

APPROVED



شرکت ملی گاز ایران - مدیریت پژوهش و فناوری

امور تدوین استانداردها

**IGS**

Iranian Gas Standards

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رزین استال برای قطعات پلاستیکی کنتور گاز

Acetal resin (polyoxymethylene) for Moulded Plastic Parts  
of GAS-METER

**APPENDIX "F"  
SPECIFICATION FOR:**

**ACETAL RESIN (POLYOXYMETHYLENE) FOR  
MOULDED PLASTIC PARTS OF GAS – METER**

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## **1. SCOPE**

This standard specification covers the minimum requirements for acetal materials selected for construction of moulded plastic parts of gasmeter in accordance with the Iranian Gas Standard IGS-MS-IN-101(3) .

## **2. REFERENCES**

Throughout this standard specification the following standards and codes are referred to . The editions of these standards and cods that are in effect at the time of publication of this standard specification (1998) shall , the extent specified herein , form a part of this standard specification . The applicability of changes in standards and codes that occur after the date of this standard specification shall be mutually agreed upon by the purchaser and supplier and/or manufacturer .

### **ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)**

D 696 – 91 "Coefficient of Linear Thermal Expansion of Plastics Between -30 °C and 30 °C"

D 4364 – 84 "Performing Accelerated Outdoor Weathering of Plastics Using Concentrated Natural Sunlight"

### **ISO (INTERNATIONAL ORGANIZATION FOR STANDARDIZATION)**

62 – 1980 "Plastics – Determination of Water Absorption"

75 – 2:1993 "Plastics – Determination of Temperature of Deflection Under Load ", Part 2 : "Plastics and Ebonite"

179 – 1993 "Plastics – Determination of Charpy Impact Strength"

180 – 1993 "Plastics – Determination of Izod Impact Strength of Rigid Materials"

527 – 1966 "Plastics – Determination of Tensile Properties"

1133 – 1991 "Plastics – Determination of the Melt Mass – Flow Rate (MFR) and the Melt Volume – Flow Rate (MVR) of Thermoplastics"

1183 – 1987 "Plastics – Methods for Determining the Density and Relative Density of Non- Cellular Plastics"

3146 – 1985 "Plastics – Determination of Melting Behavior (Melting Temperature or Melting Range) of Semicrystalline Polymers"

3167 – 1983 "Plastics – Preparation and Use of Multipurpose Test Specimens"

### **3. DEFINITION**

POM (Polyoxymethylene) : Plastics based on polymers having a predominance of acetal linkage in the main chain , and acetal plastics based on polymers in which oxymethylene is essentially the sole repeated structural unit in the chains .

### **4.PROPERTIES**

The acetal (POM) shall be weather and UV resistance in accordance with standard ASTM D 4364 and shall conform to the properties given in table 1 when tested as specified .

**Table 1**

PROPERTY	UNIT	VALUE	TEST METHOD
Melt – Mass Flow Rate (MFR = MFI)	g /10 min	9 – 14	ISO 1133
Melt Volume Flow Rate (MVR)	ml / 10 min	7 – 8	ISO 1133
Melting Point	<sup>0</sup> C	160 – 180	ISO 3146
Water Absorption			
– 50% relative humidity , max	%	0.25	ISO 62
– saturation , max	%	0.9	ISO 62
Density	g / cm <sup>3</sup>	1.38 – 1.43	ISO 1183
Tensile Strength , min	MPa	65	ISO 527 – 1
Impact Strength (Charpy) at 23 <sup>0</sup> C , min	kJ / m <sup>2</sup>	180	ISO 179 – leu
Heat Deflection Temperature under 1.8 MPa Load , min	<sup>0</sup> C	104	ISO 75 – 2
Izod Impact , min	kJ / m <sup>2</sup>	6	ISO 180 – 1A
Coefficient of Linear Thermal Expansion , max	K <sup>-1</sup>	1.25×10 <sup>-4</sup> (23 – 80 <sup>0</sup> C)	ASTM D 696*
Mold Shrinkage , max	%	2.2	ISO 3167A

**\* NOTE :**

With attention to clause 5 "significance ad use"

## **5.INSPECTION AND CERTIFICATION**

**5.1** Inspection and certification of the material supplied in accordance with this standard specification shall be in conformance with the requirements specified herein .

**5.2** Lot – acceptance inspection shall be the basis on which acceptance or rejection of the lot is made . The lot – acceptance inspection shall consist of the tests of melt flow rate .

**5.3** Periodic check inspection shall consist of the tests specified for all requirements of the material under this standard specification . Inspection frequency shall be adequate to ensure the material is certifiable accordance with 5.4 .

**5.4** Certification shall be that the material was manufactured , sample , tested and inspected in accordance with this standard specification and that average values meet the requirements at a confidence level of 95% .

**5.5** A report of the test results shall be furnished when requested . The report shall consist of the results of the lot – acceptance inspection for the shipment and the results of the most recent periodic – check inspection .