



## STANDARD SPECIFICATION FOR PERMALOK STEEL CARRIER PIPE

**SCOPE:** This specification is intended for steel pipe utilizing an integral, machined press-fit connection incorporating double “O” ring gaskets, to be used as the actual carrier of fluids under low to medium pressures. This method is proprietary to Permalok Corporation of St. Louis, MO., and is primarily used for joining steel carrier pipes in trenchless applications.

### **PART 1 MATERIAL**

- 1.1 All steel used in the manufacture of Permalok steel pipe shall conform to the requirements of ASTM A-36, ASTM A515, grade 60 or ASTM A572, grade 42.
- 1.2 Steel used in the manufacture of Permalok connections shall conform to ASTM A-36 as a minimum and be machinable.
- 1.3 Gasket materials used in the manufacture of Permalok pressure connections shall be BUNA – N with a minimum Shore A durometer of 70, unless otherwise modified by the design engineer.

### **PART 2 DIMENSIONAL TOLERANCES**

#### **2.1 ROUNDNESS**

The pipe diameter as measured along any single plane shall not vary more than 1% from the specified diameter.

#### **2.2 CIRCUMFERENCE**

The outside circumference shall not vary more than  $\pm 1\%$  from the nominal circumference based on the specified diameter, or  $\pm 3/4$ " maximum.

#### **2.3 WALL THICKNESS**

The actual wall thickness of the steel pipe sections shall not vary more than 5% under the nominal wall thickness specified.

#### **2.4 STRAIGHTNESS**

The maximum straightness deviation in any 10' length shall be 1/8". The maximum straightness deviation in fabricated sections up to 40' shall be 3/8".

2.5 "O" – ring groove dimensions and separation between male and female connector surfaces shall be such as to maintain a minimum gasket squeeze of 10% and a maximum of 30% of the gasket diameter. In no case shall the minimum squeeze be less than .006".

### **PART 3 MANUFACTURING**

3.1 Permalok steel pipe 24" and under shall be either ERW or seamless at the option of the manufacturer.

3.2 Permalok steel pipe 30" in diameter and over shall be manufactured by the rolled and welded cylinder method utilizing the DSAW process in sections of not less than 8' long, except as needed to achieve the final finished length of pipe.

3.3 Permalok connectors shall be full penetration butt-welded square to the ends of pipe sections, or profiled directly on the finished sections, at the option of the manufacturer.

3.4 Spiral welded pipe will be permitted only at the request and/or approval of the purchaser.

3.5 Specific coatings and linings compatible with the fluids being conveyed and the installation methods shall be specified by the design engineer and approved by the manufacturer.

### **PART 4 QUALITY CONTROL**

4.1 All welding shall be performed by qualified welding operators in accordance with the requirements of ANSI/AWS D1.1.

4.2 All welding procedures shall be either pre-qualified in accordance with ANSI/AWS D 1.1 for full penetration welds, or qualified by testing, as required.

4.3 One reduced section tension test specimen shall be evaluated for each lot of 500' of each size and wall thickness, and shall show a tensile strength of not less than 95% of the minimum strength specified for the grade of steel used, unless waived by the purchaser.

4.4 All steel pipe 24" in diameter and under shall be accompanied by original mill test reports indicating a hydrostatic test to a minimum of 1 1/2 times the working pressure as determined by the design engineer. At the manufacturer's option, all pipe 30" in diameter and larger shall have

hydrostatic testing waived and replaced by 100% visual weld inspection and 10% spot UT or radiographic evaluation to AWS D1.1 criteria for weld penetration and fusion.

- 4.5** All Permalok connections shall be examined at time of shipment and shall be free of injurious defects or that section shall be rejected and repaired prior to shipping.
- 4.6** All Permalok pipe shall be clearly marked with the manufacturer's name, manufacturers job number, customer name, OD, wall thickness, and weight per foot.
- 4.7** One set of "O" ring gaskets from each lot of 20 sets or less shall be 100% inspected for defects including excessive flash, dimensional tolerance and proper fit up in the gland. Gasket stretch shall not exceed 5% of the specified inside diameter, once seated in the groove.