



## TECHNICAL INFORMATION

### MATERIALS

#### THERMOPLASTICS

**UPVC - All PVC referenced in this publication is unplasticized PVC, commonly referred to as UPVC.**

##### PVC - Poly Vinyl Chloride

PVC is one of the most specified thermoplastics for piping system components, including valves, fittings, flanges and many specialty products. PVC has excellent chemical and corrosion resistance to a broad range of fluids including water, deionized water, most mineral acids, bases, salts and paraffinic hydrocarbon solutions. PVC is not recommended for use with chlorinated or aromatic hydrocarbons, esters or polar solvents such as ketones. Spears® PVC materials conform to ASTM Cell Classification 12454-B (formerly designated as Type I, Grade 1). The maximum recommended service temperature of PVC products is 60°C (140°F).

##### CPVC - Chlorinated Poly Vinyl Chloride

Chlorinated PVC is used for higher temperature applications than PVC, especially for handling hot corrosive liquids. With similar chemical and corrosion resistance to PVC, increased chlorine content gives CPVC superior thermal resistance. CPVC is not recommended for use with chlorinated or aromatic hydrocarbons, esters, or polar solvents such as ketones. Spears® CPVC materials conform to ASTM Cell Classification 23447-B (formerly designated as Type IV, Grade 1). The maximum recommended service temperature of CPVC products is 93°C (200°F).

#### ELASTOMERS

##### EPR (EPDM) Ethylene propylene rubber

Used in O-ring seals, EPR is recommended for water, chlorinated water, dilute acids and alkalines, alcohols, and has excellent resistance to ozone. EPR is not recommended for petroleum oils, di-ester lubricants, strong acids, or strong alkalines. The maximum recommended service temperature of EPR is 149°C (300°F).

##### FKM - Fluorocarbon elastomer

Used in O-ring seals, FKM exhibits a very broad range of chemical resistance, including petroleum oils, di-ester based lubricants, silicate fluids and greases, halogenated hydrocarbons and mineral acids. FKM is not recommended for ketones, amines, anhydrous ammonia, hot hydrofluoric or chlorosulfonic acids or automotive brake fluids. The maximum recommended service temperature of FKM is 204°C (400°F).

##### NITRILE (Buna-N) - Nitrile elastomer

Used in O-ring seals, nitrile elastomers are recommended for petroleum oils and fluids, silicone oils and greases, di-ester based lubricants, ethylene glycol based fluids and cold water. Nitrile is not recommended for phosphate ester hydraulic fluids, halogenated hydrocarbons, strong acids, ketone, ozone or automotive brake fluids. The maximum recommended service temperature of nitrile is 135°C (275°F).

### IMPORTANT

#### SPECIFICATION STANDARDS ORIGIN

Not all metric fitting sizes are the same. Today's global markets have varying standards, norms and interpretations of metric sizing. Identification of the standards origin for which fittings are being specified is essential in assuring that the proper fitting is obtained for each application.

##### METRIC SIZE DIAMETERS: ACTUAL (O.D.) vs. NOMINAL (I.D.)

Pipe and fitting sizes are specified according to a diameter. It is important to know if a specification of size is an actual O.D. (d), or a nominal diameter (DN) which is based on pipe I.D.

Where applicable, Spears® metric socket fittings in this price schedule have size columns to indicate both actual "d" and nominal "DN". It is always best to identify the actual pipe O.D. being used in order to select the proper fitting.

#### THREADS

Spears® metric thread fittings use BSP (British Standard Pipe) threads designated in inch-sizes, which also conform to ISO 7/1 metric threads. ASTM Iron Pipe Size (IPS) threads use NPT (National Pipe Thread) threads which are also designated as inch size, conforming to ASTM F 1498. BSP threads are not compatible with NPT threads.

### SPEARS® METRIC FITTINGS

#### PN16 PVC AND CPVC METRIC FITTINGS

Injection Molded.

<b>Size Range:</b>	20mm through 63mm socket, actual "d" 1/2" through 2" threaded
<b>Sockets:</b>	ISO 727
<b>Threads - BSP:</b>	ISO 7/1
<b>Laying Lengths:</b>	ISO 264
<b>Pressure Rating:</b>	PN16 = 16 BAR at 23°C (232 psi at 73°F)

#### PN10 (CLASS 10/12) PVC METRIC SOCKET FITTINGS

Injection Molded.

<b>Size Range:</b>	160mm and 225mm socket, actual "d" 73°F
<b>Sockets:</b>	ISO 727 diameters (ASTM D 2467 socket length)
<b>Pressure Rating:</b>	160mm: PN12 = 12 BAR at 23°C (174 psi at 73°F) 225mm: PN10 = 10 BAR at 23°C (145 psi at 73°F)



## Metric Fittings Technical Materials, Fittings & Valves Overview

### **PVC ASTM SCHEDULE 40 SOCKET X BSP ADAPTER FITTINGS (WHITE & GRAY)**

Injection Molded.

<b>Size Range:</b>	3/4" through 3" socket x threaded, nominal
<b>Sockets:</b>	Iron Pipe Size (IPS) to ASTM D 2466
<b>Threads - BSP:</b>	ISO 7/1
<b>Pressure Rating:</b>	Designed for use with corresponding size and pressure of ASTM D 1785 Schedule 40 pipe with 50% derating of threaded system.

### **PVC TRANSITION UNIONS**

Injection molded; specially designed for transitions between ASTM IPS (Iron Pipe Size) systems and either ISO (International Standards Organization) metric, or JIS (Japanese Industrial Standards) metric systems.

<b>Size Range:</b>	ASTM IPS (inch): 1/2" through 4", nominal - connect to - ISO Metric (mm): 20mm through 110mm socket, actual "d" 1/2" through 4" BSP threaded - or to - JIS Metric (mm): 16mm through 100mm socket, nominal "DN"
<b>Sockets:</b>	ASTM IPS (inch): ASTM D 2467 ISO Metric (mm): ISO 727 diameters (ASTM D 2467 socket length) JIS Metric (mm): JIS K6741 diameters (ASTM D 2467 socket length)
<b>Threads:</b>	NPT: ASTM F 1498 BSP: ISO 7/1
<b>Pressure Rating:</b>	16.2 BAR at 23°C (235 psi at 73°F)

## **PVC & CPVC METRIC VALVES**

### **TRUE UNION BALL VALVES & BALL CHECK VALVES**

<b>Size Range:</b>	20mm through 110mm socket, actual "d" 1/2" through 2" BSP threaded
<b>Sockets:</b>	ISO 727 diameters (ASTM D 2467 socket length)
<b>Threads - BSP:</b>	ISO 7/1
<b>Pressure Rating:</b>	20mm - 62mm: 16.2 BAR at 23°C (235 psi at 73°F) 75mm - 110mm: 10.3 BAR at 23°C (150 psi at 73°F)

### **GATE VALVES**

<b>Size Range:</b>	20mm through 63mm socket, actual "d" 1/2" through 2" BSP threaded
<b>Sockets:</b>	ISO 727 diameters (ASTM 2467 socket length)
<b>Threads - BSP:</b>	ISO 7/1
<b>Pressure Rating:</b>	13.8 BAR at 23°C (200 psi at 73°F)