

PRESSURE PIPING
SYSTEMS

T-MECH PP-R

T - M E C H P P - R P I P E S & F I T T I N G S

member of **THOMSUN** group

www.thomsun.com



Introduction



THOMSUN was established in the year 1976 in Dubai by directors Mr. K. V. Thomas, Mr. V. T. John and Mr. P. Srinivas. The vision and work ethic etched out over the years with the foresight to diversify into new disciplines at the right times have seen the activities of the group grow to become the multi-faceted and diversified entity it is today. With a strong history and credibility, Thomsun over the years has business interests in various core industries in the Gulf and Indian subcontinent.

Steered by visionary professionals and powered by the intelligent use of technology, the Thomsun group, a 3000 strong work force, has marked many entrepreneurial built on strong fundamentals, the Thomsun Group has emerged as a market leader in the sectors it functions in through its focused approach, strong market intelligence, attention to details, sound deployment of modern technology and a commitment to quality.

- Electromechanical
- Professional & Consumer Electronics
- Audio visual & consulting

- Music Education
- Printing & Packaging
- Pre-Press & Digital Printing
- Display Solution
- Logistics & Distribution
- Food Processing & Supplies
- Supermarket & Bakeries
- Furniture
- Lighting
- Sea food Processing & Trading
- Meat & Vegetable Processing & Trading

Certifications

Certifications

DVGW type examination certificate
DVGW-Baumusterprüfzertifikat

DW-8317CS0350
Registration Number

Field of Application products of water supply
Anwendungsbereich Produkte der Wasserversorgung

Owner of Certificate THOMSUN METAL & PIPES MANUFACTURING LLC
Zertifizierender AJMAN INDUSTRIAL AREA, UAE-6419 AJMAN

Distributor THOMSUN METAL & PIPES MANUFACTURING LLC
Vertreiber AJMAN INDUSTRIAL AREA, UAE-6419 AJMAN

Product Category plastic pipes for drinking water installations: PP-R, SDR 6 (8317)
Produktart

Product Description plastic pipes made of PP-R for the drinking water installation
Produktbeschreibung

Model T-Mech PPR Pipes

Test Reports type testing: 118901/15-4 from 25.09.2017 (SKZ)
Prüfberichte KTW testing: K-289399-17-KG from 15.09.2017 (WHY)
hygienic testing: W-288069e-17-Si/fo from 04.08.2017 (WHY)

Test Basis DVGW W 544 (01.05.2007)
Prüfungslagen UBA KTW (07.03.2016)
DVGW W 270 (01.11.2007)

Date of Expiry / File No. 25.09.2022 / 16-0259-WNE
Ablaufdatum / Aktenzeichen

20.10.2017 Fx A-1/2
Date issued by: Head of Certification Body
Datum: Aussteller: Chef, Leiter der Zertifizierungsstelle

DVGW CERT GmbH is an accredited body by DAkkS according to DIN EN ISO/IEC 17065:2013 for certification of products for energy and water supply safety.

DVGW CERT GmbH ist ein akkreditiertes Institut für die Zertifizierung von Produkten der Energie- und Wasserversorgung.

DVGW CERT GmbH
Zertifizierungsstelle
Rathausstr. 27, 43079 Solingen, Germany
Jens Witten Str. 1-3
52223 Bonn
Tel: +49 228 91 88-888
Fax: +49 228 91 88-993
www.dgw-cert.com
info@dgw-cert.com

DAkkS
Deutsche
Zertifizierungsstelle
D-23-16028-02-05

ZERTIFIKAT **SKZ**

Certificate

SKZ - Testing GmbH awards the following company

THOMSUN INDUSTRIES LLC
P.O. Box 6419
Dubai Investments Park
DUBAI
UNITED ARAB EMIRATES

Production site: THOMSUN INDUSTRIES LLC, UNITED ARAB EMIRATES

the right to use the SKZ testing and inspection mark

A 774

for the following plastic products

Pressure pipes made of PP-R, SDR 6

Trade name: T-MECH

SKZ Specification for Tests and Inspection **HR 3.10**

Users of the SKZ mark are obliged to observe the required regulations for the production and testing of these products.

Date of initial certification: ---
Date of expiry: 23 August 2022

Würzburg, 24 August 2017

SKZ - Testing GmbH
I.V.
Dipl.-Ing. Helmut Zehninger
Certification body

TEST REPORT

Client: Thomsun Metal & Pipes Manufacturing LLC

Product: T-MECH, PPR Pipe (Green)

Tests Undertaken: BS 6920 Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water

Report Number: MAT/LAB 795A

Date of Report: 26th February 2018

NSF Water Ltd
30 Fern Close
Parsippany, NJ 07054 USA
Tel: +1 973 261 2800
Fax: +1 973 261 2801
www.nsf.org

WORK/MAT 012, Revision No. 10, 15/12/16 Page 1 of 13

Approval Number: 180252
Test Report: MAT/LAB 795A

7th March 2018

Thomsun Metal & Pipes Manufacturing LLC
PO Box 6419,
Ajman Industrial Area,
Ajman,
UAE

Water Regulations Advisory Scheme Ltd.
Unit 13,
Willow Road,
Pen Y Fan Industrial Estate,
Cwmbran,
NP11 4EG

WATER REGULATIONS ADVISORY SCHEME (WRAS) MATERIAL APPROVAL

The material referred to in this letter is suitable for contact with wholesome water for domestic purposes having met the requirements of BS6920-1:2000 and/or 2014 'Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water'.

The reference relates solely to its effect on the quality of the water with which it may come into contact and does not signify the approval of its mechanical or physical properties for any use.

POLYPROPYLENE - COMPONENTS. 5280

T-MECH, Green coloured, extruded PP-R Pipe. For use with water up to 85°C.

APPROVAL NUMBER: 180252
APPROVAL HOLDER: THOMSUN METAL & PIPES MANUFACTURING LLC

The Scheme reserves the right to review approval.
Approval 180252 is valid between February 2018 and February 2023

An entry, as above, will accordingly be included in the Water Filings Directory on-line under the section headed, 'Materials which have passed full tests of effect on water quality'.

The Directory may be found at: www.wras.co.uk/directory

Yours faithfully
Jason Furnival
Approvals & Enquiries Manager
Water Regulations Advisory Scheme

Hygiene-Institut des Ruhrgebiets
Institut für Umwelt Hygiene und Toxikologie
Direktor: Prof. Dr. rer. nat. L. Dürensen
Träger: Verein zur Bekämpfung der Volkskrankheiten im Ruhrkohlengebiet e.V.

Hygiene-Institut Postfach 10 12 06, 46102 Solingen, Germany

THOMSUN INDUSTRIES LLC
PO Box 6419
DUBAI
UAE

Vestibular postal address:
Rathausstr. 27, 43079 Solingen, Germany
Jens Witten Str. 1-3
52223 Bonn
Tel: +49 228 91 88-888
Fax: +49 228 91 88-993
www.dgw-cert.com
info@dgw-cert.com

TEST CERTIFICATE

Enhancement of Microbial Growth on Materials to Come into Contact with Drinking water
Test pursuant to DVGW Technical Standard W 270, November 2007

Client: THOMSUN INDUSTRIES LLC
PO Box 6419
DUBAI
UAE

Test material: PP-R 80, Borouge RA140E
Test method: Material test

According to this report W-288069e-17-Si/fo of 04.08.2017, the pipe-material PP-R 80, Borouge RA140E is conform to the requirements for the use in the area of drinking water systems pursuant to DVGW Technical Standard W 270. Details regarding testing procedure and test results are itemized in the test report.

This test certificate is valid from the date of issue and, given that the conditions and requirements remain unaltered, expires on 04.08.2022. Upon request of the client, the validity may be extended up to another 5 year term provided that the specifications of Technical Standard W 270 are met.

The Director of the Hygiene-Institut
Dr. rer. nat. Rüdiger Koch
Head of the Dept. for water hygienic material testing

Hygiene-Institut des Ruhrgebiets
Institut für Umwelt Hygiene und Toxikologie
Direktor: Prof. Dr. rer. nat. L. Dürensen
Träger: Verein zur Bekämpfung der Volkskrankheiten im Ruhrkohlengebiet e.V.

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TEST CERTIFICATE
according to the KTW Guideline

Product: PP-R 80 pipe

Test specimen: pipe segments (PP-R 80, RA140E), green, outer diameter 20 mm, inner diameter 13.2 mm, (manufacturer's information)

The above mentioned product was tested according to the Guideline on the hygienic assessment of organic materials in contact with drinking water of the German Environment Agency. Pursuant to the test report no.: K-289399-17-KG dated 15.09.2017 the product meets the requirements for the product group:

pipes with DN < 90 mm in contact with cold water (23°C) and warm water (60°C).

All product groups for which the requirements are met are summarised on the back side.

The certificate is valid providing that the requirements, laid down in the Guideline regarding the testing of the microbial growth are fulfilled. This can be verified for the product i.e. with a valid test certificate according to the DVGW technical rule W 270.

This test certificate is valid beginning with the date of issue and is ending by 15.09.2022. The test certificate may be extended for further five years, provided that the formulation, the relevant evaluation criteria (restrictions in the positive field), the production process and the production place of the product have not changed.

The Director of the Hygiene-Institut
on behalf of
Dr. rer. nat. Rüdiger Koch
Head of the Dept. for water hygienic material testing

Exova Limited (Abu Dhabi) T: +971 (0)2 558 2345
P.O. Box 9191 J: +971 (0)2 558 4015
Abu Dhabi E: abu@exova.com
United Arab Emirates W: www.exova.com

Test Report

Description	Testing of PPR Pipe (MEDI) - Ø 32 x 5.4 mm - SDR 6 - DIN 80778078
Tested For	M/s Thomsun Industries L.L.C., Dubai, UAE
Lab Ref #	QU020068
Quote #	18.02.2018
Date Reported	02.03.2018
Page(s)	1

1.0 Introduction
Further to instructions received for a test request from M/s THOMSUN, Dubai, the following tests were undertaken:

2.0 Sample Selection, Preparation, Testing and Witnessing
MEDI brand PPR pipe sample selected and provided by the client. Sample prepared and tested by M/s Exova Abu Dhabi using local manufacturer's test facility.

3.0 Dimensions

Test Description	Requirements	Results
Mean Outside Diameter (mm)	Minimum 32.00	Mean OD 32.10
	Maximum 32.30	
Wall Thickness (mm)	Minimum 5.40	Minimum 5.60
	Maximum 6.20	Maximum 5.95

3.1 Hydrostatic Pressure Test

Test Details / Requirements	Results
Type	Water-in-Water
Socket Type	No Socket - Plain Pipe
Number of test pieces	3
Calculated Applied Pressure	64.96 bar
Water Temperature	20 °C
Duration of Test	1 hour
Observations / Results	No sign of leak or burst observed - Passed

For and on behalf of Exova (Pipe Testing & Site Services)

Tested by: Amer Bashir Test Date: 26 Feb - 1 March 2018

Compiled by the client, certificate of sampling was not given. All Tests carried out by using Calibrated Equipment.

A10-01665-03 - PPR Pipe - 32 mm - THOMSUN - 302018

LMS ASSESSMENTS

CERTIFICATE

This is to Certify that the
Quality Management System
of
THOMSUN METAL & PIPES MANUFACTURING LLC
P.O. BOX 6419, AJMAN INDUSTRIAL AREA I,
GHARNATA STREET AJMAN, UAE,
has been independently assessed and is compliant
with the requirements of
ISO 9001:2015

This Certificate is applicable to the following product or service ranges:
**MANUFACTURING OF PPR PIPES & FITTINGS
PIPE HANGERS & SUPPORTS**
:: Certificate No :: AE205585A

ASSESSMENTS

Date of initial registration 14 July 2018
Date of this certificate 14 July 2018
Surveillance audit on or before 13 July 2019
Recertification Due / Certificate expiry 13 July 2021

This Certificate is property of LMS Certifications and remains valid subject to satisfactory surveillance audits.

Director

LMS Certifications Private Limited
1-Amanahilam, Opp. Kulkarni Picnic Spot, Ghatge
Faris Nagar, Lucknow - 226015, UP (INDIA)
e-mail - info@lmsassessments.com
Web - www.lmsassessments.com

Accreditation
DAS IAF

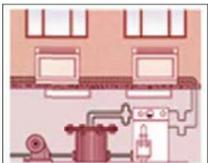
Application

Application of PPR Pipe and Fittings

- Pipe networks for rainwater utilization System, swimming pool facilities
- Pipe network for agricultural and Horticultural use
- Industrial use for transport of pressurized air and aggressive fluids (acids, etc.)
- Heating pipe for residential building



Potable water supply in residential buildings, hospitals, hotels etc.



HVAC and compressed air system.



Pipe networks for rainwater utilization System, swimming pool facilities, agriculture and horticulture, industry, i.e. transport of aggressive fluids (acids, etc.)
Industrial use for transport of pressurized air and aggressive fluids (acids, etc.). Heating pipe for residential building

Advantages

Advantages of PPR Piping Systems

- High impact Strength, Flexibility and Durability
- Ability to perform over a wide temperature range, from very low to high temperature
- Environment-friendly (Outlined by DVGW [W270])
- Fast, simple, fusion-welding of pipes and joints which produces a uniform weld to generate absolute tightness of connections with a strength equal, or even exceeding the pipe itself
- Very long lifetime with a guaranteed service life of over 50 years
- Damped vibrations and sounds are absorbed resulting to noise reduction
- Excellent flow performance properties
- Resistant to a wide array of chemicals
- Resistant to corrosion as compared to metal products
- Can be connected to any other materials used in existing installations

- ✓ T-MECH piping system : Corrosion resistance
- ✓ T-MECH piping system : Non toxic
- ✓ T-MECH piping system : Low thermal conductivity
- ✓ T-MECH piping system : High impact strength





SERVICE LIFE AGAINST HOT WATER APPLICATION

PERMISSIBLE WORKING PRESSURES (BARS) / 1.25 SAFETY FACTOR

Years of Service	Temperature	PN10	PN16	PN20	PN25
1 Year	10°C	21.1	33.4	42.0	52.9
	20°C	18.1	28.6	36.0	45.3
	30°C	15.3	24.3	30.6	38.5
	40°C	12.9	20.5	25.8	32.5
	50°C	11.0	17.5	22.0	27.7
	60°C	9.3	14.7	18.5	23.3
	70°C	7.8	12.4	15.6	19.6
	80°C	6.5	10.4	13.1	16.4
	95°C	4.6	7.3	9.2	11.6
5 Years	10°C	20.0	33.4	39.8	50A
	20°C	16.9	26.8	33.8	42.2
	30°C	14.4	22.8	28.7	36.1
	40°C	12.1	19.2	24.2	30.5
	50°C	10.2	16.2	20.4	25.7
	60°C	8.6	13.0	17.2	21.7
	70°C	7.2	11.4	14.3	18.0
	80°C	5.7	9.1	11.5	14.4
	95°C	3.0	4.8	6.1	7.6
10 Years	10°C	19.3	30.6	38.5	48.5
	20°C	16.4	26.1	32.8	41.3
	30°C	13.9	22.0	27.7	34.9
	40°C	11.8	18.7	23.6	29.7
	50°C	9.9	15.7	19.7	24.9
	60°C	8.3	13.2	16.6	20.8
	70°C	7.0	11.1	14.0	17.6
	80°C	4.8	7.6	9.6	12.0
	95°C	2.6	4.0	5.1	6.4

SERVICE LIFE AGAINST HOT WATER APPLICATION

PERMISSIBLE WORKING PRESSURES (BARS) / 1.25 SAFETY FACTOR

Years of Service	Temperature	PN10	PN16	PN20	PN25
25 Year	10°C	18.7	29.6	37.3	46.9
	20°C	16.0	25.3	31.8	40.1
	30°C	13.4	21.3	26.8	33.7
	40°C	11.3	18.0	22.6	28.5
	50°C	9.6	15.2	19.1	24.1
	60°C	8.0	12.6	15.9	20.0
	70°C	6.1	9.6	12.1	15.2
	80°C	3.8	6.1	7.6	9.6
	95°C	NA	NA	NA	NA
50 Years	10°C	18.2	28.8	36.3	45.7
	20°C	15.5	24.5	30.9	38.9
	30°C	13.1	20.7	26.1	32.9
	40°C	11.0	17.5	22.0	27.7
	50°C	9.3	14.7	18.5	23.3
	60°C	7.7	12.1	15.3	19.2
	70°C	5.1	8.1	10.2	12.8
	80°C	NA	NA	NA	NA
	95°C	NA	NA	NA	NA
75 Years	10°C	17.7	28.1	35.4	44.5
	20°C	15.0	23.8	29.3	37.7
	30°C	12.8	20.2	25.5	32.1
	40°C	21.3	16.9	21.3	26.9
	50°C	8.9	14.2	17.8	22.5
	60°C	NA	NA	NA	NA
	70°C	NA	NA	NA	NA
	80°C	NA	NA	NA	NA
	95°C	NA	NA	NA	NA

Features

SAFE AND CONVENIENT CONNECTION

T-MECH Pipes and Fittings are easy to install and assemble, with their excellent properties of lightness, ease of handling, workability and weldability.

OPAQUENESS

The light transmittance of the pipe is much lower than 0.2%. This effectively prevents the algae and bacteria from growing and ensures the safety of the drinking water.

SOUND INSULATION

The sound insulation of our pipe is better than the metal pipe. The T-MECH ppr pipes and fittings reduces the vibration of the water flow and noise to no impact by the PPR high sound insulation and flexibility features. Such features also protect the system from any water hammering.

THERMAL INSULATION

The thermal conductivity of PPR is only 1/200 of that of metal. Hence it does not require insulation to prevent heat loss.

UV RESISTANCE

In all applications subjected to UV radiation and the exposure to direct sunlight is required, T-MECH offers an external UV protective layer to the pipes.

PRESSURE -LOSS

The T-MECH pipes and pipe fittings internal surface are uniform and free of roughness, which allows liquids to flow easily without formation of deposits and allow to reduce pressure losses to a minimum.

QUALITY ASSURANCE

T-MECH maintains a high level of quality control system exceeding requirements stated by National and International Authorities and Institutions.

T-MECH PPR is conformed and certified by SKZ, HY and DVGW.

T-MECH pipes and fittings are designed to withstand constant temperature upto 70°C.

The quality plan requires that inspections and tests are carried out on all finished products. The results are documented in tests reports. Finished products are only released to stock when all tests and inspections conform to the prescribed procedures and specifications.

The final inspection and test covers the following test procedures

- ✓ Dimensional control
- ✓ Surface finish
- ✓ Impact bending test
- ✓ Hydrostatic Pressure tests – Short term and Long term
- ✓ Heat reversion test
- ✓ Homogeneity of the material
- ✓ Measurement of the melt flow index

Properties

Physical properties	Test method	Value Unit
Density at +23°C	ISO 1183	0,897g/cm ³
Melt mass-flow rate (MFR)	ISO 1133	
190°C/5.0kg		0,55g/10min
230°C/2.16kg		0,30g/10min
230°C/5.0kg		1,30g/10min
Mechanical properties	Test method	Value Unit
Tensile modulus	ISO 527-2/1	850MPa
Tensile stress	ISO 527-2/50	24,0MPa
Tensile strain at yield to 50mm/ min1,30g/10min	ISO 527-2/50	10%
Impact	Test method	Value Unit
Charpy notched impact	ISO 179	
-30°C		2,50 kJ/m ²
0°C		4,00 kJ/m ²
23°C		22,00 kJ/m ²
Charpy - Un notched impact	ISO 179	
-30°C		43,00 kJ/m ²
0°C		no break kJ/m ²
23°C		no break kJ/m ²
Hardness	Test method	Value Unit
Shore hardness D	ISO 868	65
Ball indentation hardness	ISO 2039-1	48,0N/mm ²
Thermal properties	Test method	Value Unit
Melting temperature	ISO 3146	147°C
Thermal conductivity at 20°C	DIN 52612	0,24 W/mk
Coefficient of linear temperature	DIN 53752	1.5 10 ⁻⁴ K
Vicat softening temperature		
(A50(50°C/h, 10N))	ISO 306/A50	132°C
(B50(50°C/h, 50N))	ISO 306/B50	69,0°C

Standards

The T-MECH System complies with the following standards

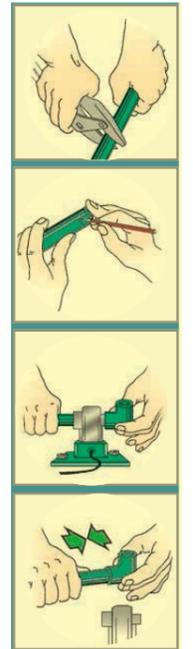
DIN 8077	Polypropylene pipes. Dimensions
DIN 8078	Polypropylene pipes type 3 Quality- tests requirements
DIN 8076	Metallic joints for PE pipelines, tests
DIN 16962	Joints and fittings for polypropylene pipes. Dimensions
DIN 4109	Soundproofing in buildings Soundproofing for water pipelines
DVGW 544	General requirements and testing of plastic pipes
DIN 16928	Connections for pipes and fittings and installation
DVS 2210/1	Plastic piping for industrial applications
DVS 2208	Machines and devices for welding of plastic pipes
DIN 4109	Sound insulation in building construction
DIN 1988	Code of practice for drinking water installations
ISO 9001-2008	Quality management system



Welding

The effectiveness and durability of the system is majorly dependant on the welding technique of the system

- Cut the pipe to desired length using appropriate cutter
- Mark the welding depth as per the table following corresponding dimension
- Set the temperature of welding device to 260°C
- Insert the pipes and fittings to the marked depth
- Heat the pipes and fittings and join without twisting
- After the cooling time, the fused joints are ready for use



BELOW TABLE TO BE REFERED FOR HEATING AND WELDING

PIPE SIZE	WELDING DEPTH	HEATING TIME	WELDING TIME	COOLING TIME
MM	MM	SEC	SEC	MIN
20	14	6	4	2
25	15	7	4	2
32	16	8	4	2
40	18	12	6	4
50	20	18	8	4
63	24	24	8	4
75	26	30	8	6
90	29	40	10	8
110	32	50	10	8

Quality System

PRESSURE TEST

After a drinking water system has been installed but before it is commissioned, it must be tested for tightness whereby this should be done while the system is still visible. Polypropylene expands under the influence of heat and pressure. For this reason, it is necessary that the test medium (as a rule water) and the pipework material are at the same temperature. Attention should, therefore, be paid to the fact that the test medium has a temperature that is as constant as possible. The pressure test is divided into three parts, namely the initial, the main and the final test.

INITIAL TEST

The highest possible operating pressure is increased by a factor of 1.5. This test pressure must be restored twice at intervals of in each case 10 minutes within a period of 30 minutes. After the pressure has been restored again a second time, the test pressure may not fall by more than 0.6 bar within the next 30 minutes. In addition, no leakage may occur.

MAIN TEST

The main test commences immediately after the completion of the initial test and lasts two hours. During this period the pressure may not fall by more than 0.2 bar relative to the pressure at the end of the initial test.

FINAL TEST

Test pressures of 10 bar and 1 bar are applied alternately at intervals of at least 5 minutes. After each application of pressure, the pipe network is to be depressurized. Leakage may not occur at any point in the network being tested.

MEASURING DEVICES

The pressure measuring device used must permit accurate readings to the nearest 0.1 bar. Where possible the pressure is to be determined at the lowest point of the network.

TEST MEMORANDUM

The test as carried out is to be documented in a memorandum which must be signed by the client and contractor with the statement of the place and date of signing.

FLUSHING OUT OF PIPEWORK SYSTEMS

The sense and purpose of flushing out pipework systems: Ensuring the quality of drinking water, avoidance of corrosion damage, avoidance of damage to fittings and equipment, cleaning of the inner surface of the pipes. Regardless of the material of the pipes, all pipework systems carrying drinking water are to be flushed out. Suitable processes are 1. Flushing out with water 2. Flushing out with a mixture of air and water Flushing out process 1, namely flushing out with water, is sufficient in the case of drinking water systems which are composed exclusively of T-Mech pipes and fittings. The appropriate flushing out process should be selected on the basis of the experience of the installing firm and of the client.

TRANSPORT AND STORAGE

Due to the properties of the material from which T-Mech pipe systems are manufactured, the pipes and fittings can fundamentally be stored at all temperatures without any problems. The storage place should, however, be selected in accordance with the following conditions:

1. The pipes should be supported along their full length.
2. Bending of the pipes is to be avoided.
3. The material becomes sensitive to impact at low temperatures and in particular at temperatures below zero °C. For this reason, knocks and similar impacts are to be avoided under these conditions.

T-Mech pipes and fittings should not be installed without protection were subject to UV radiation. T-Mech pipes and fittings are UV protected with the external packaging upon delivery. The protective package should not be removed until installation is commenced.

PPR System Linear Expansion

Calculation example for longitudinal expansion in Millimeter Longitudinal expansion of T-Mech PPR Pipe; $\alpha = 0,15 \text{ mm/m} \cdot \text{K}$

Pipe length in metres (m)	Temperature difference Δ_t (K)							
	10	20	30	40	50	60	70	80
0,1	0,15	0,30	0,45	0,60	0,75	0,90	1,05	1,10
0,2	0,30	0,60	0,90	1,20	1,50	1,80	2,10	2,40
0,3	0,45	0,90	1,35	1,80	2,25	2,70	3,15	3,60
0,4	0,60	1,20	1,80	2,40	3,00	3,60	4,20	4,80
0,5	0,75	1,50	2,25	3,00	3,75	4,50	5,25	6,00
0,6	0,90	1,80	2,70	3,60	4,50	5,40	6,30	7,20
0,7	1,05	2,10	3,15	4,20	5,25	6,30	7,35	8,40
0,8	1,20	2,40	3,60	4,80	6,00	7,20	8,40	9,60
0,9	1,35	2,70	4,05	5,40	6,75	8,10	9,45	10,80
1,0	1,50	3,00	4,50	6,00	7,50	9,00	10,50	12,00
2,0	3,00	6,00	9,00	12,00	15,00	18,00	21,00	24,00
3,0	4,50	9,00	13,50	18,00	22,50	27,00	31,50	36,00
4,0	6,00	12,00	18,00	24,00	30,00	36,00	42,00	48,00
5,0	7,50	15,00	22,50	30,00	37,50	45,00	52,50	60,00
6,0	9,00	18,00	27,00	36,00	45,00	54,00	63,00	72,00
7,0	10,50	21,00	31,50	42,00	52,50	63,00	73,50	84,00
8,0	12,00	24,00	36,00	48,00	60,00	72,00	84,00	96,00
9,0	13,50	27,00	40,50	54,00	67,50	81,00	94,50	108,00
10,0	15,00	30,00	45,00	60,00	75,00	90,00	105,00	120,00

Longitudinal expansion of T-Mech Glass Fiber Pipe; $\alpha = 0,035 \text{ mm/m} \cdot \text{K}$

Pipe length in metres (m)	Temperature difference Δ_t (K)							
	10	20	30	40	50	60	70	80
0,1	0,04	0,07	0,11	0,14	0,18	0,21	0,25	0,28
0,2	0,07	0,14	0,21	0,28	0,35	0,42	0,49	0,56
0,3	0,11	0,21	0,32	0,42	0,53	0,63	0,74	0,84
0,4	0,14	0,28	0,42	0,56	0,70	0,84	0,98	1,12
0,5	0,18	0,35	0,53	0,70	0,88	1,05	1,23	1,40
0,6	0,21	0,42	0,63	0,84	1,05	1,26	1,47	1,68
0,7	0,25	0,49	0,74	0,98	1,23	1,47	1,72	1,96
0,8	0,28	0,56	0,84	1,12	1,40	1,68	1,96	2,24
0,9	0,32	0,63	0,95	1,26	1,58	1,89	2,21	2,52
1,0	0,35	0,70	1,05	1,40	1,75	2,10	2,45	2,80
2,0	0,70	1,40	2,10	2,80	3,50	4,20	4,90	5,60
3,0	1,05	2,10	3,15	4,20	5,25	6,30	7,35	8,40
4,0	1,40	2,80	4,20	5,60	7,00	8,40	9,80	11,20
5,0	1,75	3,50	5,25	7,00	8,75	10,50	12,25	14,00
6,0	2,10	4,20	6,30	8,40	10,50	12,60	14,70	16,80
7,0	2,45	4,90	7,35	9,80	12,25	14,70	17,15	19,60
8,0	2,80	5,60	8,40	11,20	14,00	16,80	19,60	22,40
9,0	3,15	6,30	9,45	12,60	15,75	18,90	22,05	25,20
10,0	3,50	7,00	10,50	14,00	17,50	21,00	24,50	28,00

PPR Pipes

PPR Pipe SDR11/PN10



Part no	Dimension	Wall Thickness	Inner diameter	Packing unit	Kg/Mtr.
TMP1020	20	2	16	100mtrs	0.107
TMP1025	25	2.3	20.4	100mtrs	0.164
TMP1032	32	2.9	26.2	40mtrs	0.261
TMP1040	40	3.7	32.6	40mtrs	0.412
TMP1050	50	4.6	40.8	20mtrs	0.638
TMP1063	63	5.8	51.4	20mtrs	1.01
TMP1075	75	6.8	61.4	16mtrs	1.41
TMP1090	90	8.2	73.6	12mtrs	2.03
TMP10110	110	10	90	8mtrs	3.01

PPR Pipe SDR7.4/PN16



Part no	Dimension	Wall Thickness	Inner diameter	Packing unit	Kg/Mtr.
TMP1620	20	2.8	14.4	100mtrs	0.148
TMP1625	25	3.5	18	100mtrs	0.23
TMP1632	32	4.4	23.3	40mtrs	0.37
TMP1640	40	5.5	29	40mtrs	0.575
TMP1650	50	6.9	36.2	20mtrs	0.896
TMP1663	63	8.6	45.6	20mtrs	1.41
TMP1675	75	10.3	54.4	16mtrs	2.01
TMP1690	90	12.3	65.4	12mtrs	2.87
TMP16110	110	15.1	79.8	8mtrs	4.3

PPR Pipe SDR6/PN20



Part no	Dimension	Wall Thickness	Inner diameter	Packing unit	Kg/Mtr.
TMP2020	20	3.4	13.2	100mtrs	0.172
TMP2025	25	4.2	16.6	100mtrs	0.266
TMP2032	32	5.4	21.2	40mtrs	0.434
TMP2040	40	6.7	26.6	40mtrs	0.671
TMP2050	50	8.3	33.4	20mtrs	1.04
TMP2063	63	10.5	42	20mtrs	1.65
TMP2075	75	12.5	50	16mtrs	2.34
TMP2090	90	15	60	12mtrs	3.36
TMP20110	110	18.3	73.4	8mtrs	5.01

PPR Pipes

PPR Pipe SDR5/PN25



Part no	Dimension	Wall Thickness	Inner diameter	Packing unit	Kg/Mtr.
TMP2520	20	4.1	11.8	100mtrs	0.198
TMP2525	25	5.1	14.8	100mtrs	0.307
TMP2532	32	6.5	19	40mtrs	0.498
TMP2540	40	8.1	23.8	40mtrs	0.775
TMP2550	50	10.1	29.8	20mtrs	1.210
TMP2563	63	12.7	37.6	20mtrs	1.910
TMP2575	75	15.1	44.8	16mtrs	2.700
TMP2590	90	18.1	53.8	12mtrs	3.880
TMP25110	110	22.1	65.8	8mtrs	5.780

PPR Glass fiber Pipe SDR7.4/PN20



Part no	Dimension	Wall Thickness	Inner diameter	Packing unit	Kg/Mtr.
TMPG2020	20	2.8	14.4	100mtrs	0.220
TMPG2025	25	3.5	18	100mtrs	0.320
TMPG2032	32	4.4	23.2	240mtrs	0.470
TMPG2040	40	5.5	29	40mtrs	0.720
TMPG2050	50	6.9	36.2	20mtrs	1.060
TMPG2063	63	8.6	45.8	20mtr	1.650
TMPG2075	75	10.3	54.4	16mtrs	2.280
TMPG2090	90	12.3	65.4	12mtrs	3.200
TMPG20110	110	15.1	79.8	8mtrs	4.600

PPR Glass fiber Pipe SDR6/PN25



Part no	Dimension	Wall Thickness	Inner diameter	Packing unit	Kg/Mtr.
TMPG2520	20	3.4	13.2	100mtrs	0.19
TMPG2525	25	4.2	16.6	100mtrs	0.28
TMPG2532	32	5.4	21.2	240mtrs	0.45
TMPG2540	40	6.7	26.6	40mtrs	0.69
TMPG2550	50	8.3	33.4	20mtrs	1.07
TMPG2563	63	10.5	42	20mtr	1.74
TMPG2575	75	12.5	50	16mtrs	2.41
TMPG2590	90	15	60	12mtrs	3.47
TMPG25110	110	18.3	73.4	8mtrs	5.17



Note: For External Installations requiring resistance to sunlight exposure, black coloured UV Pipes and Fittings are recommended

Fittings

Socket

Part no	Dimension / mm	Packing unit
TMFS20	20	10
TMFS25	25	10
TMFS32	32	5
TMFS40	40	5
TMFS50	50	5
TMFS63	63	1
TMFS75	75	1
TMFS90	90	1
TMFS110	110	1

Elbow 90

Part no	Dimension / mm	Packing unit
TMFE9020	20	10
TMFE9025	25	10
TMFE9032	32	5
TMFE9040	40	5
TMFE9050	50	5
TMFE9063	63	1
TMFE9075	75	1
TMFE9090	90	1
TMFE90110	110	1

Elbow 45

Part no	Dimension / mm	Packing unit
TMFE4520	20	10
TMFE4525	25	10
TMFE4532	32	5
TMFE4540	40	5
TMFE4550	50	5
TMFE4563	63	1
TMFE4575	75	1
TMFE4590	90	1
TMFE45110	110	1

Fittings

Tee

Part no	Dimension / mm	Packing unit
TMFT20	20	10
TMFT25	25	10
TMFT32	32	5
TMFT40	40	5
TMFT50	50	5
TMFT63	63	1
TMFT75	75	1
TMFT90	90	1
TMFT110	110	1

Reducing Socket

Part no	Dimension / mm	Packing unit
TMFRS2520	25X20	10
TMFRS3220	32X20	5
TMFRS3225	32X25	5
TMFRS4020	40X20	5
TMFRS4025	40X25	5
TMFRS4032	40X32	5
TMFRS5020	50X20	5
TMFRS5025	50X25	5
TMFRS5032	50X32	5
TMFRS5040	50X40	5
TMFRS6320	63X20	1
TMFRS6325	63X25	1
TMFRS6332	63X32	1
TMFRS6340	63X40	1
TMFRS6350	63X50	1
TMFRS7540	75X40	1
TMFRS7550	75X50	1
TMFRS7563	75X63	1
TMFRS9050	90X50	1
TMFRS9063	90X63	1
TMFRS9075	90X75	1
TMFRS11063	110X63	1
TMFRS11075	110X75	1
TMFRS11090	110X90	1

Fittings

Reducing Tee

Part no	Dimension / mm	Packing unit
TMFRT2520	25X20	10
TMFRT3220	32X20	5
TMFRT3225	32X25	5
TMFRT4020	40X20	5
TMFRT4032	40X32	5
TMFRT5020	50X20	5
TMFRT5025	50X25	5
TMFRT5032	50X32	5
TMFRT5040	50X40	5
TMFRT6320	63X20	1
TMFRT6325	63X25	1
TMFRT6332	63X32	1
TMFRT6340	63X40	1
TMFRT6350	63X50	1
TMFRT7540	75X40	1
TMFRT7550	75X50	1
TMFRT7563	75X63	1
TMFRT9050	90X50	1
TMFRT9063	90X63	1
TMFRT9075	90X75	1
TMFRT11063	110X63	1
TMFRT11075	110X75	1
TMFRT11090	110X90	1

End Cap

Part no	Dimension / mm	Packing unit
TMFEC20	20	25
TMFEC25	25	25
TMFEC32	32	10
TMFEC40	40	10
TMFEC50	50	5
TMFEC63	63	5
TMFEC75	75	4
TMFEC90	90	3
TMFEC110	110	2

Fittings

Cross Tee

Part no	Dimension / mm	Packing unit
TMFCT20	20	10
TMFCT25	25	10
TMFCT32	32	5

Pipe Clamp

Part no	Dimension / mm	Packing unit
TMFPC20	20	200
TMFPC25	25	200
TMFPC32	32	100

End Plug

Part no	Dimension / mm	Packing unit
TMFEP12	½"	100
TMFEP34	¾"	100
TMFEP1	1"	100

Cross Over

Part no	Dimension / mm	Packing unit
TMFCO20	20	10
TMFCO25	25	10
TMFCO32	32	5

PPR Union

Part no	Dimension / mm	Packing unit
TMFU20	20	10
TMFU25	25	10
TMFU32	32	5

Fittings

Female Socket

Part no	Dimension / mm	Packing unit
TMTS2012	20 X 1/2"	10
TMTS2034	20 X 3/4"	10
TMTS2512	25 X 1/2"	10
TMTS2534	25 X 3/4"	10
TMTS3234	32 X 3/4"	5
TMTS321	32 X 1"	5
TMTS401	40 X 1"	5
TMTS40114	40 X 1 1/4"	5
TMTS50112	50 X 1 1/2"	1
TMTS632	63 X 2"	1
TMTS75212	75 X 2 1/2"	1
TMTS903	90 X 3"	1
TMTS1104	110 X 4"	1

Male Socket

Part no	Dimension / mm	Packing unit
TMTSM2012	20 X 1/2"	10
TMTSM2034	20 X 3/4"	10
TMTSM2512	25 X 1/2"	10
TMTSM2534	25 X 3/4"	10
TMTSM3234	32 X 3/4"	5
TMTSM321	32 X 1"	5
TMTSM401	40 X 1"	5
TMTSM40114	40 X 1 1/4"	5
TMTSM50112	50 X 1 1/2"	1
TMTSM632	63 X 2"	1
TMTSM75212	75 X 2 1/2"	1
TMTSM903	90 X 3"	1
TMTSM1104	110 X 4"	1

Wall Mount Elbow

Part no	Dimension / mm	Packing unit
TMTWM20	20 X 1/2"	10
TMTWM25	25 X 1/2"	10

Female Elbow

Part no	Dimension / mm	Packing unit
TMTE2012	20 X 1/2"	10
TMTE2034	20 X 3/4"	10
TMTE2512	25 X 1/2"	10
TMTE2534	25 X 3/4"	10
TMTE3212	32 X 1/2"	5
TMTE3234	32 X 3/4"	5
TMTE321	32 X 1"	5

Male Elbow

Part no	Dimension / mm	Packing unit
TMTEM2012	20 X 1/2"	10
TMTEM2034	20 X 3/4"	10
TMTEM2512	25 X 1/2"	10
TMTEM2534	25 X 3/4"	10
TMTEM3212	32 X 1/2"	5
TMTEM3234	32 X 3/4"	5
TMTEM321	32 X 1"	5

Female Tee

Part no	Dimension / mm	Packing unit
TMTT2012	20 X 1/2"	10
TMTT2034	20 X 3/4"	10
TMTT2512	25 X 1/2"	10
TMTT2534	25 X 3/4"	10
TMTT3212	32 X 1/2"	5
TMTT3234	32 X 3/4"	5
TMTT321	32 X 1"	5

Male Tee

Part no	Dimension / mm	Packing unit
TMTTM2012	20 X 1/2"	10
TMTTM2512	25 X 1/2"	10

Fittings



Stop Valve

Part no	Dimension / mm	Packing unit
TMTSV20	20 X ¾"	1
TMTSV25	25 X ¾"	1
TMTSV32	32 X 1"	1



Concealed Valve

Part no	Dimension / mm	Packing unit
TMTCV20	20 X ¾"	1
TMTCV25	25 X ¾"	1
TMTCV32	32 X 1"	1



Female Union

Part no	Dimension / mm	Packing unit
TMTFU2012	20 X ½"	10
TMTFU2534	25 X ¾"	10
TMTFU321	32 X 1"	10
TMTFU40114	40 X 1 ¼"	5
TMTFU50112	50 X 1 ½"	5
TMTFU632	63 X 2"	5



Male Union

Part no	Dimension / mm	Packing unit
TMTMU2012	20 X ½"	10
TMTMU2534	25 X ¾"	10
TMTMU321	32 X 1"	10
TMTMU40114	40 X 1 ¼"	5
TMTMU50112	50 X 1 ½"	5
TMTMU632	63 X 2"	5



Angle Valve

Part no	Dimension / mm	Packing unit
TMAV12	½"	1

Fittings



Flange Adapter with Seal

Part no	Dimension / mm	Packing unit
TMTFA40	40	1
TMTFA50	50	1
TMTFA63	63	1
TMTFA75	75	1
TMTFA90	90	1
TMTFA110	110	1



Brass PPR Ball Valve

Part no	Dimension / mm	Packing unit
TMTBV20	20	1
TMTBV25	25	1
TMTBV32	32	1
TMTBV40	40	1
TMTBV50	50	1
TMTBV63	63	1



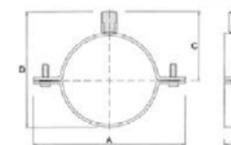
PPR Ball Valve

Part no	Dimension / mm	Packing unit
TMFBV20	20	1
TMFBV25	25	1
TMFBV32	32	1
TMFBV40	40	1
TMFBV50	50	1
TMFBV63	63	1



Clamps

Part no	Size Inches	D/ mm	Packing unit
TMSC15	3/8"	16	15-19
TMSC22	1/2"	20	20-25
TMSC28	3/4"	25	26-30
TMSC35	1"	32	32-36
TMSC42	1.1/4"	40	38-43
TMSC48	1.1/2"	50	47-51
TMSC60	2"	63	60-64
TMSC75	2.1/2"	75	74-80
TMSC90	3"	90	87-92
TMSC110	4"	110	107-112



Accessories

Pipe Cutter



Part no	Dimension / mm	Packing unit
TMAPC075	0 - 75 mm	1 pc

Pipe Cutter



Part no	Dimension / mm	Packing unit
TMAPC50125	50 - 125 mm	1 pc

Pipe Cutter



Part no	Dimension / mm	Packing unit
TMAPC042	0 - 42 mm	1 pc

Professional Pipe Cutter



Part no	Dimension / mm	Packing unit
TMAPC042A	0 - 42 mm	1 pc

Repair Pin



Part no	Dimension / mm	Packing unit
TMAPR-7:11	7 - 11 mm	1 pc

Accessories

Welding Tools

Art no	D/mm	Packing unit	Kg / Piece
P-WT1-20	20 mm	1 pc	0.112
P-WT1-25	25 mm	1 pc	0.142
P-WT1-32	32 mm	1 pc	0.185
P-WT1-40	40 mm	1 pc	0.260
P-WT1-50	50 mm	1 pc	0.395
P-WT1-63	63 mm	1 pc	0.618
P-WT1-75	75 mm	1 pc	0.790
P-WT1-90	90 mm	1 pc	1.170
P-WT1-110	110 mm	1 pc	1.750



Peeling Tools

Art no	D/mm	Packing unit	Kg / Piece
P-WT2-2025	20 - 25 mm	1 pc	0.340
P-WT2-3240	32 - 40 mm	1 pc	0.470
P-WT2-5063	50 - 63 mm	1 pc	1.060
P-WT2-7590	75 - 90 mm	1 pc	1.160
P-WT2-110	110 mm	1 pc	1.660



Welding Tools for Saddle

Art no	D/mm	Packing unit	Kg / Piece
P-WT1-6320	63/20 mm	1 pc	0.380
P-WT1-6325	63/25 mm	1 pc	0.365
P-WT1-6332	63/32 mm	1 pc	0.335
P-WT1-7520	75/20 mm	1 pc	0.377
P-WT1-7525	75/25 mm	1 pc	0.357
P-WT1-7532	75/32 mm	1 pc	0.337
P-WT1-9020	90/20 mm	1 pc	0.382
P-WT1-9025	90/25 mm	1 pc	0.362
P-WT1-9032	90/32 mm	1 pc	0.342
P-WT1-11020	110/20 mm	1 pc	0.386
P-WT1-11025	110/25 mm	1 pc	0.366
P-WT1-11032	110/32 mm	1 pc	0.346



Welding Device

Art no	D/mm	Packing unit	Kg / Piece
P-WT1-6320	63/20 mm	1 pc	0.380
P-WT1-6325	63/25 mm	1 pc	0.365
P-WT1-11032	110/32 mm	1 pc	0.346



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METAL & PIPE MANUFACTURING L.L.C

P.O. Box: 6419 | Dubai | UAE | Tel: +971 4 885 4000 | Fax: +971 4 885 1010

E-mail: sales@thomsunin.ae | www.thomsun.com