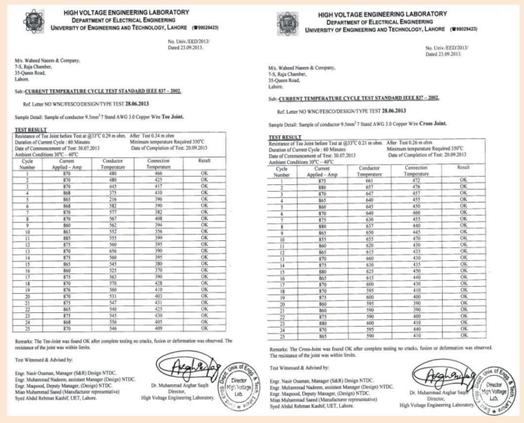
Type Test Reports NTDC Design


HIGH VOLTAGE ENGINEERING LABORATORY
DEPARTMENT OF ELECTRICAL ENGINEERING
UNIVERSITY OF ENGINEERING AND TECHNOLOGY, LAHORE (☎99029423)

No. Univ./EED/2013/
Dated 23.09.2013.

M/s. Waheed Naeem & Company,
7-S, Raja Chambers,
35-Queen Road,
Lahore.

Sub:- **CURRENT TEMPERATURE CYCLE TEST STANDARD IEEE 837 – 2002.**

Ref. Letter NO WNC/FESCO/DESIGN/TYPE TEST **28.06.2013**

Sample Detail: Sample of conductor 9.5mm²/ 7 Stand AWG 3.0 Copper Wire **Tee Joint.**

TEST RESULT

Resistance of Tee Joint before Test at @23°C 0.29 οhm. After Test 0.34 οhm
Duration of Current Cycle : 60 Minutes — Minimum temperature Required 350°C
Date of Commencement of Test: 30.07.2013 — Date of Completion of Test: 20.09.2013
Ambient Conditions 30°C – 40°C

Cycle Number	Current Applied – Amp	Conductor Temperature	Connection Temperature	Result
1	870	480	450	OK
2	870	485	415	OK
3	868	375	410	OK
4	867	218	396	OK
5	868	382	390	OK
6	870	377	382	OK
7	870	367	408	OK
8	880	562	394	OK
9	865	557	356	OK
10	883	553	399	OK
11	873	560	395	OK
12	870	456	390	OK
13	873	548	385	OK
14	865	545	380	OK
15	868	543	370	OK
16	875	562	390	OK
17	870	570	428	OK
18	876	560	410	OK
19	870	531	403	OK
20	875	547	411	OK
21	865	540	425	OK
22	875	545	430	OK
23	868	358	405	OK
24	870	348	409	OK
25	870	346	409	OK

Remarks: The Tee-Joint was found OK after complete testing no cracks, fusion or deformation was observed. The resistance of the joint was within limits.

Test Witnessed & Advised by:

Engr. Nasir Osamen, Manager (S&R) Design NTDC.
Engr. Muhammad Nadeem, assistant Manager (Design) NTDC.
Engr. Maqsood, Deputy Manager, (Design) NTDC.
Mian Muhammad Saeed (Manufacturer representative)
Syed Abdul Rehman Kashif, UET, Lahore.

Dr. Muhammad Asghar Sasli,
Director,
High Voltage Engineering Laboratory.


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No. Univ./EED/2013/
Dated 23.09.2013.

M/s. Waheed Naeem & Company,
7-S, Raja Chambers,
35-Queen Road,
Lahore.

Sub:- **CURRENT TEMPERATURE CYCLE TEST STANDARD IEEE 837 – 2002.**

Ref. Letter NO WNC/FESCO/DESIGN/TYPE TEST **28.06.2013**

Sample Detail: Sample of conductor 9.5mm²/ 7 Stand AWG 3.0 Copper Wire **Cross Joint.**

TEST RESULT

Resistance of Tee Joint before Test at @23°C 0.21 οhm. After Test 0.26 οhm
Duration of Current Cycle : 60 Minutes — Minimum temperature Required 350°C
Date of Commencement of Test: 30.07.2013 — Date of Completion of Test: 20.09.2013
Ambient Conditions 30°C – 40°C

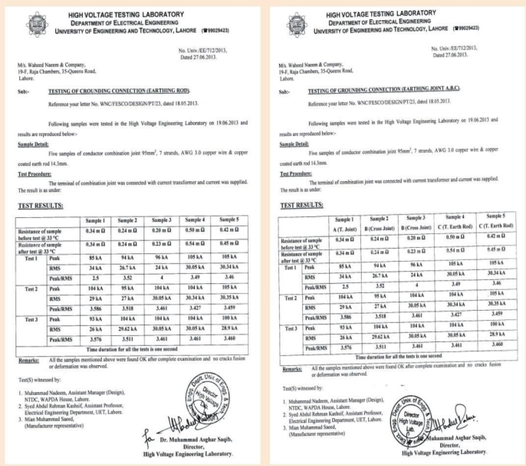
Cycle Number	Current Applied – Amp	Conductor Temperature	Connection Temperature	Result
1	875	665	470	OK
2	870	667	475	OK
3	870	657	455	OK
4	870	640	455	OK
5	860	645	450	OK
6	870	640	460	OK
7	875	630	455	OK
8	880	637	440	OK
9	865	650	445	OK
10	855	625	470	OK
11	860	620	450	OK
12	865	615	435	OK
13	870	660	430	OK
14	875	630	435	OK
15	880	615	440	OK
16	865	625	440	OK
17	870	660	430	OK
18	870	595	410	OK
19	875	600	400	OK
20	860	595	390	OK
21	860	590	390	OK
22	875	590	400	OK
23	880	600	410	OK
24	870	595	440	OK
25	865	590	410	OK

Remarks: The Cross-Joint was found OK after complete testing no cracks, fusion or deformation was observed. The resistance of the joint was within limits.

Test Witnessed & Advised by:

Engr. Nasir Osamen, Manager (S&R) Design NTDC.
Engr. Muhammad Nadeem, assistant Manager (Design) NTDC.
Engr. Maqsood, Deputy Manager, (Design) NTDC.
Mian Muhammad Saeed (Manufacturer representative)
Syed Abdul Rehman Kashif, UET, Lahore.

Dr. Muhammad Asghar Sasli,
Director,
High Voltage Engineering Laboratory.


HIGH VOLTAGE TESTING LABORATORY
DEPARTMENT OF ELECTRICAL ENGINEERING
UNIVERSITY OF ENGINEERING AND TECHNOLOGY, LAHORE (☎99029423)

No. Univ./EE/T12/2013,
Dated 27.06.2013.

M/s. Waheed Naeem & Company,
19-F, Raja Chambers, 35-Queens Road,
Lahore.

Sub:- **TESTING OF CROUNDING CONNECTION (EARTHING ROD).**

Reference your letter No. WNC/FESCO/DESIGN/PT/23, dated 18.05.2013.

Following samples were tested in the High Voltage Engineering Laboratory on 19.06.2013 and results are reproduced below:-

Sample Detail:

Five samples of conductor combination joint 95mm², 7 strands, AWG 3.0 copper wire & copper coated earth rod 14.3mm.

Test Procedure:

The terminal of combination joint was connected with current transformer and current was supplied. The result is as under:

TEST RESULTS:

		Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Resistance of sample before test @ 31 °C		0.34 οhm	0.34 οhm	0.20 οhm	0.50 οhm	0.42 οhm
Resistance of sample after test @ 31 °C		0.34 οhm	0.34 οhm	0.33 οhm	0.54 οhm	0.45 οhm
Test 1	Peak	85 kA	94 kA	96 kA	105 kA	105 kA
	RMS	34 kA	26.7 kA	24 kA	30.05 kA	30.34 kA
	Peak/RMS	2.5	3.52	4	3.49	3.46
Test 2	Peak	104 kA	95 kA	104 kA	104 kA	105 kA
	RMS	29 kA	27 kA	30.05 kA	30.34 kA	30.35 kA
	Peak/RMS	3.586	3.518	3.461	3.427	3.459
Test 3	Peak	93 kA	104 kA	104 kA	104 kA	105 kA
	RMS	26 kA	29.62 kA	30.05 kA	30.05 kA	28.9 kA
	Peak/RMS	3.576	3.511	3.461	3.461	3.460

Time duration for all the tests is one second

Remarks: All the samples mentioned above were found OK after complete examination and no cracks fusion or deformation was observed.

Test(S) witnessed by:

1. Muhammad Nadeem, Assistant Manager (Design), NTDC, WAPDA House, Lahore.
2. Syed Abdul Rehman Kashif, Assistant Professor, Electrical Engineering Department, UET, Lahore.
3. Mian Muhammad Saeed, (Manufacturer representative)

Dr. Muhammad Asghar Sasli,
Director,
High Voltage Engineering Laboratory.

HIGH VOLTAGE TESTING LABORATORY
DEPARTMENT OF ELECTRICAL ENGINEERING
UNIVERSITY OF ENGINEERING AND TECHNOLOGY, LAHORE (☎99029423)

No. Univ./EE/T12/2013,
Dated 27.06.2013.

M/s. Waheed Naeem & Company,
19-F, Raja Chambers, 35-Queens Road,
Lahore.

Sub:- **TESTING OF GROUNDING CONNECTION (EARTHING JOINT A.R.C)**

Reference your letter No. WNC/FESCO/DESIGN/PT/23, dated 18.05.2013.

Following samples were tested in the High Voltage Engineering Laboratory on 19.06.2013 and results are reproduced below:-

Sample Detail:

Five samples of conductor combination joint 95mm², 7 strands, AWG 3.0 copper wire & copper coated earth rod 14.3mm.

Test Procedure:

The terminal of combination joint was connected with current transformer and current was supplied. The result is as under:

TEST RESULTS:

		Sample 1 A (T. Joint)	Sample 2 B (Cross Joint)	Sample 3 B (Cross Joint)	Sample 4 C (T. Earth Rod)	Sample 5 C (T. Earth Rod)
Resistance of sample before test @ 31 °C		0.34 οhm	0.34 οhm	0.20 οhm	0.50 οhm	0.42 οhm
Resistance of sample after test @ 31 °C		0.34 οhm	0.34 οhm	0.22 οhm	0.54 οhm	0.45 οhm
Test 1	Peak	85 kA	94 kA	96 kA	105 kA	105 kA
	RMS	34 kA	26.7 kA	24 kA	30.05 kA	30.34 kA
	Peak/RMS	2.5	3.52	4	3.49	3.46
Test 2	Peak	104 kA	95 kA	104 kA	104 kA	105 kA
	RMS	29 kA	27 kA	30.05 kA	30.34 kA	30.35 kA
	Peak/RMS	3.586	3.518	3.461	3.427	3.459
Test 3	Peak	93 kA	104 kA	104 kA	104 kA	105 kA
	RMS	26 kA	29.62 kA	30.05 kA	30.05 kA	28.9 kA
	Peak/RMS	3.576	3.511	3.461	3.461	3.460

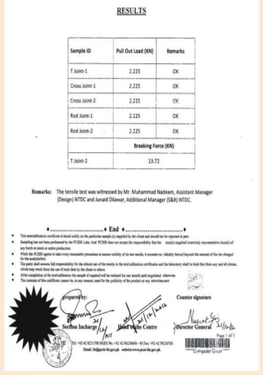
Time duration for all the tests is one second

Remarks: All the samples mentioned above were found OK after complete examination and no cracks fusion or deformation was observed.

Test(S) witnessed by:

1. Muhammad Nadeem, Assistant Manager (Design), NTDC, WAPDA House, Lahore.
2. Syed Abdul Rehman Kashif, Assistant Professor, Electrical Engineering Department, UET, Lahore.
3. Mian Muhammad Saeed, (Manufacturer representative)

Muhammad Asghar Sasli,
Director,
High Voltage Engineering Laboratory.


GOVERNMENT OF PAKISTAN
Ministry of Science & Technology
Pakistan Council of Scientific & Industrial Research
Laboratories Complex, Lahore
Ferozepur Road, Lahore-54600 - Pakistan

S/N: PCSIR-/LD/ 0175

Draft/LD/QMS/PT/05 | Issue Date: Nov 17 2006 | Issue #: 01 | Rev #: 01

TEST REPORT

Report No: PITMAD/MSA/11373-02/13 — Dated: 21-12-2012

Name & Address of Customer:	M/s Waheed Naeem & Company, 19-F, Raja Chambers, 35-Queen's Road, Lahore.
Request Ref. # & Date:	WNC/PCSIR/NTDC/PESCO/12
Description of Sample:	Full size load tests of provided Tee joint, Cross joint & Rod joint samples, Breaking force (T joint) sample
TOD Log # and Date:	294 Dated: 19-12-2012
Method used /Specs:	IEEE-Std-837
Statement of Non-compliance:	Nil
Sheet No:	1/1
No. of Sample(s):	Six (06)
RefCode #:	MECH/ 2492
Temp. & Humidity:	
Testing Date:	18-12-2012

RESULTS

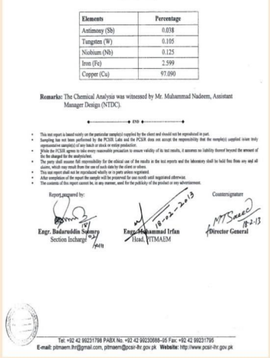
Sample ID	Pull Out Load (kN)	Remarks
T Joint-1	2.225	OK
Cross Joint-1	2.225	OK
Cross Joint-2	2.225	OK
Rod joint-1	2.225	OK
Rod joint-2	2.225	OK
	Breaking Force (kN)	
T Joint-2	13.72	

Remarks: The tensile test was witnessed by Mr. Muhammad Nadeem, Assistant Manager (Design) NTDC and Junaid Dilawar, Additional Manager (S&A) NTDC.

End

Prepared by: Section Incharge — Head Service Centre — Director General

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E-mail: hqlgore@pcsir.gov.pk website:www.pcsir.bus.gov.pk


Pakistan Council of Scientific & Industrial Research
PAKISTAN INSTITUTE OF TECHNOLOGY FOR MINERALS AND ADVANCED ENGINEERING MATERIALS
FEROZEPUR ROAD, LAHORE-54600 - PAKISTAN

Doc. # LD/QMS/PT/05/02 | Issue #: 01 | Rev. #:01 | Issue Date: Nov 17, 2006 | Page 1 of 1

TEST REPORT

Report No: PITMAD/MSA/11373-02/13 — Dated: 18-02-2013

Name & Address of Customer:	M/s Waheed Naeem & Company, 19-F, Raja Chambers, 35 Queens Road, Lahore.
Request Ref. # & Date:	WNC/NTDC/PESCO/13 Dated: 12-02-2013
Description of Sample:	Chemical Composition of provided metal sample
TOD Log # and Date:	223 Dated: 14-02-2013
Method used /Specs:	ASTM E 1476-04
Statement of Non-compliance:	Nil
Sheet No:	1/1
No. of Sample(s):	One (01)
RefCode #:	.HM # 1580
Temp. & Humidity:	
Testing Date:	15-02-2013

RESULTS

Elements	Percentage
Antimony (Sb)	0.038
Tungsten (W)	0.105
Niobium (Nb)	0.125
Iron (Fe)	2.599
Copper (Cu)	97.090

Remarks: The Chemical Analysis was witnessed by Mr. Muhammad Nadeem, Assistant Manager Design (NTDC).

- This test report is based merely on the particular sample(s) supplied by the client and should not be reproduced in part.
- Sampling has not been performed by the PCSIR Labs and the PCSIR does not accept the responsibility that the sample(s) supplied is/are truly representative sample(s) of any batch or stock or entire production.
- While the PCSIR agrees to take every reasonable precaution to ensure validity of its test results, it assumes no liability (herein) beyond the amount of fee charged for the analysis/test.
- The PCSIR shall not be responsible/liable/accountable for the ethical use of the results in the test reports and the laboratory shall be held free from any and all claims, which may result from the use of such data by the client or others.
- This test report shall not be reproduced wholly or in parts unless registered.
- After completion of the report the sample will be preserved for one month until registered otherwise.
- The contents of this report cannot be, in any manner, used for the publicity of the product in any advertisement.

Countersignature

Report prepared by: Engr. Badaruddin Nahvi, Section Incharge — Engr. Muhammad Irfan, Head, VITMAIM — Director General

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LIST OF CLIENTS

Pakistan Railway

National Transmission & Despatch Company (NTDC)

Peshawar Electric Supply Company

Sukkur Electric Power Company

Siddique Sons Engineering (PVT.) LTD.

MK Engineering

Potential Engineers

Orange Metro Train Project

Oil & Gas Development Company Ltd.

Lahore Electric Supply Company

Gujranawala Electric Power Company

Tribel Electric Supply Company

Islamabad Electric Supply Company

Faisalabad Electric Supply Company

Hyderabad Electric Supply Company

Multan Electric Power Company

Quetta Electric Supply Company

Pak Elektron Limited

Sui Northern Gas Company

Sui Northern Gas Company

Shaheen Traders

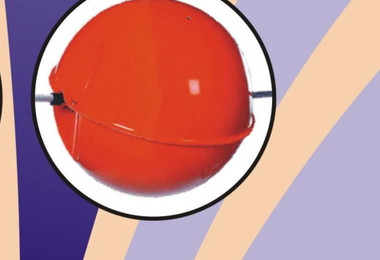
SUPPLY RECORD - 2006-2019

Sr. No.	BUYER NAME	P.O. No. Date	Quantity Cartridge ABC	Quantity Mould ABC	Inspection Authority	Inspection certificate No./ Date	GRN / Delivery Period
1	MEPCO	01/MMM 22-11-05	1980	36	Chief Engineer Material inspection	8329 18-10-06	014234-33-32 21-10-06
2	HESCO	002/CE/MMM 17-01-06	2520	138	Chief Engineer Material inspection	7964 08-09-06	041435,36,37 20-09-06
3	FESCO	1245/CE/MMM 22-04-06	1140	27	Chief Engineer Material inspection	7102 10-06-06	045595 15-06-06
4	FESCO	1300/CE/MMM 20-05-06	2980	69	Chief Engineer Material inspection	7304 29-06-06	044597 30-06-06
5	IESCO	1year(8th STG) 26-05-06	1640	40	Chief Engineer Material inspection	2379-84 24-02-07	072164,65 12-03-07
6	IESCO	1 year(8th STG)24 07-08-06	740	0	Chief Engineer Material inspection	2390-94 24-02-7	072160,61,62 12-03-07
7	IESCO	1 year(8th TG)25 07-08-06	0	31	Chief Engineer Material inspection	2385-89 24-02-07	072160,6 1,62 12-03-07
8	MEPCO	061081/MMM 16-12-06	476	0	Chief Engineer Material inspection	9182 09-01-07	071007 18-01-07
9	PESCO	7965-68 03-05-07	570	17	Chief Engineer Material inspection	10881-85 30-05-07	022705,06 13.06.07
10	QESCO	STG-35/35817-	2037	23	Chief Engineer Material inspection	521 30-08-07	070132 04-09-07
11	QESCO	STG-29/3621 18-07-07	385	06	Chief Engineer Material inspection	522 30-08-07	070133 04-09-07
12	GEPCO	STG-34 21-07-07	2470	100	Chief Engineer Material inspection	15474-80 27-10-07	046059 02-11-07
13	GEPCO	STG-2/11/0708/7051 13-12-07	1627	34	Chief Engineer Material inspection	2397-2402 20-02-08	077851,52 22-02-08
14	PESCO	8582-85 19.12.07	5405	73	Chief Engineer Material inspection	3299 06-03- 08	026320,21 22 15.03.08
15	MEPCO	061098/MMM 04-02-08	2400	96	Chief Engineer Material inspection	9880-93 17-06-08	018485,87, 25-06-08
16	IESCO	1612 22-02-08	806	63	Chief Engineer Material inspection	1888 15-03-08	069363,64,65 25-03-08
17	QESCO	CEO/MMM/ KF-448-21 10-04-08	1260	18	Chief Engineer Material inspection	2511 04-06-08	019054 17-06-08
18	FESCO	262/CE/MMM 28-04-08	1500	0	Chief Engineer Material inspection	12185-88 26-07-08	012003 28-07-08
19	HESCO	02-0004 28-11-08	1974	46	Chief Engineer Material inspection	3039-43 23-02-09	014366,67 25-02-09
20	FESCO	445/CE/MMM 24-02-09	200	40	Chief Engineer (DESIGN) NTDC	5723-27 10-04-09	099574 13-04-09
21	GEPCO	STG-8-10/0809 19-03-09	1579	58	Chief Engineer (DESIGN) NTDC	6740-44 29-04-09	013459,58 30-04-09
22	MEPCO	061129/MMM 06-04-10	987	0	Asstt. Manager (T&G) Mepco	3103-06 19-04-10	023160,59 27-04-10
23	FESCO	480/CE/MMM 26-05-09	0	30	Chief Engineer (DESIGN) NTDC	5378-81 08-04-10	005864,63 21-04-10
24	HESCO	01-0117/CE 16-07-09	1900	55	Chief Engineer (DESIGN) NTDC	165337-42 03-10-09	008770,69,68 06-10-09
25	GEPCO	STG-9-8/0910 19-04-09	700	30	AE (T) Gepco	981-86 03- 07- 10	013495,94,96 03-08-10
26	MEPCO	NCB_03/WB/PMU 29-09-10	2715	75	A. M. Procurement Mepco	1307-11 14-02-11	022060,59,58 22-02-11
27	FESCO	125/MMM/GSC	505	0	NTDC DESIGN & XEN.SS&	30.07.11	Within DELIVERY TIME
28	IESCO	4639 21.06.11	500	280	XEN.SS& T IESCO	073810-11 29.10 .11	Within DELIVERY TIME
29	Pakistan Railway	15/0020/00-/1-2013 08/05/ 13	3500	800	XEN TRACK, PR. HQ LAHORE	17.07.13	Within DELIVERY TIME
30	LESCO	72 05.04.13	4050	300	ACL.MANAGER& A.M.	05.11.2013	Within DELIVERY TIME
31	SEPCO	S-032 28.08.13	2273	173	DESIGN & USER	15191-95 31.10.13	Within DELIVERY TIME
32	HESCO CE(PMU)	ICB-4-V 16.03.13	4800	195	Pakistan Engineer ing Services Ltd	1355 -64 15.06.13	Within DELIVERY TIME
33	FESCO	151 22.07.13	1097	15	DESIGN NTDC	15106-10 29.10 .13	Within DELIVERY TIME
34	MEPCO	3146 30.09.13	410	55	Purchaser Team	5777-82 05.12.13	Within DELIVERY TIME
35	FESCO	179 22.01.14	2300	49	DESIGN & USER	22.02.14	Within DELIVERY TIME
36	FESCO	189 26.02.14	3626	0	Fesco Insp. Team	910886,7 05.05.2014	Within DELIVERY TIME
38	NTDC- NOR-31	NOR-31 12.08.14	7000	150	CE (design) ntdc	15.05.15	Within DELIVERY TIME
39	IESCO	NCB-03 410 23-03-14	4530	201 Earth Rod: 305 Nos	AET(Jhelum) SDO (GC) Iesco	8605-9/AET/TM 25-05-14	Within DELIVERY TIME
40	I.Z.Multi Engineers	OTO/14 29.11.2014	Bus Bars Connections & Moulds		Sites Under Completions		Within DELIVERY TIME
41	PESCO Peshawar	10672 – 75 17-10-2014	3305	111	FATA Cont. Division - TESCO	3129-39 31.7.17	Within DELIVERY TIME
42	MEPCO	P.O.-4849 23.03.15	6500	262	Dy. Manager MEPCO TEAM	19.06.15	Within DELIVERY TIME
43	LESCO	P.O.151 08.02.16	9000	0	LESCO Committee	338 09.03.2016	Within DELIVERY TIME
44	FESCO	40/PMU 25.07.16	2305	94	FESCO Committee	30.07.2016	Within DELIVERY TIME
45	FESCO	41/PMU 25.07.16	1378	52	FESCO Committee	30.07.2016	Within DELIVERY TIME
46	MK Engineering for IESCO	IESCO_NOB-04 LOT (IV) Date: 12.01.2017	Earth Rods ,cartridges & Mold		IESCO Inspectors	253-67 05-08-2017	Within DELIVERY TIME
47	Saddique Sons Ltd, Lahore for (QESCO)	ADB/QESCO Tranches 03	Cartridges, Molds, Holding Clamps Earth Rods		IESCO Inspectors		Within DELIVERY TIME
48	PESCO	3129 -39	Cartridges, Molds, Holding Clamps Earth Rods		PESCO Inspector	3129-39 31.7.17	Within DELIVERY TIME
49	HESCO	3435 -40	Cartridges, Molds, Holding Clamps		HESCO Inspector	15-08-17	Within DELIVERY TIME
50	SEPCO	4311 – 17	Cartridges, Molds, Holding Clamps		LESCO Inspector	21 – 08 -17	Within DELIVERY TIME
51	LESCO	201	Cartridges, Molds, Holding Clamps		LESCO Inspector	16-03- 17	Within DELIVERY TIME
52	MEPCO	061323	Cartridges, Molds, Holding Clamps		MEPCO Inspector	14-04-17	Within DELIVERY TIME
53	IESCO	NCB -19	Cartridges, Molds, Holding Clamps Earth Rods		IESCO Inspector	10-11-17	Within DELIVERY TIME
54	QESCO	305/STG- 585	MARKER BALL		QESCO inspector	11-05-18	Within 20 days
55	HESCO	305/STG 19.02.19	Cartridges, Molds, Holding Clamps		NTDC & HESCO Inspector	20.03.19	Within DELIVERY TIME
56	MEPCO	061429 22.11.18	Cartridges, Molds, Holding Clamps		MEPCO Inspector	14-01-19	Within DELIVERY TIME
57	GEPCO	STG -18.8.513 19.02.19	Cartridges, Molds, Holding Clamps Earth Rods		GEPCO Inspector	UNDER	INSPECTION
58	PEL /MEPCO	GSC-33	Cartridges, Molds, Holding Clamps, ROD CONNECTORS		MEPCO Inspector	27.03.19	DELIVERED AT 5 GRIDS SITE
59	FESCO	NOA-5239 27.03.19	Cartridges, Molds, Holding Clamps,		UNDER	SUPPLY	INSPECTION



THERMITE WELDING
NEW
GENERATION WELDING





Manufacturer
Thermite Weld (Pakistan) EST.

Office: Room No. 1, 3rd Floor Raja Chamber, 35-Queens Road, Lahore.
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www.thermiteweld.com
thermiteweld

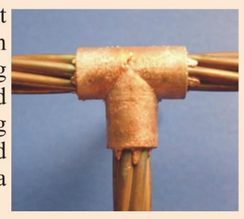
THERMITEWELD/EXOTHERMIC WELD

THERMITEWELD is similar to **CADWELD** for use in making Electrical Connections and Rail Welding Joints. All connections in the earthing system shall be made by the thermite welding / Cad Weld standards: -

IEEE-837-2002 IEEE

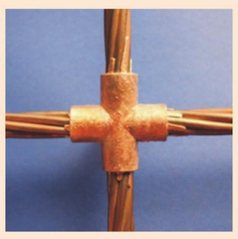
The Institute of Electrical Electronics Engineers, Inc. 3 Park Avenue, New York, NY 1016-5997, USA.

Standard for Permanent Connections Used in Substation Grounding Standard for Direction and methods for qualifying permanent connections used for substation grounding area provided in this standard.



WAPDA SPECIFICATION P-114:82

This Specification prepared by the Design Department, WAPDA/NTDC, Pakistan. Thermite Joints For Substation Earthing. Connection suitable for copper conductors and copper clad steel rod.





THERMITE WELDING FLUX

CARTRIDGES

Each aluminum packet holds the aluminothermic powder range 100 gms to 250 gms according to requirement. Operating Instructions are written on back side of each packet.



Packed in aluminum foil paper


Packed in bottles with starter

STARTER POWDER

Each small aluminum Sasha holds starter powder range 2-3 grams according to requirement.



STEEL DISC

Steel disc are used as timer to hold the welding flux in the mold and prevent it from falling down. Size and thickness of the disc must be match with the mold in order to weld conductors.



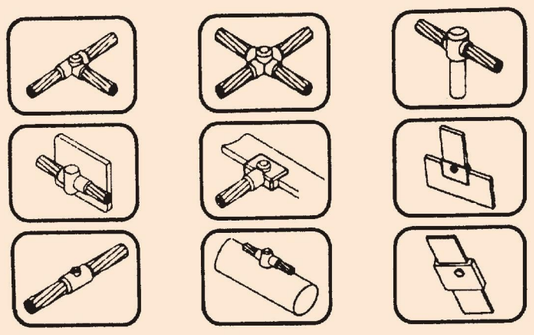
THERMITE WELDING (Graphite Mould)



Moulds are manufactured from a heat-resistant material (graphite) that leasts for an average of 60-100 connections under normal conditions of use. The metallic cover protects from the reaction projections.

STANDARD THERMITE CONNECTIONS

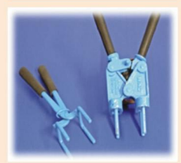
Cu Condcutor / Earth Rod / Bus Bar
Steel Re-bars / Pipes / Rail Etc



OPTIONAL ACCESSORIES

Mould Handle Clamp

They are designed to handle the moulds. The type of clump depends on the mould size and shape.



Flint Igniter

It is used for easy fusion of starting powder. Standard new flints can be used as replacement



Scraper

It is used to remove the slag from the mould after each joint and increase life of the mould.



Cleaning Brush

It is used to clean the inner side of mould after each joint hence increase the life of mould.



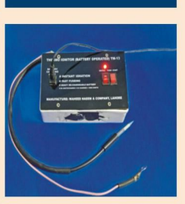
Conductor Cleaning Brush

It is used to clean the conductors before making the perfect joints.



Thermo Igniter

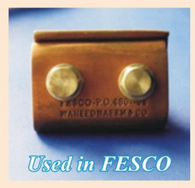
New technoloy of fusing thermite welding flux by using thermo igniter 5000 shots/charges



EARTHING CONNECTORS

These mechanical grounding connectors are designed for use with cable to bar in grounding and bonding systems and to connect the grounding electrode conductor to the ground rod. There are various types of grounding connector such as:

- Type I, II, III Raiser Connector
- Lugs Thimbles CU Connector
- Single groove Brass Connector
- Double groove CU Connector





COPPER COATED EARTH ROD

Earth rod used for substation grounding having following dimensions

- Length 3mt without threading
- Diameter of 14mm, 16mm,18mm
- Copper coated thickness range 250-350 micron



WARNING SPHERE MARKER BALL

Aircraft warning spheres are also called as marker balls or aerial warning spheres are used as a visual marking of overhead power lines to make power lines visible to aircraft and helicopters.

Aerial Warning Spheres marker ball according to international standard specifications: diameter range 25-65 inches



