



Piping Technology Network – Gaskets and Packing

U2A Gasket Codes

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Vendors and merchandise designations are given to describe materials and may not include all acceptable products. Substitutions by suppliers are to be made only on approval of the local authority initiating the use of this guideline.

1. Scope

This guideline describes DuPont coded gaskets in [Tables 1](#) and [2](#). [Figure 1](#) explains the spiral-wound gasket code numbering system. [Figure 2](#) explains the laminate gasket code numbering system. Acceptable materials and vendors for DuPont codes are listed in Specification [SU2A](#). Refer to [U1A](#) for gasket application and selection.

2. General

The prefix or initial letter of the code designates the general classification (e.g., “G” for cut gaskets and “S” for gasket material in sheet form). The second part of the code is an arbitrary designation for identification.

The following ASTM rubber designations are used in [Table 1](#):

CR	Neoprene
EPDM	Ethylene propylene terpolymer elastomer (Nordel-IP®)
FFKM	Perfluoroelastomer (Kalrez®)
FKM	Fluoroelastomer (Viton®)
IRHD	International Rubber Hardness Degrees
NBR	Nitrile butadiene rubber
NR	Natural rubber
PTFE	Fluorocarbon resin
SBR	Styrene butadiene rubber

Important! On drawings specifying DuPont code numbers, reference should be made to DuPont Specification [SU2A](#). This specification can be sent to DuPont contractors to show acceptable materials and vendors for each code number.

® Nordel is a registered trademark of Dow Chemical Company.

3. References

ASME B16.1-1998	American Society of Mechanical Engineers Publication—Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800
ASME B16.5-1996	American Society of Mechanical Engineers Publication—Pipe Flanges and Flanged Fittings
ASME B16.20-1998	American Society of Mechanical Engineers Publication—Metallic Gaskets for Pipe Flanges, Ring Joint, Spiral Wounds and Jacketed
ASME B16.21-1992	American Society of Mechanical Engineers Publication—Nonmetallic Flat Gaskets for Pipe Flanges
ASME B16.24-1991	American Society of Mechanical Engineers Publication—Cast Copper Alloy Pipe Flanges and Flanged Fittings
ASME B16.47-1996	American Society of Mechanical Engineers Publication—Large Diameter Steel Flanges
ASTM D 1415	American Society for Testing and Materials Publication—Test Methods for Rubber Properties International Hardness

DuPont Specification and Guidelines

SU2A	Gasket Codes, Manufacturers
U1A	Gasket Application
U6A	Elastomer Gasket Specification
U10A	Gasket Dimensions, Special
U16A	Teflon® Envelope Gasket Dimensions

® Teflon is a registered trademark of E.I. DuPont de Nemours and Company.

Table 1. Sheet and cut gasket codes (nonmetallic)^a

DuPont code		Description	Max. temp. ^b	
			°C	°F
S1 / S2	G1 / G2	NBR bonded compressed asbestos	399	750
S3 ^g	G3	Brown, 30 IRHD ^c , NR gum rubber	99	210
S4 ^g	G4	Red, 75 IRHD, NR or SBR rubber	99	210
S10 ^g	G10	Black, 40 IRHD, CR neoprene	99	210
S11 ^g	G11	Black, 60 IRHD, CR neoprene	99	210
S12 ^g	G12	Black, 75 IRHD, CR neoprene	99	210
S13 ^h	G13 ^h	Flexible graphite (98% minimum purity)	454 ^d	850 ^d
S13F ^h	G13F ^h	S13 with Type 316 stainless foil insert	454 ^d	850 ^d
S13G ^h	G13G ^h	S13 with glass fiber insert	454 ^d	850 ^d
S13K ^h	G13K ^h	G13 with Kevlar® and NBR bonding	260	500
S13M ^h	G13M ^h	Multilayer S13 with Type 316 stainless foil insert	454	850 ^d
S13N	G13N	Nuclear Grade Graphite (99.8% purity, per GE specification D50Y P12)	454	850
S13S ^h	G13S ^h	S13 with Type 316 stainless perforated sheet insert	454 ^d	850 ^d
S13T ^h	—	S13 corrugated tape with adhesive backing	454 ^d	850 ^d
S13V ^h	G13V ^h	S13 with 0.015" 316 stainless steel insert	454 ^d	850 ^d
S13W ^h	G13W ^h	S13 with Type 316 stainless wire screen insert	454 ^d	850 ^d
S14	G14	Compressed plant fiber	99	200
S15	G15	Inorganic Fiber Gasketing	425	800
S16	G16	Cloth inserted SBR rubber sheet	121	250
—	G17	Special EPDM ribbed gasket	149	300
—	G18	Special EPDM ribbed gasket, PTFE encapsulated	149	300
S19 ^g	G19	Black, 60 IRHD, EPDM, Peroxide cure	177	350
S20 ^g	G20	Black, 70 IRHD, EPDM, Peroxide cure	177	350
S21 ^g	G21	General-purpose, black, 60 IRHD, FKM, 100% virgin DuPont Performance Elastomers Viton®, Dipolymer, A Family, Bisphenol cure	204	400
S22 ^g	G22	General-purpose, black, 75 IRHD, FKM, 100% virgin DuPont Performance Elastomers Viton®, Dipolymer, A Family, Bisphenol cure	204	400
S23 ^g	G23	General-purpose, black, 60 IRHD, FKM, 100% virgin DuPont Performance Elastomers Viton®, Terpolymer, B Family, Bisphenol cure	204	400
S24 ^g	G24	General-purpose, black, 75 IRHD, FKM, 100% virgin DuPont Performance Elastomers Viton®, Terpolymer, B Family, Bisphenol cure	204	400
S25 ^g	G25	High-performance, black, 60 IRHD, FKM, 100% virgin DuPont Performance Elastomers Viton®, Specialty Polymer Family, Peroxide cure.	204	400
S26 ^g	G26	High-performance, black, 75 IRHD, FKM, 100% virgin DuPont Performance Elastomers Viton®, Specialty Polymer Family, Peroxide cure.	204	400
S27 ^g	G27	Low-temperature service, black, 60 IRHD, FKM, 100% virgin DuPont Performance Elastomers Viton®, Specialty Polymer Family, Peroxide cure	204	400
S28 ^g	G28	Low-temperature service, black, 75 IRHD, FKM, 100% virgin DuPont Performance Elastomers Viton®, Specialty Polymer Family, Peroxide cure	204	400
S29 ^g	G29	Highest performing grade of Viton®, black, 75 IRHD, FKM, 100% virgin DuPont Performance Elastomers Viton®, Viton® Extreme ETP – 600S, Specialty Polymer Family, Peroxide cure	204	400
S30 ^g	G30	Black, 75 IRHD, DuPont Performance Elastomers Kalrez® 4079	316	600
S31 ^g	G31	Black, 82 IRHD, DuPont Performance Elastomers Kalrez® 1050 LF	288	550
S32 ^g	G32	Black, 91 IRHD, DuPont Performance Elastomers Kalrez® 3018	288	550
S34 ^g	G34	Black 75 IRHD, DuPont Performance Elastomers Kalrez® 7075	327	620
S35 ^g	G35	White 55 IRHD, CR neoprene	99	210
S36 ^g	G36	Black 75 IRHD, DuPont Performance Elastomers Kalrez® 6375	275	527
S37	G37	Black 75 IRHD, 100% Virgin Viton®, A Family, Tracer Technology	204	400
S38	G38	Blue 75 IRHD, 100% Virgin Viton®, B Family	204	400
S39	G39	White 75 IRHD, 100% Virgin Viton®, B Family	204	400
S40	G40	Gold 75 IRHD, 100% Virgin Viton®, GF Family	204	400

See [notes](#) at end of table.

(continued)

Table 1. Sheet and cut gasket codes (nonmetallic)^a (continued)

DuPont code	Description	Max. temp. ^b	
		°C	°F
S45 ^g	G45 Black 60 IRHD, NBR rubber	127	260
—	G46 Teflon [®] TFE with Type 304 stainless insert	190	350
S48	— Teflon [®] TFE, multifilament braided tape	177	350
S49A	G49A Teflon [®] TFE, glass filler	204 to 260 ^e	400 to 500 ^e
S49B	G49B Teflon [®] TFE, glass sphere filler, compressibility (ASTM F36) > 25%	204 to 260 ^e	400 to 500 ^e
S49F	G49F Teflon [®] TFE, CaF ₂ filled	204 to 260 ^e	400 to 500 ^e
S49H	G49H Teflon [®] TFE, barium sulfate filler	204 to 260 ^e	400 to 500 ^e
S49J	G49J Teflon [®] TFE, graphite filled	204 to 260 ^e	400 to 500 ^e
S49K	G49K Teflon [®] TFE, silica filler	204 to 260 ^e	400 to 500 ^e
—	G49M Teflon [®] glass sphere filler, layered	204 to 260 ^e	400 to 500 ^e
S49N	G49N Teflon [®] TFE, barium sulfate, glass sphere filler	204 to 260 ^e	400 to 500 ^e
S49S	G49S Teflon [®] TFE, silicon carbide filled	204 to 260	400 to 500
S50	G50 White virgin Teflon [®] TFE	177 ^f	350 ^f
S50B	G50B Expanded Teflon [®] sheet	204 to 260 ^e	400 to 500 ^e
—	G50C Expanded Teflon [®] tape	204 to 260 ^e	400 to 500 ^e
—	G50D Expanded Teflon [®] insertable gasket	204 to 260 ^e	400 to 500 ^e
—	G50E Expanded Teflon [®] multi-directional tape	204 to 260 ^e	400 to 500 ^e
—	G50F Expanded Teflon [®] reduced stress – ring gasket	204 to 260 ^e	400 to 500 ^e
—	G50G Fully encapsulated expanded Teflon [®] with 316 SS corrugated insert	204 to 260 ^e	400 to 500 ^e
—	G50H Expanded Teflon [®] reduced stress-full face flange	204-260	400-500
S50I	G50I S50B with Type 316 SS tanged sheet insert	204-260 ^e	400-500 ^e
—	G51 Expanded Teflon [®] joint sealant	260	500
S70 ^k	G70 ^k Vermiculite Sheet Gasket with 316 SS tanged core	800	1700
S71 ^{j, k}	G71 ^{j, k} NBR bonded Vermiculite	454	700
S72	G72 MICA Sheet Gasket with 316 SS expanded metal mesh	800	1700
S73	G73 Talc Sheet Gasket with polysilic acid fiber, NBR binder reinforced with fiberglass scrim	800	1700
S80 ⁱ	G80 ⁱ SBR bonded Kevlar [®] , mineral fillers	204 ^e	400 ^e
S81 ⁱ	G81 ⁱ NBR bonded Kevlar [®] , mineral fillers	204 ^e	400 ^e
S82 ⁱ	G82 ⁱ CR bonded Kevlar [®] , mineral fillers	204 ^e	400 ^e
S83 ⁱ	G83 ⁱ EPDM bonded Kevlar [®] , mineral fillers	204 ^e	400 ^e
S84 ⁱ	G84 ⁱ NBR bonded graphite/ Kevlar [®] , mineral fillers	260	500
S85	G85 SBR bonded carbon, mineral fillers	340	650
S86	G86 Fire tested (API 607), non-asbestos materials ^l	340	650
S87	G87 NBR bonded carbon/Kevlar with SS wire reinforced core	454	850
S88	G88 Fire tested (API 607), FDA compliant, 100% HNBR bonded aramid and glass, total binder content less than 20%	340-454	650-850



^a Purchase orders for pipe flange gaskets shall specify the following:

- Style—full-face, flat ring, male and female (small, large), tongue and groove (small, large).
- Flange dimensional specification in accordance with ASME B16.5, ASME B16.24, ASME B16.47, and ASME B16.1
- Flange class (e.g., 150, 300).
- Refer to ASME B16.21 unless it is required to avoid a crevice at the gasket inner diameter, in which case refer to [U10A](#).

^b Maximum temperature may be lower for some services.

^c IRHD (Internal Rubber Hardness Degrees) as described in ASTM D 1415, approximately equal to Durometer A hardness..

^d Maximum temperature in air, but if nonoxidizing, temperature may go to 1100°C (2012°F) or higher.

^e 204°C (400°F) recommended, but under proper conditions 260°C (500°F) may be used.

^f 177°C (350°F) recommended, but under proper conditions 260°C (500°F) may be used.

^g See DuPont guideline [U6A](#) for gasket specifications


^h 98% purity, oxidation test 593°C for 24 hours (less than 15% weight loss) per FSA-G-604-07 Method B and API 622, co-branding of graphite (where applicable) is required

ⁱ Special considerations required for critical service given high mineral filler content

^j 700°F for 1/8" thick, 850°F for 1/16" thick.

^k Gasket passed API 607 is considered "fire-safe"

^l Consult manufacture for specific application

 Shading indicates an asbestos product.

® Kevlar is a registered trademark of E.I. DuPont de Nemours and Company.

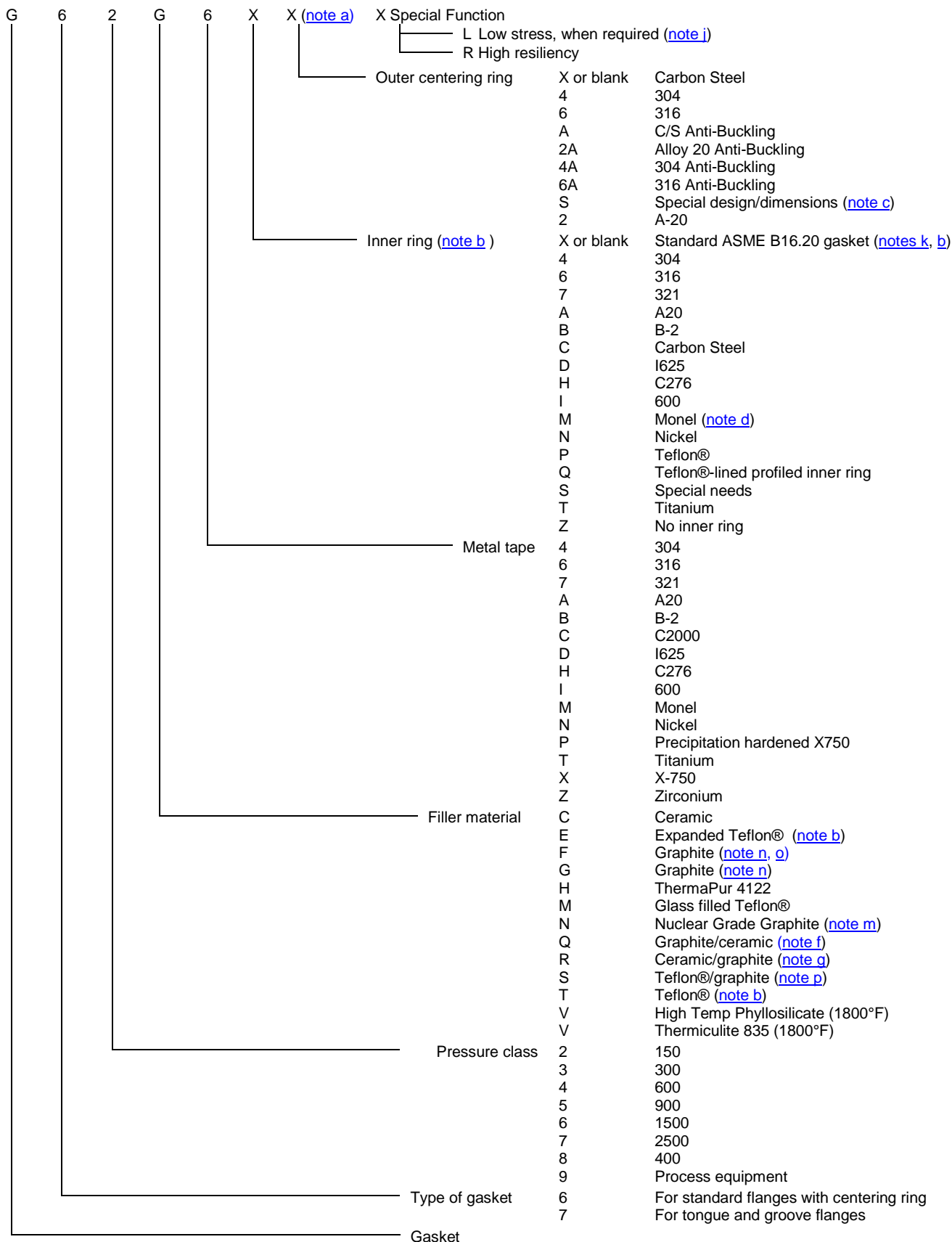
Table 2. Teflon® envelope gasket codes^a

Code	Type	Center insert	Outer insert	Use	Max. temp.	
					°C	°F
G52	Square (milled)	Reinforced Neoprene ^b	None	Pipe flanges	100 177 232	212
G53	V (slit)					
G54	Square (milled)					
G55	V (slit)					
G58	Square (milled)	Aramid fiber sheet G81 or equivalent	Corrugated stainless steel	Glass-lined vessels	232	350
G59	V (slit)					
G60AS	V (slit)					
G60AM	Square (milled)					
G61AS	V (slit)					
G61AR	V (rolled)					
G61B	Square (milled)					
G61CV	V (slit)					
G61CR	V (rolled)					
G61D	Square (milled)					
G61U	One piece 100% ePTFE gasket, 1/4" thick with fully densified ID and outer layer.	Integral ePTFE				
G61BN	Bull Nose	Corrugated stainless steel	2000LR	Glass-lined vessels	232	450
G61ES	Envelop gasket used to reduce build up of electrostatic charge	Stainless steel with grounding tab	Graphite	Pipe and vessel flanges	232	450

^a For component thicknesses, see [U16A](#).

^b To have EPDM as the center insert, add "EPDM" to the code (e.g., G52EPDM). Max temp. 163°C (325°F).

Figure 1. Spiral-wound gasket code numbering system (note l)

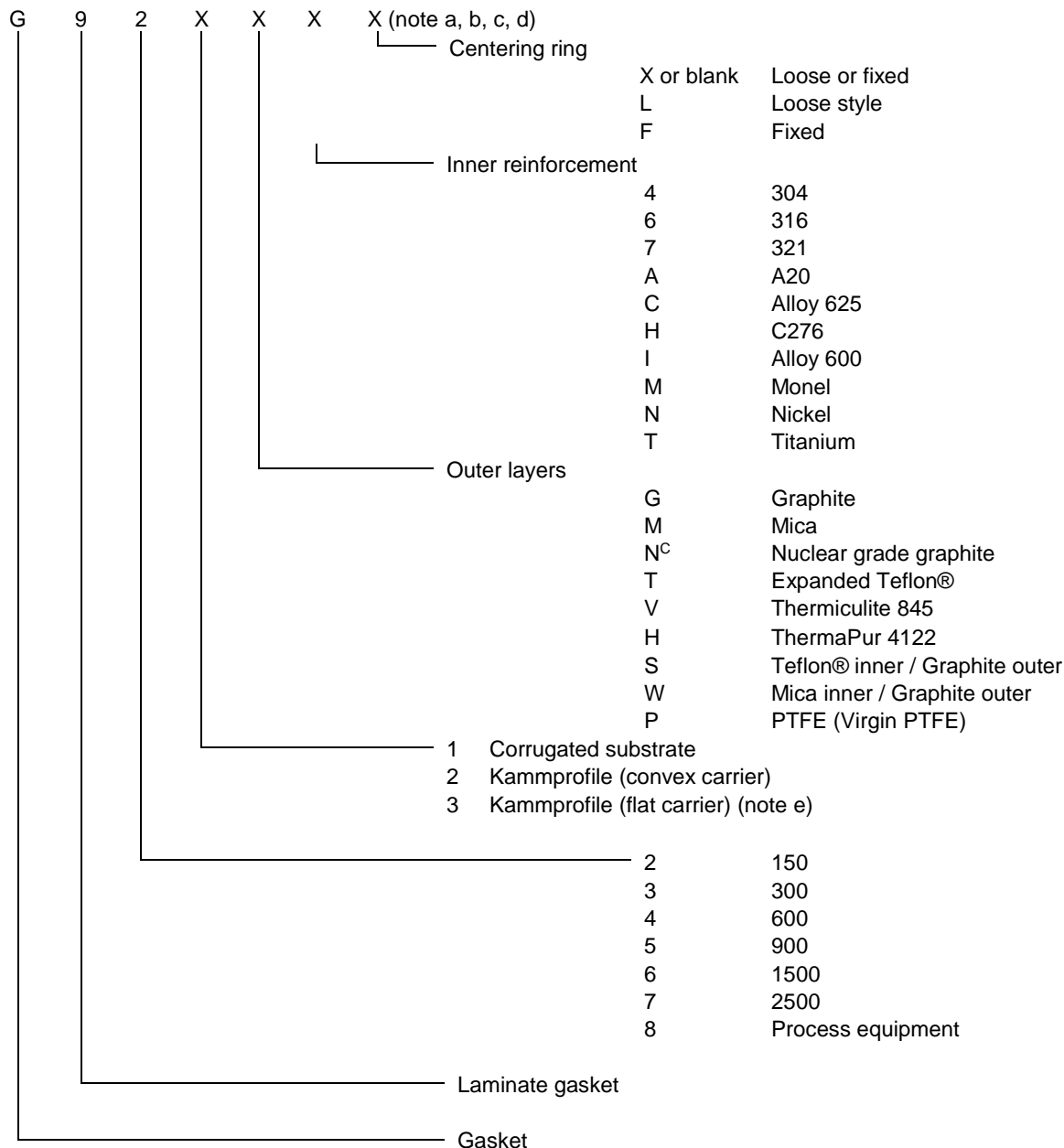


See next page for [Notes](#)

Notes:

- a Note the following example requirements in specifications:
 - G62T6 or G62T6XX = standard ASME B16.20 gasket, 316SS inner ring, CS outer ring
 - G62T6X4 = G62T6 with 304 SS outer ring, 316SS inner ring,
 - G62T64 or G62T64X = G62T6 with 304 SS inner ring
 - G62T664 = G62T6 with 316 inner ring and 304 outer ring
 - G62T6Z6A = G62T6 w/o inner ring, 316 anti-buckling outer ring
 - G72G6ZS = G72G6 w/o inner ring, special design and/or dimensions. Refer to plant detail drawings.
- b A metallic inner ring is standard on all ASME B16.20 gaskets regardless of filler. To specify a gasket without an inner ring designate a "Z" for no inner ring.
- c Refer to piping drawings for dimensions.
- d Monel, a nickel alloy, is a registered trademark of Inco Alloys International, Inc.
- e Deleted - Mica/graphite. Max operating temperature (350°F). Not fire safe.
- f This gasket has flexible graphite inner filler and ceramic outer filler.
- g This gasket has a ceramic inner filler and flexible graphite outer filler.
- h This gasket has a Teflon® inner filler and flexible graphite outer filler.
- i Small or large must be specified.
- j "L" style gaskets are required for certain applications (low stress bolts, certain flanges).
- k Per ASME 16.20 the inner ring shall be of a material that has corrosion resistance characteristics equivalent or better than winding. Unless otherwise specified, material shall be same as winding.
- l All spiral wound gaskets shall meet gasket compression requirements of ASME B16.20. Gaskets meeting all the requirements of ASME B16.20 shall be stamped B16.20.
- m Graphite with minimum 99.5% carbon content, certified to meet GE-NEDC-31735PID50YP12
- n 98% purity, oxidation test 593°C for 24 hours (less than 15% weight loss) per FSA-G-604-07 Method B and API 622, co-branding of graphite (where applicable) is required.
- o Deleted - Mica/graphite. Max operating temperature (350°F). Not fire safe. Superseded by graphite that is technically superior and less costly.
- p This filler material system uses both graphite and Teflon, half Teflon and half graphite. The Teflon filler isolated on the inner half of the windings (closer to process) while the graphite is located on the outer half of the windings (closer to environment). This allows for the chemical resistance and purity of the Teflon but the fire safety permitted by graphite.

Figure 2. Laminate gasket code numbering system



Notes:

- a. A centering ring is required on all standard class piping gaskets
- b. The centering ring shall be marked with size, materials and rating
- c. Graphite with minimum 99.8% carbon content, certified to meet GE-NEDC-31735P/D50YP12
- d. Oxidation test 593°C for 24 hours (less than 15% weight loss) per FSA-G-604-07 Method B and API 622.
- e. "Standard" flat Kammprofile style piping gaskets shall meet the requirements given in ASME B16.20 for grooved metal gaskets with covering layers