

Other Metals

Copper, crystal	[001]	2	5 mm *	E-5	Mote (1968)
	[011]	1	5 mm *	E-5	Mote (1968)
	[111]	1	5 mm * (relax- ation sup- pressed by prestrain)	E-5	Mote (1968)
Copper, polycrystal	-	~0.5 (ramp)	5 mm $\phi$	E-5	Mote (1968)
Copper	annealed	0.6-0.4	20-30 mm temp. 283- 473°K	E-7	Novikov et al. (1966)
Copper	annealed	~0.4 (ramp)	13 mm $\phi$	G-6	Taylor (1968)
Copper	annealed	~0.5 (ramp)	$\phi$	E-2,3	Munson, et al. (1966)
Copper	cold worked	-	$\phi$	G-6	Taylor (1968)
Lead	annealed	<0.2	-	E-2	Munson, et al. (1966)
Brass	annealed	3-2	30-80 mm <sup>+</sup>	E-7	Novikov, et al. (1966)
Brass	-	~8	6 mm $\phi$	E-5	Benedick (1965)
Beryllium, crystal	c-axis	40	*	G-6	Taylor (1968)
Beryllium, crystal	a-axis	4	*	G-6	Taylor (1968)
Beryllium, sintered	-	~2 (ramp)	$\phi$	G-6	Taylor (1968)
Tantalum	annealed	-	-	G-6	Taylor (1968)
Niobium	annealed	-	-	G-6	Taylor (1968)
Thorium	-	-	-	G-6	McQueen (1964)
Uranium	-	-	$\phi$	G-6	Taylor (1968)
Bismuth, crystal	-	3	1-3 mm	E,G-5	Larson (1967)
Bismuth, polycrystal	cast	~2 (ramp)	2-13 mm $\phi$	E, G-5	Larson (1967)
Bismuth, polycrystal	cast	~4 (ramp)	2 mm $\phi$	G-5	Present work
Tungsten	annealed	38	10 mm	G-5	Rohde (1968b)
Antimony	cast	17-2	5-49 mm <sup>+</sup>	E-1	Warnes (1967)

## SUMMARY OF HUGONIOT ELASTIC LIMIT MEASUREMENTS (cont)

Material	Condition (a)	$\sigma_{\text{HEL}}$ (kbar) (b)	Remarks (c)	Technique (d)	Reference
BRITTLE SINGLE CRYSTALS					
Quartz ( $\text{SiO}_2$ )	x-cut	94-48	5-25 mm <sup>+*</sup>	E-9	Wackerle (1962)
Quartz ( $\text{SiO}_2$ )	x-cut	66-55	6 mm <sup>*</sup>	E-11	Fowles (1967)
Quartz ( $\text{SiO}_2$ )	y-cut	110-82	10 mm <sup>*</sup>	E-9	Wackerle (1962)
Quartz ( $\text{SiO}_2$ )	y-cut	86-65	3-6 mm <sup>*</sup>	E-11	Fowles (1967)
Quartz ( $\text{SiO}_2$ )	z-cut	145-120	10 mm <sup>*</sup>	E-9	Wackerle (1962)
Quartz ( $\text{SiO}_2$ )	z-cut	148-100	3-6 mm <sup>*</sup>	E-11	Fowles (1967)
Quartz ( $\text{SiO}_2$ )	z-cut	145-60	-	E-12	Peyre, et al. (1965)
Quartz ( $\text{SiO}_2$ )	fused	98 (ramp)	10-13 mm $\phi$	E-9	Wackerle (1962)
Sapphire ( $\text{Al}_2\text{O}_3$ )	60° cut	120-170	10-13 mm	E-9	Brooks, et al. (1966)
Sapphire ( $\text{Al}_2\text{O}_3$ )	z-cut	120-200	10-13 mm	E-9	Brooks, et al. (1966)
Sapphire ( $\text{Al}_2\text{O}_3$ )	x-cut	135-180	10-13 mm	E-9	Brooks, et al. (1966)
Germanium	[111]	44	8 mm	G--	Graham, et al. (1966)
Germanium	[111]	41-35	6-12 mm <sup>*</sup>	E-12	McQueen (1964)
Germanium	[100]	53-46	6-12 mm <sup>*</sup>	E-12	McQueen (1964)
Germanium	[100]	45	7 mm <sup>*</sup>	E-5	Kennedy (1968)
Germanium	[100]	47	6 mm <sup>*</sup>	G-8	Graham (1967b)
Germanium	[114]	-	6-12 mm <sup>*</sup>	E-12	McQueen (1964)
Silicon	crystal		free surface velocities 50% higher than Ge values.	E-12	McQueen (1964)
Cadmium sulfide (CdS)	c-axis	>32	*	E-5	Kennedy, et al. (1966)
Cadmium sulfide (CdS)	a-axis	>28	*	E-5	Kennedy, et al. (1966)
Indium antimonide (InSb)	[100]	>20	-	E-5	Kennedy, et al. (1965)