

Solar Eclipse Exposure Calculator										
ISO		f/Number								
25		1.4	2	2.8	4	5.6	8	11	16	22
50		2	2.8	4	5.6	8	11	16	22	32
100		2.8	4	5.6	8	11	16	22	32	44
200		4	5.6	8	11	16	22	32	44	64
400		5.6	8	11	16	22	32	44	64	88
800		8	11	16	22	32	44	64	88	128
1600		11	16	22	32	44	64	88	128	176
Eclipse Feature	Q	Shutter Speed (seconds)								
Partial - 4.0 ND	11	1/32000	1/16000	1/8000	1/4000	1/2000	1/1000	1/500	1/250	1/125
Partial - 5.0 ND	8	1/4000	1/2000	1/1000	1/500	1/250	1/125	1/60	1/30	1/15
Diamond Ring	7	1/1000	1/500	1/250	1/125	1/60	1/30	1/15	1/8	1/4
Baily's Beads ²	11	1/32000	1/16000	1/8000	1/4000	1/2000	1/1000	1/500	1/250	1/125
Chromosphere	10	1/16000	1/8000	1/4000	1/2000	1/1000	1/500	1/250	1/125	1/60
Prominences	9	1/8000	1/4000	1/2000	1/1000	1/500	1/250	1/125	1/60	1/30
Corona - 0.1 Rs	7	1/2000	1/1000	1/500	1/250	1/125	1/60	1/30	1/15	1/8
Corona - 0.2 Rs ³	5	1/500	1/250	1/125	1/60	1/30	1/15	1/8	1/4	1/2
Corona - 0.5 Rs	3	1/125	1/60	1/30	1/15	1/8	1/4	1/2	1	2
Corona - 1.0 Rs	1	1/30	1/15	1/8	1/4	1/2	1	2	4	8
Corona - 2.0 Rs	0	1/15	1/8	1/4	1/2	1	2	4	8	15
Corona - 4.0 Rs	-1	1/8	1/4	1/2	1	2	4	8	15	30
Corona - 8.0 Rs ⁴	-3	1/2	1	2	4	8	15	30	60	120
Earthshine	-4	1/1.6	1.5	3	6	12	24	48	96	192
Instructions										
Choose the ISO speed in the upper left column. Next, select the f/number of the lens or telescope (on same row as the selected ISO). Finally, drop straight down the current column to the bottom table to get the recommended exposure for each feature of the solar eclipse.										
Note the brightness of the corona varies dramatically with distance from the Sun's edge. All exposure values in this guide are estimates. For best results, use them only as a guide and bracket your exposures.										
Exposure Calculations				User Values			Description			
Exposure formula:	$t=f^2/(lx2^Q)$			t=	0.001250	Exposure time (sec)				
	t=	1/	800	f=	11.00	f/stop number or focal ratio				
				l=	400.00	ISO				
				Q=	8.00	Brightness exponent				
t	=	f ²	l	2 ^Q		Calculated	Denominator (1/x)			
0.001182	=	121	400	256		t=	0.00118	846.281		
0.001250	=	128	400	256		f=	11.3137			
0.001250	=	121	378.125	256		l=	378.125			
0.001250	=	121	400	242		Q=	7.91886			
Calculator Notes:	Use target Q from main table. Modify user values as required until the user and calculated values are similar.									
Abbreviations:	ND = Neutral Density Filter; Rs = Solar Radii									
Notes:	¹ Exposures for partial phases are also good for annular eclipses									
	² Baily's Beads are extremely bright and change rapidly									
	³ Alternative exposure for the Diamond Ring effect									
	⁴ Should be able to render faint Earth shine; dependent on camera dynamic range									
Reference:	https://www.mreclipse.com/SFphoto/SFphoto.html									
SCTP Modifications										
Added shutter values over 1/4000 for newer cameras that can achieve these speeds										
Shutter speeds over 1/8000 grey due to limited cameras that can achieve this rate (stacked and global sensors)										
Shutter speeds longer than 15 sec grey due to impracticality of use in limited totality time										
Baader Visual Solar film, particularly in Kendrick Solar Filters, are 5.0 ND per the Manufacturer										
Estimated exposures specifically for Earth Shine added based on researched images										
Diamond Ring row of estimated exposures added independently for ease of use										
Exposure Calculator added to help verify alternative EVs such as 0.3 or 0.7 EV steps										
Shaun C Tarpley Photography			www.shaunctarpley.com				Version 1 - 03.05.2024			