NACIONALNI LABORATORIJ ZA ZDRAVJE, OKOLJE IN HRANO
Prvomajska ulica 1, 2000 Maribor
CENTER ZA OKOLJE IN ZDRAVJE
Oddelek za okolje in zdravje Novo mesto
Mej vrti 5, 8000 Novo mesto, **T:** (07) 39 34 100, **F:** (07) 39 34 101, **E:** nm.coz@nlzoh.si

Document number: **52-49/22E-2** Date: 31.05.2022

Document **52-49/22E-2** completely replaces previously issued document **52-49/22E-1** - corrections in compostition section were made.

SIST EN 15359:2012, Solid recovered fuels (SRF) - Partial specification and classes

JP VOKA SNAGA d.o.o. - Vodovodna cesta 90, 1000 Ljubljana

CČN Ljubljana - 2021

SRF class and origin
Class code: **NCV 4; Cl 1; Hg 3**
Origin: **19 08 05**

SRF origin and preparation
The central waste water treatment plant of Ljubljana (Ljubljana CWWTP) is designed for 360,000 PE. It is a single-stage mechanical-biological treatment plant and can process up to 38 million cubic meters of wastewater annually. The cleaning effect is about 90% based on COD and about 96% based on BOD5. Excess sludge is generated at the treatment plant in the process of biological treatment of municipal wastewater (19 08 05). This sludge is led to gravitational and mechanical pre-compaction and then to a anaerobic digester where anaerobic mesophilic stabilization is performed. Due to the implementation of the obligatory public utility service, the digester also accepts household septic tank sludges (20 03 04) and sludges from small municipal sewage treatment plants (19 08 05) as well as excess sludges from other municipal sewage treatment plants (19 08 05), which are managed by JP VOKA SNAGA d.o.o. Stabilized digested sludge is then dehydrated and dried - pelletized. The final products are sanitized pellets with at least 90% dry matter content.

Composition

Composition	Wood	Paper	Plastic	Rubber	Textile	Other
Dry basis ☐	0%	0%	0%	0%	0%	100%
As recieved ☑	Specification of Other: 100% 19 08 05 - sludges from treatment of urban waste water					

Physical parameters

Particle form: **Pellets**

Particle size: **>2 <5 mm** **Test method:** Laboratory method NLZOH

	Unit	Value		Test method
		Typical	Limit	
Ash content	% d	32,9°	/	SIST-TS CEN/TS 15403:2007
Moisture content	% ar	8,2	/	SIST-TS CEN/TS 15414-3:2007
Net calorific value	MJ/kg ar	13,16	13	SIST-TS CEN/TS 16023:2014
Net calorific value	MJ/kg d	14,34	/	SIST-TS CEN/TS 16023:2014

Chemical parameters

	Unit	Value		Test method
		Typical	Limit	
Chlorine (Cl)	% d	0,09	1	SIST EN 15408:2011
Antimony (Sb)	mg/kg d	3	/	SIST-TS CEN/TS 15411:2011
Arsenic (As)	mg/kg d	3,8	/	SIST-TS CEN/TS 15411:2011
Cadmium (Cd)	mg/kg d	0,8	/	SIST-TS CEN/TS 15411:2011
Chromium (Cr)	mg/kg d	100	/	SIST-TS CEN/TS 15411:2011
Cobalt (Co)	mg/kg d	7	/	SIST-TS CEN/TS 15411:2011
Copper (Cu)	mg/kg d	481	/	SIST-TS CEN/TS 15411:2011
Lead (Pb)	mg/kg d	61	/	SIST-TS CEN/TS 15411:2011
Manganese (Mn)	mg/kg d	280	/	SIST-TS CEN/TS 15411:2011
Mercury (Hg)	mg/kg d	0,96	/	SIST EN ISO 12846:2012, mod. in point 5
Nickel (Ni)	mg/kg d	79	/	SIST-TS CEN/TS 15411:2011
Thallium (Tl)	mg/kg d	<0,16	/	SIST-TS CEN/TS 15411:2011
Vanadium (V)	mg/kg d	30	/	SIST-TS CEN/TS 15411:2011
Σ Heavy metals*	mg/kg d	1061	/	SIST-TS CEN/TS 15411:2011
Sulphur (S)	% d	1,15	/	SIST EN 15408:2011
Mercury (Hg) - median	mg/MJ ar	0,06	/	SIST EN ISO 12846:2012, mod. in point 5
Mercury (Hg) - 80 percentile	mg/MJ ar	0,08	/	SIST EN ISO 12846:2012, mod. in point 5

Legend :
d = dry basis
ar = as recieved
* = Sb, As, Cr, Co, Cu, Pb, Mn, Ni in V and equals those in Waste Incineration Directive (WID)
° = measured value for combined yearly sample

Head of task:
Sebastijan Lamut, MSc of Ecology and Biodiversity

SEBASTIJAN LAMUT

SEBASTIJAN LAMUT
Document authenticity check on:
http://www.nlzoh.si/istovetnost.
2022.05.31 08:49:30 +02'00'