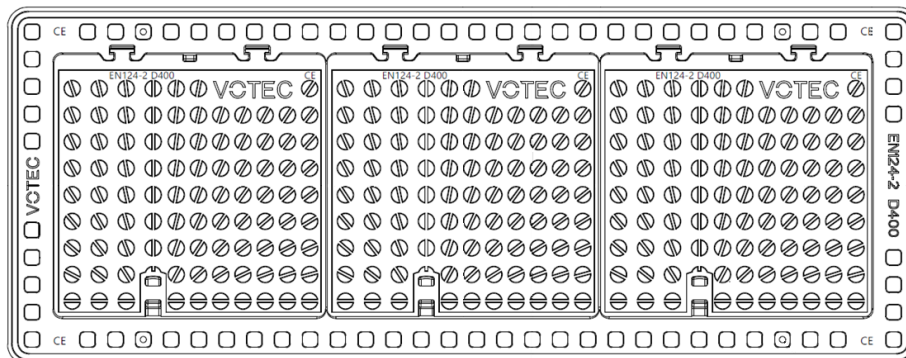
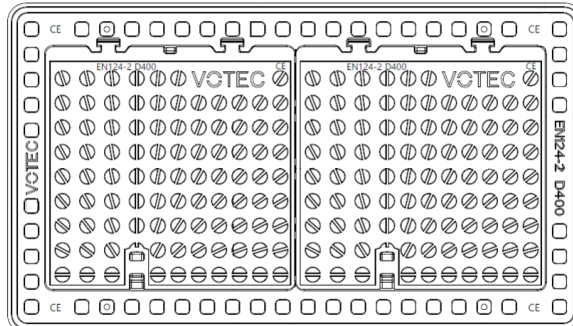
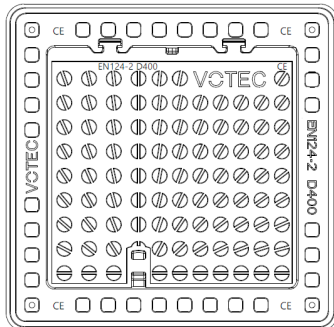


Produkt

Kumlokk og Rammer, VOTEC Trekkekummer

Produktdetaljer

Produkt	Kumlokk og Ramme til Telekommunikasjon, iht. EN124-2, flytende
Anvendelse	Muliggjør adkomst til kommunikationskabler Produktene kan kun benyttes i VOTEC gategoods, vil ikke passe inn i andre produsenters gategoods. Produktene leveres komplett, kumlokk og kumramme, iht. krav i EN124-2.
Type	Firkant lokk og ramme, 1-, 2- eller 3 lokks, D400. Med dempepakninger for å unngå klapping, flytende ramme, lukkede spetthull og lås. Lokket vil låses i åpen posisjon for å unngå at lokket utilsiktet faller tilbake. Vær oppmerksom på at dimensjonene oppgitt i produkt teksten ikke gir max. / min. innvendige mål i tilhørende trekkekum, som kan variere noe mellom de forskjellige kum produsentene. Anbefalt max. / min. dimensjoner på innvendige mål av trekkekummene er oppgitt i PDB-UC-0003.
Komponenter	Lokk og Ramme av duktilt støpejern. Materialet på pakning påmontert lokket er poly uretan.
Produsent	RBA Ferro Industries Pvt. Ltd.
Henvisninger	Det henvises også til følgende nyttig informasjon: <ul style="list-style-type: none"> • Tilhørende FDV dokument, FDV-UC-0004 • Tilhørende Monteringsanvisning, MA-UC-0004 • VA Miljøblad nr. 2, Renovering av kum • VA Miljøblad nr. 31, Sikkerhet i kummer • VA Miljøblad nr. 32, Montering av kumramme og kumlokk



Innholdsfortegnelse

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1. Introduksjon

VOTEC Kumlokk og Rammer inngår i serien VOTEC, som er Brødrene Dahl's merkevare for produkter til bruk fortrinnsvis innen VMT segmentet.

Produktet er produsert av duktilt støpejern og samsvarer med EN124-2. Det er sertifisert av ICMQ (vil bli vedlagt på senere tidspunkt).
Produktet har lokk som låses i åpen tilstand, ca. 105 grader, for å hindre at lokket utilsiktet faller tilbake til lukket tilstand. Se mer informasjon om dette i tilhørende monteringsanvisning.

Produktene kan kun benyttes i VOTEC gategods, vil ikke passe inn i andre produsenters gategods. Produktene selges komplett, lokk og ramme, iht. krav i EN124-2.

2. Produksjon og Miljø

Produktet produseres av RBA Ferro Industries Pvt. Ltd.
Produsenten innehar godkjente dokumenter for kvalitetssikring og produksjon, se vedlegg.
Produsenten er kvalitetssikret og all produksjon for Brødrene Dahl blir fulgt opp av egne inspektører hos produsenten.

Smelteovnene hos produsenten er elektriske. RBA har også installert solcellepaneler på taket for å utvinne elektrisitet og har stort fokus på miljøet og redusere CO₂ avtrykket, se vedlegg 6. Se også tilhørende EPD dokument.

3. Tekniske Data

Last	D400, iht. EN124-2: 400kN, Gruppe 4
Materiale, hovedkomponenter	Duktilt Støpejern, ISO 1083, Grade 500-7 Max. Størrelse på kaviteter i støpejerns materialet: Ø5 mm. Slike kaviteter kan forekomme i materialet, også i overflaten på materialet.
Materiale, låser	Duktilt Støpejern, ISO 1083, Grade 500-7
Materiale, pakning	Poly Uretan
Overflate, Lokk	Anti-skli overflate med VOTEC design.
Sete, Lokk / Ramme	Pakningen som er montert på lokkene sikrer at de ligger stabilt og motvirker klapping / støy
Installasjon	Installeres i varm asfalt. Rammen må installeres slik at last ikke overføres til betongen. 4 stk. M16x100 skruebolter er montert i rammen for heving / senkning av lokk og ramme under installasjon. Se tilhørende Monteringsanvisning for mer informasjon.
Overflatebehandling	Produktet er overflatebehandlet med «SYN. ENA. MATT FINISH BROWN PAINT». Se vedlegg 8, REACH, for detaljer. Overflatebehandlingen vil etter noe tid slites bort, avhengig av slitasje. Dette er normalt, overflatebehandlingen er ikke permanent.

4. Mål / Dimensjoner

3.1 1-Lokk

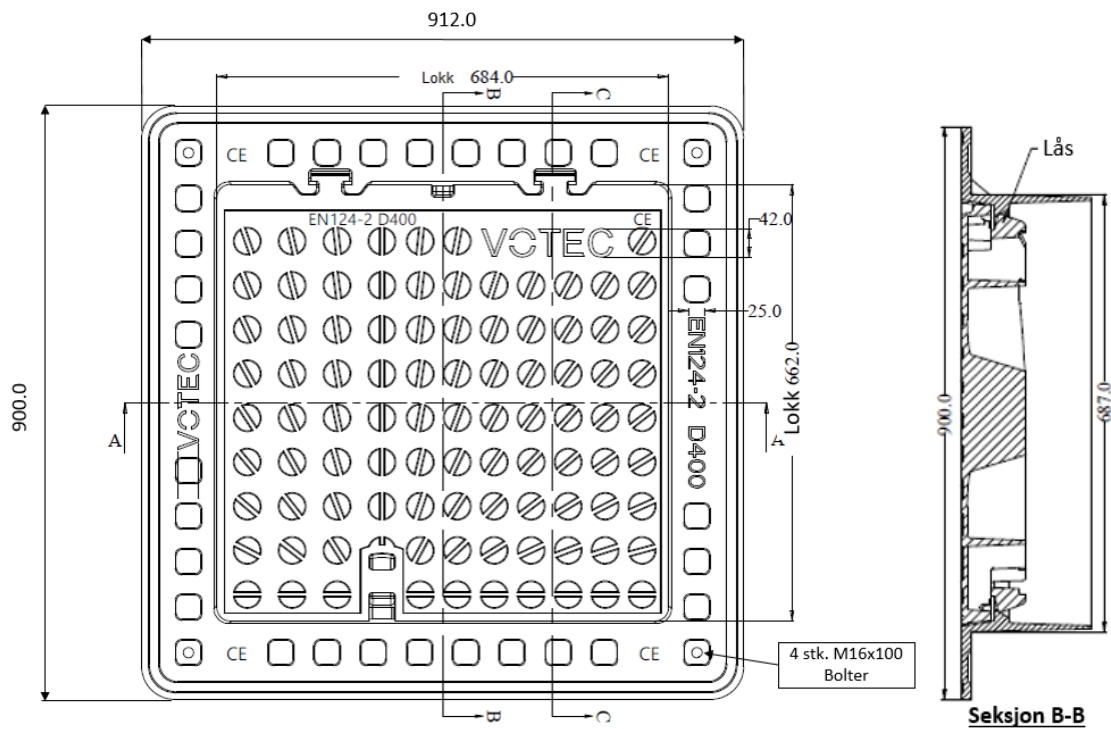
Beskrivelse	NRF nr.	Lengde, utv. [mm]	Bredde, utv. [mm]	Høyde, utv. [mm]	Lengde, Skjørt [mm]	Bredde, Skjørt [mm]	Lengde, Lysåpning [mm]	Vekt per stk. [kg]
1-Lokk	3307009	912	900	205	710	687	637	144

Tabell 1

Anbefalte innvendige max. / min. mål på trekkefum:

Innvendige Mål, Kum, Lengde [mm]	Innvendige Mål, Kum, Bredde [mm]
720-750	700-730

Tabell 2



Seksjon A - A

4.2 2-Lokk

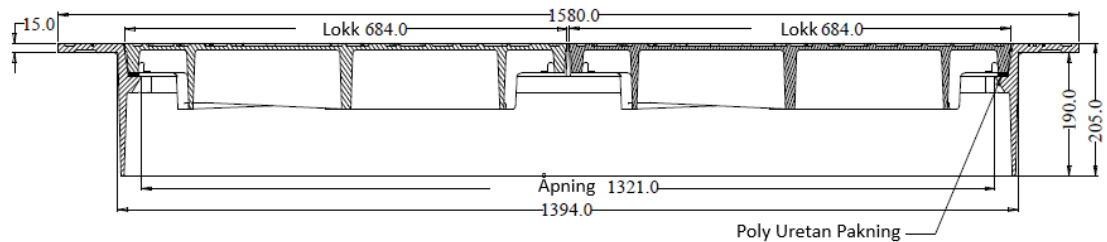
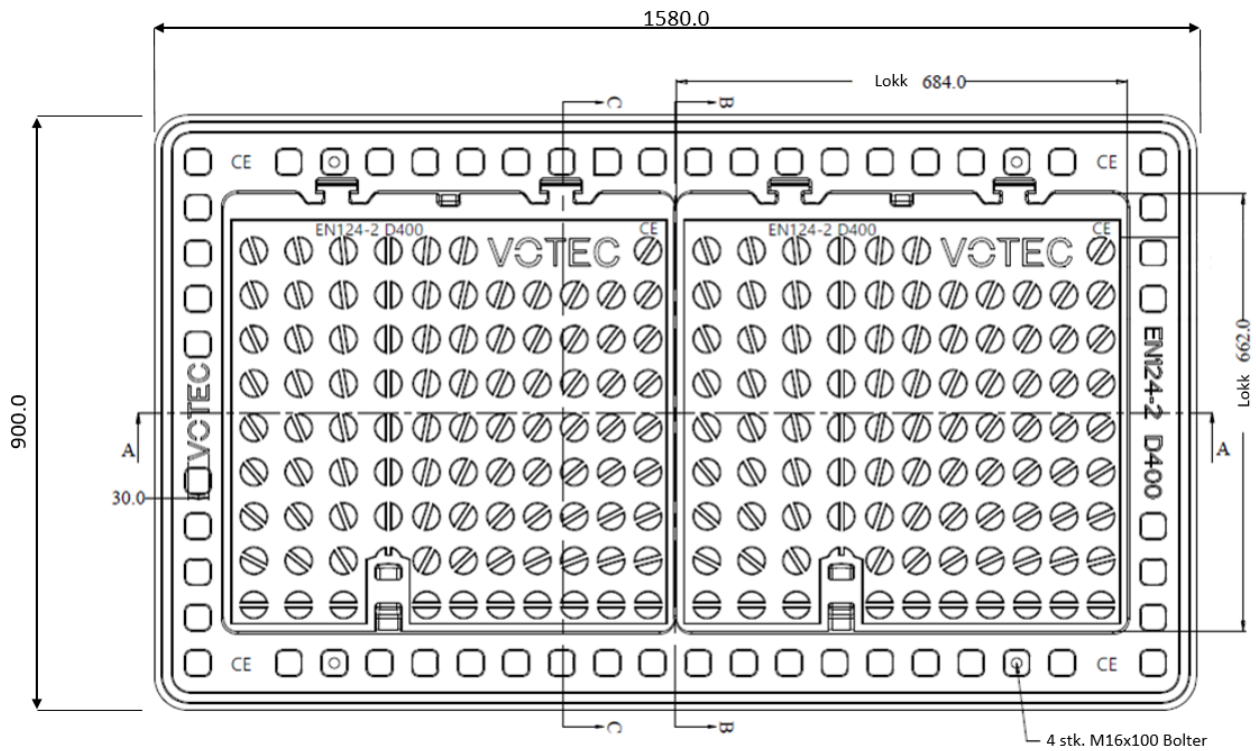
Beskrivelse	NRF nr.	Lengde, utv. [mm]	Bredde, utv. [mm]	Høyde, utv. [mm]	Lengde, Skjørt [mm]	Bredde, Skjørt [mm]	Lengde, Lysåpning [mm]	Vekt per stk. [kg]
2-Lokk	3307011	1580	900	205	1394	687	1321	247

Tabell 3

Anbefalte innvendige max. / min. mål på trekkekum:

Innvendige Mål, Kum, Lengde [mm]	Innvendige Mål, Kum, Bredde [mm]
1405-1435	710-740

Tabell 4



Seksjon A - A

4.3 3-Lokk

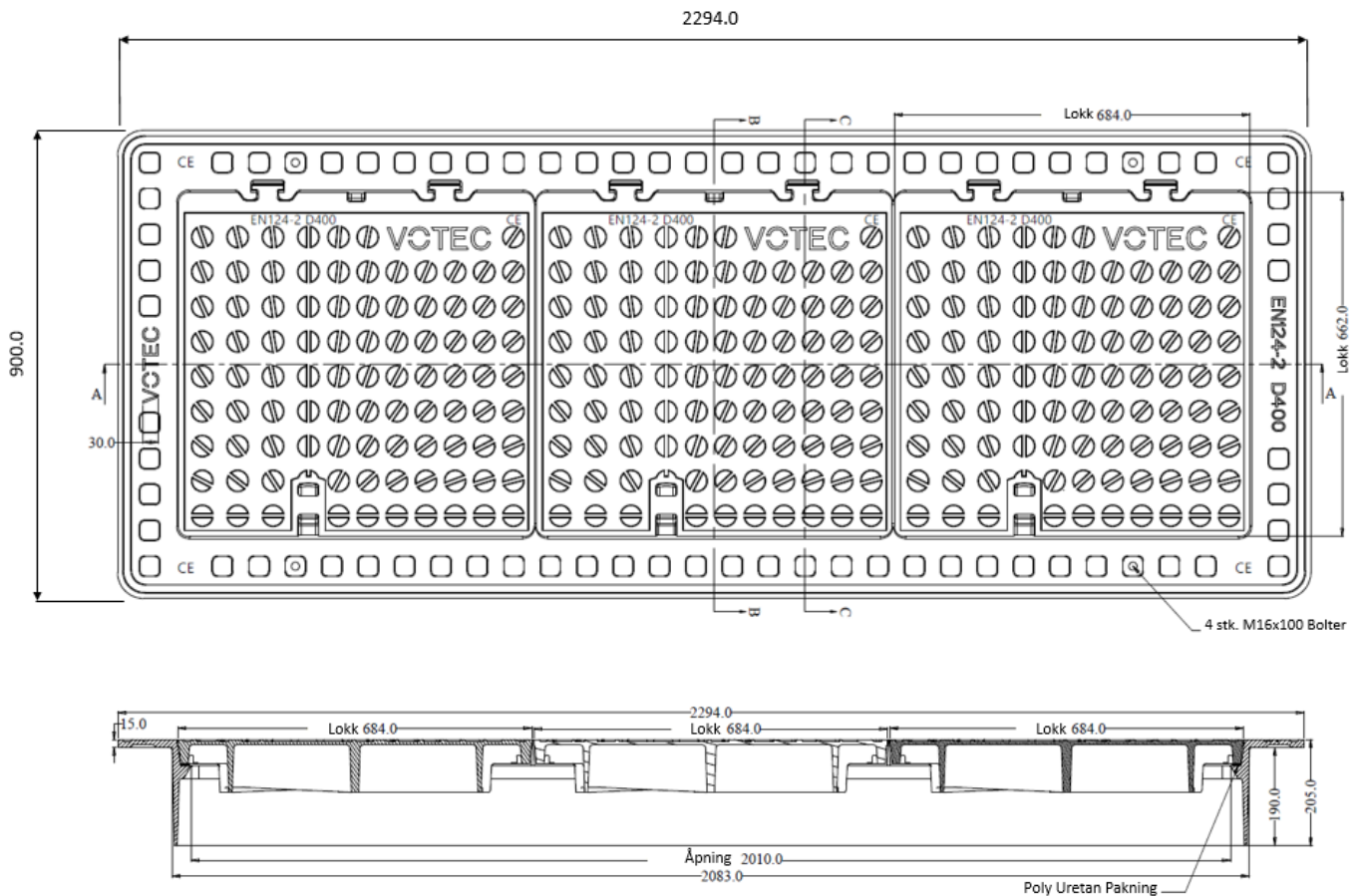
Beskrivelse	NRF nr.	Lengde, utv. [mm]	Bredde, utv. [mm]	Høyde, utv. [mm]	Lengde, Skjørt [mm]	Bredde, Skjørt [mm]	Lengde, Lysåpning [mm]	Vekt per stk. [kg]
3-Lokk	3307012	2294	900	205	2083	687	2010	354

Tabell 5

Anbefalte innvendige max. / min. mål på trekkekum:

Innvendige Mål, Kum, Lengde [mm]	Innvendige Mål, Kum, Bredde [mm]
2095-2125	710-740

Tabell 6



Seksjon A - A

5. Dempepakninger

Dempepakning, inkl. festemateriell:

Beskrivelse	NRF nr.	For kum NRF Nr.
Dempepakning	2030041	3307009, 3307011 og 3307012. 1 pakke inneholder pakning og festemateriell til ett stk. lokk.

6. Standarder, Godkjenninger og Sertifikater

Ledelse / Produksjon	ISO 9001	Vedlegg 1
	ISO 14001	Vedlegg 2
	OHSAS 18001	Vedlegg 3
	Material Sertifikat, Test Sample	Vedlegg 4
	RBA Kvalitets Plan	Vedlegg 5
	CO2 Reduksjoner, Juli 2019 - Juli 2020	Vedlegg 6
	EN124-1 og EN124-2, ICMQ	Vedlegg 7
	Test rapport, Maling, REACH	Vedlegg 8
Standarder	EN124-2	Sluktopper og kumtopper for kjøre- og fotgjengerområder - Del 2: Sluktopper og kumtopper laget av støpejern

Vedlegg 1



Certificate of Registration

(Quality Management System)

KVQA CERTIFICATION SERVICES PVT. LTD.

This is to certify that the Quality Management System of

M/S. RBA FERRO INDUSTRIES PRIVATE LIMITED

Head Office: 2/6, Sarat Bose Road, Suite No. 808, Central Plaza,
Kolkata - 700 020, West Bengal, India.

Works: NH-6, Vill. & P.O.: Prasastha, P.S.-Domjur, Howrah - 711 302, W.B., India.

Off Site Works: RB Agarwalla & Co. Pvt. Ltd., -(Rourkela Unit), IDCO,
Plot No. 180/184, Industrial Estate, Kalunga, Rourkela, Odisha.
Chirag Casting Pvt. Ltd., 29.5 Mile Stone, Jungalpur, P.O. Begri,
Domjur, Howrah, W.B.

Has been found to be of the Quality Management System Standard

ISO 9001:2015

This certificate is valid for the following product or service range

**Manufacturing, Machining & Supply of Grey Iron and SG Iron,
Automotive, Engineering, Valves, Utility Castings, Municipal
Covers and Frames**

1st Surveillance Due On: 22/02/2019 Done On:
2nd Surveillance Due On: 22/02/2020 Done On:

Certificate No: KDACQ201803069

Date of Issue: 22, March, 2018

Valid Until: 21, March, 2021*



Issued by

Authorised signatory KVQA



CB-045-MS

DAC (Dubai Accreditation Centre) is a Department within Dubai Municipality and is responsible for providing accreditation of conformity assessment bodies (CABs) in the fields of certification and inspection. Accreditation by DAC demonstrates the competence and independence of KVQA.

Accreditation by a member of IAF's MLA for Quality Systems

To Check the status of the Certification kindly log on to www.kvqa.in

F-300, Sector -63, Noida U.P., India. Ph-011-22711940, 22711941, email: delhi@kvqaindia.com

*Subject to successful completion of surveillance audits

Vedlegg 2



KVQA

Certificate of Registration

(Environment Management System)

KVQA CERTIFICATION SERVICES PVT. LTD.

This is to certify that the Environment Management System of

M/S. RBA FERRO INDUSTRIES PRIVATE LIMITED

Head Office: 2/6, Sarat Bose Road, Suite No. 808, Central Plaza,
Kolkata - 700 020, West Bengal, India.

Works: NH-6, Vill. & P.O.: Prasastha, P.S. - Domjur,
Howrah - 711 302, West Bengal, India.

Has been found to be of the Environment Management System Standard

AS/NZS ISO 14001:2015 / ISO 14001:2015

This certificate is valid for the following product or service range

**Manufacturing, Machining & Supply of Grey Iron and SG Iron,
Automotive, Engineering, Valves, Utility Castings, Municipal
Covers and Frames**

1st Surveillance Due On: 22/02/2019 Done On:

2nd Surveillance Due On: 22/02/2020 Done On:

Certificate No: IESC201803003

Date of Issue: 22, March, 2018

Valid Until: 21, March, 2021*



Issued by

Authorised signatory KVQA

JAS-ANZ



M5400913IN
www.jas-anz.org

JAS-ANZ is the government-appointed accreditation body for Australia and New Zealand responsible for providing accreditation of conformity assessment bodies (CABs) in the fields of certification and inspection. Accreditation by JAS-ANZ demonstrates the competence and independence of these CABs.

Accreditation by a member of IAF's MLA for Quality Systems

To Check the status of the Certification kindly log on to www.kvqa.in
F-300, Sector -63, Noida U.P., India. Ph-011-22711940, 22711941, email: kvqa@satyam.net.in

*Subject to successful completion of surveillance audits

Vedlegg 3



KVQA

Certificate of Registration

(Occupational Health & Safety Management System)

KVQA CERTIFICATION SERVICES PVT. LTD.

This is to certify that the Occupational Health & Safety Management System of

M/S. RBA FERRO INDUSTRIES PRIVATE LIMITED

Head Office: 2/6, Sarat Bose Road, Suite No. 808, Central Plaza,
Kolkata - 700 020, West Bengal, India.

Works: NH-6, Vill. & P.O.: Prasastha, P.S.-Domjur, Howrah - 711 302, W.B., India.

Has been found to the Occupational Health & Safety Management System Standard

OHSAS 18001:2007

This certificate is valid for the following product or service range

**Manufacturing, Machining & Supply of Grey Iron and SG Iron,
Automotive, Engineering, Valves, Utility Castings, Municipal
Covers and Frames.**

1st Surveillance Due On: 22/02/2019 Done On:
2nd Surveillance Due On: 22/02/2020 Done On:

Certificate No: IQSC201803004

Date of Issue: 22, March 2018

Valid Until: 21, March, 2021*



Issued by

Authorised signatory KVQA

JAS-ANZ



M54009131N
www.jas-anz.org

JAS-ANZ is the government-appointed accreditation body for Australia and New Zealand responsible for providing accreditation of conformity assessment bodies (CABs) in the fields of certification and inspection. Accreditation by JAS-ANZ demonstrates the competence and independence of these CABs.

Accreditation by a member of IAF's MLA for Quality Systems

To Check the status of the Certification kindly log on to www.kvqa.in
F-300, Sector -63, Noida U.P., India. Ph-011-22711940, 22711941, email: delhi@kvqaindia.com

*Subject to successful completion of surveillance audits

Vedlegg 4



consultation - engineering - delivery

ISO 9001: 2008, ISO 14001: 2004
ISO TS16949: 2009

RBA Ferro Industries Private Limited

HEAD OFFICE

2/6 Sarat Bose Road, Central Plaza, Suite # 808, Kolkatta 700020, India

Phone: +91 33 2485 8755 / 8756 , Fax: 91 33 2485 2832

Email : mail@rbaferro.com ; Website: www.rbaferro.com

Works: (NH6), Vill & PO: Prasastha, PS: Domjur, Howrah 711302, WB

Phone: +91 3326691126, Telefax: +91 3326691191

Material Test Certificate

FOUNDRY-A

Record No: RBA/Fdy-1/LAB/R-02B / Rev. No. : 01 w.e.f: 01.03.2013

Page: **01 OF 01**

Date: **10.10.2020**

Customer Name	SAINT GOBAIN	Report No.	20-21/A/Saint Gobain - 25
Part Name	614X1321X205 HT. MANHOLE 2 COVER & FRAME FOR TELECOMMUNICATION (D400)	Order No.	
Drawing / Part No.	RBAD 1441	Invoice No. / Challan No.	
Matl. Grade	ISO : 1083, 500/7		

Customer's Specification

	Chemical Composition								Mechanical Properties			Micro	Hardness (BHN)	Matrix
	% C	% Si	% Mn	% P	% S	% Cr	% Cu	% Mg	UTS (Mpa)	% Yield Strength (Mpa)	% Elongation	% Nod'ty		
Min.	3.4	2.2	0.2	-	-	-	-	0.03	500	320	7	80	Ferrite+Pearlite	
Max.	3.8	2.8	1	0.08	0.02	-	-	0.06	-	-	-	230		

Test Result

Casting No.	Heat No.	Chemical Composition								Mechanical Properties			Micro	Hardness (BHN)	Matrix
		% C	% Si	% Mn	% P	% S	% Cr	% Cu	% Mg	UTS (Mpa)	% Yield Strength (Mpa)	% Elongation	% Nod'ty		
-	201038	3.60	2.59	0.37	0.067	0.008	-	-	0.041	554.03	404.29	10.51	94.38	187	Ferrite+Pearlite
-	201019	3.55	2.51	0.34	0.069	0.011	-	-	0.040	557.53	408.18	9.77	90.82	187	Ferrite+Pearlite

Remarks: Results as per specification

Checked By : Dipankar Biswas
(Lab in-charge)



Approved By : T. Paul
(QA/QC Manager)

Vedlegg 5



RBA FERRO INDUSTRIES PVT. LTD.

FOUNDRY DIVISION

Document No.:- RBA/Fdy/MG/D-04

Effective Date:- 01-01-2011

Rev. Date:- 01.04.2018

Rev. No.:- 11

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QUALITY PLAN

SECTION : SAMPLING STAGE OF COMPONENT

AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN	SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN
Development	Receiving of Drawing	Every Enquiry	As per received drawing/Drawing Register	Visual Study		Development	RBA/Fdy/PS/D-02	Feasible/Not Feasible/Notify to Marketing Head
	Feasibility Study	Every Enquiry	"	As per the APQP Plan & Technical Feasibility Study	APQP Formats & Review Set-up		RBA/Fdy/PS/R-10	
Pattern Shop	Pattern Inspection	Pattern newly Received	Newly prepared Pattern as per the drawing	Manual By Inspector	Venier Caliper,Depth gauge,Steel Scale,Height Gauge	Pattern Shop	RBA/Fdy/PS/R-02	Notify to Plant Head
	Sampling Report (Casting Lay-Out dimension)	New Produced Sample atleast -2 Nos	As per received drawing	"	"	QA	RBA/Fdy/QA/R-02	
Development	Submission to customer	For Approval	"	As per the drawing & Customer Requirements (if any)	Visual	Development	Via Mail	Notify to Marketing Head
	PPAP Submission (If Applicable)	"	"	Level 4 documentation requirement	By Electronic means	"	By Part Submission Warrant	
Pattern Shop	Releasing of Pattern for Production	After Approval from QA	"	As per Pattern realising certificate	-----	Pattern Shop	RBA/Fdy/PS/R-06	Notify to Production

Prepared By

Reviewed & Approved By :



RBA FERRO INDUSTRIES PVT. LTD.

FOUNDRY DIVISION

Document No.:- RBA/Fdy/MG/D-04

Effective Date:- 01-01-2011

Rev. Date:- 01.04.2018

Rev. No.:- 11

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QUALITY PLAN

SECTION : RAW MATERIAL TESTING

AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN	SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN
Lab	Radiation Test (For PI & MS) For Steel scrap	One "composit" Sample/Batch	< 10 µR/H	By Instrument	NUCLEONIX	Lab	LAB/R-08	Reject/Notify Plant Head
	Carbon		0.65% max	Combustion	Strolein Apparatus			
	Silicon		1.20% max	Ignition	Balance, Measuring cylinder			
Manganese	1.30% max		Titration	Balance, Measuring cylinder, Measuring burette				
Sulphur	0.06% max		Titration					
Phosphorus	0.08% max		Titration					
Pig iron(DI)								
Carbon	3.20 - 4.50%		Same as above	Same as above				
Silicon	0.6 - 2.2%			"				
Manganese	0.80% max			"				
Phosphorus	0.15% max			"				
Sulphur	0.06% max			"				
Pig iron(CI)								
Carbon	3.20 - 4.50%			"				
Silicon	0.8 - 2.0%			"				
Manganese	0.80% max			"				
Phosphorus	0.15% max			"				
Sulphur	0.06% max		"					
Fe-Cr	Cr. : 60 - 70%		"					
Prepared By				Reviewed & Approved By :				



RBA FERRO INDUSTRIES PVT. LTD.

FOUNDRY DIVISION

Document No.:- RBA/Fdy/MG/D-04

Effective Date:- 01-01-2011

Rev. Date:- 01.04.2018

Rev. No.:- 11

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QUALITY PLAN

SECTION : RAW MATERIAL TESTING

AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN	SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN
Lab	<u>For Shell Sand</u>	Collect Material from 3 – 4 Different locations & mix to make a Sample		Manual	Sand sieve, Muffle furnace, Core gas determinator	Lab	RBA/Fdy/R-08	Reject/Notify Plant Head
	AFS No		50 – 65%					
	L.O.I		5.0 % Max					
	Gas		25 cc/gm Max					
	<u>For Dextrine</u>				Balance, Hot Plate Airoven, Muffle furnace Crucible, Cylinder			
	Ash		1% Max	Ignition				
	Insolubility		5 % Max	Titration				
RAW MATERIAL Production Consumable	<u>For Fe-Si Lumps</u>	One Sample/Batch		Ignition	Balance, Hot Plate Airoven, Muffle furnace Crucible, Balance, Hot Plate Airoven, Burette, Flask, Beaker			
	Silicon		60 – 75%					
	<u>For Fe-Mn</u>	One Sample/Batch		Titration				
	Manganese		65 – 75%					
	<u>For Fe-Cr</u>							
	Cr		60 – 70%	"				
	<u>For Fe-Si-Mg</u>	As per Supplier T.C		Titration	Balance, Hot Plate Airoven, Muffle furnace, Burette, Flask, Beaker, Measuring, cylinder, Crucible, Decicator			
Magnesium	6 – 12%							
Fe-Si	40 – 45%		Ignition					
<u>For Pure Mg</u>								
Magnesium	99%		"					
<u>For Innoculine</u>								
Silicon		60 – 75%	"					

Note : 1) Reference standard IS: 1559 : Methods of chemical analysis of Ferro alloys & standard IS: 14529 : Chemical analysis of Ferro –Silicon Magnesium alloys

Prepared By

Reviewed & Approved By :



RBA FERRO INDUSTRIES PVT. LTD.

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QUALITY PLAN

SECTION : RAW MATERIAL TESTING

AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN	SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN	
Lab	<u>For Graphite Powder(For Moulding)</u>					Lab	RBA/Fdy/R-08	Reject/Notify Plant Head	
	Fixed Carbon	Collect Material from 3 – 4 Different locations & mix to make a Sample	75 % Min.	Weight Analysis	Airoven,Muffle furnace Crucible,Decicator				
	Ash		2.0 % Max						
	VM		5.0 % Max						
	<u>For Carburizer</u>								
	Fixed Carbon		95% Min.	"	"				
	Ash		5% Max						
VM	1.5% Max								
RAW MATERIAL Production Consumable	<u>For Bentonite Powder</u>					Lab	RBA/Fdy/R-08	Reject/Notify Plant Head	
	Moisture	One Sample/Batch	5 – 14%	"	Air oven,pH Indicator Paper,Measuring Cylinder,M.B Clay tester,Measuring Cylinder				
	PH Value		9 – 10.5						
	Free Swelling		25 ml Min.						
	M.B Value		80 ml /gm Min						
	Gel formation Index		60 ml Min						
	<u>For Lustris Carbon Additives</u>								
	Ash	"	2 – 6%	"	Airoven,Muffle furnace Crucible,Decicator				
	VM		40 – 65%						
	Fixed Carbon		30 – 55%						
	<u>For Silica Sand</u>								
	Moisture	"	1 % Max (Dry) 6% Max (Wet)	"	Airoven,Sand Washer, Beaker,Sieve Shaker				
	Clay		2% Max						
	AFS No.		45 – 70						
L.O.I	2% Max								
<u>For Proprietary Items</u>		Material Performance	Satisfactory results	Line Performance		Lab/Production			
Prepared By				Reviewed & Approved By :					



RBA FERRO INDUSTRIES PVT. LTD.

FOUNDRY DIVISION

Document No.:- RBA/Fdy/MG/D-04
 Effective Date:- 01-01-2011
 Rev. Date:- 01.04.2018
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QUALITY PLAN

SECTION : UNIT SAND PREPRATION & SAND TESTING

AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN	SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN
MOULDING	<u>For Unit Sand</u>							
	Return Sand	Each batch	90 – 98%	Visual		SS-MLD		Reject/Notify Plant Head
	New Sand		2.0 – 10 %	"		"		
	Bentonite		0.20% – 1.80%	"		"		
	LCA		0.10%. – 0.50%	"		"		
	Moisture		3.0 – 5.0%	"		"		
	Compactibility	Each batch	30–55%	Visual	Sand multi controller	SS-S.Plant	Auto save	
	L.O.I	1/day	4.0 - 9.0%	Visual	Muffle furnace	SS-LAB	LAB/R-03	
	VM	1/day	2.5 – 5.0%	"	V.M Crucible	..	..
	Total clay	1/day	11.0 - 18.0%	"	Sand Washer,Clay tester	..	..
	Active clay	1/day	7.0 - 15.0%	"	M.B Clay tester	..	..
	TC-AC	1/day	2.0 - 5.0	"	Calculation	..	..
	AFS No.	1/day	45 - 70	"	Sandsiever, Sieve	..	..
	Compactibility	1/Hour	30 - 55%	"	Compactibility meter	SS-S.Plant	LAB/R-03	
	GCS	1/Hour	1.10 – 1.80 Kg./cm ²	"	Universal strenght M/c	"	"	
	GSS	1/Hour	0.30 – 0.70 Kg./cm ²	"	"	"	"	
	Permeability	1/Hour	130 - 230	"	Permeability Tester	"	"	
	Moisture	1/Hour	3.0 - 5.0%	"	Moisture Tester	"	"	

Prepared By

Reviewed & Approved By :



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QUALITY PLAN

SECTION : MOULD MAKING & CORE MAKING (SHELL CORE)

AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN	SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN
MOULDING	MATCH 130							
	Match plate Pattern	Each Pattern used	Pattern Dependent Parameter	Visual	-----	SS-MLD	MLD/R-09	Reset
			Pattern Independent Parameter	"		"	MLD/R-09	
	Mould Cake	Each Cake	No damaged Cake	"		"		Reject / Repair
	Squeez Pressure	Each Mould	1.2 – 10.0 Bar	"	VDU display	"		Adjust
	Mould Hardness	1/ Hour	H : 85 – 97	"	Mould HardnessTester	"	MLD/R-12	Reject
	Changing of Heat No. on Pattern	After 1.0T metal pouring /As per cutomer requirement	As per the Heat No. of Melting	"	-----	"	MLD/R-05	Reject
	First Mould Approval Report	Every day/Shift	As per the checking Parameters	"	Visual	"	MLD/R-15	Reset
	ARPA							
	Match plate Pattern	Each Pattern used	No undercut	Visual	-----	SS-MLD	MLD/R-03	Reject /dismount
			No damaged bush pin	"	-----	"	"	"
	Mould Box	Each Box	No damaged box	"	-----	"	MLD/R-04	Reject/Repair
			No damaged bush pin	"	-----	"	"	
	Mould Hardness	4/ day	H= 85 – 95	"	Mould HardnessTester	"	MLD/R-12	Reject
		V= 65 – 80	"	"				
Changing of Heat No. on Pattern	After 1.0T metal pouring /As per cutomer requirement	As per the Heat No. of Melting	"	-----	"	MLD/R-05	Reject	
First Mould Approval Report	Every day/Shift	As per the checking Parameters	"	Visual	"	MLD/R-15	Reset	
Prepared By					Reviewed & Approved By :			



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QUALITY PLAN

SECTION: Core Sand making

AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN	SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN		
CORE	SHELL CORE									
	Temperature Setting	Each Batch	200 ^o C – 300 ^o C	Visual	Temperature indicator	Core shop Incharge	CORE/R-09	Reject/ Readjust		
	Investment time		20 – 90 Second		Timer		”			
	Core Scratch Hardness		60 – 90		Scratch hardness tester		CORE/R-06			
	Gas	1/Day	25cc / gm Max	Combustion	Core gas determinator		CORE/R-07			
	CO₂ SAND									
	Sodium silicate	Each Batch	6.5 – 9.5%	Visual	Weighing balance	Core shop Incharge	CORE/R-05			
	Ivacol Powder		1.0 – 2.5%		Scratch hardness tester		CORE/R-06			
	Core Scratch Hardness		40 – 70		Core gas determinator		CORE/R-07			
	Gas	1/Day	25cc / gm Max	Combustion	Core gas determinator					
	OIL CORE SAND									
	Dextrin	Each Batch	2.0 – 4.0 %	Visual	Measuring Can	Core shop Incharge	CORE/R-05			
	Bentonite		1.0 – 2.5 %		”					
	Oil		2.0 – 3.5 %		”					
	Water		3.5 – 4.5 %		”					
	Baking Temperature		160 ^o C – 250 ^o C		Temperature Indicator					
	Baking Time		2.0 – 3.0 hrs		Timer					
	Core Scratch Hardness		40 – 70		Scratch hardness tester		CORE/R-06			
	Gas	1/Day	40cc / gm Max	Combustion	Core gas determinator		CORE/R-07			
	Prepared By				Reviewed & Approved By :					



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SECTION: Core Sand making

AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN	SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN
CORE	NO BAKE CORE							
	Resin Part – A	Each Batch	2.00 – 2.50 %	Visual	Measuring Can	Core shop Incharge	CORE/R-05	Reject/Re-adjust
	Resin Part – B		5 – 10 % of Part–A		”			
	Resin Part – C		18 – 22 % of Part – A		”			
	Core Scratch Hardness		60 – 90		Scratch hardness tester			
	Gas	1/Day	20cc / gm Max	Combustion	Core gas determinator		CORE/R-06 CORE/R-07	
	CORE SET							
	Dextrin	Each Batch	2.0 – 3.5 %	Visual	Measuring Can	Core shop Incharge	CORE/R-05	Reject/Re-adjust
	Bentonite		1.5 – 2.5 %		”			
	Core Set		2.30 – 3.50 %		”			
	Core Scratch Hardness		50 –70		Scratch hardness tester			
	Gas	1/Day	20cc / gm Max	Combustion	Core gas determinator		CORE/R-07	
	Viscosity of Core Paint	As per requirement	12 – 16 seconds	Visual	B4 Cup		CORE/R-04	
	Prepared By				Reviewed & Approved By :			



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QUALITY PLAN

SECTION: Core Sand making for COLD BOX CORE SHOOTER MACHINE

AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN	SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN	
CORE	SAND								
	AFS No	Each Batch	50 - 65	Weight analysis	Air Oven ,Sand washer, Beaker ,Sieve	Lab	RBA/Fdy/R-08	Reject/Notify Plant Head	
	Moisture		6 % Max						
	Clay		2 % Max						
	RESIN & HARDNER ADDITION LEVEL								
	Resin	1/Day	1.0 -1.5 % wt of sand	Visual	Measuring Can	Core shop Incharge	CORE/R-11	Reject	
	Hardener	"	1.0 -1.5 % wt of sand	"	"		"		
	SAND MAKING CYCLE TIME								
	Sand + Resin	1/Day	2 Minutes mixing	Visual	watch	Core shop Incharge	CORE/R-11	Reject	
	(Sand + Resin) + Hardener	"	1 Minute mixing	"	"		"		
	CORE GAS	1/Day	20 cc /gm Max	Combustion	Core gas determinator	Core shop Incharge	CORE/R-06 /R07	Reject	
	SCRATCH HARDNESS	3/Day	60 - 90	Visual	Scratch hardness tester				
	Bench life of Mixing Sand	Each Batch	45 minutes max	"	watch				
	Prepared By				Reviewed & Approved By :				



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QUALITY PLAN

SECTION : METAL CHARGE PREPARATION

AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN	SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN
MELTING	DI Metal (Normal heat)			Visual	Weighing Scale	SS-MLT	RBA/Fdy/MLT/R-02	Readjust
	Pig iron	Each Heat	00 % — 50 %					
	MS Scrap		20 % — 80 %					
	DI Foundry return		80 % — 20 %					
	Carburizer		0.3 % — 2.0 %					
	Fe-Si		0.0 % — 2.5 %					
	Fe - Mn		0.0 % — 1.0 %					
	DI Metal (Sintering heat)							
	Pig iron	Each Heat	30 % — 50 %					
	MS Scrap		20 % — 30 %					
	DI Foundry return		50 % — 20 %					
	Carburizer		1.0 % Max					
	Fe-Si		0.5 % Max					
	Fe-Mn		0.8 % Max					
	Copper		0.5 % Max (Optional)					
	CI Metal							
	Pig iron	Each Heat	00 % — 60 %					
	MS Scrap		15 % — 40 %					
	CI Foundry return		85 % — 00 %					
	Carburizer		0.3 % — 1.0 %					
	Fe-Si		0.4 % — 1.5 %					
	Fe-Mn		0.2 % — 1.5 %					
	Fe-Cr		0.4 % Max (optional)					
	Cu		0.6 % Max (optional)					
Sn	0.08 % Max (optional)							
Prepared By				Reviewed & Approved By :				



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QUALITY PLAN

SECTION : METAL PREPARATION, TAPPING & POURING

AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN	SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN	
MELTING (DI)	C.E.	Each Heat (Base Metal)	4.00 – 4.70 %	Visual	CE Analyser	SS-MLT	RBA/Fdy/MLT/R-02	Readjust	
	Carbon	„	3.60 – 4.00 %						
	Silicon	„	1.30 – 2.00 %						
	Tapping Temperature	„	1590 – 1490 °C						
	Fe-Si-Mg	Each Treatment ladle	1.0–1.8% / liquid metal						Immersion Pyrometer
	DI scrap / Boring	„	0.5–1.5% / liquid metal						Weighing Scale
	Treatment time	„	40 second Min						„
	During direct pouring								Watch
	Innoculation	Each pouring ladle	0.4–0.6% of liquid metal	Visual	Measured Spoon	MLT/R-03	Readjust		
	Pouring Temperature	3/heat	1460 – 1340 °C		Immersion Pyrometer	„			
	Pouring Time	Each treatment	8 minutes max after treatment		Hooter/Watch	MLT/R-07			
	Before transferring Mg treated metal to Press pour machine	Each Treatment ladle							
	Innoculation	Each mold	0.4–0.6% of liquid metal	Visual	Measured Spoon				
	Receiving Temperature (In treatment ladle to Press pour m/c)	Each Treatment ladle	1420 - 1470 °C		Immersion Pyrometer	MLT/R-07	Return to F/c		
	Transfer time	Each Treatment ladle	8 minutes max after treatment		Hooter/Watch	MLT/R-03			
	During pouring from Press pour m/c								
	Innoculation	Each mold	0.1 – 0.4% of liquid metal	As per flow gauge setting	MSI machine	MLT/R-08	Resaet		
	Pouring Temperature	Each mould	1460 – 1340 °C	Visual	Immersion Pyrometer	MLT/R-07	Stop pouring/readjust temperature, Relook pattern methoding		
	Pouring Time	1 / Each part	As per data bank		MSI machine	MLT/R-07			
	Sn, Cu (optional)	Each Heat	Sn : 0.01 – 0.07% Cu : 0.10 – 0.50%		Visual and Chemical Analysis	Spectro/Chemical Testing Instruments		SS-LAB	LAB/R-05B
Prepared By					Reviewed & Approved By :				



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SECTION : METAL PREPARATION, TAPPING & POURING

AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN	SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN			
MELTING (CI)	C.E.	Each Heat (Base Metal)	3.50 – 4.10 %	Visual	CE Analyser	SS-MLT	MLT/R-02	Readjust			
	Carbon	„	3.10 – 3.40 %								
	Silicon	„	1.30 – 1.80 %								
	Tapping Temperature	„	1500 – 1440 °C						Immersion Pyrometer	MLT/R-03	
	During direct pouring										
	Innoculation	Each pouring ladle	0.15–0.3% of liquid metal	Visual	Measured Spoon		SS-MLT	MLT/R-03	Readjust		
	Pouring Temperature	3/heat	1440 – 1330 °C		Immersion Pyrometer			„			
	Pouring Time	Each pouring ladle	9 minutes max after inoculation		Watch			„			
	Before transferring metal to Press pour machine										
	Innoculation	Each bull ladle	0.15–0.3% of liquid metal	Visual	Measured Spoon			SS-MLT	MLT/R-03	Readjust/Return to F/c	
	Receiving Temperature (In bull ladle to Press pour m/c)	Each bull ladle	1400 - 1470 °C		Immersion Pyrometer	MLT/R-07					
	Transfer time	Each bull ladle	9 minutes max after inoculation		Watch	MLT/R-03					
	During pouring from Press pour m/c										
	Innoculation	Each mold	0.1 – 0.4% of liquid metal	As per flow gauge setting	MSI machine	SS-LAB			MLT/R-08	Resaet	
	Pouring Temperature	Each mold	1440 – 1330 °C	Visual	Immersion Pyrometer				MLT/R-07	Stop pouring/readjust	
	Pouring Time	1 / Each part	As per data bank		MSI machine		„		Relook pattern methoding		
	Sn, Cu (optional)	Each Heat	Sn : 0.01 – 0.07%		Visual and Chemical Analysis		Spectro/Chemical Testing Instruments		LAB/R-05	Readjust	
			Cu : 0.10 – 0.50%								
	Prepared By				Reviewed & Approved By :						



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QUALITY PLAN

SECTION : FINAL METAL COMPOSITION / MATRIX

AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN	SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN
LAB	FOR (DI) METAL	Each Treatment				Lab	LAB / R – 05B	Notify Melting/ Plant Head
	C.E.		4.20 – 4.70%	Calculation	Spectro/Chemical Testing Instruments			
	Carbon		3.40 – 3.80%					
	Silicon		2.20 – 2.80%					
	Manganese		0.15 – 1.00%	Visual and Chemical Analysis				
	Sulphur		0.02 % max					
	Phosphorus		0.08 % max					
	Magnesium		0.03-0.06 %					
	Alloys (optional)		As per Requirement					
	FOR MATRIX							
Nodularity	80% min	Visual	Microscope					
Ferrite	As per Requirement		„					
Pearlite	As per Requirement		„					
FINAL METAL	FOR (CI) METAL	Each Ladle				Lab	LAB / R – 05B	Notify Melting/ Plant Head
	C.E.		3.50 – 4.10%	Calculation Visual and Chemical Analysis	Spectro/Chemical Testing Instruments			
	Carbon		2.90 – 3.40%					
	Silicon		1.50 – 2.30%					
	Manganese		0.40 – 1.00%					
	Sulphur		0.10% max					
	Phosphorus		0.12% max					
	Cromium		0.25% max					
	Copper		0.40% max					
	Tin		0.07% max					
	FOR MATRIX							
	Graphite Flakes(Type)		ASTM 'A'Type	Visual	Microscope			
	Pearlite		As per Requirement		„			
	Ferrite		„		„			
Prepared By				Reviewed & Approved By :				



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QUALITY PLAN

SECTION : PHYSICAL PROPERTIES

AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN	SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN	
LAB	DI	Each Heat	190 – 270 for – IS 1865 (SG-600/3)	Visual	Brinell Hardness Tester	Lab	LAB/R-05(B)	Notify Melting/ Plant Head	
	Casting Hardness		160 – 240 for – IS 1865 (SG-500/7)						
	(BHN)		170 – 230 as per BS EN 124 or ISO 1083 (500/7)						
			160 – 210 for – IS 1865 (SG 450/10)						
			201 Max for– IS 1865 (SG-400/12)						
			187 – 255 for – ASTM A 536 (Gr –80–55–06)						
			156 – 217 for – ASTM A 536 (Gr –65–45–12)						
			600 Mpa Min for – IS 1865 (SG-600/3)						
	Tensile Strength		500 Mpa Min for – IS 1865 (SG-500/7)						
			450 Mpa Min for – IS 1865 (SG 450/10)						
			400 Mpa Min for– IS 1865 (SG-400/12)						
			552 Mpa Min for – ASTM A 536 (Gr –80–55–06)						
			448 Mpa Min for – ASTM A 536 (Gr –65–45–12)						
			3 % Min for – IS 1865 (SG-600/3)						
	PHYSICAL PROPERTIES		Elongation						7 % Min.for – IS 1865 (SG-500/7)
									10 % Min for – IS 1865 (SG 450/10)
									12 % Min.for– IS 1865 (SG-400/12)
									6 % Min for – ASTM A 536 (Gr –80–55–06)
12 % Min for – ASTM A 536 (Gr –65–45–12)									
370 Mpa Min for – IS 1865 (SG-600/3)									
Yield Strength		320 Mpa Min for– IS 1865 (SG-500/7)							
		310 Mpa Min for – IS 1865 (SG 450/10)							
		250 Mpa Min for – IS 1865 (SG-400/12)							
		379 Mpa Min for – ASTM A 536 (Gr –80–55–06)							
		310 Mpa Min for – ASTM A 536 (Gr –65–45–12)							
		160 – 220 for – IS 210 (FG-200)							
CI	Casting Hardness (BHN)	180 – 220 for – IS 210 (FG-220)							
		180 – 230 for – IS 210 (FG-260)							
		180 – 230 for – IS 210 (FG-300)							
	Tensile Strength	200 Mpa Min for – IS 210 (FG-200)							
		200 Mpa Min as per BS EN 124 or ISO 185 (Gr.20)							
		220 Mpa Min for – IS 210 (FG-220)							
		260 Mpa Min for – IS 210 (FG-260)		Brinell Hardness Tester					
		300 Mpa Min for – IS 210 (FG-300)			UTS M/C				
Prepared By					Reviewed & Approved By :				



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QUALITY PLAN

SECTION : SHOT BLASTING & FETTLING

AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN	SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN
SHOT BLASTING & FETTLING	Shot Size	Each batch	0.7 - 1.2 mm	Measuring	Vernier Caliper	SS FTL	.....	Reject/
	Surface Finish	Each Casting	Sand free casting	Visual	Visual	"		
	Duration of blasting(Hanger type blasting machine)	Each batch	5 – 12 minutes	Visual	Timer	„	FLT/R-02B	Notify Plant Head /Rectify
	Duration of blasting Peen blasting machine	Each batch	5 – 20 mnutes	Visual	Timer	“	FLT/R-02B	„
<i>Prepared By</i>					Reviewed & Approved By :			



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QUALITY PLAN

SECTION : FINAL INSPECTION

AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN	SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN
QUALITY ASSURANCE (For Normal castings)	For RAW CASTING							
	Visual Defects	100%	No visual defects	Visual	-----	QA	----	Reject/Rework
	Blow hole	100%	No Blow hole	Visual	-----	"	----	"
	Shrinkage	100%	No Shrinkage	Visual	-----	"	----	"
	Cold shut	100%	No Cold shut	Visual	-----	"	----	"
	Specified Dimensions of each item.	One / lot of Production batch	As per Drawing dimension	Visual	Different Measuring Instruments	QA	QA/R-02	Reject/Rework
	Casting weight	One / lot of Production batch	As per p.o.weight	Weighing	Weighing Scale	"	QA/R-07	Notify Plant Head/Rectify
	Gauge Checking	As Required	As per gauge dimension	Visual	Gauge	"	----	Reject/Rework
	For MACHINED CASTING							
	Dimensions	As Per CP	As per Drawing dimension	Visual	Gauge / Fixture / Measuring Instrument	QA	QA/R-03	Reject/Rework
Prepared By					Reviewed & Approved By :			



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AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN		SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN				
Quality Assurance (Foundry)	For Manhole cover	Sample		As per Specification of EN 124-2:2015	Visual	Filler gauge,Venier Caliper,Depth gauge,Steel tape,Steel Scale	Inspection Foundry & Ware house	RBA/Fdy-1/QA/R-02-2	Check 3 random samples out of the lot, If found o.k., accept the whole lot If any one sample fails. Check 5 new random samples , If all the 5 samples are o.k. accept the whole lot. If any one of the 5 random samples found defective , reject the whole lot.				
	<u>Aspects of Inspection</u>	Size	Frequency										
	Clear opening	3	Supply / Receive Lot										
	Over base												
	Depth												
	Dimentions												
	Frame bearing area												
	Load bearing capacity												
	Permanent set												
	Securing of the cover / grating within the frame												
	Skid resistance												
	Child safety												
	Tilt test	3	When developed	As per the Customer Specification / Standard	Visual	Pull test machine,Vernier Caliper	Inspection Foundry & Ware house	RBA/Fdy-1/QA/R-25					
	Weight									As per P.O. Weight	Weighing	Weighing scale	RBA/Fdy-1/QA/R-02-2
	Pull test												RBA/Fdy-1/QA/R-26
Load	3 / Lot dispatched it will be repeated once in at least every six month or 1: 5000			By Application of Load	Load test m/c		Record No. of Customer Specific Requirement Matrix						
Painting (Epoxy ,CED,Powder coating,Phosphating)	One / Lot		As per customer requirement	Measurement	Viscosity, Coating thickness measuring instrument	Inspection ware house	RBA/Fdy/PHT/R- 03 and RBA/Fdy/CED/R- 03 & 04 & RBA/Fdy/PCT /R-01	Re-paint/ Re-coating/ Re-Phosphating					
Prepared By (QC Manager)					Reviewed & Approved By :								



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AREA	PARAMETERS TO BE CHECKED	INSPECTION PLAN	SPECIFICATION & TOLERANCES	METHOD OF INSPECTION	INSTRUMENT TO BE USED	RESPONSIBILITY	RECORDS	REACTION PLAN
CNC Shop/ Induction Hardening	<u>For Engg. Component</u>	Size						
	Visual Inspection of Castings	100%	As Per Drawing	As per the visual standard/Display	Standard	CNC Receiving Inspector	RBA/Fdy/CNC-QC/D- 01	Reject/Notify to QC Manager
	Machining of Castings	"	As per Machining Process check Sheet of every operation/Periodical Inspection Record	As per the list of Measuring Instruments	Vernier calliper, Height Gauge,Depth Gauge,Dial Gauge etc.	CNC Shop Incharge	RBA/Fdy/MC/D- 06 RBA/Fdy/MC/R- 08	Reject/Notify to QC Manager
	Dimensional Inspection	Every Lot	As Per Drawing	"	--do--	"	RBA/Fdy/CNC-QC/R- 02	--do--
	Induction Hardening	Once per day	As per the setting parameters	As per the Check Points & WI	Pressure Gauge,Vernier,Pyrometer, filler Gauge, Refractrometer, Polymer etc.	Incharge Heat treatment	RBA/Fdy/HT/R- 02 & R-07	Reject/Notify to QC Manager
	Tempering	100 % of total Lot	165°C	Visual Display	Visual Temp. Indicator	"	-----	-----
	MPI Testing	100 % of total Lot of Induction Hardening / As per customer Specific requirement	As per the setting parameters	As per the check Points Sheet & WI	MPI Machine	"	RBA/Fdy/HT/R- 04 & RBA/Fdy/LAB/R- 15	Reject/Notify to QC Manager
	DP Testing	Suspected Material of the lot MPI done	Visually	As per the Work Instruction	Chemical & Visual	"	-----	"
	HRC Hardness	Every after 2 Hours of production run	53 Min.	WI for HRC Hardness testing	HRC Hardness testing Machine	"	RBA/Fdy/WIO/LAB/D-25	Reject/Notify to QC Manager
	Micro Hardness	Every after 4 Hours of production run	Case depth-0.51 min	First piece approval Report	Check Points in approval report	"	RBA/Fdy/HT /R-09	Reject/Notify to QC Manager
Painting (Epoxy ,CED,Powder coating,Phosphating)	One / Lot	As per customer requirement	Measurement/As per the check Point	Viscosity, Coating thickness measuring instrument	Inspection ware house/ LAB	RBA/Fdy/PHT/R- 03 and RBA/Fdy/CED/R- 03 & 04 & RBA/Fdy/PCT /R-01	Re-paint/ Re-coating/ Re-Phosphating	
Prepared By					Reviewed & Approved By :			

Vedlegg 6



RBA Ferro Industries Pvt.Ltd - CO2 Reduction by Solar PV System

Date	CO2 Reduction (Kg)	CO2 Reduction (Ton)
01/07/2019	3717.97	3.72
01/08/2019	72336.15	72.34
01/09/2019	77653.12	77.65
01/10/2019	82420.77	82.42
01/11/2019	72287.26	72.29
01/12/2019	74115.85	74.12
01/01/2020	76216.81	76.22
01/02/2020	88209.25	88.21
01/03/2020	80909.00	80.91
01/04/2020	61457.94	61.46
01/05/2020	54298.75	54.30
01/06/2020	90021.19	90.02
01/07/2020	74078.87	74.08
Total Reduction	907722.93	907.72

Vedlegg 7



CERTIFICAZIONE DI PRODOTTO

PRODUCT CERTIFICATION

CERTIFICATE N°

CERTIFICATO N°

P534

COMPANY

AZIENDA

RBAFerro Industries Private Limited

2/6 Sarat Bose Road, Central Plaza, Suite 808, Kolkata
700020 - West Bengal, India

PRODUCTION UNIT

UNITA' PRODUTTIVA

NH6, Village and Post Office: Prasastha, Police St - 711302 West Bengal India

SCOPE OF THE CERTIFICATE

OGGETTO DEL CERTIFICATO

**GULLY TOPS AND MANHOLE TOPS FOR VEHICULAR AND
PEDESTRIAN AREAS**

*Dispositivi di coronamento e chiusura per zone di circolazione utilizzate da
pedoni e da veicoli*

REFERENCE STANDARDS

NORME DI RIFERIMENTO

EN 124-1:2015, EN 124-2:2015

CERTIFICATION SYSTEM

SISTEMA DI CERTIFICAZIONE

*General Agreement Conditions for the product certification – CP DOC 229
Condizioni Generali di Contratto per la Certificazione di prodotto - CP DOC 229*

*Particular rules for gully tops and manhole tops - CP DOC 243
Regolamento particolare per dispositivi di coronamento e chiusura – CP DOC 243*

*Instructions for the application of the EN 124:2015 - UNI/TR 11671:2017
Indicazioni per l'applicazione della serie EN 124:2015 – UNI/TR 11671:2017*

PRODUCTS

PRODOTTI

3307011 RBAD-1441

Manhole Top EN 124-2 – D400 – 2/2 – 614 – F – RP

First Issue

Current Issue

Expiry Date

Prima Emissione

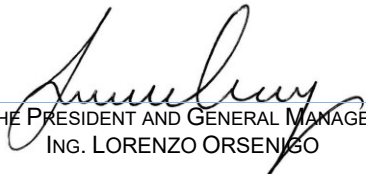
Emissione Corrente

Scadenza

11/05/2022

11/05/2022

31/12/2022


THE PRESIDENT AND GENERAL MANAGER
ING. LORENZO ORSENIKO

Vedlegg 8

TEST REPORT

Report No. : MAN:HL:1448001096

ISSUE DATE: 14th March, 2023



RBA FERRO INDUSTRIES PVT LTD.
 498-50. NH6, PRASASTHA, KOLKATA,
 WEST BENGAL,-711302
 INDIA
CONTACT PERSON: HARSHVARDHAN AGARWAL

THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED AND IDENTIFIED BY/ON BEHALF OF THE CUSTOMER AS :

SAMPLE DESCRIPTION	SYN. ENA. MATT FINISH BROWN PAINT
COLOUR	BROWN
ORDER NO.	50116915
END USE	TO COAT MANHOLE COVER
BUYER	BRODENE DAHL
BUYING HOUSE	SAINT GOBAIN
COUNTRY OF ORIGIN	INDIA
COUNTRY OF DESTINATION	NORWAY
CONDITION OF SAMPLE	COMPLETE AND OK

THE LOCATION OF PERFORMANCE OF THE LABORATORY ACTIVITIES: SGS CHENNAI LABORATORY

LAB PROVIDED DETAILS:

SAMPLE RECD ON	22/02/2023
TEST PERFORMING DATE	22/02/2023 TO 13/03/2023

SUMMARY OF TEST RESULT:

TEST REQUESTED	CONCLUSION
1. ORGANO TIN COMPOUNDS (OTC)	SEE RESULT
2. TOTAL LEAD CONTENT	SEE RESULT
3. TOTAL CADMIUM CONTENT	SEE RESULT
4. PHTHALATE CONTENT TEST	SEE RESULT
5. POLYCYCLIC AROMATIC HYDROCARBONS (PAHS) CONTENT	SEE RESULT
6. Two hundred and thirty-three (233) substances in the Candidate List of Substances of Very High Concern (SVHC) for authorization published by European Chemicals Agency (ECHA) on and before Jan 17, 2023 regarding Regulation (EC) No 1907/2006 concerning the REACH.	--
According to the specified scope and analytical techniques, concentrations of tested SVHC are < 0.1% (w/w) in the submitted sample. Concentrations of tested SVHC with specific concentration limit (SCL) # < 0.1% (w/w) set in Regulation (EC) No. 1272/2008 and its amendments are < reporting limit. # Please refer to Note 2 on the following page	PASS

TEST(S) RESULT & METHOD: PLEASE REFER TO NEXT PAGE(S). RESULTS APPLY TO THE SAMPLE AS RECEIVED

Per Pro SGS India Pvt. Ltd.



SANDIP BHUSHAN (Technical Manager)
Authorized Signatory

Email your Test Report Related Enquiries at Feedback.HLT@sgs.com

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TEST RESULT :

1. ORGANO TIN COMPOUNDS (OTC):-

METHOD: With reference to ISO/TS 16179: 2012. Analysis was conducted by GC-MS.

Organotin	TEST RESULT (% by weight of tin)	Recommended Max. Limit (%)
Tributyltin (TBT) Calculated as tin	Not Detected	--
Triphenyltin (TPhT) Calculated as tin	Not Detected	--
Tricyclohexyltin (TCyT) Calculated as tin	Not Detected	--
Trioctyltin (TOT) Calculated as tin	Not Detected	--
Tripropyltin (TPT) Calculated as tin	Not Detected	--
Trimethyltin (TMT) Calculated as tin	Not Detected	--
Dibutyltin (DBT) Calculated as tin	Not Detected	--
Diocetyltn (DOT) Calculated as tin	Not Detected	--

Detection Limit: 0.01 %

Tested Item: SYN. ENA. MATT FINISH BROWN PAINT

Note:

- Testing has been subcontracted to SGS Chennai lab.

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2. TOTAL LEAD CONTENT:

Method: With reference to EN 16711-1: 2015. Analysis was conducted by ICP-MS.

Test Name	CAS-No.	Test Result (mg/kg)	Requirement (mg/kg)
Total Lead Content	7439-92-1	Not Detected	/

Detection Limit: 20 mg/kg

Tested Item: SYN. ENA. MATT FINISH BROWN PAINT

Note:

- mg/kg = milligram per kilogram
- Testing has been subcontracted to SGS Chennai lab.

3. TOTAL CADMIUM CONTENT:

Method: With reference to EN 16711-1: 2015. Analysis was conducted by ICP-MS.

TEST NAME	CAS-No.	TEST RESULT (mg/kg)	REQUIREMENT (mg/kg)
Total Cadmium Content	7440-43-9	Not Detected	/

Detection Limit: 20 mg/kg

Tested Item: SYN. ENA. MATT FINISH BROWN PAINT

Note:

- mg/kg = milligram per kilogram
- Testing has been subcontracted to SGS Chennai lab.

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4. PHTHALATE CONTENT TEST:

Method : With reference to ISO 14389:2014. Analysis was conducted by GC-MS.

Test Name	CAS NO.	Test Result (mg/kg)	Requirement (%)
Dibutyl Phthalate (DBP)	84-74-2	Not Detected	/
Benzylbutyl Phthalate (BBP)	85-68-7	Not Detected	
Bis-(2-ethylhexyl) Phthalate (DEHP)	117-81-7	Not Detected	
Diisooheptyl phthalate (DIHP)	71888-89-6	Not Detected	
Bis (2-methoxyethyl) phthalate (DMEP)	117-82-8	Not Detected	
Bis-isopentyl phthalate (DiPP)	605-50-5	Not Detected	
Di-n-pentylphthalate (DnPP)	84-66-2	Not Detected	
Di-n-Hexylphthalate (DnHP)	84-75-3	Not Detected	
Diisobutyl phthalate (DIBP)	84-69-5	Not Detected	
Diisononyl Phthalate (DINP)	28553-12-0	Not Detected	
Di-n-octyl Phthalate (DNOP)	117-84-0	Not Detected	
Diisodecyl Phthalate (DIDP)	26761-40-0	Not Detected	

Detection Limit: 0.01 mg/kg

Tested Item: SYN. ENA. MATT FINISH BROWN PAINT

Note:

- Testing has been subcontracted to SGS Chennai lab.

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5. POLYCYCLIC AROMATIC HYDROCARBONS (PAHS) CONTENT (REACH) ANNEX XVII ENTRY 50 PARAGRAPH 5 TO 8):

Method : With reference to AfPS GS 2019:01 PAK ..Analysis was conducted by Gas Chromatography-Mass Spectrometry.

Test Item	CAS Number	Result (mg/kg)	Permissible Limit (mg/kg)
Benz [a] anthracene	56-55-3	Not Detected	--
Chrysene	218-01-9	Not Detected	--
Benz [e] acephenanthrylene	205-99-2	Not Detected	--
Benzo [k] fluoranthene	207-08-9	Not Detected	--
Benzo [j] fluoranthene	205-82-3	Not Detected	--
Benzo [a] pyrene	50-32-8	Not Detected	--
Benzo [e] pyrene	192-97-2	Not Detected	--
Dibenz[a,h] anthracene	53-70-3	Not Detected	--
Sum of 8 PAH	--	Not Detected	--

Tested Item: SYN. ENA. MATT FINISH BROWN PAINT

Detection Limit: 1 mg/kg

Note:

- mg/kg = milligram per kilogram
- Testing has been subcontracted to SGS Chennai lab.



6. Two hundred and thirty-three (233) substances in the Candidate List of Substances of Very High Concern (SVHC) for authorization published by European Chemicals Agency (ECHA) on and before Jan 17, 2023 regarding Regulation (EC) No 1907/2006 concerning the REACH.

Remark :

1. The chemical analysis of specified SVHC is performed by means of currently available analytical techniques against the following SVHC related documents published by ECHA:

- <https://echa.europa.eu/candidate-list-table>(Candidate list)

These lists are under evaluation by ECHA and may subject to change in the future.

2. If a SVHC is found greater than or equal to 0.1% (w/w) and/or the specific concentration limit which is set in Regulation (EC) No 1272/2008 and its amendments, client is suggested to prepare a Safety Data Sheet (SDS) against the SVHC to comply with the supply chain communication obligation under Regulation (EC) No 1907/2006, in which:

- a substance that is classified as hazardous under the CLP Regulation (EC) No 1272/2008.
- a mixture that is classified as hazardous under the CLP Regulation (EC) No 1272/2008, when it contains a substance with concentration equal to, or greater than the classification limit as set in Regulation (EC) No. 1272/2008; or
- a mixture is not classified as hazardous under the CLP Regulation (EC) No 1272/2008, but contains either:
 - (a) a substance posing human health or environmental hazards in an individual concentration of ≥ 1 % by weight for mixtures that are solid or liquids (i.e., non-gaseous mixtures) or ≥ 0.2 % by volume for gaseous mixtures; or
 - (b) a substance that is PBT or vPvB in an individual concentration of ≥ 0.1 % by weight for mixtures that are solid or liquids (i.e., non-gaseous mixtures); or
 - (c) a substance on the SVHC candidate list (for reasons other than those listed above), in an individual concentration of ≥ 0.1 % by weight for non-gaseous mixtures; or
 - (d) a substance for which there are Europe-wide workplace exposure limits

Test Sample:

Sample description: Liquid chemical (Black)

Tested Item: SYN. ENA. MATT FINISH BROWN PAINT

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Test Method :

SGS In-House method - Analyzed by ICP-OES, GC-MS, UV-VIS, HPLC-DAD, HPLC-MS and colorimetric method.

Test Result :

No.	Substance Name	CAS No./ EC No.	RL (%) / SCL (%)#	Concentration (%)
-	All tested SVHC	-	-	ND

Notes :

1. RL = Reporting Limit. All RL are based on homogenous material.
ND = Not detected (lower than RL)
2. # SCL = Specific Concentration Limit. All SCL are set out in Regulation (EC) No 1272/2008 and its amendments. Specific concentration limits and generic concentration limits are limits assigned to a substance indicating a threshold at or above which the presence of that substance in another substance or in a mixture as an identified impurity, additive or individual constituent leads to the classification of the substance or mixture as hazardous. The SVHCs with SCL values <0.1% are specified in the test result tables.

* The test result is based on the calculation of selected element(s) / marker(s) and to the worst-case scenario.

The client is advised to review the chemical formulation to ascertain above metal substances present in the article.

RL = 0.001% is evaluated for element (i.e. cobalt, arsenic, lead, chromium (VI), aluminum, zirconium, boron, strontium, zinc, antimony, titanium, barium and cadmium respectively), except molybdenum RL= 0.0005%.

▼ Regulation (EC) No 1272/2008 Classification, Labelling and Packaging of Substances and Mixtures, and its amendments.

^a Client has the obligation to comply with the conditions of Authorization of substance of very high concern included in the Annex XIV of the Regulation (EC) No. 1907/2006, unless the use has been exempted from Authorization. Article 56(6) of Regulation (EC) No. 1907/2006 specified the concentration limit requirement of Authorization of SVHC in mixture.

The ECHA SVHC authorization list is available at

<https://echa.europa.eu/authorisation-list>

This list is under evaluation by ECHA and may subject to change in the future

3. The table above only shows detected SVHC, and SVHC that below RL are not reported. Please refer to Appendix for the full list of tested SVHC.
4. Testing has been subcontracted Chennai lab.
5. Above all testing has been performed as per customer request.

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APPENDIX

No.	Substance Name	CAS No./ EC No.	RL (%) SCL(%)#	No.	Substance Name	CAS No./ EC No.	RL (%) SCL(%)#
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Oct 28, 2008							
1	4,4'-Diaminodiphenylmethane (MDA) ^a	101-77-9/ 202-974-4	0.010 / -	2	5-tert-butyl-2,4,6-trinitro- <i>m</i> -xylene (musk xylene) ^a	81-15-2/ 201-329-4	0.010 / -
3	Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8/ 287-476-5	0.010 / -	4	Anthracene	120-12-7/ 204-371-1	0.010 / -
5	Benzyl butyl phthalate (BBP) ^a	85-68-7/ 201-622-7	0.010 / -	6	Bis(2-ethylhexyl)phthalate (DEHP) ^a	117-81-7/ 204-211-0	0.010 / -
7	Bis(tributyltin)oxide (TBTO)	56-35-9/ 200-268-0	0.010 / -	8	Cobalt dichloride*	7646-79-9/ 231-589-4	0.001 / 0.01▼
9	Diarsenic pentaoxide ^a	1303-28-2/ 215-116-9	0.001 / -	10	Diarsenic trioxide ^a	1327-53-3/ 215-481-4	0.001 / -
11	Dibutyl phthalate (DBP) ^a	84-74-2/ 201-557-4	0.010 / -	12	Hexabromocyclododecane (HBCDD)	-	0.010 / -
13	Lead hydrogen arsenate*	7784-40-9/ 232-064-2	0.001 / -	14	Sodium dichromate ^a	7789-12-0 10588-01-9/ 234-190-3	0.001 / -
15	Triethyl arsenate*	15606-95-8/ 427-700-2	0.001 / -				
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jan 13, 2010							
16	2,4-Dinitrotoluene ^a	121-14-2/ 204-450-0	0.010 / -	17	Anthracene oil ^a	90640-80-5/ 292-602-7	0.010 / -
18	Anthracene oil, anthracene paste*	90640-81-6/ 292-603-2	0.010 / -	19	Anthracene oil, anthracene paste, anthracene fraction*	91995-15-2/ 295-275-9	0.010 / -
20	Anthracene oil, anthracene paste; distn. Lights*	91995-17-4/ 295-278-5	0.010 / -	21	Anthracene oil, anthracene-low*	90640-82-7/ 292-604-8	0.010 / -
22	Diisobutyl phthalate ^a	84-69-5/ 201-553-2	0.010 / -	23	Lead chromate molybdate sulfate red (C.I. Pigment Red 104) ^a	12656-85-8/ 235-759-9	0.001 / -
24	Lead chromate ^a	7758-97-6/ 231-846-0	0.001 / -	25	Lead sulfochromate yellow (C.I. Pigment Yellow 34) ^a	1344-37-2/ 215-693-7	0.001 / -
26	Pitch, coal tar, high temp. ^a	65996-93-2/ 266-028-2	0.00025 / 0.00025▼	27	Tris(2-chloroethyl)phosphate ^a	115-96-8/ 204-118-5	0.010 / -
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Mar 30, 2010							
28	Acrylamide	79-06-1/ 201-173-7	0.010 / -				
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jun 18, 2010							
29	Ammonium dichromate ^a	7789-09-5/ 232-143-1	0.001 / -	30	Boric acid*	-	0.001 / -
31	Disodium tetraborate, anhydrous*	1303-96-4 1330-43-4 12179-04-3/ 215-540-4	0.001 / -	32	Potassium chromate ^a	7789-00-6/ 232-140-5	0.001 / -
33	Potassium dichromate ^a	7778-50-9/ 231-906-6	0.001 / -	34	Sodium chromate ^a	7775-11-3/ 231-889-5	0.001 / -

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No.	Substance Name	CAS No./ EC No.	RL (%) SCL(%)#	No.	Substance Name	CAS No./ EC No.	RL (%) SCL(%)#
35	Tetraboron disodium heptaoxide, hydrate*	12267-73-1/ 235-541-3	0.001 / -	36	Trichloroethylene ^a	79-01-6/ 201-167-4	0.010 / -
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Dec 15, 2010							
37	2-Ethoxyethanol	110-80-5/ 203-804-1	0.010 / -	38	2-Methoxyethanol	109-86-4/ 203-713-7	0.010 / -
39	Acids generated from chromium trioxide and their oligomers	-	0.001 / -	40	Chromium trioxide ^{a*}	1333-82-0/ 215-607-8	0.001 / -
41	Cobalt(II) carbonate*	513-79-1/ 208-169-4	0.001 / 0.01▼	42	Cobalt(II) diacetate*	71-48-7/ 200-755-8	0.001 / 0.01▼
43	Cobalt(II) dinitrate*	10141-05-6/ 233-402-1	0.001 / 0.01▼	44	Cobalt(II) sulphate*	10124-43-3/ 233-334-2	0.001 / 0.01▼
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jun 20, 2011							
45	1,2,3-Trichloropropane	96-18-4/ 202-486-1	0.010 / -	46	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich ^a	71888-89-6/ 276-158-1	0.010 / -
47	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters ^a	68515-42-4/ 271-084-6	0.010 / -	48	1-Methyl-2-pyrrolidone	872-50-4/ 212-828-1	0.010 / -
49	2-Ethoxyethyl acetate	111-15-9/ 203-839-2	0.010 / -	50	Hydrazine	7803-57-8 302-01-2/ 206-114-9	0.010 / -
51	Strontium chromate ^{a*}	7789-06-2/ 232-142-6	0.001 / -				
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Dec 19, 2011							
52	1,2-Dichloroethane ^a	107-06-2/ 203-458-1	0.010 / -	53	2,2'-dichloro-4,4'-methylenedianiline (MOCA) ^a	101-14-4/ 202-918-9	0.010 / -
54	2-Methoxyaniline	90-04-0/ 201-963-1	0.010 / -	55	4-(1,1,3,3-tetramethylbutyl)phenol	140-66-9/ 205-426-2	0.010 / 0.025▼
56	Aluminosilicate Refractory Ceramic Fibres*	-	0.010 / -	57	Arsenic acid ^{a*}	7778-39-4/ 231-901-9	0.001
58	Bis(2-methoxyethyl) ether ^a	111-96-6/ 203-924-4	0.010 / -	59	Bis(2-methoxyethyl) phthalate ^a	117-82-8/ 204-212-6	0.010 / -
60	Calcium arsenate*	7778-44-1/ 231-904-5	0.001 / -	61	Dichromium tris(chromate) ^{a*}	24613-89-6/ 246-356-2	0.001 / -
62	Formaldehyde, oligomeric reaction products with aniline (technical MDA) ^a	25214-70-4/ 500-036-1	0.010 / -	63	Lead diazide*	13424-46-9/ 236-542-1	0.001 / -
64	Lead dipicrate*	6477-64-1/ 229-335-2	0.001 / -	65	Lead styphnate*	15245-44-0/ 239-290-0	0.001 / -
66	N,N-dimethylacetamide (DMAC)	127-19-5/ 204-826-4	0.010 / -	67	Pentazinc chromate octahydroxide ^{a*}	49663-84-5/ 256-418-0	0.001 / -
68	Phenolphthalein	77-09-8/ 201-004-7	0.010 / -	69	Potassium hydroxyoctaoxodizincatedichromate ^{e*}	11103-86-9/ 234-329-8	0.001 / -
70	Trilead diarsenate*	3687-31-8/ 222-979-5	0.001 / -	71	Zirconia Aluminosilicate Refractory Ceramic Fibres*	650-017-00-8 (Index no.)	0.001 / -

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No.	Substance Name	CAS No./ EC No.	RL (%) SCL(%)#	No.	Substance Name	CAS No./ EC No.	RL (%) SCL(%)#
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jun 18, 2012							
72	[4-[[4-anilino-1-naphthyl][4-(dimethylamino)phenyl]methylene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Blue 26)	2580-56-5/ 219-943-6	0.010 / -	73	[4-[4,4'-bis(dimethylamino)benzhydrylidene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Violet 3)	548-62-9/ 208-953-6	0.010 / -
74	1,2-bis(2-methoxyethoxy) ethane (TEGDME; triglyme)	112-49-2/ 203-977-3	0.010 / -	75	1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME)	110-71-4/ 203-794-9	0.010 / -
76	4,4'-bis(dimethylamino) benzophenone (Michler's Ketone)	90-94-8/ 202-027-5	0.010 / -	77	4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol	561-41-1/ 209-218-2	0.010 / -
78	Diboron trioxide*	1303-86-2/ 215-125-8	0.001 / -	79	Formamide	75-12-7/ 200-842-0	0.010 / -
80	Lead(II) bis(methanesulfonate)*	17570-76-2/ 401-750-5	0.001 / -	81	N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base)	101-61-1/ 202-959-2	0.010 / -
82	1,3,5-Tris(oxiran-2-ylmethyl)-1,3,5-triazinane-2,4,6-trione (TGIC)	2451-62-9/ 219-514-3	0.010 / -	83	α,α-Bis[4-(dimethylamino)phenyl]-4(phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4)	6786-83-0/ 229-851-8	0.010 / -
84	1,3,5-tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione (β-TGIC)	59653-74-6/ 423-400-0	0.010 / -				
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Dec 19, 2012							
85	[Phthalato(2-)]dioxotrilead *	69011-06-9/ 273-688-5	0.001 / -	86	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear ^a	84777-06-0/ 284-032-2	0.010 / -
87	1,2-Diethoxyethane	629-14-1/ 211-076-1	0.010 / -	88	1-Bromopropane ^a	106-94-5/ 203-445-0	0.010 / -
89	3-Ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	143860-04-2/ 421-150-7	0.010 / -	90	4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated ^a	-	0.010 / -
91	4,4'-Methylenedi- <i>o</i> -toluidine	838-88-0/ 212-658-8	0.010 / -	92	4,4'-oxydianiline and its salts	-	0.010 / -
93	4-Aminoazobenzene	60-09-3/ 200-453-6	0.010 / -	94	4-Methyl- <i>m</i> -phenylenediamine	95-80-7/ 202-453-1	0.010 / -
95	4-Nonylphenol, branched and linear	-	0.010 / -	96	6-Methoxy- <i>m</i> -toluidine	120-71-8/ 204-419-1	0.010 / -
97	Acetic acid, lead salt, basic*	51404-69-4/ 257-175-3	0.001 / -	98	Biphenyl-4-ylamine	92-67-1/ 202-177-1	0.010 / -
99	Bis(pentabromophenyl) ether (DecaBDE)	1163-19-5/ 214-604-9	0.010 / -	100	C,C'-azodi(formamide) (ADCA)	123-77-3/ 204-650-8	0.010 / -
101	Dibutyltin dichloride (DBTC)	683-18-1/ 211-670-0	0.010 / 0.01▼	102	Diethyl sulphate	64-67-5/ 200-589-6	0.010 / -
103	Diisopentylphthalate (DIPP) ^a	605-50-5/ 210-088-4	0.010 / -	104	Dimethyl sulphate	77-78-1/ 201-058-1	0.010 / 0.01▼
105	Dinoseb (6-sec-butyl-2,4-dinitrophenol)	88-85-7/ 201-861-7	0.010 / -	106	Dioxobis(stearato)trilead*	12578-12-0/ 235-702-8	0.001 / -
107	Fatty acids, C16-18, lead salts*	91031-62-8/ 292-966-7	0.001 / -	108	Furan	110-00-9/ 203-727-3	0.010 / -

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109	Henicosfluoroundecanoic acid	2058-94-8/ 218-165-4	0.010 / -	110	Heptacosfluorotetradecanoic acid	376-06-7/ 206-803-4	0.010 / -
111	Cyclohexane-1,2-dicarboxylic anhydride	-	0.010 / -	112	Hexahydromethylphthalic anhydride	-	0.010 / -
113	Lead bis(tetrafluoroborate)*	13814-96-5/ 237-486-0	0.001 / -	114	Lead cyanamidate*	20837-86-9/ 244-073-9	0.001 / -
115	Lead dinitrate*	10099-74-8/ 233-245-9	0.001 / -	116	Lead monoxide*	1317-36-8/ 215-267-0	0.001 / -
117	Lead oxide sulphate*	12036-76-9/ 234-853-7	0.001 / -	118	Lead tetroxide*	1314-41-6/ 215-235-6	0.001 / -
119	Lead titanium trioxide*	12060-00-3/ 235-038-9	0.001 / -	120	Lead titanium zirconium oxide*	12626-81-2/ 235-727-4	0.001 / -
121	Methoxyacetic acid	625-45-6/ 210-894-6	0.010 / -	122	N,N-Dimethylformamide	68-12-2/ 200-679-5	0.010 / -
123	N-Methylacetamide	79-16-3/ 201-182-6	0.010 / -	124	N-Pentyl-isopentylphthalate ^o	776297-69-9 /-	0.010 / -
125	o-Aminoazotoluene	97-56-3/ 202-591-2	0.010 / -	126	o-Toluidine	95-53-4/ 202-429-0	0.010 / -
127	Pentacosfluorotridecanoic acid	72629-94-8/ 276-745-2	0.010 / -	128	Pentalead tetraoxide sulphate*	12065-90-6/ 235-067-7	0.001 / -
129	Methyloxirane (Propylene oxide)	75-56-9/ 200-879-2	0.010 / -	130	Pyrochlore, antimony lead yellow*	8012-00-8/ 232-382-1	0.001 / -
131	Silicic acid, barium salt, lead-doped*	68784-75-8/ 272-271-5	0.001 / -	132	Silicic acid, lead salt*	11120-22-2/ 234-363-3	0.001 / -
133	Sulfurous acid, lead salt, dibasic*	62229-08-7/ 263-467-1	0.001 / -	134	Tetraethyllead*	78-00-2/ 201-075-4	0.001 / -
135	Tetralead trioxide sulphate*	12202-17-4/ 235-380-9	0.001 / -	136	Tricosfluorododecanoic acid	307-55-1/ 206-203-2	0.010 / -
137	Trilead bis(carbonate)dihydroxide*	1319-46-6/ 215-290-6	0.001 / -	138	Trilead dioxide phosphonate*	12141-20-7/ 235-252-2	0.001 / -

Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jun 20, 2013

139	4-Nonylphenol, branched and linear, ethoxylated ^o	-	0.010 / -	140	Ammoniumpentadecafluoro octanoate (APFO)	3825-26-1/ 223-320-4	0.010 / -
141	Cadmium	7440-43-9/ 231-152-8	0.001 / -	142	Cadmium oxide*	1306-19-0/ 215-146-2	0.001 / -
143	Dipentyl phthalate (DPP) ^o	131-18-0/ 205-017-9	0.010 / -	144	Pentadecafluorooctanoic acid (PFOA)	335-67-1/ 206-397-9	0.010 / -

Candidate List of Substances of Very High Concern (SVHC) for authorization published on Dec 16, 2013

145	Cadmium sulphide*	1306-23-6/ 215-147-8	0.001 / -	146	Diethyl phthalate	84-75-3/ 201-559-5	0.010 / -
147	Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28)	573-58-0/ 209-358-4	0.010 / -	148	Disodium 4-amino-3-[[4'-[(2,4-diaminophenyl)azo][1,1'-biphenyl]-4-yl]azo]-5-hydroxy-6-(phenylazo)naphthalene-2,7-disulphonate (C.I. Direct Black 38)	1937-37-7/ 217-710-3	0.010 / -

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149	Imidazolidine-2-thione; 2-imidazoline-2-thiol	96-45-7/ 202-506-9	0.010 / -	150	Lead di(acetate)*	301-04-2/ 206-104-4	0.001 / -
151	Trixylyl phosphate	25155-23-1/ 246-677-8	0.010 / -				
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jun 16, 2014							
152	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear	68515-50-4/ 271-093-5	0.010 / -	153	Cadmium chloride*	10108-64-2/ 233-296-7	0.001 / 0.01▼
154	Sodium perborate; perboric acid, sodium salt*	-	0.001 / -	155	Sodium peroxometaborate*	7632-04-4/ 231-556-4	0.001 / -
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Dec 17, 2014							
156	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)	3846-71-7 / 223-346-6	0.010 / -	157	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)	25973-55-1 / 247-384-8	0.010 / -
158	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate; DOTE	15571-58-1 / 239-622-4	0.010 / -	159	Reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (reaction mass of DOTE and MOTE)	-	0.010 / -
160	Cadmium fluoride*	7790-79-6 / 232-222-0	0.001 / 0.01▼	161	Cadmium sulphate*	10124-36-4; 31119-53-6 / 233-331-6	0.001 / 0.01▼
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jun15, 2015							
162	1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters or mixed decyl and hexyl and octyl diesters	-	0.010 / -	163	5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [1], 5-sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [2] [covering any of the individual stereoisomers of [1] and [2] or any combination thereof]	-	0.010 / -
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Dec 17, 2015,							
164	1,3-propanesultone	1120-71-4 / 214-317-9	0.010 / 0.01▼	165	2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327)	3864-99-1 / 223-383-8	0.010 / -
166	2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350)	36437-37-3 / 253-037-1	0.010 / -	167	Nitrobenzene	98-95-3 / 202-716-0	0.010 / -
168	Perfluorononan-1-oi-c-acid and its sodium and ammonium salts (PFNA)	-	0.010 / -				
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jun 20, 2016							
169	Benzo[def]chrysene (Benzo[a]pyrene)	50-32-8 / 200-028-5	0.010 / 0.01▼				
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jan 12, 2017							

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No.	Substance Name	CAS No./ EC No.	RL (%) SCL(%)#	No.	Substance Name	CAS No./ EC No.	RL (%) SCL(%)#
170	4,4'-Isopropylidenediphenol (Bisphenol A)	80-05-7 / 201-245-8	0.010 / -	171	4-Heptylphenol, branched and linear	-	0.010 / -
172	Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts	-	0.010 / -	173	p-(1,1-dimethylpropyl)phenol	80-46-6 / 201-280-9	0.010 / -
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jul 7, 2017							
174	Perfluorohexane-1-sulphonic acid and its salts	-	0.010 / -				
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jan 15, 2018							
175	Benz[a]anthracene	56-55-3; 1718-53-2/ 200-280-6	0.010 / -	176	Cadmium carbonate*	513-78-0/ 208-168-9	0.001 / -
177	Cadmium hydroxide*	21041-95-2/ 244-168-5	0.001 / -	178	Cadmium nitrate*	10325-94-7/ 233-710-6	0.001 / 0.01▼
179	Chrysene	218-01-9; 1719-03-5/ 205-923-4	0.010 / -	180	1,6,7,8,9,14,15,16,17,17,18,18-Dodecachloropentacyclo [12.2.1.16,9.02,13.05,10] octadeca-7,15-diene ("Dechlorane Plus"™)	-	0.010 / -
181	Reaction products of 1,3,4-thiadiazolidine-2,5-dithione, formaldehyde and 4-heptylphenol, branched and linear (RP-HP)	-	0.010 / -				
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jun 27, 2018							
182	Benzene-1,2,4-tricarboxylic acid 1,2 anhydride (TMA)	552-30-7 / 209-008-0	0.010 / -	183	Benzo[ghi]perylene	191-24-2 / 205-883-8	0.010 / -
184	Decamethylcyclopentasiloxane (D5)	541-02-6 / 208-764-9	0.010 / -	185	Dicyclohexyl phthalate (DCHP)	84-61-7 / 201-545-9	0.010 / -
186	Disodium octaborate*	12008-41-2 / 234-541-0	0.001 / -	187	Dodecamethylcyclohexasiloxane (D6)	540-97-6 / 208-762-8	0.010 / -
188	Ethylenediamine (EDA)	107-15-3 / 203-468-6	0.010 / -	189	Lead	7439-92-1 / 231-100-4	0.001 / 0.03▼
190	Octamethylcyclotetrasiloxane (D4)	556-67-2 / 209-136-7	0.010 / -	191	Terphenyl, hydrogenated	61788-32-7 / 262-967-7	0.010 / -
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jan 15, 2019							
192	2,2-Bis(4'-hydroxyphenyl)-4-methylpentane	6807-17-6 / 401-720-1	0.010 / -	193	Benzo[k]fluoranthene	207-08-9 / 205-916-6	0.010 / -
194	Fluoranthene	206-44-0 / 205-912-4	0.010 / -	195	Phenanthrene	85-01-8 / 201-581-5	0.010 / -
196	Pyrene	129-00-0 / 204-927-3	0.010 / -	197	1,7,7-trimethyl-3-(phenylmethylene)bicyclo[2.2.1]heptan-2-one	15087-24-8 / 239-139-9	0.010
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jul 16, 2019							
198	2,3,3,3-Tetrafluoro-2-(heptafluoropropoxy)propionic acid, its salts and its acyl halides	-	0.010 / -	199	2-Methoxyethyl acetate	110-49-6 / 203-772-9	0.010 / -

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200	Tris(4-nonylphenyl, branched and linear) phosphite (TNPP) with ≥ 0.1% w/w of 4-nonylphenol, branched and linear (4-NP)	-	0.010 / -	201	4-tert-butylphenol	98-54-4 / 202-679-0	0.010 / -
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jan 16, 2020							
202	2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone	119313-12-1 / 404-360-3	0.010 / -	203	2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5 / 400-600-6	0.010 / -
204	Diisohexyl phthalate	71850-09-4 / 276-090-2	0.010 / -	205	Perfluorobutane sulfonic acid (PFBS) and its salts	-	0.010 / -
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jun 25, 2020							
206	1-Vinylimidazole	1072-63-5 / 214-012-0	0.010 / 0.03▼	207	2-Methylimidazole	693-98-1 / 211-765-7	0.010 / -
208	Butyl 4-hydroxybenzoate	94-26-8 / 202-318-7	0.010 / -	209	Dibutylbis(pentane-2,4-dionato-O,O')tin	22673-19-4 / 245-152-0	0.010 / -
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jan 19, 2021							
210	Bis(2-(2-methoxyethoxy)ethyl)ether	143-24-8 / 205-594-7	0.010 / -	211	Diocetyl tin dilaurate, stannane, dioctyl-, bis(coco acyloxy) derivs., and any other stannane, dioctyl-, bis(fatty acyloxy) derivs. wherein C12 is the predominant carbon number of the fatty acyloxy moiety	-	0.010 / -
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jul 8, 2021							
212	1,4-dioxane	123-91-1 / 204-661-8	0.010 / -	213	2,2-bis(bromomethyl)propane-1,3-diol (BMP); 2,2-dimethylpropan-1-ol, tribromo derivative/3-bromo-2,2-bis(bromomethyl)-1-propanol (TBNPA); 2,3-dibromo-1-propanol (2,3-DBPA)	-	0.010 / -
214	2-(4-tert-butylbenzyl)propionaldehyde and its individual stereoisomers	-	0.010 / -	215	4,4'-(1-methylpropylidene)bisphenol	77-40-7 / 201-025-1	0.010 / -
216	Glutaral	111-30-8 / 203-856-5	0.010 / -	217	Medium-chain chlorinated paraffins (MCCP)	-	0.010 / -
218	Orthoboric acid, sodium salt	-	0.001 / -	219	Phenol, alkylation products (mainly in para position) with C12-rich branched or linear alkyl chains from oligomerisation, covering any individual isomers and/ or combinations thereof (PDDP)	-	0.010 / -
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jan 17, 2022							
220	(±)-1,7,7-trimethyl-3-[(4-methylphenyl)methylene]bicyclo[2.2.1]heptan-2-one covering any of the individual isomers and/or combinations thereof (4-MBC)	-	0.010 / -	221	6,6'-di-tert-butyl-2,2'-methylene-di-p-cresol (DBMC)	119-47-1 / 204-327-1	0.010 / -

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222	S-(tricyclo[5.2.1.0' ² .6]deca-3-en-8(or 9)-yl) O-(isopropyl or isobutyl or 2-ethylhexyl) O-(isopropyl or isobutyl or 2-ethylhexyl) phosphorodithioate	255881-94-8 / 401-850-9	0.010 / -	223	tris(2-methoxyethoxy)vinylsilane	1067-53-4 / 213-934-0	0.010 / -
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jun 10, 2022							
224	N-(hydroxymethyl)acrylamide	924-42-5 / 213-103-2	0.010 / -				
Candidate List of Substances of Very High Concern (SVHC) for authorization published on Jan 17, 2023							
225	1,1'-[ethane-1,2-diylbis(oxy)]bis[2,4,6-tribromobenzene]	37853-59-1 / 253-692-3	0.010 / -	226	2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol	79-94-7 / 201-236-9	0.010 / -
227	4,4'-sulphonyldiphenol	80-09-1 / 201-250-5	0.010 / -	228	Barium diboron tetraoxide	13701-59-2 / 237-222-4	0.001 / -
229	Bis(2-ethylhexyl) tetrabromophthalate covering any of the individual isomers and/or combinations thereof	-	0.010 / -	230	Isobutyl 4-hydroxybenzoate	4247-02-3 / 224-208-8	0.010 / -
231	Melamine	108-78-1 / 203-615-4	0.010 / -	232	Perfluoroheptanoic acid and its salts	-	0.010 / -
233	reaction mass of 2,2,3,3,5,5,6,6-octafluoro-4-(1,1,1,2,3,3,3-heptafluoropropan-2-yl)morpholine and 2,2,3,3,5,5,6,6-octafluoro-4-(heptafluoropropyl)morpholine	- / 473-390-7	0.010 / -				

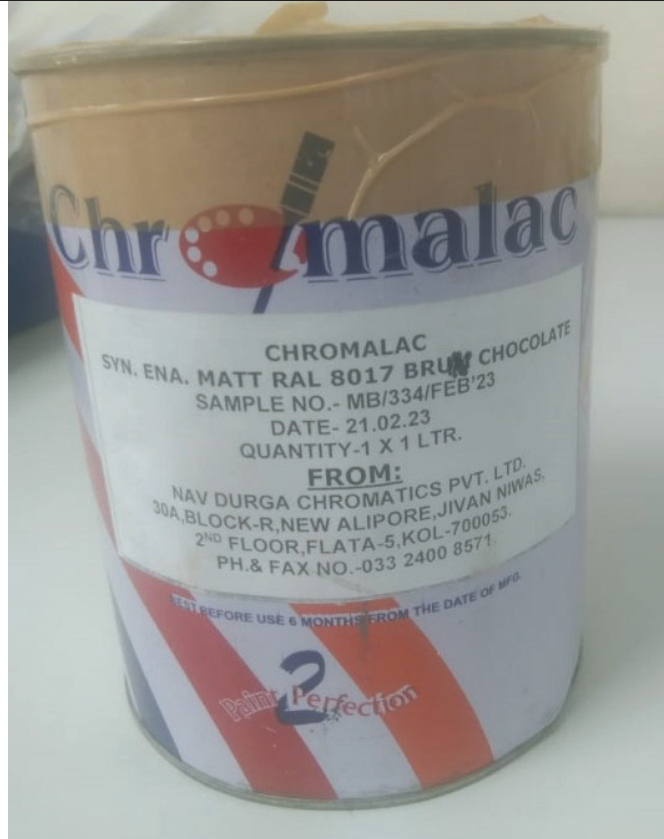
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Sample as Received



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