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	· · · · ·	1. ID	DENTIFI	CATION (C	OF THE OMPAN	SUBST Y/UND	CANCE/MI ERTAKIN	XTURE G	AND O	F Т<u>Н</u>Е		1 - 1 1	
in:	1.1 Produc Substance	e t identif name:	lier	Ferrosi	licon	14	181		in:	÷:	141	in:	:
	Chemical n	name:		912-63 silicon	1-7 / FeS	i: Reactio	on mixture of	iron, iron	disilicide	e , iron silic	ide and	 	ţ,
	Synonyms: Trade name	e:		FeSi FeSi75	5%, FeSi 6	55%, FeS	i 45%, FeSi 1	fraction 0-	0.5				
	EINECS: Molecular	weight:		912-63 not det	1-7 ermined					· : :			
	REACH re	gistration	n number:	01-211	9485286- ; • •	-28-0016		; • •					
	1.2 Releva	nt identi	ified uses	of the substa	ance/mix	ture and	uses advised	l against					
	Brief descr	iption of	the functi	ion of the sub	stance:	Deoxid	ation of iron	alloys, allo	oying of a	alloys with s	silicon		
in:	Uses not re	commen	ded: ays of usi	ng the substa	ince/prepa	aration in	Table 1 of th	ne Annex 1	to the Saf	ety Data Sh	leet.	in:	
	1.3 Details	of the s	upplier of	f the safety d	lata sheet	t · ·	141	:			:**		÷
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(F	Prepared acco	ording to	PR Annex II o	ODUCT SA f the EP an Regulatio	.FETY] d Coun n (EU)]	DATA SHE cil Regulati 2020/878)	ET on 1907/2	006/EC a	nd Commi	ssion		
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compa Nation inform	any: nal toxicologi nation center:	cal	+(949)	9) 407-8904 407-8904	:-:		1 I 1 1 I				111	
			2.]	HAZARD	5 IDEN	TIFICAT	ION	1 1				
2.1.0	lossification	of cubeto	naa ar mivt	uro								
2.1 U				ui t			ulotia-				11	
2.1.1 ·	ubstance does	not meet	ubstance ac	for inclusion	ine CLF	rdance with	Regulation	n EC 127	2/2008			
The st	ubstance does	not meet	the criteria	for inclusion	1 In acco	ordance with	Regulatio	n ee 127	2/2008.		in:	
2.2 L: 2.2.1	abel elements	ording to	the CLP /	GHS regula	ition		; • •					
The su	ubstance does	not meet	the criteria	for inclusion	1 in acco	ordance with	Regulatio	n EC 127	2/2008.			
Signa	l word:		none				0					
		·		1.1				·			·	
2.3 0	ther hazards											
The su	ubstance does	not meet	the criteria	for classific	ation as	a PBT or vP	vB substa	nce.				
Conta	ct of ferrosilio	con with	water can lea	ad to the for	mation o	of toxic gase	s.					
Dange	er to human h	ealth can	arise from	the formatio	on of to?	kic gases in	a non-ven	tilated an	d humid tra	nsport or		
storag	ge area, where er to human h	people ca ealth can	an be poison also arise if	the contact	of FeSi	with water i	; s not prev	ented and	the premise	es are not		
ventila	ated or if dust	is inhale	d and toxic g	gases are rel	eased in	the lungs.	s not prov				1.	
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3. COMPOSITION/INFORMATION ON INGREDIENTS

Description:

The registered substance is present in the form of an alloy.

Degree of purity:

< = 95.1% (mass concentration)

3.1 Constituents

Constituents	Typical concentration	Concentration span	Notes
Silicon	FeSi 90%: 90.0% (by weight)	87.0-96.0% (weight)	Oxidation
CAS: 7440-21-3	FeSi 75%: 75.0% (by weight)	72.0-78.0% (weight)	number: met
EINECS: 231-130-8	FeSi 65%: 66.0% (weight)	65.0-70.0% (weight)	
	FeSi 45%: 45.0% (by weight)	42.0 – 50.0% (weight)	
Iron	FeSi 90%: $> = 6.0\%$ (weight)	4.0-10.0% (weight)	
CAS: 7439-89-6	FeSi 75%: > = 22.0% (weight)	18.0-24.0% (weight)	
EINECS: 231-096-4	FeSi 65%: 30.0% (weight)	28.0-34.0% (weight)	
	FeSi 45%: 52.0% (weight)	45.0-55.0% (weight)	

3.2 Admixtures

The substance does not contain any additives necessary for classification and labeling.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General inform	ation:	 In contact with clothing, skin and eyes, no damage to health is ex However, in the event of an accident or persistent discomfort, seek r attention immediately.	pected. nedical
Inhalation:		 Mechanical irritation caused by dust in the respiratory tract: Move the out of the dusty area.	person
Skin contact:		 Wash the skin with water or mild soap.	:
Eye contact:		 Flush the eyes with water or saline solution. In case of persistent disc consult a doctor.	omfort,
Ingestion:		Remove the source to prevent further ingestion. Look at that inhalation	1.

4.2 Most important symptoms and effects, both acute and delayed

Sympton	ns of poiso	ning:		Nausea	, vomitin	g, diarrhea,	weakness.					
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		1 1	5.1	FIREFIG	HTING	MEASURI	ES					
5.1 E	Extinguishing	media				::. ::.		1.1				
Suita	able:											
FeSi extin	as a piece or guish the surr	in the for ounding fir	rm of granu re.	les is not	flammabl	le. Use dry sa	and, carbo	on dioxi	de or dry p	owder to	i.	
Use a	appropriate fir	efighting n	neasures bas	sed on loca	l circums	tances and en	vironmen	t.				
Unsı	iitable:			: ' '			: ' '			:		
Do n	ot extinguish	with water.	1 1 1 1 1 1						· · · · ·			
5.2 S	pecial hazaro	ds arising f	from the su	bstance or	mixture			:		141	i.e	
Flam Parti 5.3 A	mable hydrog cles of FeSi d Advice for fire	en gas. ispersed in e fighters	the air can o	cause an ex	plosion u	inder certain o	circumsta	nces.		i'	:	
Use l circu	breathing appa mstances and	aratus in un environme	iventilated a	reas. Use a	ppropria	te firefighting	measures	based o	n local			
1.1										: • •		1
			6. ACC	IDENTAI	L RELE	CASE MEAS	SURES					
6.1 F	ersonal prec	autions, pr	otective eq	uipment a	nd emer	gency proced	lures					
6.1.1	For non-emo	ergency pe	rsonnel									
Wear	r suitable prot	ective equi	pment (see s	section 8).							1 e	
6.1.2	For emerger	icy person	nel				:					
Ensu	re adequate vo	entilation a	nd ventilate	these space	es before	entering clos	ed spaces					
Avoi	d stirring up d	lust.						11				
Isola	te the affected	l area and d	lo not allow	unprotecte	d person	s to approach	the area.					
15010	d inhalation 1	·	1,1	all montilat	ed or we	an anitable noa			.11	ive	1.1	· · · :
Avoi equij	pment. (see se	make sure t ction 8).	he area is w	en ventnat		ar suitable res	pirators, v	wear suit	able protect	live		
Avoi equij Avoi	d getting the r	make sure t ction 8). material we	the area is w				pirators, v	wear suit	able protect			
Avoi equij Avoi	d getting the r	make sure t ction 8). material we	the area is w	; · ·			pirators, v	vear suit				÷
Avoi equij Avoi	d getting the r	make sure t ction 8). material we	the area is w				pirators, v	wear suit				2

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	141	;••	· ·	141	;••			1 1 1 1		141			
•	6.2 Environ	mental p	recautio	ns				:			:		
	Based on the of material c	availabl an clog d	e studies, rains, so	the given su disposing of	bstance it in this	does not e way is no	ndanger the en ot recommende	vironmo d.	ent. How	ever, large a	amounts	i.	11
	6.3 Methods Keep the ma	and ma	terial for 1 dry envi	containme ronment.	nt and c	leaning u	p	:			:		
	Avoid stirrin	g up dus	t.	ist he collect	ed in sui	table cont	ainers Materia	l that is	damp or	wet must h	e		
1	FeSi in the for than sweepin	m dry m orm of du g.	aterial an	er vacuumed	e collect	acuum cl	eaner that does	not cre	s. ate sourc	es of ignitic	on, rather	<u></u>	
	6.4 Reference	e to oth	er sectior	IS	:			:			:		1.1
	For more det	ailed info	ormation	regarding ex	posure c	ontrols an	d personal prot	tective e	equipmen	t, see sectio	n 8.	101	
			1 	7. H	ANDLI	NG ANI	D STORAGE	C	1 			1 ci	
	7.1 Precauti Avoid stirrin	ons for s g:up dust	afe hand t. Wear p	ling rotective clo	thing, glo	oves and g	goggles. Wear s	suitable	respirato	rs where de	sirable.		•••
	Avoid sparks	s or other	sources o	of ignition (fo	or examp	ole, weldin	ng) in places wi	th an in	creased c	oncentration	n of dust.		
	Avoid contact formation of	naterial et of FeS poisonou	i with act	ds such as h	ydrofluc	pric acid (HF) or nitric a	cid (HN	O ₃), which	ch would le	ad to the	te.	1
,	7.2 Conditio	ns for sa	ife storag	e, including	g any inc	ompatibi	lities	;••			:		
1	Store in a dry	and we	ll-ventilat	ed place awa	ay from a	acids and	bases.	: '					
			1		;		i i i	i.			;	1 A A	

7.3 Specific end use(s)

Please check the identified uses of the substance included in Table 1 of the Annex to the Safety Data Sheet.

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				8. EX	POSURI	CONTR	OLS/PI	RSONAL	PROTE	CTION				
	,	0.1.0				001,111	0 2,011 2	,	1110,12					
	1	8.1 Contro	o param	eters									1.1	
		Exposure	limit val	ues										
		Workplac Derived N keeping the	e exposu o-Effect e OEL be	re limit (Limit (D clow the e	OEL): 4 m NEL) for le exposure lin	g/m ³ inhale ong-term ex nit.	d FeSi di xposure:	ust. 0.3 mg/m ³ in	nhaled FeS	i dușt, wh	ich is achiev	ved while	· ·	
,	11	PNEC wate	r :	1.1	for F	eSi, due to	its low s	olubility, it i	s not deter	mined.	11.			
	in:	PNEC soil :	: . • :		low knov this i data level	probability /n uses of t ndicator on on the know of 680 mg/	of soil of he mater soil. The n effects kg dry w	exposure fro ial down the soil PNEC i of metal con reight.	om FeSi pi e supply ch is derived u mponents, v	oduction ain. Then using a ca which ind	and from re is no dire lculation me licates its va	currently ect use of ethod and lue at the		
		PNEC sedin	nent :	• •	low j knov	orobability o on uses of th	of sedime ne materi	ent exposure al down the	from FeSi supply cha	productio in.	on and from	currently		
	11		:	1.1			1.1	· · · · · · · · · · · · · · · · · · ·		1.1			11	
		8.2 Exposi	ure conti	rols										
		To control protective take occup	possible equipmen ational sa	exposure nt is reco afety mea	e, it is nece mmended. sures preve	ssary to pro In the case nting the ac	event the of visibl cumulati	e formation e accumulat on of dust al	and stirring ion of dust bove 4 mg/	g of dust. from Fe m ³ at the	The use of Si, it is nec workplace.	f suitable essary to	i.	
			:						:**					
		8.2.1 Wor	kplace ex	xposure c	control									
		Measure the extraction	ne workp or ventila	lace expo ation syste	sure limit r em or other	egularly. If means to m	dust is g aintain d	generated du lust limit val	ring the ha	ndling of air.	the materia	ıl, use an		
	111			111		1.1					161	141	1.1	
		8.2.2 Perso	onal prot	tective eq	uipment									
		8.2.2.1 Eye	e/face pr	otection										
		Wear safet	y glasses											
						: '			. '		1			
		8.2.2.2 Ski	in protec	tion			,		,			,	,	
	1	Wear prote	ective clo	thing, glo	oves and use	e protective	hand cre	am.		1.1		141	1.1	,
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8.2.2.3	Protection o	of the resp	piratory sy	ystem	· ·	1 1 1 1 1						
Use a r	espirator.		::. ::.					11	· · · · ·		11	
8.2.3 C	ontrol of env	vironmen	ntal exposu	ire				i			te.	
Dust en enviror	nissions from mental prote	n the venti ction legi	ilation syst slation. A o	em or worl concentrati	xplace mu on below	st be check 4 mg/m ³ de	ed to see if oes not thre	they mee aten the e	t the require nvironment.	ments of		
1.1				;**			; · ·		1.1	:		
			9. PHYS	ICAL AN	D CHE	MICAL P	ROPERT	IES			1	
9.1 Inf	ormation on	basic ph	vsical and	chemical	propertie	s						,
Appear	ance:		gray	substance	in solid sta	ate: pieces,	ingots, grar	ules or d	ust		te.	
Odor:			none	, if gases a	re released	l in contact	with water.	they sm	ell like garlio	2		
Odor th	nreshold:		none	, the substa	nce is odd	orless						
pH:			not d	letermined						,		
Boiling	; point:		not d	letermined	(substance	e in solid st	ate with me	lting poir	$t > 300^{\circ}C$			
Melting	g/solidificatio	on tempera	ature: 1220)-1400 °C a	at 101.3 kI	Pa						
Flash p	oint:	111	not d	letermined	(substance	e is inorgan	ic in solid a	nd not lie	uid state)	101	i e	
Flamm	ability:		non-	flammable	(EU meth	od A.16)						
Explos	ive properties	3:	not d mole	letermined cule)	(no chemi	cal groups	with explos	ive prope	erties present	in the		
Oxidiz	ing properties	5:	not	determined	l (substar	ice is not	capable o	of exothe	ermic reacti	on with		
Vapor			not d	latarmin ad	(malting t	amparatura	; > 200°C)		. : .	-		,
v apor	e density:	·	101 d	$7.5 \mathrm{g/cm^3}$	(mennig t	emperature	(> 300 C)	•			•	
Solubil	ity in water:		OEC	D T/D scre	ening test	$: \le 0.02 \text{ mg}$	$g Si/la \leq 0.0$	4 mg Fe/l	at pH 6 (21	.5 °C), ≤		
, , D', , 'I		н н Ист. 1	pH 5	1.8-5.9(20)	°C) ferros	ilicon parti	cles with a c	liameter	< 1 mm	ig 51/1 at		
n- octa	nol / water (lo	og. value)	: not d	letermined	(substance	e is inorgan	ic)					
Viscos	ity:		not d liquio	letermined d)	(at norma	l ambient te	emperature,	the subst	ance is solid	and not	11	
Auto-i	gnition tempe	rature:	>400	0°C, witho	ut signs of	burning (E	EU method A	A.16)		1.1	1	
Dissoc	ation constar	nt:	the s grou	ubstance de ps	oes not de	compose di	ue to the lac	k of appr	opriate func	tional		
	:			;						; • •		

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Surface tensi	on:		the subs	stance is 1	not active	on the surface	· · ·					
Stability in o solvents:	rganic		not dete	ermined (substance	e is inorganic)	:		· · · · · ·			
9.2 Other in	formatio) Dn				141	:•:			141		1
Formation of	gases:		in conta	et with w	vater							
	: ' '		1.1	: ' '			; ' '			: ' '		11
			10. ST	ABILIT	'Y AND	REACTIVI	TY					
10.1 Reactiv	ity											
No data are a	wailable	for this s	substance.	:•: :•:	: :::		· · · · ·	:•:			1.1	·
10.2 Chemic Under norma	e al stabil Il temper	ity ature con	nditions, cond	litions of	storage a	ind use, the giv	en subs	tance is s	table.			1
11.												
10.3 Possibil If the materia	l ity of ha al is hand	azardous	stored accord	ing to the	e instructi	ions, there is no	o risk of	dangerou	us reactions.		:-:	1
10.4 Conditi	ons to a	void			· ·	· · · ·	;					
Avoid contac water.	ct of mel	t with wa	ater. A violer	nt explosi	on may c	occur when mo	lten ma	terial con	nes into cont	act with		
Avoid contac	t with w	ater The	contact of th	e materia	l with wa	ater can lead to	the form	nation of	noisonous g	ases that		
can harm hui	nan heal	th:							poisonous ge		1.1	
Avoid contact formation of	et of FeS	i with ac us gases.	ids such as h	ydrofluo	ric acid (HF) or nitric a	cid (HN	NO3), whi	ch would lea	id to the		
				;••		141	; • •			:		
10.5 Incomp	atible m	aterials										
Water, hydro	ofluoric a	cid (HF)	, nitric acid (HNO3), a	cids in ge	eneral.						
				:•:				:-:			1.1	
10.6 Hazard	ous deco	ompositi	on products									
They are not	, if the pr	reparation	n is used in a	ccordance	e with the	e intended use.	: • •	· · ·				
11.	:					· · · · · · · · · · · · · · · · · · ·			 			

			11. TC	DXICOLO	OGICAL	INFORM	IATION		1		. • •
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· · ·				
End point	ts			The result of the impact assessment
Toxicokir	netics			Due to the low solubility and dissolution of FeSi metal components, the
				risk assessment of FeSi can be based on the toxicity of silicon and silica,
1.1	: * *		1.1	while also taking into account the effects of slightly soluble substances
				such as strontium and barium.
Acute tox	icity			Ferrosilicon is not acutely toxic.
	11	1.1		Deputto of animal studies
				Results of animal studies: Ingestion: I.D. $\sim > 5,000$ mg/kg body weight synthetic amorphous
				silicas (OECD 2004b, rat and mouse)
	1.1	1	· . ·	$LD_{50} > 400 - 800 \text{ mg/kg body weight of barium carbonate}$
				(WHO (1999), rat)
				Inhalation: LC $_{50}$ (4 h) > 2.08 mg/l air, synthetic amorphous silica
1.1				(OECD 2004b, rat)
· ` ·				
				Through the skin: LD $_{50}$ > 2,000 mg/kg of body weight strontium
				component
	:			(WHO (2010), rat)
				$LD_{50} > 5,000 \text{ mg/kg body weight of silicon dioxide}$
				(Woltjen R, Calkins JE (1978a – d) T
<u> </u>	• (0)			The inclusion of FeSi in the framework of acute toxicity is not guaranteed.
Skin corr	osion/S	kin irrita	tion	Results of animal studies:
				Ferrosilicon does not irritate the skin (several animais).
				Ferrosilicon is not likely to be a skin irritant. Material inclusion or further
				testing is not proposed. Naturally, as with dust FeSi dust can also cause
				mechanical skin irritation.
		1.1		The inclusion of FeSi in the framework of irritation and corrosion is not
				guaranteed.
Serious e	ye dama	nge/eye		Results of animal studies:
irritation	111	. · · ·		Ferrosilicon does not irritate the eyes (rabbit).
				Ferrosilicon is not likely to be an eye irritant. Material inclusion or further
				testing is not proposed. Naturally, as with any dust, FeSi dust can also
<u> </u>		• • •		cause mechanical eye irritation.
Kespirato	ory or sl ion	kin '		No data available. Ferrosilicon is not considered a skin or respiratory tract
sensitizat	1011			The inclusion of FaSi in the framework of sensitization is not guaranteed
Germ cell	l mutea	enicity		Ferrosilicon is not genotoxic
	mutag	enterty		Results of animal studies:
				Analysis of a sample of bacteria for the presence of a reverse mutation
	1.1	1	1.1	(Ames test, OECD 471): negative
				Mutation of cellular genes in mammals (OECD 476): negative
				<i>In vitro</i> test for the presence of chromosome anomalies in mammals
				(OECD 473): negative
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		: * *		1.1	
					Analysis of the sample for the presence of chromosome anomalies
					(OECD 475): negative
1.1	11	11	1.1	11	Analysis of the sample for the presence of lethal mutations of dominant
					genes (OECD 478): negative
1.1	1.1	1.1	1	1.1	Negative data on amorphous silica in vitro and in vivo, negative in vitro
					data on calcium silicate. Other main components whose mass concentration
					exceeds the limit limits for inclusion at the level of 0.1% (category 1A and
					B) and 1% (category 2) and which are dissolved in the appropriate amounts
					of artificial biological fluids during a period of one week (strontium and
	1.1				barium) they are not classified as mutagenic and, according to the available
					evidence, do not represent the potential for genotoxic effects.
					The inclusion of FeSi in the framework of genotoxicity is not guaranteed
	Carcinog	enicity	, '		Ferrosilicon is not carcinogenic.
					Results of epidemiological studies involving humans in the production of
				:	ferrosilicon or silicon metal do not show an increased incidence of cancer
					associated with exposure to these substances. Amorphous silica and
					calcium silicate have not shown carcinogenic reactions in animal tests.
					Also, other components that dissolve from FeSi in higher quantities than
	1.1				particles of synthetic amorphous silica in artificial biological fluids are not
					classified as carcinogenic.
					The inclusion of FaSi in the framework of earoing enjoits is not
		1		. : .	guaranteed
	Reprodu	ctive tox	icity		Ferrosilicon is not toxic to reproduction.
			5		
					Results of animal studies:
					Chronic toxicity studies (OECD 452) mouse and rat: negative
					NOAEC 10 mg/m ³ in air, rat: no evidence of carcinogenicity
	1.1				ferrosilizon or silizon metal production do not show an increased incidence
					of cancer associated with exposure to these substances. Amorphous silica
					and calcium silicate have not shown carcinogenic reactions in animal tests.
					Also, other components that dissolve from FeSi in higher quantities than
					particles of synthetic amorphous silica in artificial biological fluids are not
	1.1				classified as carcinogenic.
	1.			1.	
					The inclusion of FeSi in the framework of reproductive toxicity is not
	0			•.	guaranteed.
	Specific t	arget or	gan toxic	ity	Based on the available data, the criteria for inclusion of the substance are
	(SIUI) -	single e	<u>xposure</u> gan toxic	ity	Ferrosilicon is not toxic through repeated doses
	(STOT) -	reneate	d exnosu	re	renosincon is not toxic unough repeated doses.
		repeate	u exposu		toxicity of FeSi: Studies show that amorphous silica does not cause
		i			systemic organ damage after ingestion, so silicon released from FeSi is
					unlikely to cause any adverse effects. The release of FeSi components
					according to solubility studies is very limited compared to synthetic
	i.	1.1			amorphous silica and is unlikely to have an effect on repeated dose toxicity
					of FeS1.
				1.1	
	1.1				

	:			PRODUCT SAFETY DATA SHEET
			11	te ta at te ta ta te
				en di di en di di en
				Dermal toxicity of FeSi : insufficient number of studies.
÷	Ľ			toxicity of FeSi : The increased incidence of COPD among workers producing and handling FeSi or silicon metal cannot be attributed to FeSi indentation but rather to general dust exposure. The effects of amorphou
			11	silica on the lungs are likely to depend on the properties of the particles, such as their surface area. Lung effects were noted at 5-9 mg/m ³ , but we mostly reversible. According to the German MAK commission, the limit
	:			value of exposure to amorphous carbon dioxide is derived at the level of a mg/m ³ (DFG 1991). However, it is very likely that the results of experimental studies of the toxicity of amorphous silica overestimate the hazards from inhalation of FeSi due to the different properties of the particles used in these studies compared to this material.
11.				The classification of FaSi under repeated dose toxicity is not guaranteed.
Risk of	aspiration			Lack of data.
11				in the fact of the fact of
			1	12. ECOLOGICAL INFORMATION
			li	ikely that there would be any effects on fish during short-term exposure du
Long-ter	m toxicity:		to T	o the low solubility of individual FeSi qualities . The study is not scientifically justified due to the low solubility of individu
Long-ter	m toxicity:	· · ·	to T q	o the low solubility of individual FeSi qualities . The study is not scientifically justified due to the low solubility of individua qualities of FeSi .
Long-ter	m toxicity:		to T q	o the low solubility of individual FeSi qualities . The study is not scientifically justified due to the low solubility of individu qualities of FeSi .
Long-ter 12.1.2 A	m toxicity: cute and ch	ronic to	tt T q xicity f	o the low solubility of individual FeSi qualities . The study is not scientifically justified due to the low solubility of individu qualities of FeSi . for aquatic invertebrates
Long-ter 12.1.2 A Short-ter	m toxicity: cute and ch m toxicity:	ronic to	to T q xicity f V p s	o the low solubility of individual FeSi qualities . The study is not scientifically justified due to the low solubility of individu qualities of FeSi . For aquatic invertebrates With a high load and a short duration of the test, problems often arise with physical effects that cause changes in behavior and immobility of the test process. A short-term high -load test for FeSi alloys is not important an
Long-ter 12.1.2 A Short-ter	m toxicity: cute and ch m toxicity:	ronic to	ta q xicity f v p s n n	o the low solubility of individual FeSi qualities . The study is not scientifically justified due to the low solubility of individu qualities of FeSi . for aquatic invertebrates With a high load and a short duration of the test, problems often arise with physical effects that cause changes in behavior and immobility of the test pecies. A short-term high -load test for FeSi alloys is not important ar necessary.
Long-ter 12.1.2 A Short-ter Long-ter	m toxicity: cute and ch m toxicity: m toxicity:	ronic to	ta T q xicity f V p s n E	The study is not scientifically justified due to the low solubility of individual restriction of FeSi . for aquatic invertebrates With a high load and a short duration of the test, problems often arise with obysical effects that cause changes in behavior and immobility of the test precies. A short-term high -load test for FeSi alloys is not important an necessary. EC 50 unknown, daphnia reproduction test magna (OECD 211) is ongoing.
Long-ter 12.1.2 A Short-ter Long-ter	m toxicity: cute and ch m toxicity: m toxicity:	ronic to	to T q xicity f V P s n E	The study is not scientifically justified due to the low solubility of individu qualities of FeSi . for aquatic invertebrates With a high load and a short duration of the test, problems often arise wi obysical effects that cause changes in behavior and immobility of the te species. A short-term high -load test for FeSi alloys is not important ar necessary. EC 50 unknown, daphnia reproduction test magna (OECD 211) is ongoing.
Long-ter 12.1.2 A Short-ter Long-ter	m toxicity: cute and ch m toxicity: m toxicity:	ronic to	to T q xicity f y p s n E	The study is not scientifically justified due to the low solubility of individu qualities of FeSi . For aquatic invertebrates With a high load and a short duration of the test, problems often arise wi obysical effects that cause changes in behavior and immobility of the te species. A short-term high -load test for FeSi alloys is not important ar necessary. EC 50 unknown, daphnia reproduction test magna (OECD 211) is ongoing.
Long-ter 12.1.2 A Short-ter Long-ter 12.1.3 A A study of individ	m toxicity: cute and ch m toxicity: m toxicity: cute and ch on slowing c dual FeSi qu	ronic to ironic to lown the ialities.	to T q xicity f V p s n E xicity t growth	o the low solubility of individual FeSi qualities . The study is not scientifically justified due to the low solubility of individu qualities of FeSi . For aquatic invertebrates With a high load and a short duration of the test, problems often arise wi ohysical effects that cause changes in behavior and immobility of the te species. A short-term high -load test for FeSi alloys is not important ar necessary. EC 50 unknown, daphnia reproduction test magna (OECD 211) is ongoing. to aquatic plants h of algae and cyanobacteria is technically unfeasible due to the low solubili

12.1.4 Acute and chronic toxicity for sedimentary organisms This information is not available. For classification and labeling purposes, tests for sedimentary organisms are not required. Only FeSi in the form of dust or fine grains can prompt further testing. 2.1.5 Acute and chronic toxicity for soil macro-organisms

PRODUCT SAFETY DATA SHEET

This information is not available. Based on the information on the existing exposure and effects of FeSi, there is currently no need to carry out its targeted ecotoxicological testing.

12.1.6 Acute and chronic toxicity for terrestrial plants

This information is not available. Based on the information on the existing exposure and effects of FeSi, there is currently no need to carry out its targeted ecotoxicological testing.

12.1.7 Acute and chronic toxicity for soil microorganisms

The justification for abandoning the test is based on current information regarding the use of FeSi alloys. Direct exposure of individual soil components to alloys is believed to be unlikely. In the event that we cannot exclude the possibility of direct or indirect exposure of the substance to the soil, further test results may be required.

12.1.8 Acute and chronic toxicity for aquatic microorganisms

The study is not scientifically justified due to the low solubility of individual qualities of FeSi .

12.1.9 Acute and chronic toxicity to birds

This information is not available. The solubility and bioavailability of FeSi is low and, based on information on existing exposure and effects of FeSi, there is currently no need to conduct its targeted ecotoxicological testing.

12.1.10 General conclusion

The preliminary PNEC value for water (drinking water) was derived on the basis of cross-information from the FeSi metal components, which are also subject to precautionary measures. The determination of the PNEC value will be completed after the results of standard long-term tests are available. The solubility of FeSi in a 7-day solubility test was a maximum of 0.3% (at pH 7.2 and 1.5) (KTH 2010). The highest solubility rate was measured for Si, Fe, Sr and Ba and small amounts of Cu, Zn, Pb.

12.2 Mobility

FeSi in lump form is immobile in soil and sedimentary rocks. Adsorption and desorption of dissolved FeSi components is mainly determined by inorganic soil and sediments. Each component behaves in a characteristic manner largely dependent on local environmental conditions. In general, it can be said that the adsorption of these components in organic materials is weak and therefore less significant.

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		<u>Silicon:</u>	Ľ		In the or sili	e environm icic acid. S	nent, silico Silicon, wi	on usually bind hich is present	ls mainl in FeSi	y with ox alloys, i	ygen, form s found in t	ing silica the Si (0)	
	н 	11	141	i.	and Soxida chem soluti	tion state. ical states, on or in	Si(IV) in such as di the form	a drinking wat ssolved monor of colloidal c	er or se mer Si(C clusters	eawater is OH) 4, din of differ	found in r found in r ner, trimer, ent sizes or	umerous colloidal in total	in:
		141	; · ·		are ar	ound 60-1	40 mg/l (v)	with temperatu	re contr	ol).	nomer conc	entration	
		Iron:	Ľ		Disso while (hydr	lved iron Fe(II) is olysis) to t	is found in easily 'oxio form collo	n the environm dized to Fe(III idal and insolu	nent in tv). Fe (II uble ferr	wo oxidat II) norma ic hydrox	ion states F lly reacts w ide Fe(OH)	e (II/III), ith water 3, which	
·]	i e	11			slowl forma in wa	y precipit ation of fer ter system	ates into ric hydrox s. Fe prec	sediments u tide at pH valu ipitates can ad	nder ty es above lsorb hea	pical wa e 5.0 limit avy metal with ph	ter conditions the present s and organ	ons. The ce of iron ic matter	1 e
					espec part o solub	ially Fe(II of the iron le organic), can also dissolved complexe	be absorbed b in natural wate s.	by dissol er bodies	ved orgar s can be p	ic material, resent in the	and thus e form of	
		12.3 Pern	nanence a	ind degra	dability	: `	1.1	1 1 1 1 1			::. ::.		
		It is not es	stablished	for inorga	nic substan	ices.							
1				in.									111
		12.4 Bioa	ccumulat	ive poten	tial								
	• •	Due to the the the true t	e bioaccun endency o	nulation p of soluble	otential in t silica to b	he aquatic ioaccumul	environm ate in pla	ent, the study nts is low. Si	is scient licon is	ifically un not know	nfounded. Ir vn to conce	n general, entrate or	
		accumulat componer	te in soil o nts of FeSi	rganisms i is low. T	at levels that hese element	at are harm nts are not	ful. Terre known to	strial bioaccun accumulate in	the terr	of Fe and estrial foo	other relev	ant metal	
•]	i.	12.5 Resu	ilts of PB	Γ and vPv	vB assessm	ent							111
		The subst	ance does	not meet	the criteria	for classifi	cation as	a PBT or vPvB	3 substa	nce.			
							1 1						1 1
	1.1	12.6 Othe	er adverse	e effects		:		::					
		No other a	adverse ef	fects were	detected.								
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			12			CIDED AT				: • •
			13.	DISPUSE	AL CON	SIDEKAI	10115			
3,1 was	te treatmo	ent metho	0 ds , ; ,							
Jisposal (consumed	of FeSi mu l by the us	ist be in a er.		with local a	and nation	al legislatio	n. Unconsi	imed cont	tent of FeSi	s is to be
· · ·	. · ·		14.	TRANSI	PORT IN	FORMA	ΓΙΟΝ		1 - 1 	
l 4.1 Basi	c informa	tion abou	ut transpor	tation					1	
Proper explosion	pedition		Ferro	silicon	·					
FeSi 45% n Warsav	, 65% and v accordin	75% basing to the U	ed on the re N N.5 Man	esults of tests ual of tests	sts carried and criter	l out in Luka ia (Classific	asiewicz In ation certif	stytut Prz icate Nr /I	emysl Orga No 056/ Lul	nicznego kasiewicz
oncernin	g the trans	sport of d	angerous go	gulation N		J1.01.2021	is not subje	ct to class		1 01035 4.5
	-	spor, or a	ungçi yus ge	bods.			1			
From the classified regulation	point of y in class 4 as regardin	view of s 4.3, and the tran	ea transpor thus from this sport of da	t (IMDG) the point on ngerous go	and air t of view c oods.	ransport (IA f IMDG ar	ATA), FeSi nd ICAO-T	45%, 65' I/IATA-I	%, 75% an DGR it is s	d 90% is subject to
From the classified regulation MDG and Transport	point of v in class 4 as regardin d ICAO-T able name	view of s 4.3, and t g the tran T/IATA-I	ea transpor thus from isport of da DGR: Ferro 1408	t (IMDG) the point on ngerous go psilicon	and air t of view c oods.	ransport (IA f IMDG ar	ATA), FeSi nd ICAO-T	45%, 65 1/IATA-E	%, 75% an OGR it is s	d 90% is subject to
From the classified egulation MDG an Transport JN numb Fhe class Packaging	point of v in class 4 as regardin d ICAO-T able name per: hazards: g group:	view of s 4.3, and the the tran T/IATA-I	ea transpor thus from isport of da DGR Ferro 1408 4.3 III	t (IMDG) the point on ngerous go osilicon	and air t of view c oods.	ransport (IA f IMDG ar	ATA), FeSi nd ICAO-T	45%, 65 1/IATA-E	%, 75% an OGR it is s	d 90% is subject to
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From the classified regulation MDG an Fransport UN numb Fhe class Packaging I 4.2 Spec Avoid cor ise tarpau	point of v in class 4 as regardin d ICAO-T able name ver: hazards: g group: cial preven ntact of Fe alin-covere	view of s 4.3, and t g the tran T/IATA-I :: ntive mea Si with w ed trucks t	ea transpor thus from isport of da DGR Ferro 1408 4.3 III sures for t vater during to prevent i 15. F	t (IMDG) the point on ngerous go osilicon he user transport. t from com	and air t of view o oods. It is trans ning into o TORY I	ransport (IA f IMDG ar ported in big contact with	TA), FeSi nd ICAO-T g bags or co water.	45%, 65 I/IATA-E	%, 75% an OGR it is s For bulk m	d 90% is subject to naterial,
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RID and ADR regulations regarding the transport of dangerous goods in accordance with 2.2.43:1.7 based on the results of tests carried out in Lukasiewicz Instytut Przemysl Organicznego in Warsaw according to UN N.5 Manual of tests and criteria (Classification certificate Nr /No 056/ Lukasiewicz -IPO-BC/2022), the legal status of the regulation RID/ADR-01.01.2021, this product is not subject to classification in class 4.3 concerning the transport of dangerous goods.

PRODUCT SAFETY DATA SHEET

EU CLP - CLP Regulation on classification, labeling and packaging of chemical substances and mixtures:

According to Article 59(2)(b) EC no. 1272/2008 (CLP), regulating Article 31(1) of the REACH regulation, safety data sheets (SDS) are required only for substances and mixtures/special preparations that meet the criteria for endangering safety, health and the environment.

Since this product does not meet the given criteria, a safety data sheet according to EC 453/2010 will not be issued. To provide information related to safety and health and environmental protection, product safety information will be provided instead.

EU REACH - Registration, evaluation and authorization of chemical substances:

According to Article 31(7) of the REACH Regulation, exposure scenarios resulting from the Chemical Safety Report (CSR) are required to be documented as an annex to the Safety Data Sheet. However, according to the REACH regulation Annex I, part 0. (Introduction), subsection 0.6. no. 4 and 5 such exposure scenarios are required only for substances and mixtures that are classified as dangerous. As this product is not classified as hazardous in the sense of CLP, the provision of exposure scenarios is not required." A chemical safety assessment has been carried out for the substance . According to the REACH regulation, this substance does not require authorization.

15.2 Chemical safety assessment

There are no special regulations, restrictions and prohibitions.

16. FURTHER INFORMATION

These data are based on our current knowledge, but do not represent any guarantee of any particular product properties and do not establish any legally binding contractual relationships.

	: ' '				: * *	
16.1 List o	f abbrev	iations used				
COPD:		chronic obstructive pulmonary disease	:			
DNEL:		derived no effect limit				
EC 50:		mean value of the effective concentration	1.1		141	1.1
LC 50:		median value of the lethal concentration				
LD 50:		median lethal dose value				
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PBT PNE	: C:		persis predic	tent, bioaccu	mulative concentr	and toxic	substances		le:	· : :		
T/D vPvI	test: 3:	;	substa very p	nce solubilit persistent, ver	y test y bioaccu	umulative	substances	;			: • •	
16.2	List of	f change	s compared	to the previ	ous revis	ion	ήςζ/τ			0022	atat	
relat	ad to th	a transna	ort of danger	rous goods go	oods.							
16.3 This	Key R Safety	esources	s eet was prep	ared accordin	ng to the	Chemical	Safety Rep	ort issued	l on Sep	tember 9, 2	010.	
16.3 This	Key R Safety	esources	eet was prep	pared accordin	ng to the	Chemical	Safety Rep	ort issued	l on Sep	tember 9, 2	010.	
16.3 This Tabl	Key R Safety	esources Data Sho	eet was prep	pared accordin	ng to the A	Chemical NNEX	Safety Rep	ort issued	1 on Sep	tember 9, 2	010.	
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16.3 This Tabl	Key R Safety le 1 Wa	esources Data Sho ays of us Name o	eet was prep ing the subs of Identified se (IU)	stance or pro	ng to the A	Chemical NNEX	Safety Rep workers in Usa	ort issued industr	l on Sep y)	tember 9, 2	010.	
16.3 This Tabl Confii dentii al	Key R Safety le 1 Wa IU no.	esources Data Sho ays of us Name o Product through process	ing the subs	stance or pro	A paration	Chemical NNEX n (Use by ss categor 3, 4, 5, 8a	Safety Rep workers in Usa y (PROC): , 8b, 9, 14, 2	industr nge Descr	l on Sep y)	tember 9, 2	010.	
16.3 This Tabl Con f i d e n t i i a l	Key R Safety le 1 Wa IU no.	Average of the second s	ing the subs of Identified se (IU) ion of FeSi the melting in an arc furnace on of quartz bon)	stance or pro	A paration Proce PROC Categ PC 7 Envir	Chemical NNEX n (Use by ss categor 3, 4, 5, 8a ory of che onmental	Safety Rep workers in Usa y (PROC): , 8b, 9, 14, 2 mical produ	industr inge Descr 1, 22, 23 cts (PC):	1 on Sep y) iptors	tember 9, 2	010.	
16.3 This Tabl C o n f i d e n t i a l	IU no.	Ave of us of	ing the subs of Identified se (IU) ion of FeSi the melting in an arc furnace on of quartz bon)	stance or pro	A paration Proce PROC Categ PC 7 Envir ERC 5 Sector	Chemical NNEX (Use by ss categor 3, 4, 5, 8a ory of che onmental 5	Safety Rep workers in Usa y (PROC): , 8b, 9, 14, 2 mical produ release categ	industr industr age Descr 1, 22, 23 cts (PC): gory (ER(l on Sep y) iptors	tember 9, 2		

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1		or special types of	in itself)		atogoing of abomibal prod	note (DC).	1.1		
		nermeshility steel)	11		alegory of chemical proc	ucis (FC):			
		allow both for		P					
		incorporation into		E	nviro'nmental r'elease cat	egory (ERC	٦•'.		
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		and allov powder			ice 5, 5, 12d, 126				
		through spraving.		Se	ctor of use (SU):				
		un ough spraying.		S	J 14. 15				
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'						,			
				Is	the subsequent life relev	ant for the	given us	se? yes	
	3	Use in the electric	as such	P	ocess category (PROC):				
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		secondary	in itself)						
		metallurgy / Use in		C	ategory of chemical prod	ucts (PC):			
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				: Se	ector of use (SU):	: * *		1.1	111
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	4	Depridation and	l'ag guah	15 D	the subsequent life relev	ant for the	given us	se: yes	
	4	allowing of steel	as such		CC = 4 + 5 + 8 + 8 + 0 + 22	22.25			:
		malte: the stainless	(substance	11	(00, 3, 4, 3, 6a, 60, 9, 22,	23, 23			
		steel industry	III Itsell)		ategory of chemical prod	ucts (PC).			
:		steer maastry.	1	P		uets (1 C).	1.1	111	1.1
				1					
				E	nvironmental release cat	egory (ERC	D:		
				E	RC 3, 5	8 / (,		
1.		1		' Se	ector of use (SU):				
				SI	J 14				
				SI	J 0: Other: NACE code: C	C24+C24.1+	C25 up t	to C33	
			1				1.1		
				Is	the subsequent life relev	ant for the	given us	se? yes	
					•				
					oduct category (AC):				
1.	5	A 11 C		A					
	С	Alloying of cast	as such		cocess category (PROC):	10 15 00 /		(
		molta (increases and	(substance		(OC 4, 5, 7, 8a, 8b, 9, 10,	12, 13, 20, 2	22, 23, 2	U	
		liquid iron trasting)	, in useir)	6	atogony of abomical need	note (DC).			
. •		and inoculation and	11		ategory of chemical proc			1.1	: • •
1		iron casting: pig	· ,	P	- /, 1 ,1			1.1	-
		iron production		F	nvironmental release cot	egory (FRC	·/·		
		non production		F	RC 5	Sor J (Enc	·)•		
1.							1.1		
				Se	ctor of use (SID:				
				SI	J 14				
		· · · · · · · · · · · · · · · · · · ·		- SI	J 0: Other: NACE code: (24.5	·		· . ·
			i .				1 1	i.	
				Is	the subsequent life relev	ant for the	given us	se? yes	
					· · · · · · · · · · · · · · · · · · ·			2	
				P	oduct category (AC):AC	21, 2, 7			
	-	1.1.1	· . ·	: ' '		111		1,1	

111				n de la la la la la la	
	6	Reduction of refractory metals with silicon (Cr, V,	as such (substance in itself)	Process category (PROC): PROC 3, 4, 5, 8a, 8b, 9, 22, 23, 25 Category of chemical products (PC):	
		Mo) and others (Nb, W)		PC 7 Environmental release category (ERC):	. '
				ERC 5 Sector of use (SU):	
				SU 0: Other: NACE code: C 24.1	
				Is the subsequent life relevant for the given use? yes	
	7	Use as raw material for production FeSiMn or FeSi	as such (substance in itself)	Process category (PROC): PROC 3, 4, 5, 8a, 8b, 9, 20, 22	
				Category of chemical products (PC): PC 7	
				Environmental release category (ERC): ERC 5	
				Sector of use (SU):	
				SU 0: Other: NACE code: C24.1+27.1	
				Is the subsequent life relevant for the given use?: yes	
			* = =	Product category (AC): AC 2, 7	
	8	Use for surface treatment of metals	as such (substance in itself)	Process category (PROC): PROC 2, 3, 4, 5, 17, 18, 20, 21, 22, 23, 24, 25	
				Category of chemical products (PC): PC 14	1.11
				Environmental release category (ERC):	
			:	Sector of use (SU):	
				SU 14 SU 0: Other: NACE code: C24	
				Is the subsequent life relevant for the given use? yes	
			· · · · ·	Product category (AC): AC 7	111
	9	Use for the production of magnesium from	as such (substance in itself)	Process category (PROC): PROC: 3, 4, 5, 8a, 8b, 9, 22, 23, 25	
		dolomites using the Pidgeon process in electric furnaces;		Category of chemical products (PC): PC 7	
		use as metal feedstock in oxygen converters (BOF)		Environmental release category (ERC): ERC 5	
:.		(steel industry); Use as a weld metal		Sector of use (SU): SU 14 SU 0: Other: NACE code: C24	1.
				Is the subsequent life relevant for the given use? yes	

	10	Substantial EaSi	ag guah	Droade astagen; (DDOC).		
• :	10	used for the production of	as such (substance in itself)	PROC: 3, 4, 5, 8a, 8b, 9, 22, 23, 25 Category of chemical products (PC): PC 7, 14		· .
		refractory products, production of exothermic products		 Environmental release category (ERC): ERC 3, 5 Sector of use (SU): SU 0: Other: NACE code: C23 20 + C24 		
:.				SU 14 Is the subsequent life relevant for the given use? yes Product category (AC): AC 7, 01		
	11	Liquid iron	as such	Process category (PROC):		
		inoculation and iron casting. Production	in itself)	Category of chemical products (PC): PC 7	: * *	
		of FeSi bricks, use as a powder for the production of filled	1	Environmental release category (ERC): ERC 5		
		profiles		Sector of use (SU):		
			1 1 1 1 1 1	SU 0: Other: NACE code: C24		÷
				Is the subsequent life relevant for the given use? yes		
				Product category (AC): AC 7		
	12	Use in arc welding	as such (substance in itself)	Process category (PROC): PROC: 5, 9, 25		
				Category of chemical products (PC): PC 38		
				Environmental release category (ERC): ERC 5		
· . :		tet da la	::	Sector of use (SU): SU 17 SU 0: Other: NACE code: C24		1
				Is the subsequent life relevant for the given use? yes		
	13	Use as a flotation additive for metal	as such (substance	Process category (PROC): PROC: 26		
		separation through heavy laundry and for the production	in itself)	Category of chemical products (PC): PC 0: Other: flotation additive		
		of welding products		Environmental release category (ERC): ERC 4		
:.			1 1 1 1 1	Sector of use (SU): SU 2a	141	
				SU 0: Other: NACE code: B7.2.9, + flotation additive		
				Is the subsequent life relevant for the given use? no		
	14	Mixing in the	as such	Process category (PROC): PROC: 5, 8b, 9		
		toundry industry	(substance in itself)	Environmental release category (ERC): ERC 5		
				Sector of use (SU): SU 10		
:.			:: :	Is the subsequent life relevant for the given use? yes		

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			additive separation heavy la	on through	(substance) (in itself)	Ca PC	ategory of 0: Other:	chemical prod flotation additi	ucts (PC): ve	t. ^{AC}		d ⁱⁿ		10 10 10
			$\widehat{T}_{\mathcal{W}_{\widehat{K}}}$		⁹ ti	Ei	vironmen ctor of use	tal release cate (SU): SU 10	egory (ERC	:): ERC 4		24	Še.	ŝ
						ls	the subseq	uent life relev	ant for the	given use?	no			
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