



**QMS Lab
Manual**

Issue No. : 06
Revision No. : 06
Revision Date : 01.03.2021

Release date : 11.02.19

KI/U2/PRO/LTM/22-001

Effective Date:

Quality Assurance Plan

Spheroidal Graphite & Flake Graphite Cast Iron Manhole Cover & Frame as per BS EN 124- 1 & 2:2015

Item :

Client :

Purchaser's PO No & Dt. :

Sl No	Area of Inspection	Details	Equipment / Process	Type of Inspection	Frequency	Acceptance Norms	Records	M	P	TPI / Client
1	INCOMING MATERIAL									
A.	Raw materials	S.G & C.I.Pig Iron. Steel Scrap. S.G & C.I>Returns.	Wet Analysis Spectrometer Spectrometer	Chemical composition analysis is carried out as per L.T.M. of Kiswok & Table 3 BS EN 124 - 2	Every Delivery	as per L.T.M (Laboratory Test Method of Kiswok)	M/s Kiswok internal testing certificates. or Supplier's certificates	T	V	V
B.	Moulding Sand	Compactibility Moisture Green Compressive Strength Green Shear Strength Permeability Wet Tensile Strength Active Clay Total Clay Loss on Ignition Volatile Matter AFS No.	Compactibility Tester Hot Air Oven / Digital Moisture Tester Universal Sand Testing Machine Universal Sand Testing Machine Permeability Tester WTS Machine Titration Method Clay Washer Muffle Furnace Sieve shaker with Sieve set	As per Table 4 Process Control BS EN 124 - 2 & Kiswok Spec.	Each Hour Each Shift	as per L.T.M (Laboratory Test Method of Kiswok)	M/S Kiswok internal Testing Report.	T	V	V
C	Liquid metal	Testing of liquid metal (Final) quality, S.G & C.I	Spectrometer	Chemical analysis As per Table 4 Process Control		as per L.T.M (Laboratory Test Method of Kiswok)	M/s Kiswok internal Inspection Report	T	V	V



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				BS EN 124 - 2 & Kiswok specification	Each Heat					
2	Rough Casting Inspection after Moulding & Pouring.									
	Surface Condition of castings after shotblasting.	Checking of defects & soundness of castings, Internal & external surface condition.	Surface Roughness Comparator	Visual.	100%	As per Standard BS EN 124 - 2	M/s Kiswok internal Inspection Reports	T	V	V
3	Rough Casting (Initial Inspection at Unit - II)									
A.	Castings.	Dimension Clear Opening Over Base Depth of Insertion Frame Depth	Vernier Caliper Steel Tape Steel Scale Depth Vernier	Measurement As per Table 5 BS EN 124 - 2	As per BS EN 124 : 2	As per Standard BS EN 124 - 2	M/s Kiswok internal Inspection	T	V	V
B.	Testbar	Tensile testing. Elongation % 0.2 Proof stress Yield Strength	Universal Tensile Testing Machine Extensometer Micrometer	As per Table 4 EN 1563, 8.2 BS EN 124 - 2	Each heat.	As per Standard BS EN 124 - 2 EN 1563	M/s Kiswok Lab report.	T	V	V
C	Testbar	Hardness Test (Brinell test)	Brinell Hardness Tester	HBW if required by the customer	Each heat.	As per Standard EN 1563	M/s Kiswok Lab report.	T	V	V
D	Micro sample	Micro Examination Graphaite Shape	Microscope with	Nodularity as per specification. As per Table 4	As per EN 124, EN 1563	As per Standard EN 1563 80% Minimum	M/s Kiswok Lab report.	T	V	V



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Sl No	Area of Inspection	Details	Equipment / Process	Type of Inspection	Frequency	Acceptance Norms	Records	M	P	TPI / Client
		Nodularity Nodule Count	Image Analyser	EN 1563:2011, 8.2 BS EN 124 - 2						
4	Finished Casting (Final Inspection at Unit - IV)									
A.	Castings.	Fitment		Fitment/Seatings & Total Clearance BS EN 124 - 1	100%	As per Standard BS EN 124,	M/s Kiswok internal Inspection Reports	T	V	V
B.	Castings.	Test Loads / Permanent Set	Load Testing Machine	Load Test Annex A & Annex B of EN 124 - 1	1 nos. per Offer Lot / type / size	As per Standard BS EN 124 - 1	M/s Kiswok Load testing report.	T	V	V
C.	Castings.	Compatibility of seatings	Tilt Test & Pull Out Testing Machine	Tilt Test Annex D of EN 124 - 1	1 nos. per Offer Lot / type / size	As per Standard BS EN 124 - 1 CI No 6.5 , 8.4.5	M/s Kiswok Tilt testing report.	T	V	V
D.	Castings.	Testing of securing of covers/gratings within the frame	Tilt Test & Pull Out Testing Machine	Pull-Out Test Annex E of EN 124 - 1	1 nos. per Offer Lot / type / size	As per Standard BS EN 124 - 1 CI No 6.6 , 8.4.6	M/s Kiswok Pull-Out testing report.	T	V	V
E	Castings.	Bitumen painting. Epoxy Coating	Digital Coating Thickness Gauge	Visual	100%	Minimum 50 microns	Supplier's certificates	T	V	V
F	Castings.	Marking	Visual	Visual	100%	As per Standard BS EN 124 - 2	M/s Kiswok testing report.	T	V	V
5	THIRD PARTY									
A.	Castings.	Dimension	Measuring Inrument	Measurement As per Table 5 BS EN 124 - 2	Randomly 2% of Offer Lot	As per Standard BS EN 124 - 2	M/s Kiswok internal Inspection	T	V	W
C.	Castings.	Fitment	Visual Dimensional	Fitment/Seatings & Total Clearance As per CI-6.5	Randomly 1 no. of Offer Lot / type / size	As per Standard BS EN 124 - 1	M/s Kiswok internal Inspection	T	V	W



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Sl No	Area of Inspection	Details	Equipment / Process	Type of Inspection	Frequency	Acceptance Norms	Records	M	P	TPI / Client
				BS EN 124 - 1			certificates.			
D.	Castings.	Test Loads / Permanent Set	Load Testing Machine	Load Test Annex A & Annex B of EN 124 - 1	Randomly 1 no. of Offer Lot / type / size	As per Standard BS EN 124 - 1	M/s Kiswok Load testing report.	T	V	W
E.	Castings.	Compatibility of seatings	Tilt Test & Pull Out Testing Machine	Tilt Test Annex D of EN 124 - 1	Randomly 1 no. of Offer Lot / type / size	As per Standard BS EN 124 - 1 CI No 6.5 , 8.4.5	M/s Kiswok Tilt testing report.	T	V	W
F.	Castings.	Testing of securing of covers/gratings within the frame	Tilt Test & Pull Out Testing Machine	Pull-Out Test Annex E of EN 124 - 1	Randomly 1 no. of Offer Lot / type / size	As per Standard BS EN 124 - 1 CI No 6.6 , 8.4.6	M/s Kiswok Pull-Out testing report.	T	V	W
G.	Castings.	Bitumen painting. Epoxy Coating	Digital Coating Thickness Gauge	Visual	Randomly 2% of Offer Lot	As per standard BS EN 124 - 2	Supplier's certificates	T	V	W
H.	Castings.	Marking	Visual	Visual	Randomly 2% of Offer Lot	As per Standard BS EN 124 - 2	M/s Kiswok testing report.		V	W

T = Testing.

W = Witness

V = Verification of Documents.

TPI = Third Party Inspection.

M = Manufacturer.

P = Purchaser.

Prepared and checked by

Authorized by
Director (Mkt.)

Designation

QM

Lab

QC

Signature.

Signature.