Baltic Control

Client: Habika Contracting Company	**Office:** Basra, Iraq	**IVR No.: PI-04-103-028 (10/02/2026)**
Project: - Goptapa-Chamchamal water supply project	**Other References (If any): -**	**Report date: 03/29/2026**
Note of Inspection Letter No.: -	**Supplier/Vendor: HANYCO**	**Order Status:** ☐ **Complete** ☐ **Incomplete**
Inspection Date: 03.15.2026	**Inspection Place: HAMOUN NYZEH COMPANY, 14Km, ARDESTAN road, KASHAN, Iran.**	
Inspection duration: 1 DAY		

1) Material inspected

ITEM	DESCRIPTION	TAG/SERIAL NUMBER	QUANTITY	
			ORDERED	INSPECTED
1	**Ductile Iron Double Socket Bend DN 900 MM 11.25 Deg**	-	45	-
2	**Ductile Iron Double Socket Bend DN 900 MM 22.5 Deg**	-	7	-

2) Scope of inspection

The Inspection in accordance with the attached ITP (ITP-HABICA/025), which has 9 activity includes:

supplier quality plan, material receiving plan, chemical composition, mechanical properties, microstructure, dimensional, appearance, hydrostatic test, lining, coating, marking, accessories & packing.

3) Applicable documents

Row	Document Name	Document Number
1	COMMERCIAL INVOICE	**PI-04-103-028**
2	ITP	ITP-HABICA/025
3	Standards	ISO 2531
4		ISO 4179
5		ISO 4633
6		ISO 8179

4) Instruments used

Row	Equipment Name	Equipment Number	Calibration Validity Date
1	Tensile machine	QL004	2027.10.19
2	Hardness tester	QL003	2027.10.06
3	Caliper	QL107	2027.03.13
4	THICKNESS GAGE (Ductile wall thickness)	PC464	2026.02.08
5	Hydrostatic pressure gage	FT 029.1	2026.09.27
6	Thickness gage of lining	PC 400	2026.04.26
7	Furnace Pyrometer (Heat Treatment)	QL 034	2027.09.28
8	Elcometer (finishing layer thickness gage)	QL 117	2026.03.13

5) Description of inspection

The inspection carried out for **Hardam Company** and item are as follows**:**

1.the ductile iron fittings inspected list as follows as table:

DN	Description
900	**Ductile Iron Double Socket Bend MM 11.25 Deg; 45PCS**
	Ductile Iron Double Socket Bend DN 900 MM 22.5 Deg: 7 PCS

2.inspection was done based on the unique serial number of Fittings for following step of ITP-HABICA/025:

3.Acc to clause 1, the available documentation shows that the system is in place. **IMS certification** is available and quality documentation was observed & were acceptable. Product conformity certificate also was observed.

Raw material control documentation was observed, and sampling of raw materials was carried out to obtain a valid test report.

4. Acc to clause 2, **Visual inspection** were done considering the technical issues, the appearances of fittings after casting, coating & lining were inspected separately and no discrepancies were observed. Dimensional inspection (wall thickness, length, internal socket diameter, ovality, socket depth) was carried out according to ITP clauses and is within the acceptance range.

5. Acc to clause 3, for **chemical composition**, **microstructure**, **mechanical properties** include Tensile strength (N/mm2), % Elongation, Brinell Hardness was performed and, on the samples, taken and tested in accordance with ITP and results are satisfactory and within the acceptance range.

6. Acc to clause 4**, Leak Tightness** (**Hydrotest**) according to ITP carried out and the results will be mentioned in the report.

7. zinc **coating** acc to clause 5&6 of ITP include zinc purity, material type, test plate for mass of zinc coated on the fitting be check and result mentioned in this inspection report and are in acceptance range. The **cement lining** (ratio of material s/c, w/c, mortar precreation, wall thickness & appearance…) checked acc to ITP clause 6, and the results are satisfactory.

9. Acc to clause 7, **marking** of manufactured products was checked & accepted in terms of the information that must be legibly and durably marked.

10. EPDM gasket dimensional control & quantity check acc to clause 8 preformed and the result will be mentioned in this report, also for material & physical properties sample submitted by refences LAB test report.

11. Acc to clause 9, documents control (purchase order, TDS & MTC), Packing inspection was check and everything accepted.

12- All inspection documents (Performa, ITP), laboratory results & calibration tools report are attached.

6) Non-Conformances

7) Further Operation

8) Conclusion

In accordance with the request of the respected employer acc to ITP, all items were carried out, and no discrepancies were found. Only there no order marking in the fittings.

Final Result

√**Satisfactory**

☐ **Unsatisfactory**
☐ **Satisfactory with comment**

9) Attachments:

- Minutes of Meeting
- Test Reports
- ITP
- Porches order (Performa)
- Calibration certificates
- IMS Certificates
- Product conformity certificate

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10) **Pictures & test result**

1. Material sampling

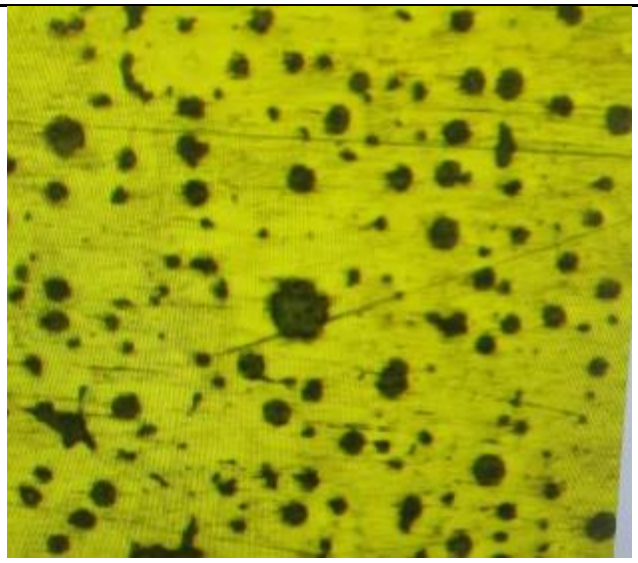
2. Chemical composition Sample

Type	SN	DN	Mg	S	Mn	Si	C	Result
MMK 11.25	15-2-12-22		0.059	0.012	0.42	2.41	3.56	Pass
	16-2-12-22		0.042	0.013	0.45	2.44	3.52	Pass
	24-4-12-22		0.051	0.008	0.37	2.45	3.46	Pass
	25-4-12-22		0.061	0.007	0.37	2.49	3.59	Pass
	33-5-12-22		0.057	0.009	0.41	2.55	3.35	Pass
MMK 22.5	29-9-12-22		0.060	0.009	0.43	2.55	3.37	Pass
	33-9-12-22		0.043	0.009	0.31	2.59	3.40	Pass
	1-10-12-22		0.040	0.006	0.29	2.55	3.33	Pass
	2-10-12-22		0.038	0.010	0.29	2.44	3.50	Pass

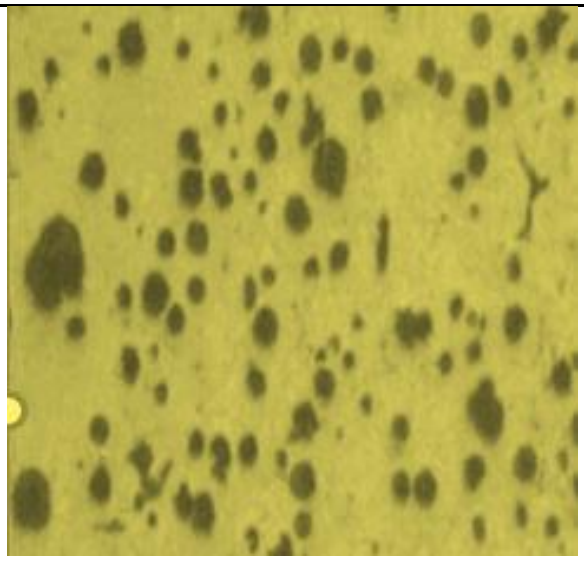
2.1 Fittings chemical composition result

3. Fitting's microstructure & hardness sampling

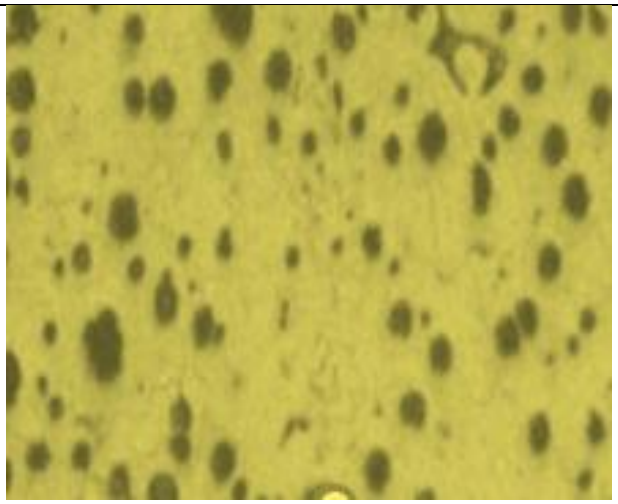
3.1) Fitting's metallography



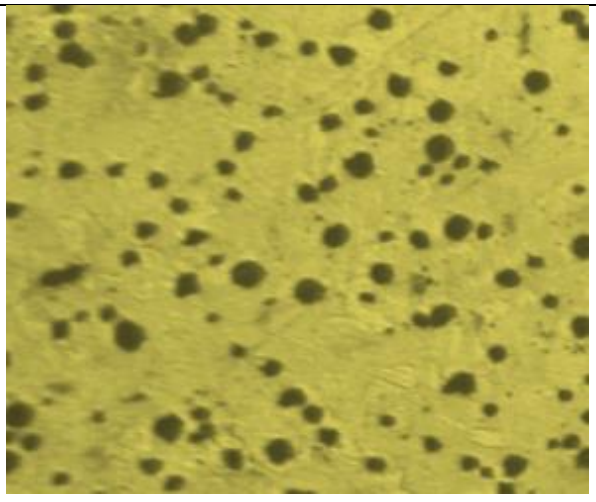
MMK-DSB 11.25- 01



MMK-DSB 11.25- 06



MMK-DSB 11.25 – 18



MMK-DSB 11.25- 24

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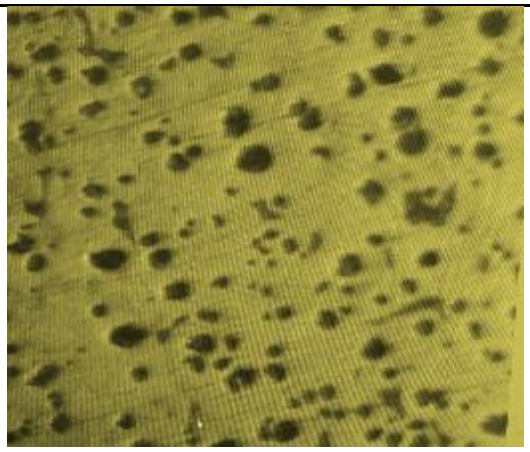
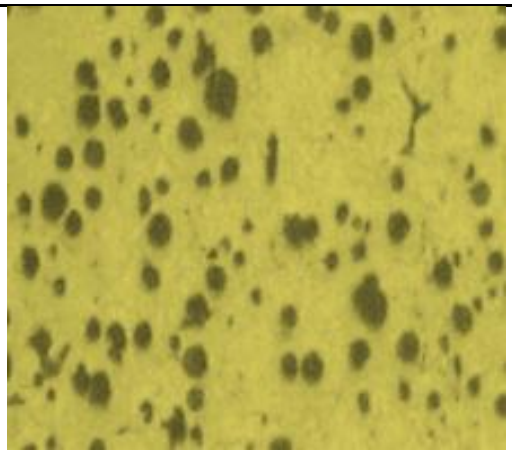
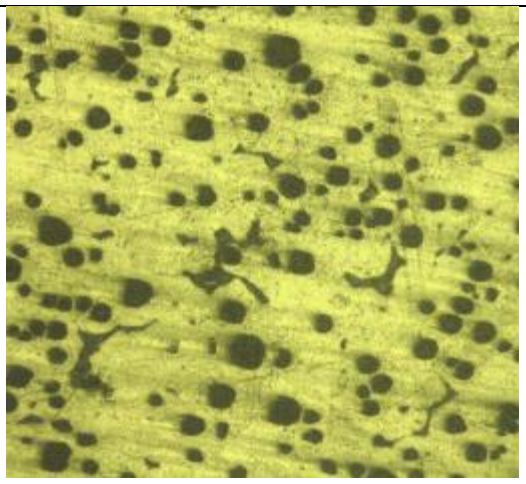
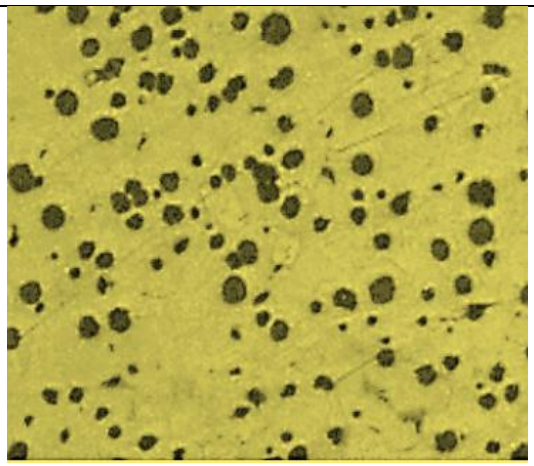
	
MMK-DSB 11.25- 30	MMK-DSB 11.25- 43
	
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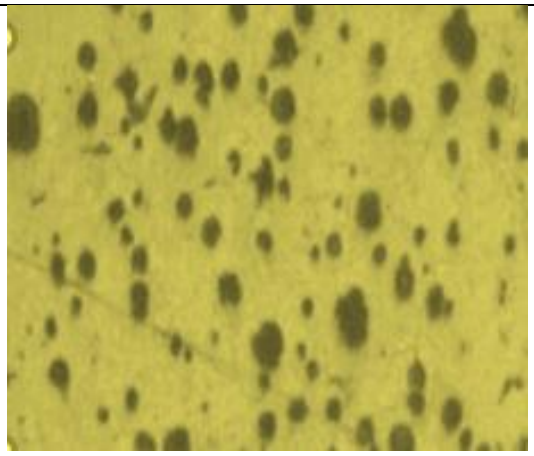
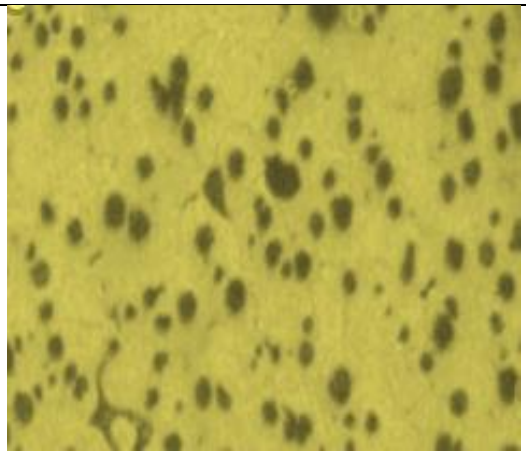
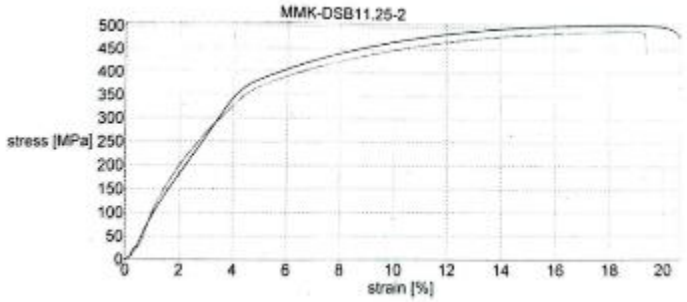
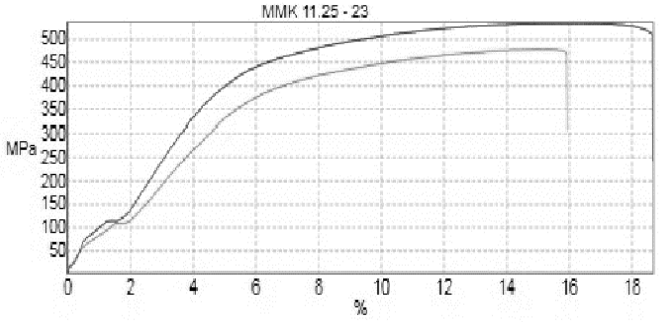
	
MMK-DSB 22.25 - 07	MMK-DSB 22.25- 11

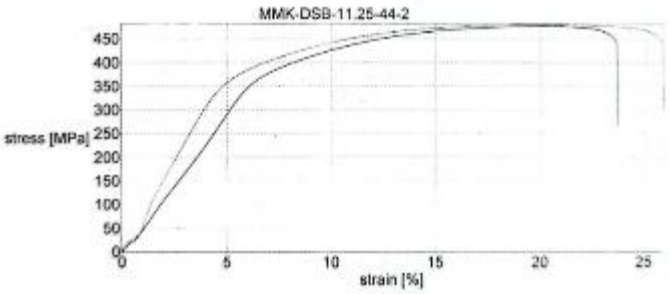
Microstructure Picture						
SN	Sphericality%	NC	G Size	Structure	Hardness	Result
MMK-DSB 11.25- 01	90<	140	5-35	Perlite <%2	171	Pass
MMK-DSB 11.25- 06	90<	100	5-35	Perlite <%2	177	Pass
MMK-DSB 11.25 – 18	90<	140	5-30	Perlite <%2	183	Pass
MMK-DSB 11.25- 24	90<	120	5-30	Perlite <%2	180	Pass
MMK-DSB 11.25- 30	90<	100	5-30	Perlite <%2	181	Pass
MMK-DSB 11.25- 43	90<	140	5-30	Perlite <%2	176	Pass
MMK-DSB 22.25- 01	90<	120	5-30	Perlite <%2	170	Pass
MMK-DSB 22.25 – 02	90<	120	5-30	Perlite <%2	177	Pass
MMK-DSB 22.25 - 07	90<	140	5-40	Perlite <%2	185	Pass
MMK-DSB 22.25- 11	90<	140	5-35	Perlite <%2	177	Pass

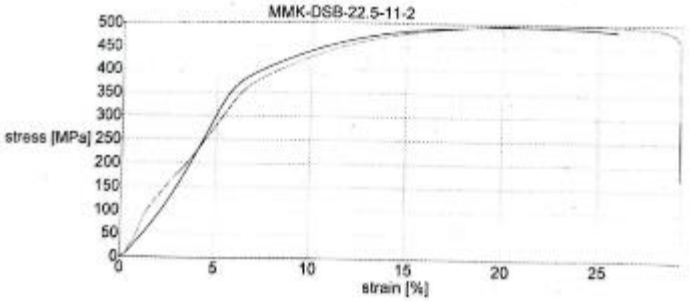
4.2) Microstructure picture & result

5. Mechanical properties-Brinell Hardness









6.3 Mechanical Properties-Tensile strength& elongation test

FITTING Number	Tensile strength (Mpa)		Elongation		Hardness		Result
	Standard	Measured	Standard	Measured	Standard	Measured	
MMK-DSB-11.25 2	>420	497.5	>5	14.5	<230	186	Pass
MMK-DSB 11.25 23		506		13.5		181	Pass
MMK-DSB-11.25 44		478		16		177	pass

MMK-DSB-22.5 11		497		14.5		179	pass

6.4 Mechanical strenght test result

Parameter	SN	Measured (%)	Standard (%)	Appearance check	RESULT
Ovality (circular)	MMK 11.25 5	0.8	2	OK	Pass
	MMK 22.5 3	0.7		OK	Pass
*Socket Length (depth)	MMK 11.25 5	185 mm	185	OK	Pass
	MMK 22.5 3	185	185	OK	Pass

7.1 Dimension & appearance: External and Internal Socket	7.2 Dimension & appearance: External and Internal Socket result




7.3 Dimension & appearance: dimensional requirement / wall thickness

FITTING Number	Wall thickness (mm)		Internal diameter D4		Internal diameter D5		Result
	Standard (Min)	Measured	Standard (m)	Measured (M)	Standard (m)	Measured (M)	
MMK DSB 11.25 2	16.8	17.2	946.5 - 951.6	950.1	990-994.1	993.1	Pass
MMK DSB 11.25 3		17.4		950.2		993.5	Pass
MMK DSB 11.25 5		17.3		950.3		993.6	Pass
MMK DSB 11.25 7		17.1		950.1		993.4	Pass
MMK DSB 11.25 26		17.4		950.2		993.5	Pass
MMK DSB 11.25 33		17.2		949.8		993.6	Pass
MMK DSB 11.25 39		17.3		949.9		993.2	Pass
MMK DSB 22.5 2		17.2		950.1		993.3	Pass
MMK DSB 22.5 3		17.2		950.2		993.6	Pass
MMK DSB 22.5 6		17.3		950.1		993.5	Pass

7.5 Dimension & appearance: External DE & fitting length result

8. Hydrostatic test procedure

FITTING Number	DN	Hydrostatic test parameter		
		Pressure (bar) Min PFA/Class **Standard**	Pressure (bar) Min PFA/Class **Measured**	Result
MMK DSB 11.25 2	900	10bar,15sec	16 bar, 15 sec	Pass
MMK DSB 11.25 18		10bar,15sec	16 bar, 15 sec	Pass
MMK DSB 11.25 29		10bar,15sec	16 bar, 15 sec	Pass
MMK DSB 11.25 41		10bar,15sec	16 bar, 15 sec	Pass
MMK DSB 22.5 3		10bar,15sec	16 bar, 15 sec	Pass
MMK DSB 22.5 6		10bar,15sec	16 bar, 15 sec	Pass

8.2 Hydrostatic test result

9. EXTERNAL COATING: Visual check, Film thickness control

Fitting's type	Zinc Mass (gr/m^2)	Result
MMK DSB 11.25 5	255	Pass
MMK DSB 22.5 9	266	Pass

9.2 EXTERNAL COATING (Zinc Mass)

Purity acc to standard	Measured purity of Zinc	Result
99.99 % min	99.99 %	Pass

آزمون تعیین عناصر به روش ICP-MASS

غلظت و درصد وزنی عناصر موجود در نمونه به شرح زیر است:

عنصر	غلظت (ppm)	عنصر	درصد وزنی
Th	<1	Zn	99.99
Ti	<1	-	-
Tl	<1	-	-
Tm	<1	-	-
U	<1	-	-
V	<1	-	-
W	<1	-	-
Y	<1	-	-
Yb	<1	-	-
Zr	<1	-	-
Te	<1	-	-
Mg	<1	-	-
-	-	-	-

9.3 EXTERNAL COATING (Purity)




9.3 Coating & lining: Preparation and mortar weight & S/C ratio=1

Coating & lining: appearance Free from void, gap or any defect.

FITTING Number	DN	Lining		Coating		Visual appearance	Result
		Lining thickness	Appearance conditions Cement	Fitting Number	Bitumen thickness		pass
MMK DSB 11.25 23	900	7.6	Ok	MMK DSB 11.25 5	126	OK	pass

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MMK DSB 11.25 17		6.8	Ok	MMK DSB 11.25 5	123	OK	pass
MMK DSB 22.5 2		7.19	Ok	MMK DSB 22.5 3	119	OK	pass
MMK DSB 22.5 6		7.3	Ok	MMK DSB 22.5 5	122	OK	pass

9.6 Coating & lining: Lining thickness result

Marking durable (as cast): HANYCO, DN 900, Year of production 2026, Ductile iron sign (GGG), Bending angle, Unique SN.

Marking legibly on body (painted): inspection mark (BALTIC CONTROL)

10. Marking & packaging

Soft section Hardness= 54 hard section= 83

آنالیز جنس نمونه

شرح آزمایش

– پیرولیز و تهیه طیف IR مطابق استاندارد ASTM D 3677-10(23)

نتیجه آزمایش

پایه پلیمری نمونه EPDM (Ethylene Propylene Diene Rubber) می باشد.

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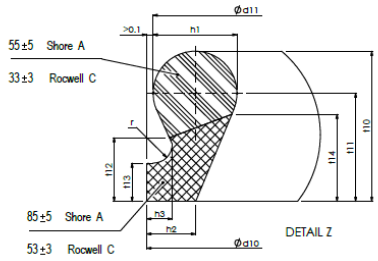

DN	d10	Tol	d11	h1	h2	h3	t10	Tol	t11	t12	t13	Tol	t14	r
500	583	+3	581	25	14	6.5	42.5		30	18	9		24	5.5
600	692	+3	690	27	15	7	46.5		33	20	10		26	6
900	1026	+5	1020	37.5	22	12	66.2		47.5	28	18		37	9

استاندارد مرجع آزمون: ISO 37:2024 نتیجه آزمایش - نتایج آزمون کشش سرد (بعد از تست شتاب دهی محصول به شرح جدول زیر می باشد ردیف / عرض (mm) / ضخامت (mm) / مساحت مقطع اولیه (mm²) / طول گیج (mm) / سرعت کشش (mm/min) / نیروی کشش حداکثر (N) / ازدیاد طول نسبی (%) / استحکام کششی در نقطه پارگی (MPa) 1 / 5.96 / 4.49 / 26.76 / 25 / 500 / 216.36 / 751 / 9.09 2 / 5.97 / 5.05 / 30.15 / 25 / 500 / 276.32 / 792 / 9.17 3 / 5.96 / 4.93 / 29.28 / 25 / 500 / 256.01 / 779 / 9.76 میانگین / 779 / 9.14	All dimension acc to manufacturer technical drawing
11.1 ACCESSORIES: Gaskets Hardness and base analysis	11.2 ACCESSORIES: Gaskets Dimension
	
12. Packaging	

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13. Calibration example; All certificate attached.

Inspector: FARHAD KHEASHAVAND INSPECTOR 03.15.2026	**Supervisor of Inspection:**	**Project Manager**
Stamp and Signature: F. Kheshavand	**F.esmaeili**	**M.Hedayati**
	Stamp and Signature:	**Stamp and Signature:** BALTIC CONTROL A/S Brunbjergvej 3, 1.Sal P.o BOX 2199 DK-8240 Risskov Denmark Tel:+45 85216211 www.balticcontrol.com