

IGS-MS-TP-014 (0) , PART 1 : 1999

National Iranian Gas Co.

امور پژوهش و استانداردهای صنعتی

IGS

Iranian Gas Standards

Specification for :

**Polyurathane (PUR)/Polyurathane Tar (PUR-TAR)
Material & Coating**

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**TECHNICAL SPECIFICATION OF POLYURATHANE (PUR) /
POLYURATHANE TAR (PUR.TAR) FOR COATING OF
FIELD WELD JOINTS , VALVES AND FITTINGS AND
REPAIRS**

1.0 SCOPE

- 1.1 THIS SPECIFICATION SPECIFIES THE MIN. REQUIREMENTS FOR COATING OF FIELD WELD JOINTS , VALVES & FITTINGS AND REPAIRS WITH POLYURATHANE (PUR) / POLYURATHANE TAR (PUR-T) AS AN EXTERNAL ANTI-CORROSION COATING (PUR PREFERRED) . THE COATING PERFORMANCE , TEST METHOD AND INSPECTION SHALL BE ALL IN ACCORDANCE WITH DIN 30671 (SECOND EDITION . 1992) AND MANUFACTURERS RECOMMENDATIONS .
- 1.2 THE COATING CONTRACTOR SHALL HAVE ON SITE AND FOLLOWS THE MANUFACTURERS COATING MATERIAL SAFETY DATA SHEETS AND APPLICATION INSTRUCTION .

2.0 REFERENCES

- 2.1 DIN – 30671 – 1992 EDITION : HERMOSET PLASTIC COATINGS
FOR BURIED STEEL PIPES (POLYURATHANE)
- 2.2 DIN – 30677 , PART 2 – 1998 – EDITION : EXTERNAL CORROSION
PROTECTION OF BURIED VALVES .
(POLYURATHANE)
- 2.3 GBCW6-1993 EDITION : BRITISH GAS TECHNICA
SPECIFICATION FOR
THE EXTERNAL PROTECTION OF
STEEL LINE
PIPE AND FITTINGS USING MULTI
COMPONENT
LIQUID COATING (POLYURATHANE)
PART 1 : REQUIREMENTS FOR COATING
MATERIALS AND METHODS OF TEST .
PART 2 : FACTORY APPLIED COATINGS .
- 2.4 ASTM D16 : POLYURETHANE CLASSIFICATION .
- 2.5 NACE STANDARD RP-01-84 : REPAIR OF LINING SYSTEM
(POLYURATHANE)

- 2.6 NACE STANDARD : CORROSION CONTROL OF
 RP – 01 – 76 (1983 REVISION) STEEL , FIXED
 OFFSHOREPLATFORMS SSOCIATED
 WITH PETROLEUM PRODUCTION
 (POLYURATHANE)
- 2.7 NACE PUBLICATION 6H 284 (1998) : POLYURETHANE TOPCOATS FOR
 ATMOSPHERIC APPLICATIONS .

3.0 COATING MATERIAL GENERAL CHARACTERISTIC

A HIGH BUILD , COLD APPLIED , TWO COMPONENT , THERMOSETTING POLYURATHANE OR POLYURATHANE TAR ANTI – CORROSION COATING DESIGNED FOR THE EFFICIENT LONG TERM PROTECTION OF BURIED PIPELINE FIELD WELD JOINTS , BURIED VALVES AND FITTINGS . IT SHALL BE HIGHLY ADHESIVE TO CARBON STEEL SURFACE AND COMPATABLE WITH ALL PIPE COATING MATERIAL (THREE LAYER POLYETHYLENE , COAL TAR ENAMEL , BITUMEN ENAMEL) .

THE MIXED POLYURATHANE MATERIALS SHALL BE SUITABLE FOR OUTDOOR , INDOOR , AND FIELD APPLICATION BY BRUSHING , ROLLER , TROWER OR SPARYING .

NOTE :

- 1/ FOR CURED COATING PROPERTIES REFER TO TABLE 1 .
- 2/ FOR UNMIXED POLYURATHANE MATERIAL PROPERTIES REFER TO APENDIX A.

4.0 CURED COATING PROPERTIES

TABLE NO.1

COATING PROPERTIES	REQUIREMENTS
THICKNESS	MIN 1.5 MM (1500 UM) (DIN 30671)
ABSENCE OF PORES	≥ 15 KV (DIN 30671)
IMPACT	10 NM (DIN 30671)
PENETRATION RESISTANCE	≤30% (DIN 30671)
ELONGATION POLYURATHANE POLYURATHANE TAR	≥ 10% 3 % (DIN 30671)
SPECIFIC COATING RESISTIVITY (23° C 100 DAYS)	≥ 10 ⁵ M ² (DIN 30671)
SUITABILITY FOR HANDLING TO GET THE COATED JOINTS , VALVES AND FITTINGS UNDAMAGED BURIED (CURING TIME)	WITHIN MAX 24 HOURS OF APPLICATION (GBE / CW6 PART 1)

CONTINUED

TABLE NO. 1 CONTINUED

COATING PROPERTIES	REQUIREMENTS
ADHESION (V CUTMETHOD) : TO : (STEEL , PE , COAL TAR , BITUMEN)	NOT TO BE LIFTED (DIN 30671)
CATHODIC DISBONDMENT TEST (AT 23°C , FOR 30 DAYS)	≤ 12 MM LENGTH (DIN 30671)
FLEXIBILITY	≥ 5% (DIN 30671)
HEAT REVERSION TEST	FREE FROM PINHOLES (DIN 30671)
CO ₂ RELEASE	NOT EXCEEDING 3MG CO ₂ / 100 GR COATING (DIN 30671) THIS TEST APPLICABLE ONLY TO POLYURATHANE TAR COATING
SHORE HARDNESS TEST	OVER NIGHT CURE : MIN D35 FULLY CURED : MIN D50

5.0 APPENDIX A (THE UNMIXED POLYURATHANE MATERIALS PROPERTIES FOR COLD APPLICATION)

PROPERTIES	REQUIREMENTS
SHELF LIFE	MIN. 24 MONTHS AFTER PRODUCTION
POT LIFE	≥ 20 MIN AFTER MIXING (BGC / CW6 , PART 1)
APPLICATION TEMPERATURE	0°C TO 50°C (BGC / CW6 , PART 1)
SERVICE TEMPERATURE	-10°C TO 80°C
FLASH POINTS	≥ 100°C (BGC / CW6 , PART 1)
VOLUME SOLID	≥ 95 %
MIXING RATIO	THE MIXING RATIO OF MATERIAL COMPONENTS SHALL BE SPECIFIED BY THE MANUFACTURER , BOTH BY WEIGHT AND BY VOLUME (BGC / CW6 , PART 1)

CONTINUED

APPENDIX A CONTINUED

PROPERTIES	REQUIREMENTS
VISCOSITY	THE VISCOSITY OF EACH MATERIAL COMPONENT AS SUPPLIED , SHALL BE SPECIFIED BY THE MANUFACTURER (GBE / CW6 , PART 1)
RELATIVE DENSITY	THE RELATIVE DENSITY OF EACH MATERIAL COMPONENT SHALL BE SPECIFIED BY THE MANUFACTURER (GBE / CW6 , PART 1)
PACKAGING	EACH MATERIAL COMPONENT (PART A & B) SHALL BE PACKED IN AIRTIGHT METALLIC CONTAINERS. THE WEIGHT OF EACH PART SHALL BE SPECIFIED BY MANUFACTURER AND TO BE APPROVED BY N.I.G.C