Angle Beam Transducers

CTS' Angle Beam Transducers and various wedge combinations are typically used to launch refracted shear waves or surface waves in a test material. CTS designed all of its Angle Beam Transducers with high gain and optimum resolution (GP Series). Special broadband, high resolution transducers (HR Series) can be substituted upon request. All replaceable wedges are offered in standard rexolite or polystyrene depending upon frequency. In addition, special high temperature wedges are available up to 500°F. As an option, CTS can contour Angle Beam wedges for axial or circumferential pipe or bar inspection.

Angle Beam Transducers utilize the basic principle of refraction and mode conversion to produce refracted shear or longitudinal waves in the test material. The angle of incidence required to produce the desired refracted wave is calculated from Snell's Law. The following formula may be used to calculate the wedge angle (Q1) required to generate the desired mode and refracted angle (Q2) in the material under test.

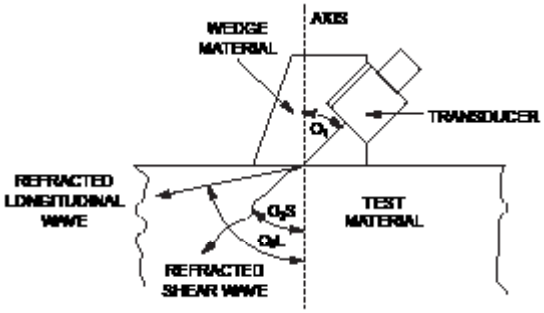
$$\frac{\text{Sin}\emptyset_1}{\text{Sin}\emptyset_2} = \frac{V_1}{V_2}$$

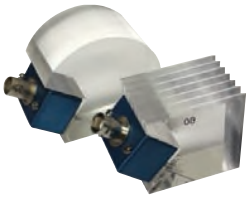
$\emptyset_1$ = Wedge angle

$\emptyset_2$ = Angle of refracted wave in test material

V_1 = Longitudinal velocity of wedge material

V_2 = Velocity of material being inspected for the desired mode





AWS Transducers

AWS Transducers conform to AWS Code D1.1. The AWS wedges are offered in either Serrated or Snail configurations and provide optimum signal to noise ratios.

FREQUENCY (MHz)	SIZE INCHES (mm)		
	0.625 X 0.625 (15.875 X 15.875)	0.625 X 0.75 (15.875 X 19.05)	0.75 X 0.75 (19.05 X 19.05)
2.25	**AW0255**	**AW0256**	**AW0266**

AWS Serrated Wedges

PART NUMBER	REFRACTED ANGLE
AWS45	45º
AWS60	60º
AWS70	70º

AWS Snail Wedges

PART NUMBER	REFRACTED ANGLE
SAWS45	45º
SAWS60	60º
SAWS70	70º