

Laser-Induced Damage Thresholds of LAYERTEC Optics

Laser Mirrors

Item No.	Specification	LIDT [J/cm ²]	Pulse Parameters	Measured by
141321	HRs,p (0–10°, 1030–1064 nm) > 99.95 %	50	1064 nm; 7 ns; 10 Hz; Ø 270 µm	LAYERTEC
141325	HRs,p (0–10°, 1030–1064 nm) > 99.95 % Rs,p (0–10°, 808 nm) < 2 %	30	1064 nm; 7 ns; 10 Hz; Ø 270 µm	LAYERTEC
141329	HRs,p (45°, 515–532 nm) > 99.9 %	10	532 nm; 7 ns; 10 Hz; Ø 270 µm	LAYERTEC
141327	HRs,p (45°, 1030–1064 nm) > 99.95 %	50	1064 nm; 7 ns; 10 Hz; Ø 270 µm	LAYERTEC
139691	HRs,p(0–10°, 725–875 nm) > 99.9 % GDD-Rs,p(0–10°, 725–875 nm) < 50 fs ²	0.4 2	800 nm; 40 fs; 1 kHz; Ø 80 µm 800 nm; 70 fs; 10 Hz; Ø 700 µm	WRCP Budapest HZDR Dresden
140876	HRs,p(0–10°, 750–850 nm) > 99.5 % GDD-Rs,p(0–10°, 750–850 nm) < 60 fs ²	1 2	800 nm; 40 fs; 1 kHz; Ø 80 µm 800 nm; 30 fs; 10 Hz; Ø 700 µm	WRCP Budapest HZDR Dresden
139710	HRs,p (22.5°, 725–875 nm) > 99.9 % GDD-Rs,p (22.5°, 725–875 nm) < 75 fs ²	2 0.4	800 nm; 70 fs; 10 Hz; Ø 700 µm 800 nm; 40 fs; 1 kHz; Ø 80 µm	HZDR Dresden WRCP Budapest
140881	HRs (45°, 730–870 nm) > 99.8 % HRp (45°, 760–840 nm) > 99.5 % GDD-Rs,p (45°, 760–840 nm) < 80 fs ²	1 1.3 3	800 nm; 40 fs; 1 kHz; Ø 80 µm 800 nm; 128 fs; 1 kHz; Ø 15 µm 800 nm; 30 fs; 10 Hz; Ø 830 µm	WRCP Budapest WRCP Budapest HZDR Dresden
139374	HRs,p (0–10°, 1030–1042 nm) > 99.99 % GDD-Rs,p (0–10°, 1030–1042 nm) < 20 fs ²	3	1030 nm; 10 ps; 1 kHz; Ø 50 µm	LIDARIS Vilnius

exemplary LIDT data of LAYERTEC laser mirrors

Chirped Mirrors

Item No.	Specification	LIDT [J/cm ²]	Pulse Parameters	Measured by
139711	HRp(45°, 725–875 nm) > 99.8 % GDD-Rp(45°, 725–875 nm) = -40 (±30) fs ²	0.4 0.1	800 nm; 40 fs; 1 kHz; Ø 15 µm 800 nm; 128 fs; 4.3 MHz; Ø 15 µm	WRCP Budapest WRCP Budapest
140884	HRs,p (0–10°, 725–875 nm) > 99.9 % GDD-Rs,p (0–10°, 725–875 nm) = -40 (±10) fs ²	0.2 0.25	800 nm; 40 fs; 1 kHz; Ø 80 µm 800 nm; 128 fs; 1 kHz; Ø 15 µm	WRCP Budapest WRCP Budapest
140988 + 140990	HRs,p (0–10°, 725–875 nm) > 99.8 % GDD-Rs,p (0–10°, 725–875 nm) = -40 (±20) fs ² to compensate 1 mm Fused Silica per bounce (average)	0.2	800 nm; 40 fs; 1 kHz; Ø 15 µm	WRCP Budapest
141570 + 141571	HRs,p (0–10°, 725–875 nm) > 99.8 % GDD-Rs,p (0–10°, 725–875 nm) = -110 (±50) fs ² to compensate 3 mm Fused Silica per bounce (average)	0.1 0.25	800 nm; 40 fs; 1 kHz; Ø 15 µm 800 nm; 128 fs; 1 kHz; Ø 15 µm	WRCP Budapest WRCP Budapest
141507	HRs (45°, 670–970 nm) > 99.9 % GDD-Rs (45°, 670–970 nm) = -200 ... + 200 fs ²	0.1	800 nm; 40 fs; 1 kHz; Ø 15 µm	WRCP Budapest
141520	HRp (45°, 670–970 nm) > 99.8 % GDD-Rp (45°, 670–970 nm) = -200 ... 0 fs ²	0.1 0.25	800 nm; 40 fs; 1 kHz; Ø 15 µm 800 nm; 128 fs; 1 kHz; Ø 15 µm	WRCP Budapest WRCP Budapest

exemplary LIDT data of LAYERTEC chirped mirrors

Metal Mirrors

Item No.	Specification	LIDT [J/cm ²]	Pulse Parameters	Measured by
140777	Au + protection layer HR (0°, 800–4000 nm) > 95 % HRs (45°, 800–4000 nm) > 95 % HRp (45°, 800–4000 nm) > 94 %	0.2	800 nm; 40 fs; 1 kHz; Ø 80 µm	WRCP Budapest
140770	Au unprotected HR (0°, 800–20000 nm) > 98 % HRs (45°, 800–20000 nm) > 98 % HRp (45°, 800–20000 nm) > 97 %	0.5	800 nm; 40 fs; 1 kHz; Ø 80 µm	WRCP Budapest
140780	Ag + protection layer, fs-opt. 600–1000 nm HR (0°, 600–1000 nm) > 97 % HRs (45°, 600–1000 nm) > 96 % HRp (45°, 600–1000 nm) > 96 % GDD-Rs,p (0–45°, 600–1000 nm) < 10 fs ²	5 0.7	1064 nm; 7 ns; 10 Hz; Ø 480 µm 800 nm; 40 fs; 1 kHz; Ø 80 µm	LAYERTEC WRCP Budapest
140831	Ag + protection layer, fs-opt. 800–2000 nm HR (0°, 800–2000 nm) > 97 % HRs (45°, 800–2000 nm) > 98 % HRp (45°, 800–2000 nm) > 97 % GDD-Rs,p (0–45°, 800–2000 nm) < 5 fs ²	5 0.7	1064 nm; 7 ns; 10 Hz; Ø 480 µm 800 nm; 40 fs; 1 kHz; Ø 80 µm	LAYERTEC WRCP Budapest
139943	Ag + Multilayer HRs,p (0–45°, 725–875 nm) > 98 % GDD-Rs,p (45°, 725–875 nm) < 40 fs ²	0.9	800 nm; 40 fs; 1 kHz; Ø 80 µm; AOI 0°	WRCP Budapest
141523	Ag + Multilayer HRs,p (0–45°, 670–970 nm) > 97 % GDD-Rs,p (0–45°, 670–970 nm) < 50 fs ² for application outside the resonator	0.4 1.5	800 nm; 40 fs; 1 kHz; Ø 15 µm 800 nm; 30 fs; 10 kHz; Ø 700 µm	WRCP Budapest HZDR Dresden

exemplary LIDT data of LAYERTEC metal mirrors

Antireflection Coatings

Item No.	Specification	LIDT [J/cm ²]	Pulse Parameters	Measured by
141528	ARs,p (0–15°, 670–970 nm) < 0.25 %	0.4 0.5	800 nm; 40 fs; 1 kHz; Ø 15 µm 800 nm; 128 fs; 1 kHz; Ø 15 µm	WRCP Budapest WRCP Budapest

exemplary LIDT data of LAYERTEC antireflection coatings