CHARPY IMPACT TEST REQUIREMENTS

REV	REASON FOR CHANGE	DATE	MADE BY	REVIEWD BY	APPROVED BY	STATUS
0	Temp rating R deleted and N, X & Y added	17-05-2013	USR	JG	KKD	RELEASED

CHARPY IMPACT TEST REQUIREMENTS

1.0 SCOPE

This specification establishes the Charpy Impact testing requirements and procedure for forgings, castings and bar stock.

2.0 REQUIREMENTS

2.1 Impact test shall be performed in accordance with the procedure specified in ASTM A-370 using the Charpy V-Notch technique. The test temperature shall be at or below the temperature specified by the properties table "1". A minimum of three impact specimens shall be tested to qualify a single heat of material.

2.2 Standard size impact specimens measuring 10 mm X 10 mm in cross section shall be used, except where there is insufficient material, in which case the next smaller standard size specimen obtainable shall be used. When sub size specimens are used the adjustment factors shall be noted.

2.3 Impact testing shall be performed at specified temperature each set of three specimens. The average value shall be meet at least the minimum value specified in the table "2". In no case shall an individual impact value fall below two-thirds of that required as a minimum average. Similarly, no more than one of the three test results shall be below the required minimum average.

2.4 If the results are not satisfactory, then a retest shall be conducted using three specimens from the same location within the QTC. Each of the retest specimens shall meet or exceed the applicable requirements.

TABLE 1

Specification	Specimen Dimension	Adjustment Factor
API6A	10 mm X 10 mm (Full Size)	1 (none)
	10 mm X 7.5 mm	0.833
	10 mm X 6.7 mm	0.780
	10 mm X 5.0 mm	0.667
	10 mm X 3.3 mm	0.440
	10 mm X 2.5 mm	0.333

TABLE 2

Temperature Rating	Test Temperature	Minimum Average Impact value for three specimens in Transverse Direction Ft-Lbs (Joules)			Minimum Impact value for one specimen only/ set	Lateral Expansion Inch (mm)
		PSL 1	PSL 2	PSL 3/ PSL 4		PSL 4
K	-75 °F (-60°C)	15 (20)	15(20)	15 (20)	10(13.3)	0.015(0.38)
L	-50 °F (-46°C)	15(20)	15(20)	15(20)	10(13.3)	0.015 (0.38)
N	-50 °F (-46°C)	15 (20)	15(20)	15(20)	10(13.3)	0.015(0.38)
P	-20 °F (-29°C)	-	15 (20)	15(20)	10(13.3)	0.015(0.38)
S	0 °F (-18°C)	-	-	15(20)	10(13.3)	0.015(0.38)
T	0 °F (-18°C)	-	-	15 (20)	10(13.3)	0.015(0.38)
U	0 °F (-18°C)	-	-	15(20)	10(13.3)	0.015(0.38)
V	0 °F (-18°C)	-	-	15(20)	10(13.3)	0.015(0.38)
X	0 °F (-18°C)	-	-	15 (20)	10(13.3)	0.015(0.38)
Y	0 °F (-18°C)	-	-	15 (20)	10(13.3)	0.015(0.38)

3.0 SPECIMEN ORIENTATION

The values listed in Table 2 are the minimum acceptable values for forgings and wrought products tested in the transverse direction and for castings and weld qualifications. Forgings and wrought products may be tested in the longitudinal direction instead of the transverse direction and then shall exhibit 20 ft-lb (27 joules) minimum average value.