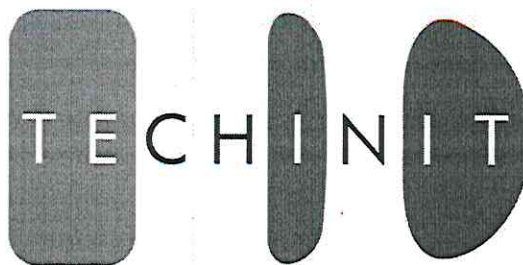


6 ORIGIN CERTIFICATES

CONTENT



Tecnologie Innovative Italia

To whom it may concern

We, Techinit S.r.l. located in Via L. da Zara, 16/18 - 35020 Albignasego (PD) ITALY, confirm that FREO-PIPE® is produced in our factory in Italy.

FREO-PIPE® is produced according to EN Standards 1736:2008 and is tested according to par. 6.1 of the Normative, at 78 bars.

Product is inspected by TÜV Austria (Italy branch) with Inspection Report TAI/20/001.

Norm Compliance Dossier is available upon qualified request at info@techinit.it

Any technical information or test results issued by Techinit, or by the third certification body, and referred to FastPipe® shall be construed as referred to FREO-PIPE®.

We, Techinit S.r.l., guarantee the integrity of our product (pipe) for 10 years against manufacturing defects, as stated in Annex A.

Limitations, exclusions and warranty voiding clauses may apply.

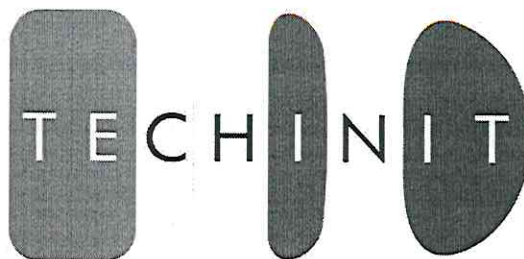
Albignasego, May 30th 2022

Techinit S.r.l.

Chairman Ivo Lamenti

TECHINIT srl
Amministratore
IVO LAMENTI





Tecnologie Innovative Italia

ANNEX A)

Warranty limitations, exclusion and warranty voiding clauses

Warranty limitations

Techinit's warranty exclusively covers the structural integrity and the pressure strength of FREO-PIPE, in case of manufacturing defect, for a duration of 10 (ten) years from the production date printed on Product. The production date that makes reference is the one that is directly printed onto the grey outer layer of FREO-PIPE. No other dates or information can extend the duration of the warranty.

The warranty issued by Techinit S.r.l. covers the structural integrity and the pressure strength of the pipe, established that no warranty voiding clauses apply.

Techinit is not issuing a specific warranty upon the correct functionality of the Air Conditioner or of any other thermo-dynamic device connected using FREO-PIPE, being that there are many conditions that, mutually, can affect the operation of the Air Conditioner or of the device.

By structural integrity of the pipe is strictly intended the capacity of the pipe – fittings excluded – to withstand the hydrostatic pressure of 78 bars, as per Normative Requirements.

Warranty voiding clauses

In case of failure of the structural integrity and the pressure strength of the pipe, any wrong assembling procedure, bad habit as well as any other action that could damage or shorten the lifespan of the pipe shall void this warranty.

For example, and without any limitation, such wrong procedures and bad habits includes:

- incorrect insertion and assembly of the fitting kit;
- incorrect crimping of the bushing,
- over-tightening of the nuts (breaking of the internal flare of the fitting is explicitly excluded from the warranty);
- improper use of the assembly lubricant;
- improper use of copper gasket or third-party sealants, direct and continuous exposition to sunlight of the Product (the whole tube shall be entirely protected in a sunproof insulation or cover, for the whole duration of the warranty);
- kinking or over-bending (minimum bending radiuses are provided in the Product Manual);
- improper pipe twisting during the installation;
- use of pliers or other tools to handle and lay the Product.

Being that the Product is completely tested and verified in our production sites, any other external damage on the pipe (including and not limiting to scratches, kinks, pinches and cuts) shall void the warranty. In the event of a dispute, the decision on whether a damage voids or not the warranty is upon the sole manufacturer.

Claim exclusions and costs rejections

It is explicitly excluded and rejected any claim that is approximate, unsubstantiated, undefined, not demonstrable and, in general, which does not allow contradictory analysis.

Any cost related to reaching the pipe, including as example and not limiting to opening walls, channels, ducts as well as renting ladders or lifting platforms are not acceptable.

Any costs related to eventual damages of Air Conditioners or other devices are rejected unless there is a demonstrable failure of the structural integrity of the Pipe.

In case of dispute that involves direct or indirect costs for the Manufacturer, the claimer understand that those costs will have to be refunded to the Manufacturer in case of warranty voiding.



TECHINIT srl
Amministratore
IVO LAMENTI

شهادة مطابقة إرسالية للمنتجات المستوردة
Shipment Conformity certificate for imported products



نقر ونتعهد نحن (.....) مؤسسة الريادة المتطورة للتجارة (بأن جميع بيانات المنتجات الموجودة في طلب الإرسالية صحيحة ، وأن المنتجات مطابقة للمواصفات القياسية السعودية ذات العلاقة ، ونتعهد بتوفير أي ملفات فنية للمنتجات تطلبها الهيئة السعودية للمواصفات والمقاييس والجودة أو من يمثلها لاحقاً ، وفي حال تبين عدم صحة ذلك اتحمل جميع التبعات النظامية المترتبة على ذلك

Certificate Number	IT-22-0070901	Issue Date	19/02/2022
Certificate Type	Shipment Conformity Certificate for Imported Products	Commercial Registration No	1010495497
Establishment Address		Shipment country	Italy

Product and Manufacturer Data			
Model Name	FP0145014	Trade Mark	Freo-Pipe®
Product Name	TUBE FREO-PIPE		
Product Description			
Country of origin			
Production Date			
HS Code	400942100004		
Manufacturer name	TECNOLOGIE INNOVATIVE ITALIA		
Exporter name	TECNOLOGIE INNOVATIVE ITALIA	Exporter Address	ITALY



نقر ونتعهد نحن (.....) مؤسسة الريادة المتطورة للتجارة (بأن
المنتج ليس خاضع لأي من اللوائح الفنية المعتمدة من الهيئة كما أنه ليس بمنتج دوائي أو غذائي أو زراعي ولا يقع
خارج نطاق المنتجات المشمولة باللوائح الفنية والمواصفات القياسية ذات العلاقة المعتمدة من الهيئة.

19/02/2022 01:10





شهادة مطابقة للمنتجات الخاضعة للوائح

Certificate of conformity for regulated products



We (.....Gulftic Europe Certification LLC.....) office number (.....121127.....) are bearing full responsibility for the product described below is conforms to the conformity assessment procedure Conduct the relevant technical regulations and standards which mentioned during this certificate.

Certificate Number	00845-121-24-1410754	Issue Date	27/05/2024	Expire Date	27/05/2025
Certificate Type	Product Conformity Certificate (COC)	Commercial Registration No	1010419897 / 7006399856		
Establishment Address	26 7133 الرياض الاحساء				
Product and Manufacturer Data					
Model type	TUBE 0 1/4	Trade Mark	FREO PIPE		
Product Name	TUBE FREO-PIPE				
Product Description					
Country of origin					
HS Code	391731000003				
Technical Regulation	Technical Regulation for Building Materials - Part 5 : Tubes and Pipes used in water, electricity and Gas networks				
Manufacturer name	TECHINIT S.r.I				
Manufacturer Address	viale L.Da Zara, 16/18 35020 Albignasego (PD) Italy				
Product test data					
Report number					
Report Date					
Decision of conformity assessment	Product Approved				

CB Organization Office
Responsabile Manager
signature

27/05/2024 03:12

CB Organization Office
Stamp



[Terms and Conditions \(/Home/Terms\)](#) | [Contact Us \(/home/ContactUs\)](#) | [SASO Portal](#)

(<http://www.saso.gov.sa/en/contactus/Pages/default.aspx>)

CONTENT

7 TEST CERTIFICATES

FREO - PIPE

F L E X I B L E A / C P I P E

PRODUCT CERTIFICATES

TUV AUSTRIA:



TUV Austria Bureau of Inspection & Certification. A leading Testing, Inspection, Certification & Training company globally authorized to offer third party Testing, Inspection, Certification & Training services.

Giordano Test Inspection:



The Giordano Institute is part of the group of CE notified bodies and works in the field of product certification and laboratory testing on materials.

The tubes have been tested pressure test in accordance with standards UNI EN 1736:2009 and UNI ISO 6605:2005.

Fire Rating Certificate UL94-V0:



UL94 is a standard set by UL for testing for flammability of plastics. V-0 Vertical Burn Burning stops within 10 seconds after two applications of ten seconds each of a flame to a test bar. NO flaming drips are allowed.

LifeTime of the tube:



This certificate is issued by 3A Laboratori which illustrates the Product life evaluation in reference to the ASTM E1877-15 (Calculating Thermal Endurance of Materials from Thermogravimetric Decomposition Data).

Nitrogen Test Certificate:

This is an indoor test certificate for the final kit product, by testing the Tube with Nitrogen at 78 bar pressure.

Leakage points can be observed visually and by the Oil Leakage Detection Spray. Each tube is tested after crimping and before packaging.

**ATTESTATO DI VERIFICA**
VERIFICATION REPORTATTESTATO N°: TAI/21/007
REPORT NR.:DATA PROVE: 01/10/2020
TEST DATE:NOME ED INDIRIZZO DEL RIVENDITORE:
NAME AND ADDRESS OF THE DEALER:ADVANCED LEADERSHIP EST.
Office 3, Al Ahsaa Commercial Building
Al Ahsaa Street P.O. Box 3066
Riyadh (Saudi Arabia)CARATTERISTICHE DELL'E.U.T.:
E.U.T. FEATURES:GENERE:
Category:Sistema di tubi flessibili e connessioni.
Flexible tubing system and fittings.MARCA:
Trade mark:Prodotto Freo-Pipe®
Product Freo-Pipe®TIPO:
Type:Diametri 1/4", 3/8", 1/2", 5/8"
Diameter 1/4", 3/8", 1/2", 5/8"MATRICOLA/ lotto:
Serial number / Lot:

Flexible tubing 1/4"	Flexible tubing 3/8"	Flexible tubing 1/2"	Flexible tubing 5/8"
19/042C, 19070C, 20/005A, 20/005C, 20/020C	20/009B, 20/010C, 20/015C, 20/032B, 20/092B	19/047A, 19/068C, 19/075E, 20/007B, 20/062B	19/048G, 20/002B, 20/013F, 20/019C, 20/035E

NORME DI RIFERIMENTO:
TEST STANDARDS:

EN 1736 : 2008

RISULTATO DELLE PROVE:
TEST RESULT:I risultati, le condizioni e le modalità di prova sono contenuti nel
rapporto d'ispezione n. BS/RE/FV/20/0504/04
The results, conditions and test methods are included in the inspection
report n. BS/RE/FV/20/0504/04NOTE:
REMARKS:Le verifiche fanno riferimento alle parti applicabili delle norme di riferimento citate. Prove superate.
Tests refer to the applicable parts of the applicable reference standards. Tests passed.CONDIZIONI:
CONDITIONS:Questo certificato non autorizza l'apposizione di alcun tipo di marcatura CE. È vietata la parziale
riproduzione del certificato senza l'approvazione di TÜV AUSTRIA ITALIA – BLU SOLUTIONS s.r.l.
This certificate does not allow to affix any kind of EC mark. The partial reproduction of the certificate is forbidden
without TÜV AUSTRIA ITALIA – BLU SOLUTIONS s.r.l. approval.Eventuali variazioni delle norme di riferimento e/o modifiche rispetto al campione testato, fanno
decadere la validità del presente attestato.
Variation of the reference standards and/or modifications regarding to the sample tested, invalidate the validity of this
certificate.Revisione r00 / Rev. r00
Erbusco, 22/12/2021Responsabile tecnico
Technical ManagerTÜV AUSTRIA ITALIA - Blu Solutions s.r.l. - Via del Commercio, 6/A - 60030 Monte Roberto (AN) - T: +39 0731 22781 - F: +39 0731 227806
E: info@tuvaustraiitalia.com - tuvaustriaitalia@legalmail.it - W: www.tuvaustriaitalia.com - Codice Sdi M5UXCR1
C.F. - P. IVA IT02217380423 - Cap. Soc. i.v. EUR 10.000,00 - R.L. Ancona REA n. 170070
A socio unico, soggetta a controllo e coordinamento di: TÜV AUSTRIA HOLDING AG Deutschstrasse 10, A-1230, Vienna, AustriaSede operativa: Via dell'Industria, 14 - 25030 Erbusco (BS) - T: +39 030 982 1049 - F: +39 030 982 2253 - E: info.bs@tuvaustraiitalia.com
Sede operativa: Via Pasquale Romano, 25 - 72100 Brindisi (BR) - T: +39 347 597 0825 - F: +39 030 982 2253 - E: info.br@tuvaustraiitalia.com

TÜV®

RAPPORTO DI PROVA N. 374617**TEST REPORT No. 374617**

Cliente / Customer

TECHINIT S.r.l.

Via Leonino Da Zara, 16/18 - 35020 ALBIGNASEGO (PD) - Italia

Oggetto / Item*

tubazioni per uso frigorifero denominate
"Tubo FastPipe by Techinit - Diam DN ¼", ⅜", ½", ⅝"
- PAT.PEND PN60"

pipes for refrigeration use named "Tubo FastPipe by Techinit -
Diam DN ¼", ⅜", ½", ⅝" - PAT.PEND PN60"

Attività / Activity

prova di resistenza a pressione secondo le norme
UNI EN 1736:2009 e UNI ISO 6605:2005
pressure test in accordance with standards
UNI EN 1736:2009 and UNI ISO 6605:2005



Risultati / Results

Prova Test	Esito Result
resistenza pressione -0,99 bar _g e 78 bar _g <i>pressure resistance -0,99 bar_g and 78 bar_g</i>	positivo nessun cedimento e/o rottura <i>positive</i> <i>no yielding and/or breaking</i>
resistenza a scoppio a 180 bar _g <i>burst resistance at 180 bar_g</i>	positivo nessun cedimento e/o rottura <i>positive</i> <i>no yielding and/or breaking</i>
resistenza a pressione pulsante <i>resistance to pulsating pressure</i>	positivo nessun cedimento e/o rottura <i>positive</i> <i>no yielding and/or breaking</i>

(*) secondo le dichiarazioni del cliente.
according to that stated by the customer.

Bellaria-Igea Marina - Italia, 8 settembre 2020
Bellaria-Igea Marina - Italy, 8 September 2020

L'Amministratore Delegato
Chief Executive Officer

Commessa:

Order:
84974

Provenienza dell'oggetto:

Item origin:
campionato e fornito dal cliente
sampled and supplied by the customer

Identificazione dell'oggetto in accettazione:

Identification of item received:
2020/1724 del 10 agosto 2020
2020/1724 dated 10 August 2020

Data dell'attività:

Activity date:
dal 27 agosto 2020 al 6 settembre 2020
from 27 August 2020 to 6 September 2020

Luogo dell'attività:

Activity site:
Istituto Giordano S.p.A. - Blocco 4 - Via San Mauro, 8 - 47814 Bellaria-Igea Marina (RN) - Italia

Indice	Pagina
Descrizione dell'oggetto*	2
Riferimenti normativi	3
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Modalità	4
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Contents	Page
Description of item*	2
Normative references	3
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Method	4
Results	5

Il presente documento è composto da n. 5 pagine (in formato bilingue (italiano e inglese), in caso di dubbio è valida la versione in lingua italiana) e non può essere riprodotto parzialmente, estrapolando parti di interesse a discrezione del cliente, con il rischio di favorire una interpretazione non corretta dei risultati, fatto salvo quanto definito a livello contrattuale.

I risultati si riferiscono solo all'oggetto in esame, così come ricevuto, e sono validi solo nelle condizioni in cui l'attività è stata effettuata.

L'originale del presente documento è costituito da un documento informatico firmato digitalmente ai sensi della Legislazione Italiana applicabile.

This document is made up of 5 pages (in a bilingual format (Italian and English), in case of dispute the only valid version is the Italian one) and shall not be reproduced except in full without extrapolating parts of interest at the discretion of the customer, with the risk of favoring an incorrect interpretation of the results, except as defined at contractual level.

The results relate only to the item examined, as received, and are valid only in the conditions in which the activity was carried out.

The original of this document consists of an electronic document digitally signed pursuant to the applicable Italian Legislation.

Responsabile Tecnico di Prova: / Chief Test Technician:

Dott. Ing. Luca Bonini

Laboratorio PED-Saldature-CND: / Head of PED-Welding-NDT Laboratory:

Dott. Alessandro Gaspari

Compilatore: / Compiler: Francesca Manduchi

Revisore: / Reviewer: Dott. Ing. Luca Bonini

Pagina 1 di 5 / Page 1 of 5

Descrizione dell'oggetto*

Description of item*

L'oggetto in esame è costituito da tubazioni per uso frigorifero di diametro DN $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ".

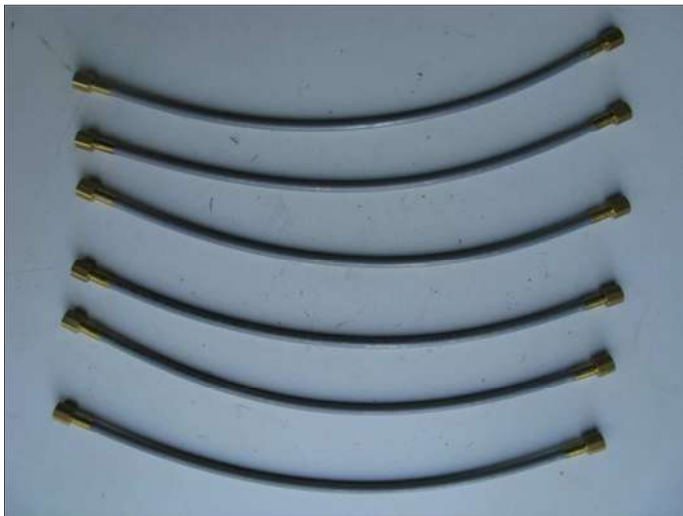
Per ciascun diametro sono state fornite n. 12 tubazioni di cui n. 6 di lunghezza 500 mm e n. 6 di lunghezza conforme alle prescrizioni del paragrafo 6.5 della norma UNI ISO 6605:2005, aventi PN 60 bar_g e temperatura di lavoro 70 °C.

The item under examination consists of pipes for refrigeration use DN $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ".

For each diameter, No. 12 pipes of which No. 6 of length 500 mm and No. 6 of length complying with the requirements of paragraph 6.5 of the UNI ISO 6605:2005 standard, with PN 60 bar_g and working temperature 70 °C.

FOTOGRAFIE DELL'OGGETTO

PHOTOGRAPHS OF THE ITEM



Tubazione DN $\frac{1}{4}$ "

Pipe DN $\frac{1}{4}$ "



Tubazione DN $\frac{3}{8}$ "

Pipe DN $\frac{3}{8}$ "

(*) secondo le dichiarazioni del cliente, a eccezione delle caratteristiche espressamente indicate come rilevate; Istituto Giordano declina ogni responsabilità sulle informazioni e sui dati forniti dal cliente che possono influenzare i risultati.

according to that stated by the customer, apart from characteristics specifically stated to be measurements; Istituto Giordano declines all responsibility for the information and data provided by the customer that may influence the results.



Tubazione DN 1/2"
Pipe DN 1/2"



Tubazione DN 5/8"
Pipe DN 5/8"

Riferimenti normativi

Normative references

Norma Standard	Titolo Title
UNI EN 1736:2009	Impianti di refrigerazione e pompe di calore - Elementi flessibili delle tubazioni, isolatori di vibrazioni, giunti di dilatazione e tubi non metallici - Requisiti, progettazione ed installazione <i>Refrigerating systems and heat pumps - Flexible pipe elements, vibration isolators, expansion joints and non-metallic tubes - Requirements, design and installation</i>
UNI ISO 6605:2005	Oleoidraulica - Tubi e tubi flessibili raccordati - Metodi di prova <i>Hydraulic fluid power - Hoses and hose assemblies - Test methods</i>

Apparecchiature

Apparatus

Descrizione <i>Description</i>	Codice di identificazione interna <i>In-house identification code</i>
Centralina oleodinamica modello "U100B302271" della ditta Oleomec <i>Oleomec "U100B302271" hydraulics power unit</i>	TER012
Trasduttore di pressione modello "TP12BL53R" della ditta AEP Transducers, campo di misura 0 ÷ 100 bar _g <i>AEP Transducers "TP12BL53R" pressure trasducer, measuring range 0 ÷ 100 bar_g</i>	TER013B
Camera climatica modello "TY 560 IU" della ditta Angelantoni <i>Angelantoni "TY 560 IU" climatic chamber</i>	SC406
Pompa manuale modello "PP113SS" della ditta Europress <i>Europress "PP113SS" manual pump</i>	TER035
Manometro digitale 350 bar _g modello "BIT02" della ditta AEP Transducers <i>AEP transducers "BIT02" digital pressure gauge 350 bar_g</i>	TER022
Manometro digitale -1 ÷ 5 bar _g modello "BIT02B" della ditta AEP Transducers <i>AEP transducers "BIT02B" digital pressure gauge -1 ÷ 5 bar_g</i>	TER036
Pompa a vuoto <i>Vacuum pump</i>	//

Modalità

Method

Su una terna di tubazioni, aventi lunghezza di 500 mm, sono state eseguite le seguenti prove:

- resistenza ad una pressione pari a -0,99 bar_g e ad una pressione pari a 78 bar_g in accordo al paragrafo 6.1 della norma UNI EN 1736:2009;
- resistenza a pressione di scoppio pari ad almeno 3 PS ovvero 180 bar_g in accordo al paragrafo 6.4 della norma UNI EN 1736:2009.

Su una seconda terna di tubazioni, aventi dimensioni in accordo al paragrafo 6.5 della norma UNI ISO 6605:2005, è stata eseguita la prova in accordo al paragrafo 6.5 della norma UNI EN 1736:2009 con i seguenti parametri:

- n. 250000 cicli;
- pressione massima 64 bar_g, in accordo alla figura 2 della norma UNI ISO 6605:2005;
- pressione minima 8 bar_g, in accordo alla figura 2 della norma UNI ISO 6605:2005;
- temperatura del fluido 70 °C.

The following tests were carried out on a set of three pipes, having a length of 500 mm:

- *resistance to a pressure of -0,99 bar_g and 78 bar_g, in accordance with paragraph 6.1 of the UNI EN 1736:2009;*
- *resistance to burst pressure equal to at least 3 PS or 180 bar_g in accordance with paragraph 6.4 of the UNI EN 1736:2009;*

On a second set of three pipes, having dimensions in accordance with paragraph 6.5 of the UNI ISO 6605:2005, a test was performed in accordance with paragraph 6.5 of the UNI EN 1736:2009 with the following parameters:

- *250000 cycles;*
- *maximum pressure 64 bar_g, according to figure 2 of the UNI ISO 6605:2005;*
- *minimum pressure 8 bar_g, according to figure 2 of the UNI ISO 6605:2005;*
- *fluid temperature 70°C.*

RisultatiResults

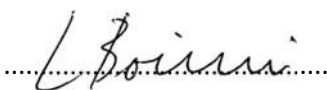
Tutte le tubazioni in esame non hanno manifestato segni di cedimenti e/o rotture alla pressione di $-0,99 \text{ bar}_g$ ed hanno raggiunto e superato una pressione di 200 bar_g senza manifestare rotture. La prova di resistenza a pressione di scoppio è stata interrotta raggiunti i 200 bar_g in quanto la pressione di scoppio da verificare era di 180 bar_g .

Tutte le tubazioni in esame hanno superato la prova di resistenza ciclica a pressione senza manifestare cedimento e/o rotture.

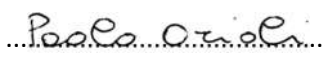
All the pipes under examination showed no signs of yielding and / or breakages at a pressure of $-0,99 \text{ bar}_g$ and reached and exceeded a pressure of 200 bar_g without showing breakages. The burst pressure resistance test was interrupted when a pressure of 200 bar_g was reached, as the burst pressure to be verified was 180 bar_g .

All the pipes under examination have passed the pulsating pressure test without showing failure and / or breakage.

Il Responsabile Tecnico di Prova
Chief Test Technician
(Dott. Ing. Luca Bonini)



Per il Responsabile del Laboratorio
PED-Saldature-CND
On behalf of Head of PED-Welding-NDT
Laboratory
(Dott. Alessandro Gaspari)


Dott. Paolo Orioli

**TEST REPORT AP-2022-382****Date:** 13/05/2022**Customer:** **TECHINIT SRL** Via L. Da Zara, 16/18 - 35020 Albignasego (PD) - ITALY**Reference:** Our offer OP-2022-522 of 19/04/2022**Samples:** Sample Pipe with metal fitting**Scope of analysis:** UL94 test**SAMPLE**

The samples was identified as follows:

- **Sample** → 5 specimens obtained from customer



Figure 1 – Sample

ANALYSIS AND RESULTS

- UL94 Vertical Burning-test, after conditioning for 48 hours at 23° C.

	Sample 1 - Specimen (see Figure 1)					
		1	2	3	4	5
FIRST FLAME (10s)	Afterflame time (s) <i>t1</i>	1	2	2	0	1
	Ignition of Cotton	NO	NO	NO	NO	NO
	Flame over support	NO	NO	NO	NO	NO
SECOND FLAME (10s)	Afterflame time (s) <i>t2</i>	2	1	1	0	2
	Ignition of Cotton	NO	NO	NO	NO	NO
	Flame over support	NO	NO	NO	NO	NO

Sample size NOT compliant with ISO StandardsBased on the results obtained the **material sample is V0** (see video attached)Laboratory Manager
(Dr. V. Geretto)

Note: The test results shown in this report refer only to the samples that have been analysed.

Test report n°: **17LA21754** of **16/01/2018**

Dear
Techinit srl
Via L. Da Zara, 16/18
35020 Albignasego (PD)

Sample Information

Description: **New tube in Polyamide (INTERNAL WHITE) - Product life evaluation in reference to the ASTM E1877-15**

Test subject: **Polymers**

Registration date: **22/12/2017** Registration hour: **07.37**

Date of arrival: **22/12/2017** Hour of arrival: **07.37**

Notes on receipt: **Suitable**

Date analysis commenced: **27/12/2017** Date analysis completed: **08/01/2018**



Sampling data

Sampling by: **Client**

Transport: **Client**

The analytical results are exclusively referred to the sample.

Representation of a Test Report signed electronically in accordance with current legislation.

The test report can not be reproduced in part without the written permission of the laboratory.

Laboratory management system certified UNI EN ISO 9001: 2008 by CSQA with the No. 14270. Inclusion in the list of regional laboratories carrying out analysis in the context of self-control procedures for Food Industries No. 52. Recommended by AIC for the analysis of quantification of gluten in food matrices. Registered laboratory for the analysis of food contact materials intended for export to Japan.

Mod.PT01.01 Rev.6



Test report n°: **17LA21754** of **16/01/2018**

Parameter - Note <i>Method - Note</i>	U.M.	Result Note	LoQ
Arrhenius activation energy - E ASTM E 1641-16	J/mol	148741	

LEGEND: **U.M.** = Unit of measurement; **(Sup)** = upper limit; **(Inf)** = Lower Limit ;; **x ÷ y** = acceptable range; **LoQ** = limit of quantification, the threshold value below which you choose not to bring any numerical result for the parameter in question; this limit is provided directly by the method, or is chosen on the basis of the experimental detection limits (LoQ or LoD) so as not to be changed over time or according to the chemical-physical or microbiological single sample; **LOD** = limit of detection; **NQ** = unquantifiable, indicates a value less than LoQ

"<x" or ">x" respectively indicate a value lower or higher than the measuring range of the test

UNLESS OTHERWISE SPECIFIED: Quantitative microbiological tests are performed on single replica and two consecutive dilutions in accordance with UNI EN ISO 7218: 2013 (with the exception of the analysis of water and MPN); the results of this test report are not correct for recovery factors (R) as the values of recovery are in the tolerance specified in the test method; summations are calculated using the criterion of the lower bound (LB)

If the sampling isn't the responsibility of 3ALaboratori Ltd., the test results were obtained on the basis of the data declared.

The analytical results are exclusively referred to the sample.

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3A-Laboratori SRL

Via A.Volta 1/d Maserà di Padova - 35020 (PD) Email amministrazione1@3alaboratori.it Phone 049 0994658-0994671 Fax 049 8868430
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Test report n°: **17LA21754** of **16/01/2018**

Note:

Heating Rates: 1 °C/min - 2 °C/min - 5 °C/min - 10 °C/min

Instrumentation:

TGA 2950 - TA Instruments - Division of Waters SpA:

- Platinum Sample Pan 100 μ l (Ø10.16mm)
- Sample Thermocouple inside the rack

For temperature calibration was used Nickel

The calibration of the mass was performed at room temperature

Acquisition parameters

+ Heating from 30 ° C to 700 ° C - Oxygen

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Test report n°: **17LA21754** of **16/01/2018**

Opinions and Interpretations:

With reference to ASTM E1877-15 (Calculating Thermal Endurance of Materials from Thermogravimetric Decomposition Data) the Arrhenius activation energy obtained from the ASTM E1641-16 test method, is used to construct the resistance curve thermal of an organic material from which an estimate of the service life at certain temperatures can be obtained.

It is emphasized that this is a processing and that, by modifying the calculation equations, we could deduce different results.

Taking into account that the activation energy of the material was calculated on the basis of the weight loss of 10%, we are taken into account two critical temperatures for the polymer object of the tests:

70 ° C (Maximum temperature of real pipe use)
150 ° C (Extreme aging conditions)

Therefore:

Thermal Endurance at 70°C = 97516 years of work

Thermal Endurance at 150°C = 5.11 years of work

Please note that this test does NOT take into account other sources of aging that could accelerate the degradation of the polymer early.

Technical Director

Dr. Giovanni Mitaritonna
Chemist

Ordine Interprov. Chimici del Veneto - Padova n° 910 SEZ. A

The analytical results are exclusively referred to the sample.

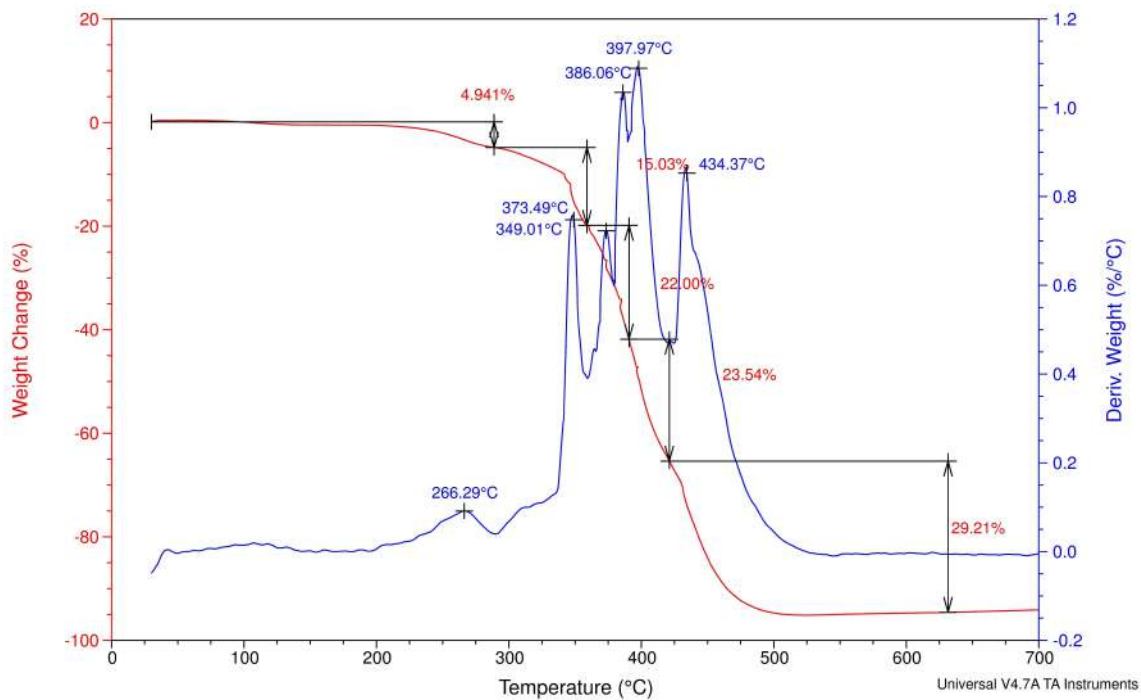
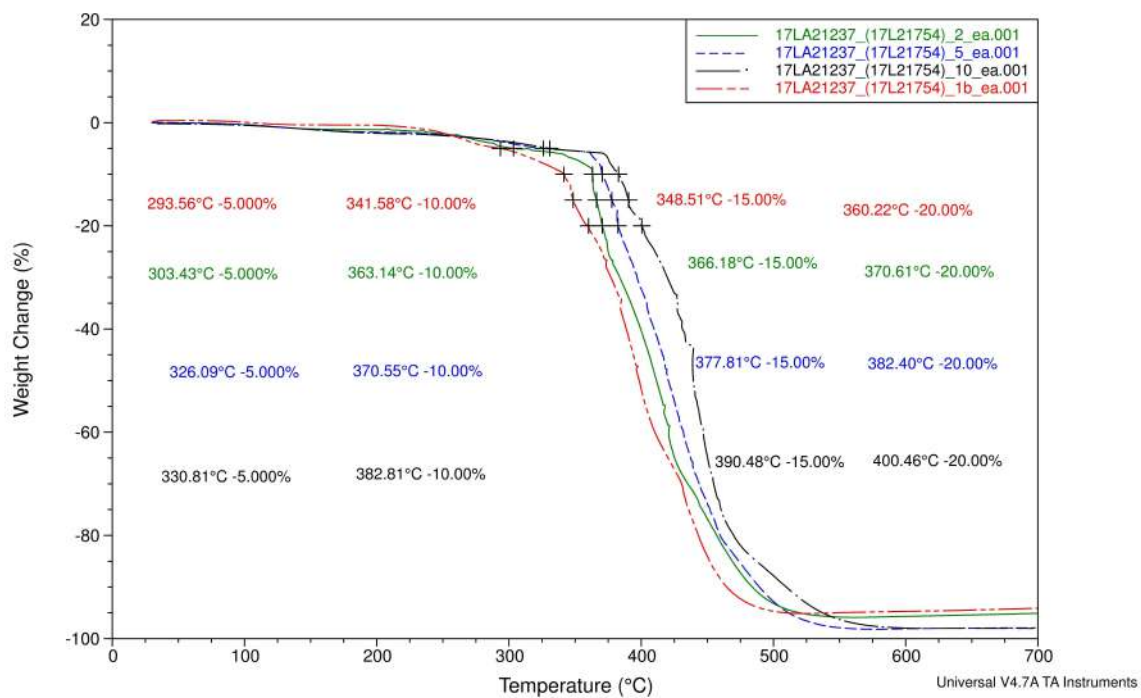
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Test report n°: **17LA21754** of **16/01/2018**

TGA Parameters

Sample: 17LA21237_1b_ea

Comment:

Date of Experiment: 2-Jan-18

Operator: IZ

File Name: 17LA21237_1b_ea.001

Instrument Type: 2950 TGA HR V5.4A

Sample Size: 2.91400 mg

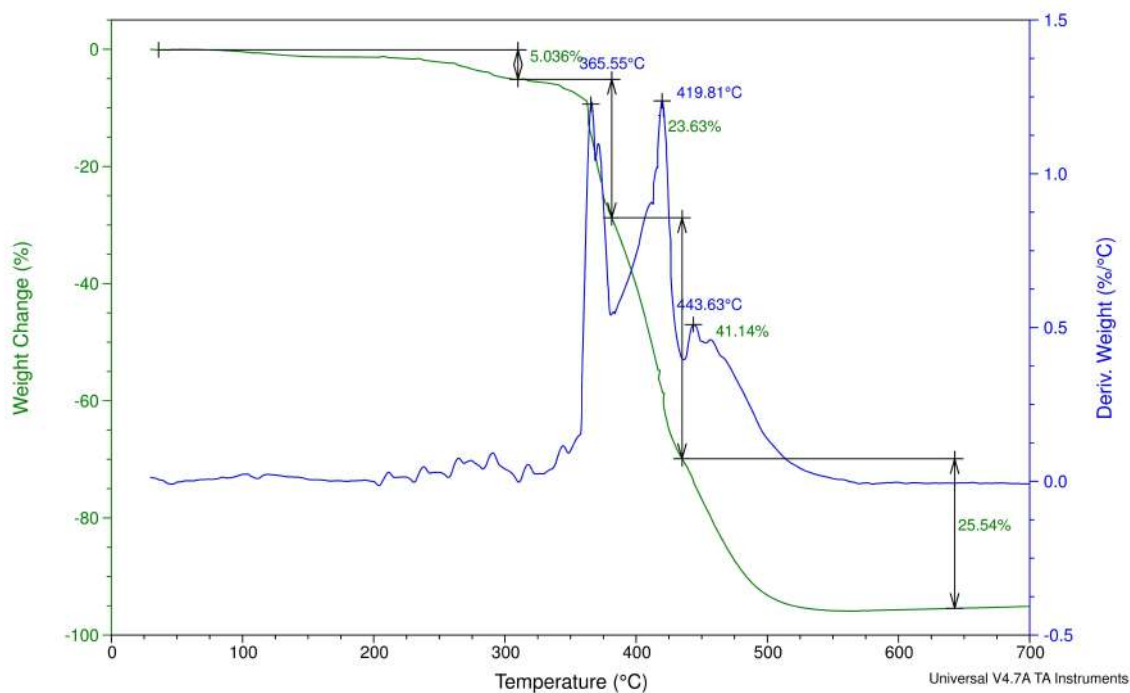
Method: Energia attivazione 1°C

Method Log:

1: Equilibrate at 30.00 °C

2: Ramp 1.00 °C/min to 700.00 °C

3: End of method



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Test report n°: **17LA21754** of **16/01/2018**

TGA Parameters

Sample: 17LA21237_2_ea

Method Log:

Comment:

1: Equilibrate at 30.00 °C

Date of Experiment: 27-Dec-17

2: Ramp 2.00 °C/min to 700.00 °C

Operator: Iz

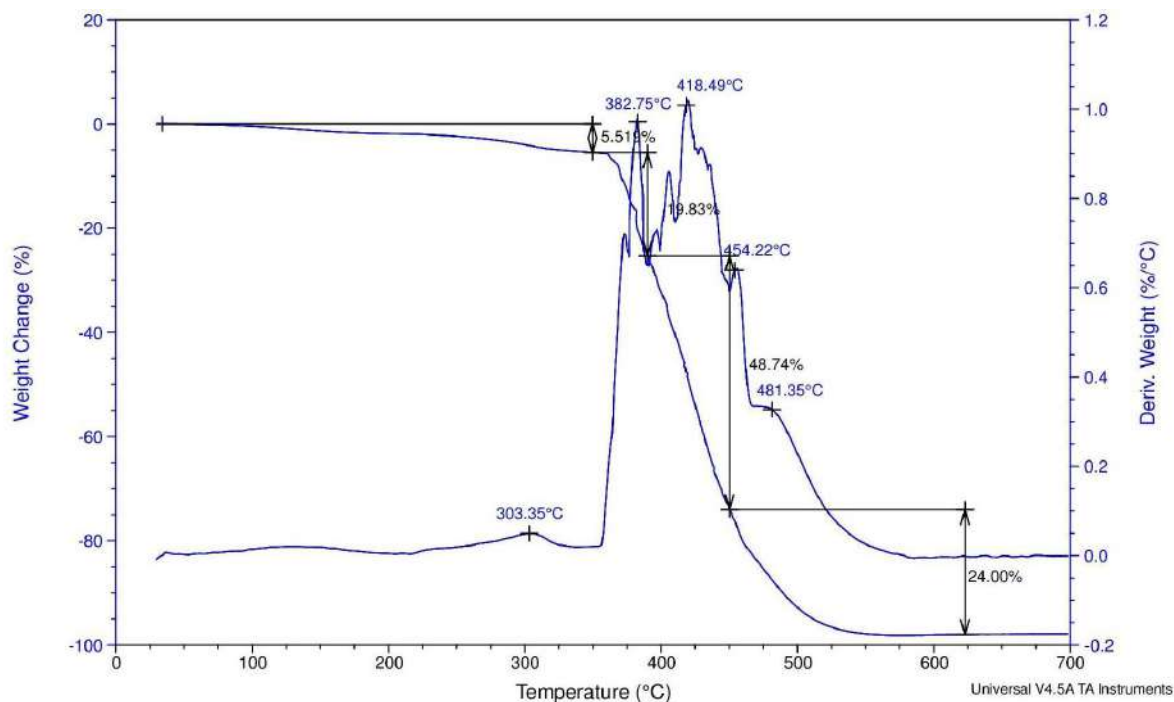
3: End of method

File Name: 17LA21237_2_ea.001

Instrument Type: 2950 TGA HR V5.4A

Sample Size: 2.98100 mg

Method: Energia attivazione 2°C



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Test report n°: **17LA21754** of **16/01/2018**

TGA Parameters

Sample: 17LA21237_5_ea

Method Log:

Comment:

1: Equilibrate at 30.00 °C

Date of Experiment: 27-Dec-17

2: Ramp 5.00 °C/min to 700.00 °C

Operator: Iz

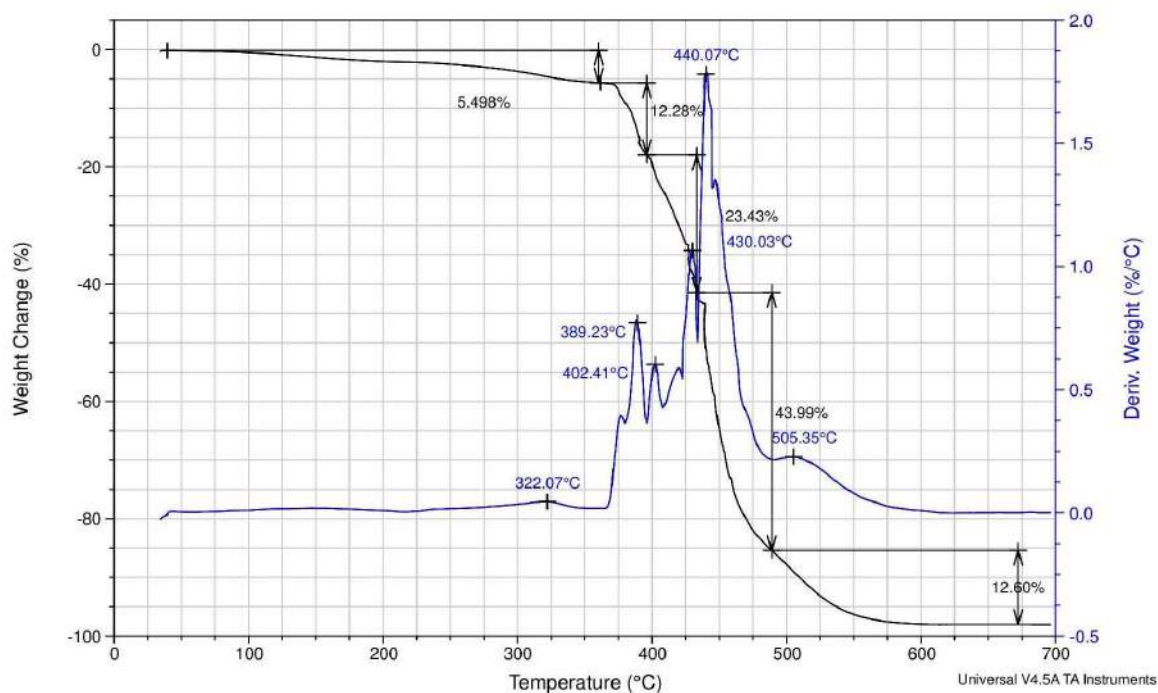
3: End of method

File Name: 17LA21237_5_ea.001

Instrument Type: 2950 TGA HR V5.4A

Sample Size: 3.26100 mg

Method: Energia attivazione 5°C



The analytical results are exclusively referred to the sample.

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Test report n°: **17LA21754** of **16/01/2018**

TGA Parameters

Sample: 17LA21237_10_ea

Comment:

Date of Experiment: 27-Dec-17

Operator: Iz

File Name: 17LA21237_10_ea.001

Instrument Type: 2950 TGA HR V5.4A

Sample Size: 3.13100 mg

Method: Energia attivazione 10°C

Method Log:

1: Equilibrate at 30.00 °C

2: Ramp 10.00 °C/min to 700.00 °C

3: End of method

The analytical results are exclusively referred to the sample.

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Test Certificate, Nitrogen Pressure Test

Product : Flexible tubing system and brass fittings

Trade Mark: Fleo-pipe®

Size : Diameter 1/4", 3/8", 1/2" & 5/8"

Hereby, Fleo-Pipe® certifies that the material listed below, complies with the requirements of the Purchase Order and to the non-specific test results performed in accordance with manufacturing processes and quality assessments provided by the Quality Management System and by the product specifications.

Materials : 7-layer MLT. Structure, Long-chain polyamide, Aluminum film, High-strength synthetic fiber braiding, High barrier plastic polymer layer, Anti-wear, anti-UV, anti-abrasion and chemically inert external coating layer,

Insulation: Closed cell expanded polyethylene insulation, Anti-UV resistance polyethylene protective coating(grey) & two brass Elica fitting.

Length : 4, 8, 12 & 16 meters

Testing : Tested at 78 bar of Nitrogen, according to EN 1736:2008

Test Result : Success, No Leak.