via Durando 38/A-39
City/Country	20154 Milan / ITALY
Contact person for SDS	Tommaso Verri, Claudio Diano
Phone number	+393346005870
e-mail address of competent person for SDS	info@rubberjet.it

1.4 Emergency telephone number

Name	ASST Grande Ospedale Metropolitano Niguarda
Address/city/Country	Piazza Ospedale Maggiore, 3 20162 MILAN
Telephone	+39 02 661.010.29
Language of the phone service	Italian
Opening hours	H24

Section 2: HAZARDS IDENTIFICATION

2.1 Classification of the mixture

This product does not meet the criteria for classification in any hazard class according to Regulation (EC) 1272/2008 on classification, labelling and packaging of substances and mixtures (CLP Regulation).

However, a safety data sheet is being supplied for it upon request as it contains substances for which there are community workplace exposure limits and substances posing human health hazard in individual concentrations above 1% by weight.

2.2 Label elements

Hazard statements:	N/A
Precautionary statements:	N/A
Hazard pictograms:	N/A
Signal word:	N/A
Warning:	EUH210 – Safety data sheet available on request

2.3 Other hazards

Physical-chemical hazards:	This product is not classified as hazardous with physical-chemical hazards according to the criteria established by Regulation (EC) 1272/2008. In case of combustion may generate toxic fumes
Health hazards	This product is not classified as hazardous to human health according to the criteria established by Regulation EC 1272/2008. It doesn't contain substances classified as carcinogen, mutagen or reproductive toxicant with individual concentration equal or greater than the relevant concentration limits specified in Part 3 of Annex VI or Part 3 of Annex I to Regulation EC 1272/2008.



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It contains a substance (sulfur CAS 7704-34-9) classified as skin irritant (H315) but in concentration that does not imply the classification of the entire mixture in this hazard class.

The product contains substances (oils/plasticizers CAS 64742-52-5, 64742-54-7, 64742-65-0, 64741-88-4, 68783-04-0) classified as carcinogenic cat.1B for which note L of Annex VI of Regulation (EC) 1272/2008 is applied. According to this note, these substances, and as result the mixture, are not classified as carcinogenic.

Environmental hazards:

This product is not classified as hazardous to environment according to the criteria established by Regulation EC 1272/2008.

It contains a substance (cobalt sulfide CAS 1317-42) classified as toxic to aquatic life (H400, H410) but in concentration that does not imply the classification of the entire mixture in this hazard class.

Determination of endocrine-disrupting properties

The mixture does not contain one or more substances with endocrine disrupting properties in a concentration equal to or greater than 0.1%.

Other hazards:

The product doesn't meet the criteria for PBT or vPvB substances according to the Annex XIII of REACH.

The product contains substances included in the list established pursuant to Article 59, paragraph 1 of REACH with concentration lower than 0.1%.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

According to REACH Regulation (Par.3.2.2. Annex II), for mixtures not meeting the criteria for classification in accordance with Regulation (EC) No 1272/2008, the following substances are indicated, together with their concentrations or concentration range in the mixture:

- a) 1% by weight in non-gaseous mixtures and 0,2% by volume in gaseous mixtures for:
 - i. Substances which present a health or environmental hazard within the meaning of Regulation (EC) No 1272/2008 or
 - ii. Substances for which Union workplace exposure limits have been assigned;
- b) 0.1% by weight for substances which are persistent, bioaccumulative and toxic in accordance with the criteria set out in Annex XIII, very persistent and very bioaccumulative in accordance with the criteria set out in Annex XIII or included in the list established in accordance with Article 59(1) for reasons other than the hazards referred to in point (a).

The substances for which the SDS must be prepared upon request pursuant to art. 31 par.3.b and to notes to tables 3.6.2, 3.7.2, 3.8.3 and 3.9.4 of Annex I of CLP Regulation are also reported.

Name	CAS No	Classification according to Annex VI CLP	Reason of indication	% range [weight]
Carbon black	1333-86-4	-	Substance with workplace exposure limit in concentration >1%.	32-36
Silicon dioxide	7631-86-9	-	Substance with workplace exposure limit in concentration >1%.	0.5-1.5
Distillates (petroleum), hydrotreated heavy naphthenic *	64742-52-5	H350-cat.1B (NOTA L)	Substance with workplace exposure limit in concentration >1%.	1.3-2.5
Distillates (petroleum), hydrotreated heavy paraffinic *	64742-54-7	H350-cat.1B (NOTA L)		
Distillates (petroleum), solvent-dewaxed heavy paraffinic *	64742-65-0	H350-cat.1B (NOTA L)		
Distillates (petroleum), solvent-refined heavy paraffinic *	64741-88-4	H350-cat.1B (NOTA L)		
Extracts (petroleum), solvent-refined heavy paraffinic distillate solvent *	68783-04-0	H350-cat.1B (NOTA L)		



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sulfur	7704-34-9	H315	Substance with human health hazard in concentration >1% Substance with workplace exposure limit in concentration >1%.	1.0-2.0
Zinc sulphide	1314-98-3	-	Substance with workplace exposure limit in concentration >1%.	0.9-1.1

* Based on the SDSs of the manufacturers, for oils used in the manufacturing of tyres, note L of Annex VI of the Regulation (EC) 1272/2008 shall apply, saying that "The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3 % DMSO extract as measured by IP 346 'Determination of polycyclic aromatics in unused lubricating base oils and asphaltene free petroleum fractions — Dimethyl sulphoxide extraction refractive index method', Institute of Petroleum, London. This note applies only to certain complex oil-derived substances in Part 3."

Additional information

For full text of H-statements: see SECTION 16

Section 4: FIRST AID MEASURES

4.1 Description of first aid measures

General notes

Because of the physical state of the product, the main routes of exposure are due to the inhalation of combustion fume and inhalable material and to the skin contact without appropriate personal protective equipment.

The oral exposure and eye contact shall be considered only in case of a previous skin contact with the mixture.

Following inhalation:

The exposure to high concentrations of fumes/dust may cause difficulty in breathing. In case of exposure to fumes/dust, bring the person to a well-ventilated uncontaminated area.

In case of illness or difficulty of breathing, seek medical advice.

Following skin contact:

The contact with skin may cause mild irritation in susceptible individuals. In case of mild irritation, wash thoroughly with water and detergents suitable for skin cleansing.

If symptoms like skin irritation persist, seek medical advice.

Following eye contact:

In case of indirect contact through hands, wash thoroughly with water and do not rub.

Remove contact lenses, if present.

Following ingestion:

In case of indirect contact through hands, rinse mouth with water and, in case of unwellness, call the poison control center.

4.2 Most important symptoms and effects, both acute and delayed

Effects after inhalation:

Unwellness, irritation and breathing difficulty at high concentrations of fine dust or combustion fumes.

Effects after skin contact:

Irritation

Effects after eye contact:

Foreign-body sensation in the eye, redness and tearing.

Effects after ingestion:

Unwellness

Delayed effects:

Not data available

4.3 Indication of any immediate medical attention and special treatment needed

In case of exposure to combustion fumes

in case of prolonged exposure to high concentrations of respirable dust derived from product in closed environments with unwellness and breathing difficulty.

In case of skin irritation after prolonged and direct contact with skin

In case of unwellness after accidental ingestion through indirect contact with hands



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Section 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: Multi-purpose chemical extinguisher, carbon dioxide, firefighting foam for closed environments

Unsuitable extinguishing media: Not relevant

Firefighting instructions Avoid inhalation exposure to combustion fumes.

5.2 Special hazards arising from the mixture

Explosion hazards N/A

Fire hazards Rubber materials generate class A fires, namely fires of solid materials, usually of an organic nature, leading to the formations of embers.
In case of fire, the material will burn rapidly with emission of thick, black smoke, irritating the respiratory tract and the eyes.

Hazardous combustion products The combustion produces toxic fumes, containing sulfur oxides and dioxins.

5.3 Advice for firefighters

Prevent firefighting waters from contaminating surface and underground waters.

Wear complete equipment and masks with breathing apparatus.

Although not provided for in this point, refer to the recommended protective equipment in SECTION 8 of this SDS.

Section 6: ACCIDENTAL RELEASE MEASURES

No risk condition due to accidental dispersion is envisaged. The only possible dispersion is related to a high production of fine fraction during particular processes of the finished mixture.

6.1 Personal precautions, protective equipment and emergency procedures

In case of high release of dust: wear protection glass, gloves, suits and use of protection masks (grade FFP1 or higher). Stay upwind. Remove people from the release area.

6.2 Environmental precautions

Do not release to the environment. Prevent the dispersion in the atmosphere of the fine dust. Avoid sources of ignition.

6.3 Methods and material for containment and cleaning up

In case the product is used as infill in synthetic turf fields and in horse riding, adequate containment measures must be adopted (eg curb) in order to avoid dispersion in the environmental matrices.

Avoid production of dust. Use vacuum cleaners to remove the dust.

6.4 Reference to other sections

Make reference to sections 8 and 13 for further details.

Section 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Protective measures: The thermal processing of the product must take place in closed circuit plants to avoid the release of vapours in workplace during the process.

During room temperature processing of the product in open systems producing inhalable material, it is necessary to adopt personal protective equipment such as gloves, goggles, dust masks, protective clothing and process the product only in areas with an adequate ventilation.

Measures to prevent fire: Avoid handling the product in the presence of potential ignition sources such as open flames.



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Measures to prevent aerosol and dust generation:

Wear the recommended personal protective equipment (see Section 8.2.2).

Advice on general occupational hygiene:

Use and handling the product in areas with adequate ventilation. Avoid creating excessive dust.

Use good housekeeping practices during storage, transfer and handling.

Do not eat, drink and smoke in work areas.

Foods and beverages should be consumed only in areas specifically identified after removing contaminated clothing and protective equipment and after washing your hands. Wash hands after handling of product.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions:

Store the product in original sealed packaging, in ventilated rooms and away from sources of ignition.

Protect from heat. Keep away from food, drink and animal feeds

Requirements for storage rooms and vessels:

Keep in properly labelled containers. Storage areas should be equipped with adequate fire-detection and automatic extinguishing system

7.3 Specific end uses

The recommendations described in subsections 7.1 to 7.2 relate to the use of the product for the uses stated in subsection 1.2. Uses other than those indicated are considered not controlled and, in any case, not covered by this SDS.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1. Occupational exposure limit values

Limit value - Eight hours (mg/m ³)	Limit value – Short term (mg/m ³)	Source*
Phenanthrene (CAS 85-01-8)		
0,8	-	Latvia
Lead (CAS 7439-92-1)		
0,15 inhalable fraction		European Union [1]
0,15		Italy, Ireland, Belgium, Romania, UK, Singapore, Turkey
0,1 inhalable aerosol	0,4 inhalable aerosol	Austria
0,05 inhalable aerosol	0,10 inhalable aerosol	Denmark
0,1		Finland
0,1 inhalable aerosol		France, Switzerland
0,15 inhalable aerosol		Germany, Spain [2]
0,15 inhalable aerosol; 0,05 respirable aerosol	0,60 inhalable aerosol; 0,2 respirable aerosol	Hungary
0,005	0,01	Latvia
0,05		Poland, Australia, Canada, Israel, South Korea
0,1 inhalable aerosol, 0,05 respirable aerosol		Sweden
0,1		New Zealand [3]
0,05 inhalable fraction, 0,03 respirable fraction		China
0,1 inhalable aerosol	0,8 inhalable aerosol	Switzerland
cobalt sulfide (CAS 1317-42-6)		
0,02 (calculated as Co)		Finland
kaolin (CAS 1332-58-7)		
10 total dust, 5 respirable fraction		USA-NIOSH
15 total dust, 5 respirable fraction		USA-OSHA
2 respirable aerosol	4 respirable aerosol	Denmark
2 respirable fraction		Finland, UK
10 respirable fraction		France
3 respirable fraction		Switzerland



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2		Belgium, Ireland
zinc sulphide (CAS 1314-98-3)		
5		Latvia
Copper (CAS 7440-50-8)		
1 inhalable fraction	4 inhalable fraction (15min. average value)	Austria
0,01 respirable fraction	0,02 respirable fraction (15min. average value)	Germany DFG
0,5 inhalable fraction	1 inhalable fraction (15min. average value)	Latvia
0,2 (as Cu) inhalable fraction		Poland
0,01 respirable fraction		Sweden
0,1 inhalable fraction	0,2 inhalable fraction (15min. average value)	Switzerland
0,1 inhalable fraction		The Netherlands
Barium (CAS 7440-39-3)		
0,5		European Union [1], Italy, USA-NIOSH, USA-OSHA, UK, Turkey, The Netherlands, Spain, South Korea, Singapore, Romania, New Zealand, Australia, Belgium, Canada, France, Hungary, Ireland, Latvia
0,5 inhalable aerosol	2 inhalable aerosol	Austria
0,5	1	Denmark
0,5 inhalable aerosol	0,5 inhalable aerosol (15min. average value)	Germany (AGS) [4]
0,5 inhalable aerosol	4 inhalable aerosol (15min. average value)	Germany DFG
0,5	1,5 (15min. average value)	China
0,5 total dust		Sweden
0,5 inhalable aerosol	4 inhalable aerosol	Switzerland
2-Mercaptobenzothiazole (CAS 149-30-4)		
4 inhalable aerosol		Germany (AGS), DFG
Benzothiazole (CAS 5-16-9)		
20		Poland
Bis(2-ethylhexyl) phthalate (CAS 117-81-7)		
5	10 (15min. average value 0,15 mg/m3 LOQ)	USA-NIOSH
5	5	USA-OSHA
5	10	Australia, New Zealand, South Korea, UK
3	5	Austria, Canada
3	6	Denmark
5	10 (15min. average value)	Finland, Ireland
5		France, Spain, Japan JSOH
2 inhalable fraction	4 inhalable fraction (15min. average value)	Germany (AGS), DFG
10	40	Hungary
1	5	Poland
3	5 (15min. average value)	Sweden [5]
2 inhalable fraction		Switzerland
Aniline (CAS 62-53-3)		
7,74	19,35 (15min. average value)	European Union [1][6]
19		USA-OSHA [7]
7,6		Australia, Singapore, Canada
8	40	Austria
7,7		Belgium, Spain
4	8	Denmark [6]
4	8 (15min. average value)	Sweden
1,9	3,9 (15min. average value)	Finland [6]
10		France, South Korea
7,7 inhalable aerosol e vapour	15,4 inhalable aerosol e vapours (15min. average value)	Germany (AGS) [6]
7,7	15,4 (15min. average value)	Germany DFG [6]
8	32	Hungary
3,8		Ireland, Japan JSOH
0,1		Latvia [6]
4		New Zealand, UK



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3		China
5	20	Poland [6]
3	5 (15min. average value)	Romania
8	16	Switzerland
Cyclohexanamine (CAS 108-91-8)		
40		USA-NIOSH, Ireland, South Korea, France
41		Spain, UK, Singapore, Canada, Australia, New Zealand
42		Belgium
40	80	Denmark
4,1	41 (15min. average value)	Finland
8,2	16,4 (15min. average value)	Germany (AGS), DFG [8]
40	40 (20.5 ceiling limit value)	Hungary
1		Latvia
20	40 (15 min. average value)	Romania, Sweden
8,2	24,6 (15min. average value)	Switzerland
Cyclohexanamine, N-cyclohexyl- (CAS 101-83-7)		
5 inhalable aerosol e vapour	10 inhalable aerosol e vapour (ref.15min.)	Germany (AGS) [9]
tertbutylamine (CAS 75-64-9)		
15	75 (15min. average value)	Austria
15	15	Denmark
6,1	12,2 (15min. average value), 15,25 ceiling limit value	Germany (AGS), DFG
	15 (15min. average value)	Sweden
N-(1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine (6-ppd) (CAS 793-24-8)		
2 inhalable aerosol	4 inhalable aerosol (ref.15min.)	Germany (AGS)
3	6	Switzerland
carbon black (CAS 1333-86-4)		
3,5		USA-OSHA
3,5		USA-NIOSH [10]
3,5		France, Spain, South Korea, Canada, Singapore
3,5	7	UK, Denmark
3,5	7 ((15min. average value)	Ireland, Finland
3		Sweden, Australia, New Zealand, Belgium
1 inhalable fraction, 4 total dust		Japan JSOH
3,5 inhalable fraction		Israel
4- inhalable fraction		China
Sulfur (CAS 7704-34-9)		
6		Latvia
	15 dust (15min. average value)	Romania
Silicon dioxide (CAS 7631-86-9)		
80% total dust silica		USA-OSHA
2		Australia [11]
4 inhalable aerosol		Austria, Germany (AGS), DFG, Switzerland
10		Belgium, Canada, Singapore, South Korea
2 inhalable aerosol	4 inhalable aerosol	Denmark
5		Finland
6 inhalable fraction, 2,4 respirable fraction		Ireland
1		Latvia, New Zealand
2 inhalable fraction		China
6 inhalable aerosol; 2,4 respirable aerosol		UK

(1) Binding Occupational Exposure Limit Value (BOELV)

(2) Binding Occupational Exposure Limit Value - BOELV .Reference value that represents the state of the art. Individual measures are related to this LV.

(3) Exposure can also be estimated by biological monitoring.

(4) Except barium oxide and barium dihydroxide

(5) The same limit value, expressed in mg/m³, shall also be applied to phthalates for which no limit values have been defined. There are a number and variety of dioctyl phthalates (DOPs). Di-(2-ethylhexyl) phthalate (DEHP) is the commonest industrial octyl phthalate and, like other octyl phthalates, is also rather vaguely termed DOP. The designation disec-octyl phthalate often refers to DEHP, which from a chemical viewpoint is not entirely correct.

(6) Skin



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- (7) The LV is listed as “Aniline and homologues”.
- (8) VL short term: a momentary value of 5 mL/m³ (21 mg/m³) should not be exceeded.
- (9) VL short term: a momentary value of 5 ml/m³ (15 mg/m³) should not be exceeded.
- (10) in presence of PAHs: limit PAHs to 0,1 mg/m³ TWA (detected as cyclohexane soluble extract)
- (11) This value is for inhalable dust containing no asbestos and < 1% crystalline silica.

*Australia: Workplace exposure standards for chemicals at safe work Australia, Austria: Verordnung des Bundesministers für Arbeit, Soziales und Konsumentenschutz über Grenzwerte für Arbeitsstoffe sowie über krebserzeugende und fortpflanzungsgefährdende (reproduktionsstoxische) Arbeitsstoffe (Grenzwerteverordnung 2011 – GKV 2011). StF: BGBl. II Nr. 253/2001, Belgium: Federal Public Service Employment, Labour and Social, Canada - Ontario: Current Occupational Exposure Limits for Ontario Workplaces (Regulation 833), Québec: Règlement sur la santé et la sécurité du travail, Denmark: Bekendtgørelse om grænseværdier for stoffer og materialer, European Union: Council Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work (fourteenth individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC), Commission Directive 2000/39/EC of 8 June 2000, Commission Directive 2006/15/EC of 7 February 2006, Commission Directive 2009/161/EU, Commission Directive (EU) 2017/164 of 31 January 2017, European Union: Council Directive 2004/37/EC of the European Parliament and of the council of 29 April 2004, 1st Amendment - Directive 2017/2398, 2nd Amendment - Directive 2019/130, European Union: Directive 2009/148/EC of the European Parliament and of the Council of 30 November 2009, Finland: HTP-arvot 2018, France: Valeurs limites d'exposition professionnelle aux agents chimiques en France ED 984. INRS, (2006), Germany - AGS: Technische Regeln für Gefahrstoffe, Arbeitsplatzgrenzwerte, TRGS 900, Germany - MAK Values: German: Deutsche Forschungsgemeinschaft (DFG) (ed.), MAK- und BAT-Werte-Liste 2019. Maximale Arbeitsplatzkonzentrationen und Biologische Arbeitsstofftoleranzwerte, Hungary: 25/2000.(IX.30.) EüM-SZCSM együttes rendelet: A munkahelyek kémiai biztonságáról, 1.melléklet, Magyar Közlöny, 99 szám 6150-6178 old. módosítva a 13/2002 (XI.28.) ESZCSM – FMM és a 13/2006 (III. 23.) EüM-FMM együttes rendelettel, elérhető: Joint Decree No. 25/2000.(IX.30.) EüM-SZCSM issued by the Ministry of Health and Ministry of Social and Family Affairs on the Chemical Safety at Work, Annex 1., Magyar Közlöny, Vol 99, pp 6150 - 6178, modified by Joint Decree No 13/2002(XI.28.) ESZCSM – FMM and Joint Decree No 13/2006 (III. 23.) EüM-FMM, Ireland: Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations. (S.I. No. 619 of 2001), Italy: Decreto Legislativo 9, ALLEGATO XXXVIII and ALLEGATO XLIII (carcinogenic substances), Japan - Evaluation standards: Japan ISHA - Administrative Control Levels of Working Environment Evaluation Standards, Japan - Japan Society for Occupational Health, Latvia: Occupational Exposure Limits, New Zealand: Workplace Exposure Standards and Biological Exposure Indices. Edition 9 effective from November 2017, PR China: Limit Values of the National Health Commission (GBZ 2.1-2007), Romania: HOTĂRÂR, Singapore Workplace Safety and Health (General Provisions) Regulations, South Korea: Korean Industrial Hygiene Association, Spain: Límites de Exposición Profesional para Agentes Químicos en España (Occupational Exposure Limits for Chemical Agents in Spain), Instituto Nacional de Seguridad e Higiene en el Trabajo, Ministerio de Trabajo y Asuntos Sociales, Madrid, Sweden: Hygieniska gränsvärden at the website of the Swedish Work Environment Authority, Switzerland: Searchable Database (German, French, Italian) available at www.suva.ch., United Kingdom: Health and Safety Executive, EH40/2002 Occupational Exposure Limits 2002, HSE Books (2002), ISBN 0717620832, with EH40/2002 Occupational Exposure Limits Supplement 2003, HSE Books (2003), ISBN 0717621723, EH40/2005 Workplace Exposure Limits 2005, HSE Books (2005), ISBN 0717629775, United States - NIOSH: National Institute for Occupational Safety and Health. NIOSH Recommendations for occupational safety and health, Compendium of Policy Documents and Statements, January 1992, DHHS (NIOSH) Publication No. 92-100. United States - OSHA: US Occupational Safety and Health Administration: Occupational Health and Safety Standards, US Code of Federal Regulations: 42 CFR 1910 Subpart Z, Toxic and Hazardous Substances. Accessed February 1, 2006.

Biological limit value

There are no statutory limit values regulating biological exposure.

8.1.2. Information on monitoring procedures

European reference	
EN 13205	Workplace exposure — Procedures for measuring gases and vapours using pumped samplers — Requirements and test methods
EN 1076	Workplace exposure — Procedures for measuring gases and vapours using pumped samplers — Requirements and test methods
EN 13137	Workplace atmospheres — Pumps for personal sampling of chemical and biological agents — Requirements and test methods
EN 13936	Workplace exposure — Procedures for measuring a chemical agent present as a mixture of airborne particles and vapour — Requirements and test methods
EN 45544	Workplace atmospheres — Electrical apparatus used for the direct detection and direct concentration measurement of toxic gases and vapours
EN 481	Workplace atmospheres - Size fraction definitions for measurement of airborne particles
EN 482	Workplace exposure - General requirements for the performance of procedures for the measurement of chemical agents
EN 689	Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy
EN 1540	Workplace exposure – Terminology
EN ISO 13138	Air quality - Sampling conventions for airborne particle deposition in the human respiratory system
CEN/TR 15230	Workplace atmospheres - Guidance for sampling of inhalable, thoracic and respirable aerosol fractions
CEN/TR 15278	Workplace exposure - Strategy for the evaluation of dermal exposure
CEN/TS 15279	Workplace exposure - Measurement of dermal exposure - Principles and methods

8.1.3 Information on the generation of atmospheric pollutants as a consequence of an intentional use

The identified uses as from section 1.2 could lead to the generation of atmospheric pollutants.

For inhalable particulate matter the following occupational exposure limits are set:



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TLV-TWA ACGIH PNOC (Particulate Not Otherwise Classified) inhalable 10 mg/m³, PNOC respirable 3 mg/m³.

The thermal processing at high temperature must take place in closed circuit plants to avoid the release of emissions in workplace.

8.1.4 Information related to the Chemical Safety Report DNEL(S) and PNEC(S)

N/A

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Minimize exposure to dust.

Periodically check the operation of aeration/ suction / ventilation systems in the workplace.

Check that workers wear personal protective equipment described in Section 8.2.2.

8.2.2 Personal protection equipment

a) eye and face protection	During processes producing dust, wear protective goggles.	EN 166
b) skin protection	During direct handling operations of the mixture, wear adequate gloves.	EN ISO 374
c) respiratory protection	During processes producing dust or in case of direct exposure to emissions produced by hot processes, use proper protective mask (grade FFP1 or higher).	EN 529 EN 149
d) thermal hazards	N/A	

8.2.3 Environmental exposure controls

Direct the process water in an appropriate filtering system for capturing material with variable grain size.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

PROPERTIES	VALUE	METHOD
Colour	Dark grey or black	-
Physical state	Solid	-
Appearance	granule	-
Granulometry	3.3-4.0mm	ISO 13320:2020
Odour	Typical of rubber	-
Odour threshold	n.a. in the normal conditions of use	
pH	n.d.	
Melting point/freezing point	N.A.	
Initial boiling point	N.A.	
Evaporation rate	N.A.	
Flammability (solid)	n.d.	
Upper/lower flammability or explosive limits	n.d.	
Vapour pressure	N.A.	
Vapour density	N.A.	
Relative density	1.1 g/cm ³	ASTM D297 - 19
Solubility	n.d.	
Partition coefficient-octanol/water	N.A.	
Auto-ignition temperature-layer (5mm)	n.d.	
Auto-ignition temperature-cloud	n.d.	
Decomposition temperature	n.d.	
Viscosity	N.A.	
Explosive properties	-	
Oxidising properties	-	
Humidity	1%	UNI EN 14346:2007 Method A
Characteristics of the particles	n.d.	



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9.2 Other information

No other information available.

Change of state: N.A.

9.2.1 Information regarding physical hazard classes

Explosive properties	Non-explosive product	
Explosives	N.A.	
Flammable gases	N.A.	
Aerosol	N.A.	
Oxidising gases	N.A.	
Gas under pressure	N.A.	
Flammable liquids	N.A.	
Flammable Solids	N.A.	
Self-reactive mixed substances	N.A.	
Pyrophoric liquids	N.A.	
Pyrophoric solids	N.A.	
Self-heating substances and mixtures	N.A.	
Substances and mixtures that emit flammable gases when in contact with water	N.A.	
Oxidising liquids	N.A.	
Oxidising solids	N.A.	
Organic peroxides	N.A.	
Substances or mixtures corrosive to metals	N.A.	
Desensitizing explosives	N.A.	

9.2.2 Other safety features

N.D.

Section 10: STABILITY AND REACTIVITY

10.1 Reactivity

Not reactive.

10.2 Chemical stability

Stable in all ordinary circumstances and under normal conditions of use.

10.3 Possibility of hazardous reactions

No known hazardous reactions

10.4 Conditions to avoid

Keep away from sources of ignition. Protect from heat. Ref. Section 7.2

10.5 Incompatible materials

None.



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10.6 Hazardous decomposition products

No known hazardous decomposition products.

Section 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

a) Acute toxicity

Oral exposure- ingestion No data available in the literature on the tests carried out on animals and humans aimed at assessing the consequences of ingestion of the product. No specific studies have been carried out directly on product.

The mixture contains substances classified in acute toxicity (oral) class, but their concentrations are below the cut off values for which they must be taken into account for the purposes of classification of the entire mixture.

Furthermore, considering the nature of the product that incorporates the substances in the polymer matrix, they are not expected to contribute to the overall health effects of the mixture.

Dermal exposure - absorption through skin / eyes: No data available in the literature on the tests carried out on animals and humans aimed at assessing the consequences of absorption through skin/eyes of the product. No specific studies have been carried out directly on product.

The mixture contains substances classified in acute toxicity (dermal) class, but their concentrations are below the cut off values for which they must be taken into account for the purposes of classification of the entire mixture.

Furthermore, considering the nature of the product that incorporates the substances in the polymer matrix, they are not expected to contribute to the overall health effects of the mixture.

Inhalation exposure: No data available in the literature on the tests carried out on animals and humans aimed at assessing the consequences of inhalation of the product. No specific studies have been carried out directly on product.

The mixture contains substances classified in acute toxicity (inhalation) class, but their concentrations are below the cut off values for which they must be taken into account for the purposes of classification of the entire mixture.

Furthermore, considering the nature of the product that incorporates the substances in the polymer matrix, they are not expected to contribute to the overall health effects of the mixture.

b) Skin corrosion/irritation

Corrosion: No data available in the literature on skin corrosion effects of the product. No specific studies have been carried out directly on product. No evidence of corrosion actions.

The mixture contains substances classified as corrosive to skin, but their concentrations are below the cut off values for which they must be taken into account for the purposes of classification of the entire mixture.

Furthermore, considering the nature of the product that incorporates the substances in the polymer matrix, they are not expected to contribute to the overall health effects of the mixture.

Skin irritation: No data available in the literature on skin irritation effects of the product. No specific studies have been carried out directly on product.

The mixture contains a substance classified as irritative to skin cat.2 (sulfur) in such a concentration that it must be considered in the classification of the entire mixture but lower than the limit that classifies the overall mixture as a skin irritant.

The following data is available for mixture components:

Tested substance	Sulfur (CAS 7704-34-9)
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method	<i>In vivo test, using Draize criteria. responses at 1, 24, 48 and 72 hours, and at 7 days after treatment. (OECD Guideline 404, GLP certificate).</i>
species	<i>Albino NZW rabbits</i>
Exposure time	<i>4 hours under semi-occlusive conditions.</i>
Result/evaluation	<i>Mean erythema and oedema scores of 2.67 and 1.57, respectively. However, all skin effects had resolved completely by day 7.</i>
Source	<i>ECHA infocard</i>

c) Serious eye damage/irritation

Irreversible effects on eyes / serious eye damage:

No data available in the literature on Irreversible effects on eyes of the mixture. No specific studies have been carried out directly on product.

The mixture contains substances classified in this hazard class, but their concentrations are below the cut off values for which they must be taken into account for the purposes of classification of the entire mixture.

Furthermore, considering the nature of the product that incorporates the substances in the polymer matrix, they are not expected to contribute to the overall health effects of the mixture.

Reversible effects on eyes / serious eye irritation:

No data available in the literature on reversible effects on eyes of the mixture. No specific studies have been carried out directly on product.

The mixture contains substances classified in this hazard class, but their concentrations are below the cut off values for which they must be taken into account for the purposes of classification of the entire mixture.

Furthermore, considering the nature of the product that incorporates the substances in the polymer matrix, they are not expected to contribute to the overall health effects of the mixture.

d) Respiratory or skin sensitisation

Respiratory sensitisation

No data available in the literature on respiratory sensitisation of the product. No specific studies have been carried out directly on product.

The mixture contains substances classified in this hazard class, but their concentrations are below the cut off values for which they must be taken into account for the purposes of classification of the entire mixture.

Furthermore, considering the nature of the product that incorporates the substances in the polymer matrix, they are not expected to contribute to the overall health effects of the mixture.

Skin sensitisation:

No data available in the literature on skin sensitisation of the product. No specific studies have been carried out directly on product.

The mixture contains substances classified in this hazard class, but their concentrations are below the cut off values for which they must be taken into account for the purposes of classification of the entire mixture.

Furthermore, considering the nature of the product that incorporates the substances in the polymer matrix, they are not expected to contribute to the overall health effects of the mixture.

e) Germ cell mutagenicity

No specific studies have been carried out directly on product.

The mixture contains substances classified as mutagens, but their concentrations are below the cut off values for which they must be taken into account for the purposes of classification of the entire mixture.

Furthermore, considering the nature of the product that incorporates the substances in the polymer matrix, they are not expected to contribute to the overall health effects of the mixture.

The following data is available in literature on the mutagenicity of similar products:

In vitro genotoxicity

Tested product	<i>Tyre crumb for use in playgrounds</i>
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Type of genotoxicity	<i>The genotoxicity was evaluated by the increase in the number of tested colonies (minimum increase of 1.5) compared to the controls, demonstrating a dose-dependent response.</i>
Type of study	<i>Mutagenicity fluctuation Assay, SOS chromotest, Mutatox</i>
Animal species	<i>Salmonella typhimurium TA98, TA100, TA1535 and TA1537</i>
Result/Evaluation	<i>Absence of toxicity. No test shows an evident genotoxicity. No test performed with microsomal activation demonstrates genotoxic activity. No damage to DNA or chromosomes.</i>
Source	<i>A. Birkholz, K. L. Belton, T. L. Guidotti. Toxicological Evaluation for the Hazard Assessment of Tire Crumb for Use in Public Playgrounds. (2003)</i>

f) Carcinogenicity

No data available in the literature on carcinogenicity of the product. No specific studies have been carried out directly on product. The mixture contains substances classified as carcinogenic, but their concentrations are below the cut off values for which they must be taken into account for the purposes of classification of the entire mixture or for some of these substances Note L of CLP Regulation shall apply.

Furthermore, considering the nature of the product that incorporates the substances in the polymer matrix, they are not expected to contribute to the overall health effects of the mixture.

g) Reproductive toxicity

No data available in the literature on adverse effects on sexual function and fertility of the product, or on development, on or via lactation. No specific studies have been carried out directly on product.

The mixture contains substances classified as reproductive toxicants, but their concentrations are below the cut off values for which they must be taken into account for the purposes of classification of the entire mixture or for some of these substances Note L of CLP Regulation shall apply.

Furthermore, considering the nature of the product that incorporates the substances in the polymer matrix, they are not expected to contribute to the overall health effects of the mixture..

h) Specific target organ toxicity (STOT)-single exposure

No data available in the literature on effects on specific target organ after a single exposure to the mixture. No specific studies have been carried out directly on product.

The mixture contains substances classified in this hazard class, but their concentrations are below the cut off values for which they must be taken into account for the purposes of classification of the entire mixture or for some of these substances Note L of CLP Regulation shall apply.

Furthermore, considering the nature of the product that incorporates the substances in the polymer matrix, they are not expected to contribute to the overall health effects of the mixture

i) Specific target organ toxicity (STOT)-repeated exposure

No data available in the literature on effects on specific target organ after a repeated exposure to the mixture. No specific studies have been carried out directly on product.

The mixture contains substances classified in this hazard class, but their concentrations are below the cut off values for which they must be taken into account for the purposes of classification of the entire mixture or for some of these substances Note L of CLP Regulation shall apply.

Furthermore, considering the nature of the product that incorporates the substances in the polymer matrix, they are not expected to contribute to the overall health effects of the mixture

j) Aspiration hazard

No data available in the literature on aspiration hazards of the mixture. . No specific studies have been carried out directly on product.

11.2 Information about other hazards

11.2.1 Endocrine disrupting properties



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The mixture does not contain one or more substances with endocrine disrupting properties in a concentration equal to or greater than 0.1%

11.2.2 Other information

N.D.

Section 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Product: not classified as hazardous for the environment according to the criteria established by Regulation (EC) 1272/2008.

Components: The mixture contains substances classified as toxic to aquatic life (acute toxicity cat.1 and chronic toxicity cat.1, 2), of which one (Component 1: cobalt sulfide CAS 1317-42-6, H400, H410) in such a concentration that it must be considered in the classification of the entire mixture but lower than the limit that classifies the overall mixture as a hazardous for the aquatic ecosystem

The following data is available for mixture components:

Component 1:

Tested substance	Cobalt sulfide (CAS 1317-42-6)
Acute fish toxicity	LC50: 1.5 mg Co/L (<i>Oncorhynchus mykiss</i> , CDI, 2008a)
Chronic fish toxicity	EC10, LC10 or NOEC for freshwater fish: 351.4 µg/L (CDI 2009a, <i>Pimephales promelas</i> , endpoint: biomass) EC10, LC10 or NOEC for marine water fish: 31 802 µg/L (CDI 2010c, <i>Cyprinodon variegatus</i> , endpoint: biomass)
Acute aquatic invertebrates toxicity	EC50/LC50 for freshwater invertebrates: 0.61 mg/L (<i>cladoceran</i> , <i>Ceriodaphnia dubia</i> tested in soft, CDI 2005) EC50/LC50 for marine water invertebrates: 2.32 mg/L (<i>Dendroaster excentricus</i> (CDI 2010f))
Chronic aquatic invertebrates toxicity	EC10, LC10 or NOEC for freshwater invertebrates: 7.55 µg/L (Heijerick et al 2007, <i>Hyalella azteca</i> (isopod), endpoint: growth) EC10, LC10 or NOEC for marine water invertebrates: 206 µg/L (CDI, 2010j, <i>Neanthes arenaceodentata</i> (marine annelid), endpoint: reproduction)
Aquatic plants toxicity	EC50 for freshwater algae: 197 µg/L (OSU 2015, <i>Pseudokirchneriella subcapitata</i> (freshwater algae), endpoint: Growth) EC50 for marine water algae: 24.1 µg/L (CDI, 2010k, <i>Champia parvula</i> (seaweed), <i>Cytoscarp</i> production) EC10 or NOEC for freshwater algae: 66.9 µg/L (OSU 2015, <i>Pseudokirchneriella subcapitata</i> (freshwater algae), endpoint: Growth) EC10 or NOEC for marine water algae: 1.23 µg/L (CDI, 2010k, <i>Champia parvula</i> (seaweed), <i>Cytoscarp</i> production)
Source	ECHA infocard Cobalt sulfide

The following data is available for similar products:

Product 1

Tested product	ELT powder
Acute aquatic invertebrates' toxicity	24 h EC50 (mg/l): >100 (<i>daphnia magna</i>) 48 h EC50 (mg/l): >100 (<i>daphnia magna</i>) NOAEC (mg/l): 100 (<i>daphnia magna</i>)
Aquatic plants toxicity	72h EC50 (mg/l): 59.2 (<i>P. subcapitata</i> (yield)) NOAEC (mg/l): 9.8 (<i>P. subcapitata</i> (yield))
Acute fish toxicity	48-h LC50 (mg/l): >100 (<i>Zebrafish Danio rerio</i>) 96-h LC50 (mg/l): >100 (<i>Zebrafish Danio rerio</i>) NOAEC (mg/l) :100 (<i>Zebrafish Danio rerio</i>)
Source	Noè, Dini (2012)

Product 2



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Tested product	tire and road wear particles
Acute aquatic invertebrates toxicity	48 h EC50 (mg/l): >10000 (D. magna (Sediment elutriate), D. magna (Leachate, 21° C), D. magna (Leachate + sediment, 21° C) NOAEC (mg/l): >10000 D. magna (Sediment elutriate), D. magna (Leachate, 21° C), D. magna (Leachate + sediment, 21° C) 48 h EC50 (mg/l): >4360 (3660–5250) D. magna (Leachate, 44° C) NOAEC (mg/l): 1250 D. magna (Leachate, 44° C) 48 h EC50 (mg/l): 5080 (4250–6070) D. magna (Leachate + sediment, 44° C) NOAEC (mg/l): 2.500 D. magna (Leachate + sediment, 44° C)
Aquatic plants toxicity	72-h EC50 (mg/l): >10000 (P. subcapitata (growth rate) Sediment elutriate) NOAEC (mg/l): >10000 (P. subcapitata (growth rate) Sediment elutriate)
Source	Britt McAtee et al. (2011)

12.2 Persistence and degradability

No specific studies on the possibility that the mixture degrades in the environment through processes such as photolysis, hydrolysis or other are available.

The following data is available for mixture components:

Substance name	Description
Carbon black (CAS 1333-86-4)	Substance not biodegradable. Insoluble in water and stable against hydrolysis. It cannot further be degraded by light or light and reactive species by photodegradation in air or surface water. (ECHA, infocard)
Silicon dioxide (CAS 7631-86-9)	No photo- or chemical degradation is expected. Hydrolysis to a minor, not yet quantifiable degree is limited to a gel-layer surrounding the silica/silicate particle in aqueous medium. Thus, hydrolysis largely independent of the pH between 1.1 and 8.9 contributes to the limited dissolution of silica/silicates in water. Biodegradation is not applicable to these inorganic substances. (ECHA, infocard)
Distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)	The available data and available weight of evidence demonstrate that other lubricant base oils are resistant to hydrolysis because they lack a functional group that is hydrolytically reactive. This substance contains hydrocarbon molecules that absorb UV light below 290 nm, a range of UV light that does not reach the earth's surface. Therefore, this substance does not have the potential to undergo photolysis in water and soil, and this fate process will not contribute to a measurable degradative loss of this substance from the environment. Studies have been demonstrated that substance is not readily biodegradable (2 to 4 % degradation within 28 days (BP Limited International, 1990), 31.13% Exxon, 1995) (ECHA, infocard)
Distillates (petroleum), hydrotreated heavy paraffinic (CAS 64742-54-7)	
Distillates (petroleum), solvent-dewaxed heavy paraffinic (CAS 64742-65-0)	
Distillates (petroleum), solvent-refined heavy paraffinic (CAS 64741-88-4)	
Extracts (petroleum), solvent-refined heavy paraffinic distillate solvent (CAS 68783-04-0)	The available data and available weight of evidence demonstrate that other lubricant base oils are resistant to hydrolysis because they lack a functional group that is hydrolytically reactive. This substance contains hydrocarbon molecules that absorb UV light below 290 nm, a range of UV light that does not reach the earth's surface. Therefore, this substance does not have the potential to undergo photolysis in water and soil, and this fate process will not contribute to a measurable degradative loss of this substance from the environment. Calculated degradation half-lives for constituents of this substance range between 2.75 - 165496 days. It should be borne in mind that this is the full range of predicted values, and that this may be misleading or unrepresentative of the properties of the UVCB substance as a whole. (ECHA, infocard)
Sulfur (CAS 7704-34-9)	In accordance with REACH Annex VIII, the hydrolysis test does not need to be conducted as the substance is highly insoluble in water (water solubility < 5 µg/l). Sulfur pure test material showed a half-life of 4.25 hours when illuminated with 80000 lux at 25°C. After 1.15 hours 80% of the sulfur remained unchanged. Substance not biodegradable (ECHA infocard)
Zinc sulphide (CAS 1314-98-3)	Waived: Inorganic substance: test to assess hydrolysis, photo transformation in air, water, soil, biodegradation are not applicable for the substance (ECHA infocard)

12.3 Bioaccumulative potential

No data available for this parameter for the entire mixture.

The following data is available for mixture components:

Substance name	Description
Carbon black (CAS 1333-86-4)	Based on the physio-chemical properties of carbon black as an inert solid, its insolubility and stability in water and in organic solvents, a diffusion through the gills or through the membranes of the body of aquatic, sediment or soil organisms is not to be expected. (ECHA infocard)



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Silicon dioxide (CAS 7631-86-9)	<i>Due to its inherent chemical-physical properties, such as absence of lipophilicity as well as the capability of the organism to excrete absorbed SiO₂ components, bioaccumulation can be disregarded. However, silica can be actively accumulated by terrestrial plants, and some marine organisms which represents a normal natural process. (ECHA, infocard)</i>
Distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)	<i>Substance is a hydrocarbon UVCB. Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance. (ECHA, infocard)</i>
Distillates (petroleum), hydrotreated heavy paraffinic (CAS 64742-54-7)	<i>Substance is a hydrocarbon UVCB. Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance. Calculated BCF for constituents of this substance range between 0.4 and 71100 L/kg. It should be borne in mind that this is the full range of predicted values, and that this may be misleading or unrepresentative of the properties of the UVCB substance as a whole.(ECHA, infocard)</i>
Distillates (petroleum), solvent-dewaxed heavy paraffinic (CAS 64742-65-0)	<i>Substance is a hydrocarbon UVCB. Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance. (ECHA, infocard)</i>
Distillates (petroleum), solvent-refined heavy paraffinic (CAS 64741-88-4)	<i>Substance is a hydrocarbon UVCB. Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance. Calculated BCF for constituents of this substance range between 0.4 and 71100 L/kg. It should be borne in mind that this is the full range of predicted values, and that this may be misleading or unrepresentative of the properties of the UVCB substance as a whole.(ECHA, infocard)</i>
Extracts (petroleum), solvent-refined heavy paraffinic distillate solvent (CAS 68783-04-0)	
Sulfur (CAS 7704-34-9)	<i>As sulfur is an inorganic substance, it will not have any significant potential for bioaccumulation.(ECHA infocard)</i>
Zinc sulphide (CAS 1314-98-3)	<i>In experimental work, high BCF factors are observed at the lowest zinc exposure levels, due to the fact that organisms will concentrate zinc to satisfy internal physiological needs for the essential element. For the same reason of homeostasis, the BCF will strongly decrease when exposure concentrations increase. This results in a general negative relationship between BCF and exposure (McGeer et al 2003). On bioaccumulation, the EU risk assessment report (ECB 2008) concludes that “it is concluded that secondary poisoning is considered to be not relevant in the effect assessment of zinc. “(ECHA infocard)</i>

12.4 Mobility in soil

No data available for this parameter for the entire mixture.

The following data is available for mixture components:

Substance name	Description
Carbon black (CAS 1333-86-4)	<i>Carbon black is insoluble in all organic solvents, and its vapour pressure is negligible. These physical-chemical properties are the reason why important parameters like water solubility, octanol/water partition coefficient, dissociation constant or adsorption/desorption which are relevant for environmental fate and distribution cannot be measured analytically in water or organic solvent, like octanol. Based on these properties (insolubility, negligible vapour pressure) it is expected that carbon black will not occur in air or water in relevant amounts. also, a relevant distribution via water or air can be dismissed. The deposition on soil or sediments is therefore the most relevant compartment of fate of carbon black in the environment. (ECHA infocard)</i>
Silicon dioxide (CAS 7631-86-9)	<i>SiO₂ is not volatile under environmental conditions due to its chemical nature and inherent physical properties. Due to its low water solubility and extremely low vapour pressure, SiO₂ is expected to be distributed mainly into soils/sediments, weakly into the water and probably not at all in the air. (ECHA, infocard)</i>
Distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)	<i>Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance as it is hydrocarbon UVCB. However, this endpoint is characterized using quantitative structure property relationships for representative hydrocarbon structures that comprise the hydrocarbon blocks used to assess the environmental risk of this substance with the PETRORISK model. Based on the regional scale exposure assessment, the multimedia distribution of the substance is 39.93% to air, 3.98% to water, 34.01% to sediment and 22.09% to soil. (ECHA, infocard)</i>
Distillates (petroleum), hydrotreated heavy paraffinic (CAS 64742-54-7)	
Distillates (petroleum), solvent-dewaxed heavy paraffinic (CAS 64742-65-0)	
Distillates (petroleum), solvent-refined heavy paraffinic (CAS 64741-88-4)	<i>Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance as it is hydrocarbon UVCB. Calculated log K_{oc} for constituents of this substance range between 1.71 and 14.70. It should be borne in mind that this is the full range of predicted values, and that this may be misleading or unrepresentative of the properties of the UVCB substance as a whole.(ECHA, infocard)</i>



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Extracts (petroleum), solvent-refined heavy paraffinic distillate solvent (CAS 68783-04-0)	<i>Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance as it is hydrocarbon UVCB. Calculated log Koc for constituents of this substance range between 3.62 and 14.70. It should be borne in mind that this is the full range of predicted values, and that this may be misleading or unrepresentative of the properties of the UVCB substance as a whole. (ECHA, infocard)</i>
Sulfur (CAS 7704-34-9)	<i>As sulfur is an inorganic substance, it will not have any significant potential for adsorption. (ECHA, infocard)</i>
Zinc sulphide (CAS 1314-98-3)	<i>For metals, the transport and distribution over the different environmental compartments e.g. the water (dissolved fraction, fraction bound to suspended matter), soil (fraction bound or complexed to the soil particles, fraction in the soil pore water,...) is described and quantified by the metal partition coefficients between these different fractions. Partition coefficients for zinc in freshwater have been reviewed in the RAR (ECB 2008) Based on this experimental evidence, a partition coefficient for the distribution between solid particulate matter and water (Kpsusp) of 5.04 (log value) has been defined for EU waters and was used throughout the RAR. The Kp for the distribution between sediment and water (Kpsed) was estimated in the RAR from that for particulate matter, of 73,000 l/kg. (ECB 2008) For the marine water, a partition coefficient water/suspended matter of 6010 l/kg has been derived. For soil, a solids-water partitioning coefficient of 158.5 l/kg (log value 2.2) was determined experimentally on 11 American soils. This value was used in the RA Zinc. (ECHA infocard).</i>

12.5 Results of PBT and vPvB assessment

The product contains PBT and vPvB substances in concentrations <0,1%.

12.6 Endocrine disrupting properties

The mixture does not contain one or more substances with endocrine disrupting properties in a concentration equal to or greater than 0.1%

12.7 Other adverse effects

Use according to good operating practices, avoiding dispersing the product into the environment.

Section 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste treatment-relevant information:

Handling, use and transport of ELTs powder or granulate do not generate waste or residues requiring disposal/recovery.

The production of granules can generate material not meeting quality requirements, which has therefore to be disposed/recovered.

Disposal of waste resulting from this product must be done according to the relevant legislation in force in the country where the waste is generated and disposed. In Europe, the relevant legislation is the Directive (EU) 2018/851, Directive 2008/98 (Waste Framework Directive), the Decision 2000/532 on the list of waste, and their amendments.

If possible, recover.

Containers/packaging disposal: Do not dispose into the environment. Disposal must be done according to local regulations.

Disposal of product/packaging

The producer is responsible for the assignment of the EWC code to waste based on the production process that generated it.

Sewage disposal-relevant information:

Waste generated by common uses (sec.1.2) must be not released to sewage system.

Section 14: TRANSPORT INFORMATION

14.1 UN Number



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N/A

14.2 UN proper shipping name

N/A

14.3 Transport hazard classes

Road/railway transport (ADR/RID)	Road/railway transport (ADR/RID)	Road/railway transport (ADR/RID)
n.a.	n.a.	n.a.

14.4 Packing group

Road/railway transport (ADR/RID)	Road/railway transport (ADR/RID)	Road/railway transport (ADR/RID)
n.a.	n.a.	n.a.

14.5 Environmental classes

Road/railway transport (ADR/RID)	Road/railway transport (ADR/RID)	Road/railway transport (ADR/RID)
n.a.	n.a.	n.a.

14.6 Special precautions for users

During the phases of loading / unloading of the material should be used same precautions described in SECTION. 7 regarding the safe handling. Previously ensure the load compatibility in common with other goods eventually to be loaded.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

N/A.

Section 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the mixture

EU Regulations

- Regulation (EC) No. 1272/2008 on classification, labelling and packaging of substances and mixtures, (CLP)
- Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).
- Directive (EU) 2008/98/CE concerning waste.
- Directive (EU) 2018/851 of 30 May 2018 amending directive 2008/98/CE concerning waste.
- Directive (UE) 2018/852 of 30 May 2018 amending directive 94/62/CE on packaging and packaging waste.
- Regulation (EU) 2016/425 of the European Parliament and of the Council of 9 March 2016 on personal protective equipment
- Council Regulation (EC) No 440/2008 of 30 May 2008 laying down test methods pursuant to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Authorisations

N/A

Restrictions

- RESTRICTION 78 point 6.j: ban on placing the product on the market starting from 17 October 2031 if it is used as granular infill on synthetic sports surfaces.
- RESTRICTION 78 points 1,4,5: ban on placing the product on the market starting from 17 October 2023 if it is intended for uses involving use as its own or as in mixtures in a concentration equal to or greater than 0.01% by weight, other than those in derogation: uses at industrial sites (derogation point 4.a), uses involving the permanent modification of the physical properties of the product during end use so that the polymer no longer falls within the scope of application of microparticles of synthetic polymers subject to the restriction (derogation point 5.b), uses involving the use of the product permanently incorporated into a solid matrix during end use (derogation from point 5.c).



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- RESTRICTION 78 points 7,8: if the product is intended for industrial uses, uses involving the permanent modification of the physical properties of the product during end use so that the polymer no longer falls within the scope of application of the microparticles of synthetic polymers subject to the restriction, uses involving the use of the product permanently incorporated into a solid matrix during end use, obligation starting from 17 October 2025 for the manufacturer of the product and its customers if they use the product to produce another product to be placed on the market to provide downstream users with the information required in points 7 and 8 of the restriction (instructions for use and disposal, applicability of the restriction, information on the quantity and identity of the synthetic polymers contained in the product). This information is provided in the manner defined in point 10 of the restriction, in the form of readable text, SDS, pictograms on labels and packaging.
- RESTRICTION 78 points 11,12: if the product is intended for industrial uses, uses involving the permanent modification of the physical properties of the product during end use so that the polymer no longer falls within the scope of application of the microparticles of synthetic polymers subject to the restriction, uses involving the use of the product permanently incorporated into a solid matrix during end use, obligation starting from 2027 for the manufacturer of the product and for users to submit the information requested in points 11 and 12 of the restriction (description of uses of the product and for each use, identity of the polymers used, estimate of the quantities of microparticles released to the environment, reference to applicable derogation) to ECHA by 31 May of each year.

National legislation • xx

15.2 Chemical safety assessment

According to art. 2, par.7, letter b) of the EC Regulation. 1907/2006 as amended, the product is exempted from the application of the provisions of Titles II, V, VI of the Regulation. Therefore, the producer of the mixture is exempted from the obligation to perform the chemical safety assessment according to art. 14 of Title II of the Regulation.

Section 16: OTHER INFORMATION

i) Indication of changes

This is the 1st revision according to the provisions of Annex II of REACH Regulation (update of the SDS contents based on new information on the chemical composition of the product and regulatory updates.

ii) Abbreviations and acronyms used

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
BCF	Bioconcentration Factor
CAS	Chemical Abstracts Service number
CLP	Classification, Labelling and Packaging Regulation
DNEL	Derived No Effect Level
EC50	Effective Concentration, 50%
ECHA	European Chemicals Agency
ELTs	End of Life Tyres
EWC	European Waste Catalogue
GLP	Good laboratory practice
IATA DGR	International Air Transport Association Dangerous Goods Regulations
IMDG Code	International Maritime Dangerous Goods Code
LC50	Lethal concentration 50%
N/A	non applicable
n.d.	Not available
NIOSH	National Institute for Occupational Safety and Health
NOAEC	No Observed Adverse Effect Concentration
OECD	Organisation for Economic Co-operation and Development
OSHA	Occupational Safety and Health Administration
PBT	Persistent, Bioaccumulative, Toxic
PNEC	Predicted No Effect Concentration
PNOC	Particulates not otherwise classifiable
RAR	Risk Assessment Report
REACH	Registration, Evaluation, Authorisation, Restriction of Chemicals
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail



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STOT RE	Single Target Organ Toxicity- Repeated exposure
STOT SE	Single Target Organ Toxicity- Single exposure
SU	Sector of use
TLV	Threshold Limit Values
TWA	Time Weighted Average
UN	United Nations
UVCB	unknown or variable composition, complex reaction products or of biological materials
vPvB	very Persistent, very Bioaccumulative

iii) Key literature references and sources for data

- European Chemicals Agency (ECHA) website: REACH registration dossiers, C&L inventory, infocard
- SDS of manufacturers of the following products: Distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5), Distillates (petroleum), hydrotreated heavy paraffinic (CAS 64742-54-7), Distillates (petroleum), solvent-dewaxed heavy paraffinic (CAS 64742-65-0), Distillates (petroleum), solvent-refined heavy paraffinic (CAS 64741-88-4), Extracts (petroleum), solvent-refined heavy paraffinic distillate solvent (CAS 68783-04-0).
- GESTIS database on hazardous substances Institut für Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung (IFA, Institute for Occupational Safety and Health of the German Social Accident Insurance)

iv) Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Classification according to Regulation (EC) N.1272/2008: not hazardous

Classification procedure: summation method

v) Relevant H-statements

Relevant H-statements: N/A

Relevant H-statements indicated in sections 3 e 12:

- H350 Carc. 1B May cause cancer <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>
- H315 Skin Irrit. 2 Causes skin irritation.
- H400 Aquatic Acute 1, Very toxic to aquatic life.
- H410 Aquatic Chronic 1, Very toxic to aquatic life with long lasting effects.

vi) Further information

This information is based upon the present state of knowledge of RUBBERJET VALLEY SRL and on information given in the SDSs of mixture's components. Therefore, they should be considered truthful and accurate on the date of the current version.

Users must comply with the current health and safety laws and local regulations and verify the suitability and thoroughness of provided information according to specific use of the product.

RUBBERJET VALLEY SRL is relieved from any liability arising from not reasonably foreseeable, incorrect or improper uses of the product.

This SDS has been drafted based on present state of knowledge of RUBBERJET VALLEY SRL, the results of chemical analysis carried out on product with the same chemical composition made by the company and results of the study carried out during the CONFOREACH_GVG project, of Italian UNI/CT 04/GL14 Working Group " Materiali da recupero di Pneumatici Fuori Uso " of the "Environment Technical Commission" of UNI, by:



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