Comprehensive Dust Testing Facility

The following table is a comprehensive list of dust testing facilities at NASA. **Not every facility in this list will accommodate dust testing or is prepared to accommodate dust testing.** The reader should check the "Notes" column to get an idea of each facility's dust-related capabilities. It should also be noted that some information may be out of date, as noted in the "Notes" column. This does not mean the information is incorrect, but it may be incorrect. Furthermore, all values (dimensions, volume, temperature, pressure, etc.) should be taken as estimates that can change with time. It is recommended that the reader reach out to the POC for exact values, should they have interest in testing, with this list serving as a guide for readers. Reach out to Alex Hobbs (alexander.s.hobbs@nasa.gov) with any questions.

Site	Facility	Size	Configuration	Vacuum (Torr)	Temperature Range	Cryo	Primary Use	Contact	Volume (ft^3)	Volume (m^3)	Notes
MSFC	V10	1.5' diam x 1.5' long	Vertical cylinder	5.00E-08	Ambient	LN2	Life cycle	Richard A. Cooper (richard.a.cooper@nasa.gov) (Out of date)	3	0.1	Not designated for regolith testing.
JPL	18" Vac Chmbr	1.5' diam x 1.5' depth	Cylinder	1.00E-05	-195 C to 400 C	LN2	Scientific and engineering research	Liz Carey (elizabeth.m.carey@jpl.nasa.gov)	2.65	0.1	Considered a "dirty" chamber as we tend to use water, other volatiles, and silicate materials inside the chamber. The hot gas system that can run hot air through the shrouds up to 400 C while under vacuum hasn't worked in a couple years and would need to be fixed to obtain that end of the temperature range.
MSFC	V4	23" diam x 25.75" high	Horizontal cylinder	1.00E-06	Ambient to 175 C	No	Vacuum bake out	Richard A. Cooper (richard.a.cooper@nasa.gov)	6.2	0.18	Not designated for regolith testing.
MSFC	V8	23" diam x 25.75" high	Horizontal cylinder	1.00E-06	Ambient to 175 C	No	Vacuum bake out	Richard A. Cooper (richard.a.cooper@nasa.gov)	6.2	0.18	Not designated for regolith testing.
GRC	Lunar Dust Adhesion Bell Jar	.6m diam x .75 m long	Horizontal cylinder	1E=08	200 C dust bake-out, 30 K cold wall to remove moisture		Dust testing	Sharon K. Miller (sharon.k.miller@nasa.gov)	7.49	0.212	System had plasma cleaning and plasma activation of the dust which is being added back in
GSFC	240	3' diam x 3' long	Horizontal cylinder	1.00E-07	Shroud Temperature: -140 C to 110 C	Yes	Thermal vacuum	Yan Lui (yan.lui-1@nasa.gov) or Mellina Espiritu (ana.mellina.p.espiritu@nasa.gov)	21	0.6	More info: https://environmentaltest.gsfc.nasa.gov/5494web/facility/fac240.htm
GSFC	241	3' diam x 4' long	Horizontal cylinder	1.00E-06	Shroud Temperature: -150 C to 150 C	Yes	Thermal vacuum	Yan Lui (yan.lui-1@nasa.gov) or Mellina Espiritu (ana.mellina.p.espiritu@nasa.gov)	28	0.79	More info: https://environmentaltest.gsfc.nasa.gov/5494web/facility/fac241.htm
MSFC	V5	3' diam x 4' long	Horizontal cylinder	1.00E-06	-170 C to 150 C	LN2	Thermal vacuum	Richard A. Cooper (richard.a.cooper@nasa.gov)	35.3	1	Not designated for regolith testing.
MSFC	V6	3' diam x 4' long	Horizontal cylinder	1.00E-07	-170 C to 150 C	LN2	Thermal vacuum	Richard A. Cooper (richard.a.cooper@nasa.gov)	35.3	1	Not designated for regolith testing.
GSFC	281	3' diam x 4' long	Horizontal cylinder	1.00E-07	Shroud Temperature: -150 C to 150 C	Yes	Thermal vacuum	Yan Lui (yan.lui-1@nasa.gov) or Mellina Espiritu (ana.mellina.p.espiritu@nasa.gov)	28	0.8	More info: https://environmentaltest.gsfc.nasa.gov/5494web/facility/fac281.htm
GRC	VF-10	3.3' diam x 5' long	Horizontal cylinder	8.00E-07	80K-400K	LN2	Thermal vacuum	Taylor Varouh (taylor.varouh@nasa.gov)	43	1.2	Not currently set up for "dirty" testing
JPL	Build 79	4' diam x 5' high	Horizontal cylinder	1.00E-06		Yes	Cryogenic test chamber	Mary Barmatz	63	1.8	Terry Fisher (terry.c.fisher@nasa.gov) said that these facilities likely still exist but mainly used for elecric propulsion engine testing and thus would not be best for our purposes. None have been used for lunar dust. He indicated that they are "dirty" chambers
GRC	VF-9	2' w x 5' h x 8' long	Rectangle	1.00E-03		No	Atomic oxygen	Taylor Varouh (taylor.varouh@nasa.gov)	105	3	Not currently set up for "dirty" testing
JPL	Building 148	4' diam x 6.5' long	Horizontal cylinder	1.00E-06		LN2	Micro-thruster testing	Wei-yen Hu (wei-yen.hu-1@nasa.gov)	82	2.3	Terry Fisher (terry.c.fisher@nasa.gov) said that these facilities likely still exist but mainly used for elecric propulsion engine testing and thus would not be best for our purposes. None have been used for lunar dust. He indicated that they are "dirty" chambers
MSFC	V1	4' diam x 7' long	Horizontal cylinder	5.00E-07	Ambient to 180 C	No	Optical cleanliness	Richard A. Cooper (richard.a.cooper@nasa.gov)	105	3	Not designated for regolith testing.
MSFC	V9	4' diam x 7' long	Horizontal cylinder	1.00E-06	Ambient to 170 C	LN2	Vacuum Bakeout	Richard A. Cooper (richard.a.cooper@nasa.gov)	88	2.5	Not designated for regolith testing.
MSFC	V2	4' diam x 10' long	Horizontal cylinder	5.00E-07	Ambient to 180 C	No	Optical cleanliness	Richard A. Cooper (richard.a.cooper@nasa.gov)	142	4	Not designated for regolith testing.

MSFC	V3	4' diam x 10' long	Horizontal cylinder	5.00E-08	-100 C to 100 C	LN2	Pilot-in-the-Loop On-Orbit Simulation	Richard A. Cooper (richard.a.cooper@nasa.gov)	142	4	Not designated for regolith testing.
MSFC	V11/RAC	4' diam x 10' long	Horizontal cylinder	1.00E-06	-240 C to 340 C	LN2	Launch simulation	Richard A. Cooper (richard.a.cooper@nasa.gov)	126	3.6	Not designated for regolith testing.
GRC	VF-2	3.5' diam x 7' long	Horizontal cylinder	5.00E-07		No		Taylor Varouh (taylor.varouh@nasa.gov)	166	4.7	Not currently set up for "dirty" testing
GRC	VF-20	6' diam x 6' long	Horizontal cylinder	1.00E-06	80K-300K	LN2	Plasma interactions	Taylor Varouh (taylor.varouh@nasa.gov)	169	4.8	Not currently set up for "dirty" testing
JPL	Building 148	5.5' diam x 7.5' long	Horizontal cylinder	1.00E-06		LN2	Patio Chamber	Wei-yen Hu (wei-yen.hu-1@nasa.gov)	178	5	Terry Fisher (terry.c.fisher@nasa.gov) said that these facilities likely still exist but mainly used for elecric propulsion engine testing and thus would not be best for our purposes. None have been used for lunar dust. He indicated that they are "dirty" chambers
JPL	B149 Arc Jet	3.5' diam x 8' long	Horizontal cylinder	1.00E-06		LN2	Ion engine testing	Wei-yen Hu (wei-yen.hu-1@nasa.gov)	190	5.4	Terry Fisher (terry.c.fisher@nasa.gov) said that these facilities likely still exist but mainly used for elecric propulsion engine testing and thus would not be best for our purposes. None have been used for lunar dust. He indicated that they are "dirty" chambers
GRC	VF-13	5' diam x 11.5' long	Vertical cylinder	4.00E-07	80K-300K	LN2	Lunar soil, Mars gas	Mike McVetta (michael.s.mcvetta@nasa.gov)	226	6.35	Available to handle lunar dust testing
GRC	SMIRF	6' diam x 8.3' long	Vertical cylinder	8.50E-06	200R to 650R	LN2, LH2, LO2, LCH4		James A. Mullins (james.a.mullins@nasa.gov)	235	6.6	Can accommodate test articles as large as 90" high by 71" in diam. Test article size is limited to 65" high by 44" in diam when shroud installed
JPL	B312	5' diam x 12'	Horizontal cylinder	1.00E-06		LN2	Ion engine testing	Wei-yen Hu (wei-yen.hu-1@nasa.gov)	236	6.7	Terry Fisher (terry.c.fisher@nasa.gov) said that these facilities likely still exist but mainly used for elecric propulsion engine testing and thus would not be best for our purposes. None have been used for lunar dust. He indicated that they are "dirty" chambers
GRC	VF-19	6' diam x 9.5' long	Vertical cylinder	5.00E-07		No		Taylor Varouh (taylor.varouh@nasa.gov)	268	7.6	Currently (5/13/2020) not operational
JPL	Building 148	6' diam x 10' long	Horizontal cylinder	1.00E-06		LN2	High bay chamber	Wei-yen Hu (wei-yen.hu-1@nasa.gov)	283	8	Terry Fisher (terry.c.fisher@nasa.gov) said that these facilities likely still exist but mainly used for elecric propulsion engine testing and thus would not be best for our purposes. None have been used for lunar dust. He indicated that they are "dirty" chambers
JPL	B149 Big Green	8' diam x 17.5' long	Horizontal cylinder	1.00E-06		LN2	Ion engine testing	Wei-yen Hu (wei-yen.hu-1@nasa.gov)	883	25	
GRC	VF-1	5' diam x 15' long	Horizontal cylinder	3.00E-07		LN2	Cathode development	Taylor Varouh (taylor.varouh@nasa.gov)	294	8.3	Not currently set up for "dirty" testing
GRC	VF-3	5' diam x 15' long	Horizontal cylinder	4.00E-07		No	Small thrusters	Taylor Varouh (taylor.varouh@nasa.gov)	294	8.3	Not currently set up for "dirty" testing
GRC	VF-8	5' diam x 15' long	Horizontal cylinder	4.00E-07		LN2	Small thrusters	Mike McVetta (michael.s.mcvetta@nasa.gov)	294	8.3	Not currently set up for "dirty" testing
GSFC	237	7' diam x 8' long	Horizontal cylinder	5.00E-07	Shroud Temperature: GN2 mode: -140 C to 100 C, LN2 mode: -190 C	Yes	Thermal vacuum	Yan Lui (yan.lui-1@nasa.gov) or Mellina Espiritu (ana.mellina.p.espiritu@nasa.gov)	308	8.7	5000 lb. capacity. More info: https://environmentaltest.gsfc.nasa.gov/5494web/facility/fac237.htm
GSFC	239	7' diam x 8' long	Horizontal cylinder	5.00E-07	Shroud Temperature: GN2 mode -140 C to 100 C, LN2 mode -190 C	Yes	Thermal vacuum	Yan Lui (yan.lui-1@nasa.gov) or Mellina Espiritu (ana.mellina.p.espiritu@nasa.gov)	308	8.7	More info: https://environmentaltest.gsfc.nasa.gov/5494web/facility/fac239.htm
GRC	VF-67	3.3' diam x 10' long	Horizontal cylinder	1.00E-07	80K to 300K	LN2	Cathode life testing	Mike McVetta (michael.s.mcvetta@nasa.gov)	418	11.8	Not currently set up for "dirty" testing
MSFC	V7	8' diam x 10' long	Horizontal cylinder	5.00E-07	-170 C to 150 C	LN2	Vacuum Bakeout	Richard A. Cooper (richard.a.cooper@nasa.gov)	385	10.9	Not designated for regolith testing.
MSFC	Sunspot	10' diam x 12' long	Vertical cylinder	1.00E-06	-170 C to 200 C	LN2	Thermal vacuum	Richard A. Cooper (richard.a.cooper@nasa.gov)	942	26.7	Not designated for regolith testing.
GRC	VF-11	7.25' diam x 27' long	Horizontal cylinder	1.00E-07		LN2	Electric propulsion testbed	Taylor Varouh (taylor.varouh@nasa.gov)	1114	31.5	Not currently set up for "dirty" testing
GRC	VF-7	10' diam x 15' long	Horizontal cylinder	4.00E-07		LN2	Medium Thrusters	Taylor Varouh (taylor.varouh@nasa.gov)	1178	33.3	Currently (5/13/2020) not operational. Plan to reactivate in FY21
GSFC	225	10' diam x 15' long (9' diam x 14' long interior)	Horizontal cylinder	1.00E-07	Shroud Temperature: -140 C to 100 C (LN2 mode: -190 C)	Yes	Thermal vacuum	Yan Lui (yan.lui-1@nasa.gov) or Mellina Espiritu (ana.mellina.p.espiritu@nasa.gov)	890	25	Payload weight up to 5000 lb. More info: https://environmentaltest.gsfc.nasa.gov/5494web/facility/fac225.htm
GSFC	238	12' diam x 15' high	Vertical cylinder	5.00E-07	Shroud Temperature: GN2 mode: -90	Yes	Thermal vacuum and thermal balance testing, baking out	Yan Lui (yan.lui-1@nasa.gov) or Mellina Espiritu	1700	48	More info: https://environmentaltest.gsfc.nasa.gov/5494web/facility/fac238.htm

					C to 90 C, LN2 mode: -190 C		spacecraft hardware	(ana.mellina.p.espiritu@nasa.gov)			
GRC	VF-61	3' diam x 5' length	Horizontal cylinder	4.00E-08		LN2		Taylor Varouh (taylor.varouh@nasa.gov)	35.34	1	Not currently set up for "dirty" testing.
MSFC	12 ft Chamber	12' diam x 12' high	Horizontal cylinder	1.00E-04		Test Article fill station for LH2/LCH4/LN2/LHe	Little used (outdoors - rough pumped, Gas Injector)	Jim Sisco (Jimmy.D.Sisco@nasa.gov)	1357	38.4	
GRC	VF-12	10' diam x 30' long	Horizontal cylinder	8.00E-08		LN2	Medium thrusters	Mike McVetta (michael.s.mcvetta@nasa.gov)	2355	66.6	Not currently set up for "dirty" testing
JPL	B248	10' diam x 40' tall	Vertical cylinder	1.00E-06	-180 C to 100 C	LN2 shrouds on walls and top. Bottom shroud removed but could be reinstalled	Current use is by M2020 for rock drilling (dirty cvhamber). Hardware development for robotic arm	Andy Rose (andrew.d.rose@jpl.nasa.gov)	3140	88.9	Is reserved through end of FY 2021 for M2020 project. Is currently accomodating dust (presumably Martian).
JSC	Chamber B	25' diam x 26' high	Spherical	1.00E-06	-300 F to ambient	Yes	T/V and EVA (human rated)	Mike Montz (michael.e.montz@nasa.gov)	8168	231	Two manlocks are attached to support rescue techs or other standalone T/V testing. Volume & dimensions are the usable volume of the internal LN2 cylindrical shroud 20' diam by 26' tall.
MSFC	20 ft Chamber	20' diam x 25' high	Vertical cylinder	1.00E-08		LN2 Shroud plus Test Article fill station for LH2/LCH4/LN2	Heavy use (outdoors)	Jim Sisco (Jimmy.D.Sisco@nasa.gov)	7854	222.4	
MSFC	V20	20' diam x 27' long	Horizontal cylinder	1.00E-06	-170 C to 200 C	LN2	Thermal vacuum	Richard A. Cooper (richard.a.cooper@nasa.gov)	8478	240	Approved/suggested for "dirty" testing
GRC	VF-5	15' diam x 60' long	Horizontal cylinder	1.00E-07		LN2	Large thrusters	Mike McVetta (michael.s.mcvetta@nasa.gov)	10598	300	Not currently set up for "dirty" testing
GSFC	290	27' diam x 40' high	Vertical cylinder	1.00E-07	Shroud Temperature: -130 C to 100 C	Yes	I-up spacecraft testing has antechamb	Yan Lui (yan.lui-1@nasa.gov) or Mellina Espiritu (ana.mellina.p.espiritu@nasa.gov)	22891	648	More info: https://environmentaltest.gsfc.nasa.gov/5494web/facility/fac290.htm
GRC	VF-6	25' diam x 70' long	Horizontal cylinder	5.00E-07	80K-300K	LN2	Large thrusters	Mike McVetta (michael.s.mcvetta@nasa.gov)	34344	972	Not currently set up for "dirty" testing
GRC-PB	In-Space Propulsion Facility	38' diam x 62' high	Vertical cylinder	2.00E-07	-320 F to 100 F	LN2, LH2, LO2	Full-up upper stage	Hal Weaver (harold.f.weaver@nasa.gov)	70279	1989	Thermal conditioning provided by LN2 cold shroud and heating with IR lamps and/or configurable heater panels.
LaRC	16m Chamber	55' diam x 64' high	Vertical cylinder	1.00E-05		LN2		Martin S. Annett (martin.s.annett@nasa.gov)	152053	4303	Reserved through CY25, unavailable for use.
JSC	Chamber A	45' diam x 65' high (internal)	Vertical cylinder	1.00E-06	-430 F to ambient	Yes	Large Scale Crewed or Uncrewed Spacecraft and Systems Testing	Mike Montz (michael.e.montz@nasa.gov)	103377	2928	Chambers in the EP Hazardous Test Area are more appropriate for their needs and will preserve Chamber A in its present condition. This is unlikely to change as Chamber A is a Smithsonian Historical site, but other EC Chambers might be considered for dust testing if EP or other NASA facilities (e.g. at KSC) are not sufficient). Volume and dimensions are the usable volume of the internal helium cylindrical shroud 45' diam x 65' tall.
ARC	Aeolian Facility	50' x 50' x 100' high	Vertical box	4.00E+00		No	Martian Wind Tunnel		250000	7079	**Information not up to date.** Contradictions in dimensions. Needs confirmation.
GRC-PB	Space Environments Complex (SEC)	100' diam x 125' high	Vertical cylinder	5.00E-06		Yes	Full-up spacecraft testing	Bob Kowalski	981250	27769	**Information not up to date.** Person does not exist. Need to find new contact.
KSC	Regolith Test Bin	8 m long x 8 m wide x 8 m high	Cube containing 120 tons of regolith (BP1-)	Ambient atmosphere, sealed		No	Rovers, spacesuits, mechanical components testing	Drew Smith (jonathan.d.smith@nasa.gov)	N/A	N/A	
GRC	Simulated Lunar Operations (SLOPE) Laboratory	12 m x 3 m x 0.3 m soil tank	Soil tank, plus 6 m x 0.3 m adjustable tilting soil tank for sloped operations	Ambient atmosphere		No	Simulated vehicle getting "stuck" in high-sinkage soil. Mobility of vehicles & wheels Adjustable tilting soil tank (6m x 5m x 0.3m, 0 to 45 deg) and sink tank (12m x 3m x 0.6m) containing a high sinkage soil (Filliti) used for various testing with GRC lunar simulant	Phil Abel (phillip.abel@nasa.gov)	N/A	N/A	**Information not up to date.**
			Motorized rails for driving								

GRC	Traction and Excavation Capabilities (TREC) Rig	Two adjacent soil bins, each 2 m x 1 m x 0.75 m	implements, wheels (mobility systems) and tools through length of soil bin. 6-axis load cell force measurements	Ambient atmosphere		No	Single-wheeled tested and excavation tools/digging force testing	Phil Abel (phillip.abel@nasa.gov)	N/A	N/A	**Information not up to date.**
GRC	The Dunes - Outdoor mobility testing and demonstrations	100 ft x 80 ft covered with 6 in. of sand	Large hill with 3 sides of different slope angles (10, 15, 20 deg), plus obstacle course	Ambient atmosphere, outdoor		No	Outdoor test area for extended cross-slope testing with larger scale vehicles	Phil Abel (phillip.abel@nasa.gov)	N/A	N/A	**Information not up to date.**
GRC	Particulate Flow Loop	36 in x 10 ft	Sealed flow loop	Ambient and low pressure (down to Martian pressure)	Nominally room temperature. Will add some capability for temperature control.	No	Test filters for ECLSS and ISRU	Juan H. Agui (juan.h.agui@nasa.gov)	N/A	N/A	
JSC	B29, Flight Lab in Room 148	Adjutable diameters	Flow Rig, adjustable flow rate	N/A	Ambient	N/A	Testing filters	Sarah Skrobarczyk (sarah.m.skrobarczyk@nasa.gov) or Stephanie Casper (stephanie.e.casper@nasa.gov)			Purely for internal use within EC3. Not able to accommodate customers and not certified in any way. Will not be interested in customers.
JSC	H-3PO Laboratory Space in B21 Highbay	14' x 20'	Simulation environment utilizing VR and sand boxes containing regolith simulant	Ambient	Ambient	No	Simulating crew activities in virtual reality environment	Omar Bekdash (omar.s.bekdash@nasa.gov) or Alejandro Garbino (alejandro.garbino@nasa.gov)	~100	~2.8	
JSC	Lunar Environment & ISRU Test Facility	15 ft.					Thermal vacuum chamber	Mike Reddington (michael.reddington-1@nasa.gov)			**Information not up to date.** Operational FY 2021 Q1.
JSC	LEIT Ambient Test Room	15 ft. chamber staging area	Class 100,000 / ISOB Clean Room, Small sandboxes and regolith handling tools, tables and stands to support hardware, small dust mini vacuum chamber(s), other tools	N/A	Ambient	N/A		Mike Reddington (michael.reddington-1@nasa.gov)			**Information not up to date.** Planned to be active 6/1/2020.
JSC	15' Environmental Chamber	15 ft. diameter spherical with 78" clear entry	Spherical	0.000001 (Planned 10^{-8} to 10^{-9}) Air, GN2 pressurization	-196 C to 120 C		Hardware exposure testing to dust/regolith	Mike Reddington (michael.reddington-1@nasa.gov)	1767.15	50	**Information not up to date.** Operational FY 2021 Q1, 6' x 6' deep tray of regolith, 3' x 3' x 3' tray, 1m depth drilling.
JSC	B353 ESTA ISRU Dev Lab Dust Box Chamber	3' x 2' x 2'	Rectangle				Development of Resource Prospector Equipment	Mike Reddington (michael.reddington-1@nasa.gov)	12	0.34	**Information not up to date.** Ready for use.
JSC	B34 Tumbler	16" diameter x 20" length	Cylinder	N/A	Ambient	N/A	13 RPM Tumbling	Amy Ross - B34 Lab Manager (amy.j.ross@nasa.gov)	2.3	0.066	**Information not up to date.** Not currently operational, but could be.
JSC	JSC Lighting Lab (JSC B14 Tunnel)	25' width x 25' length x 17' height (Room at end of 300' long tunnel	Rectangle	N/A (Some equipment mobile/usable in other pressurized	Air conditioned/STP	N/A	Lighting Projects	Toni Clark (toni.clark-1@nasa.gov)	10625	301	Lots of special lighting equipment. They maintain "orbital simulators" that can illuminate a target at 125,000 lux +/- 10000 lux

		that is 20' wide x 17' high)		facilities.)							
JSC	B36 PEARL Chamber	2' diameter		760 down to .01				Ernie Lewis (ernest.k.lewis@nasa.gov)			Non-dust system
JSC	AML Cryogenic Chamber (AST Thermal Chamber) (located JSC B7, Room 2023)	20" width x 28" height x 20" depth	Glove ports	No	-170 °C to 700° C	Yes	Tool Testing	Joe Settles - Lab Manager (joseph.r.settles@nasa.gov)	6.5	0.18	
JSC	AML Air Permeation Machines (located JSC B7, Room 2023)	38 cm^2 Test Area	Model: FX3300	N/A	Ambient	N/A	Air permeation testing of flat materials such as paper, fabric, open non-woven, and foam products. Also measures pressure drop at a given air velocity for air filtration materials	Joe Settles - Lab Manager (joseph.r.settles@nasa.gov)	N/A	N/A	Test standard ASTM D737
JSC	AML Dry Cleaner Tumbler (located JSC B7, Room 2023)	~ 10" diam x 20" height		N/A	Ambient	N/A	Tumbling fabric coupons in various media	Joe Settles - Lab Manager (joseph.r.settles@nasa.gov), Evelyne Orndoff - Team Lead (evelyne.orndoff-1@nasa.gov)	0.91	0.026	
JSC	AML B7 IVA/EVA Glovebox for Dust Testing	2' x 2' x 3'		N/A	Ambient	N/A	Move objects on a layer of dust and agitate the dust	Joe Settles - Lab Manager (joseph.r.settles@nasa.gov), Evelyne Orndoff - Team Lead (evelyne.orndoff-1@nasa.gov)	12	0.34	
JSC	Active Response Gravity Offload System (ARGOS)	38' x 19' x 18'	Large open volume	Ambient	Ambient	No	Dynamic, robotic system that simulates reduced gravity for human/robotic payloads over a large test area	Paul Valle (paul.valle@nasa.gov)	13000	368	Larger next generation system in work to be located in B9N and ready for human testing at beginning of FY23.
JSC	JSC Rock Yard - Lunar Yard, Mars Yard, Mount Kosmo		Rectangle	N/A	STP	N/A	Testing of various robotics and vehicles to be sent to foreign bodies	Susan Ward (susan.d.ward@nasa.gov)	N/A	N/A	**Information not up to date.** Lunar yard - three craters of varied size and depth, mars yard - mostly flat area with rocks of varying size, Mount Kosmo - small, steep hill with a variety of hill climbing terrain.
JSC	B36 Simulant Lab	~51' x 20'	N/A	N/A	N/A	N/A	Creation of lunar simulant.	Sarah Dietrick (sarah.r.deitrick@nasa.gov) and John Gruener (john.e.gruener@nasa.gov)	~1020	~29	Contains jaw crusher, pulverizer, jar mill, sieve shaker, mixer, cryogenic cooler, drying oven, and simulant test beds. Theoretically would be up and running late fall/early winter 2020.
JSC	B36 Sim Lab Glovebox	60" width x 24" depth x 25" height	N/A	N/A	N/A	N/A	Testing of tools/equipment with regolith simulants	Sarah Dietrick (sarah.r.deitrick@nasa.gov) and John Gruener (john.e.gruener@nasa.gov)	21	0.59	Theoretically would be up and running late fall/early winter 2020.
JSC	B36 Sim Lab Jar Mill	Unknown (could not measure during work from home)	N/A	N/A	N/A	N/A	Griding granular materials, can be used for abrasion testing	Sarah Dietrick (sarah.r.deitrick@nasa.gov) and John Gruener (john.e.gruener@nasa.gov)	Unknown (could not measure during work from home)	Unknown (could not measure during work from home)	Theoretically would be up and running late fall/early winter 2020.
JSC	B36 Sim Lab Drying Oven	26" width x 24" depth x 20" height	N/A	N/A	< 450°F	N/A	Drying/heating materials	Sarah Dietrick (sarah.r.deitrick@nasa.gov) and John Gruener (john.e.gruener@nasa.gov)	7.2	0.2	Theoretically would be up and running late fall/early winter 2020.
JSC	B36 Sim Lab Simulant Test Beds	Unknown (could not measure during work from home)	N/A	N/A	N/A	N/A	Testing tools/equipmenbt with regolith simulants	Sarah Dietrick (sarah.r.deitrick@nasa.gov) and John Gruener (john.e.gruener@nasa.gov)	Unknown (could not measure during work from home)	Unknown (could not measure during work from home)	Theoretically would be up and running late fall/early winter 2020.
		Overall dimensions:	Acrylic and				Small vacuum-capable facility for exposing mechanism				

GRC	Mechanism Exposure to Regolith Simulator	Approx. 15" wide x 15" deep x 20" tall. Inside (test chamber): Approx 8" wide x 8" depth x 8" height	aluminum sealed test chamber inside acrylic sealed vacuum cabinet (low level vacuum).	Low level vacuum (i.e. not high vacuum) ~ 10 Torr in current config ~10^{-7} Torr in future	Currently room temperature only	No	concepts to lunar regolith environments for durability testing, advanced technology development, and other performance evaluations in simulated surface operations	Adam Howard (howard@nasa.gov)	0.3	0.008	Operational August 2020 (estimate)
GRC	Warm/Cold Seal Leak Testing	Internal size of cube-shaped test chambers is TBD	Able to test seals up to ~12 in. in diameter inside cube-shaped environmental test chambers	Adjustable pressure differential across seal	-73 C to 200 C	Can perform tests at temperatures as low as -73 C (-99 F)	Measure seal and fasket leak rates under representative operating conditions	Pat Dunlap (patrick.h.dunlap@nasa.gov)	Internal size of cube-shaped test chambers is TBD	Internal size of cube-shaped test chambers is TBD	GRC has three of these environmental chambers. TBD information to be filled in upon returning to centers.
GRC	Gases and Aerosols from Smoldering Polymers (GASP) Lab	326 liter	Repurposed glovebox, now an aerosol test chamber	Atmospheric pressure only	Ambient tests with lab-generated aerosols and smoke from a furnace (25 to 28 C)	N/A	Smoke experiments for spacecraft fire safety, proving gas and aerosol sensor and smoke detector performance	Marit Meyer (marit.meyer@nasa.gov)	11.5	0.326	The GASP Chamber is capable of being purged to less than 10 particles/cm^3 between tests, which is a nearly particle free environment. GASP safety permit covers toxic gases for sensor calibrations. A variety of aerosol reference instruments measure chamber contents.
GRC	TSI Fractional Filter Tester							Phil Abel (phillip.abel@nasa.gov)			**Information not up to date.**
GRC	Particle Measurement Lab							Paul Greenberg (paul.s.greenberg@nasa.gov)			Many instruments available upon inquiry.
GRC	Planetary Dust Filtration Flow Loop							Phil Abel (phillip.abel@nasa.gov)			**Information not up to date.**
JPL	Mars Yard	21m x 22m	Open field	Atmospheric	Ambient	N/A	Usable for various terrain based tests	Carlos Soares (carlos.e.soares@jpl.nasa.gov)	N/A	N/A	**Information not up to date.**
JPL	Planetary Robotics Laboratory	1500 ft^2 for testing and 1500 ft^2 for sand pits (indoor testing)		Atmospheric	Ambient	N/A	Rover testing	Carlos Soares (carlos.e.soares@jpl.nasa.gov)			**Information not up to date.**
JPL	"Dirty" Vacuum Chamber - Environmental Test Laboratory (ETL)	2 m					Project that will get dirty (simulants, off-gassing)	Carlos Soares (carlos.e.soares@jpl.nasa.gov)			**Information not up to date.**
JPL	Flow Cell						Test particle adhesion and detachment under Mars conditions in support of physics-based modeling	Carlos Soares (carlos.e.soares@jpl.nasa.gov)			**Information not up to date.**
JPL	Centrifuge						Test particle adhesion and detachment under Mars conditions in support of physics-based modeling	Carlos Soares (carlos.e.soares@jpl.nasa.gov)			**Information not up to date.**
JPL	Dynamitron Facility						Displacement damage in solar cells, ionization in electronic devices, discoloration of cover glasses and other coatings, spacecraft charging	Terry Hendricks (terry.j.hendricks@jpl.nasa.gov)			**Information not up to date.** Can support Lunar Dust Testing,
JPL	Low Temperature						Multiple clean thermal/vacuum chambers for plasma	Terry Hendricks (terry.j.hendricks@jpl.nasa.gov)			**Information not up to date.** Can support Lunar Dust Testing,

	Laboratory						work				
KSC	Granular Mechanics and Regolith Operations (GMRO) Lab	N/A	Mostly reconfigurable work benches and tables to accommodate a multitude of different projects.	Ambient	Ambient	N/A	Regolith testing, often with robotics	Drew Smith (jonathan.d.smith@nasa.gov)	N/A	N/A	This is the entire lab.
KSC	GMRO Regolith Test Bed	25' wide x 25' long x 3' depth of BP-1 regolith x 12' tall above regolith	Cube	Ambient	Ambient	Could be with new safety documents	To test excavation and mobility in dusty environments	Drew Smith (jonathan.d.smith@nasa.gov)	~10000	~280	Filled with Bp-1 regolith simulant
KSC	Advanced Manufacturing						Regolith/polymer 3D printing system, COTS FDM and SLA 3D printers	Drew Smith (jonathan.d.smith@nasa.gov)			
KSC	Electrostatics and Surface Physics Lab						Mechanisms testing in extreme environments	David J. Miranda (david.j.miranda@nasa.gov)			
ARC	Planetary Aeolian Laboratory	23' diam x 100' high					Has been used for Mars dust listing effects and Mars dust devils	Dr. David Williams (Arizona State University) and James Ken Smith (ASU/ARC)	140000	4000	**Information not up to date.** Contains both the Titan Aeolian Windtunnel and the MARSWIT Mars Wind Tunnel. More info: https://www.nasa.gov/ames/planetary-aeolian-laboratory and https://rpif.asu.edu/pal/
ARC	Planetary Aeolian Laboratory - Mars Surface Wind Tunnel (MARSWIT)	1.3 m x 1.3 m x 13 m	Wind tunnel	Ambient to 4.1				Dr. David Williams (Arizona State University) and James Ken Smith (ASU/ARC)	777	22	**Information not up to date.** More info: https://www.nasa.gov/ames/planetary-aeolian-laboratory and https://rpif.asu.edu/pal/
ARC	Planetary Aeolian Laboratory - Titan Wind Tunnel (TWT)		Wind tunnel	Ambient to 15000				Dr. David Williams (Arizona State University) and James Ken Smith (ASU/ARC)			**Information not up to date.** More info: https://www.nasa.gov/ames/planetary-aeolian-laboratory and https://rpif.asu.edu/pal/
ARC	SSERVI Regolith Test Bin	4m x 4m x 0.5m testbed	Testbed, filled with 8 tons of JSC-1A regolith simulant	Ambient	Ambient	N/A	Lunar Polar Lighting, Stereo Vision Characterization	Joe Minafra (joseph.minafra@nasa.gov)	8	0.23	Tribocharging of rover wheels in regolith. Development and advancement of lunar instrumentation. Neutron Spectrometer sensor testing.
WSTF	Chamber Lab							Ilse Reyes (ilse.a.reyes@nasa.gov) or Susana Harper (susana.a.harper@nasa.gov)			
WSTF	Test Stand (TS) 401	32' diam x 33' high			4 C to 49 C		Engine testing	Mark Moody (mark.m.moody@nasa.gov)	26540	752	**Information not up to date.** Open to include lunar simulant for hot-fire testing
WSTF	Test Stand (TS) 302	Can hold propulsion systems up to 15 ft diam x 25 ft tall			4 C to 49 C		Propulsion systems	Mark Moody (mark.m.moody@nasa.gov)	4418 (prop volume)	125	**Information not up to date.** Has done hot-fire regolith tests before
SSC	A-3 Altitude Test Facility	40' diam x 66.3' high						Mark Moody (mark.m.moody@nasa.gov)	83315	2359	**Information not up to date.** May need funds to be brought back online
LaRC	Sonic Adhesion Device	24" x 24" x 24"				N/A	Lunar dust adhesion mitigation	Christopher Wohl (c.j.wohl@nasa.gov)	8	0.227	**Information not up to date.** Dimensions are for environmental chamber.
GSFC	Radiation Effects Facility (REF)	Multilab Facility	Vertical cylinder surface science and chamber	<1E-09	100 C to 400 C	LN2 dewars	Effects of proton induced hydroxylation (FTIR), Lunar soil reactivity following solar energetic particle bombardment.	Jason McLain (jason.l.mclain@nasa.gov) or Martin Carts (martin.a.carts@nasa.gov)	1	0.028	
	Lunar	30" x 48" (without						Paul Craven			

MSFC	Environment Test System (LETS) Space Environmental Effects Lab	cold shroud) 27" x 48" (with cold shroud)	Horizontal cylinder with domed cap ends	1E-06 to 1E-07	-150 C to 150C	LN2 (may be able to use others)	Multquse, reconfigurable chamber.	(paul.craven@nasa.gov), Todd Schneider (todd.a.schneider@nasa.gov), Jason Vaughn (jason.a.vaughn@nasa.gov)	21	0.59	In use full time for several months after JSC reopens. Will be performing non-dusty testing.
MSFC	Test Stand 300 - 15' Vacuum Chamber	15' diam x 15' high	Vertical cylinder	1.00E-03	Ambient - Heater and Cryo systems available	LHe/LN2/LH2/LCH4	Capture H2 Gas Vacuum Vent	Jim Sisco (jimmy.d.sisco@nasa.gov)	2650	75	Can accommodate dust, dust filters being installed for KSC
GRC	VF-54	2' diam x 3' tall	Vertical cylinder (belljar)	5.00E-07	TBD	Possibly but not currently capable	Diffusion pumped high vacuum chamber used for lunar dust testing	Mike Mcvetta (michael.s.mcvetta@nasa.gov) or Taylor Varouh (taylor.varouh@nasa.gov)	9.4	0.27	Not currently operational, would need TLC to become operational. Previously used with dust testing. No LN2 at facility but chiller could be added.
MSFC	V11/RAC	4' diam x 10 ' length	Cylinder	1.00E-06	-240 C to 340 C	Not controllable	Launch simulation	Richard A. Cooper (richard.a.cooper@nasa.gov)	142	4	Not designated for regolith testing.
MSFC	V15	12' diam x 20'	Cylinder	1.00E-07	-170 C to 180 C	LN2	Thermal Vacuum	Richard A. Cooper (richard.a.cooper@nasa.gov)	1112	31.5	Not designated for regolith testing.
MSFC	TH1 through TH3, TH5, and TH6	4' x 4' x 4'	Cube	Ambient	-70 C to 190 C	No	Thermal Humidity	Richard A. Cooper (richard.a.cooper@nasa.gov)	1073	30.3	Not designated for regolith testing.
MSFC	TH4	4' x 5' x 4'	Rectangle	Ambient	-70 C to 160 C	No	Thermal Humidity	Richard A. Cooper (richard.a.cooper@nasa.gov)	3346	94.8	Not designated for regolith testing.
MSFC	V14/MEG	4' diam x 16' length	Cylinder	1.00E-06	Ambient to 150 C	No	Vacuum Bakeout	Richard A. Cooper (richard.a.cooper@nasa.gov)	213	6.1	Not designated for regolith testing.
MSFC	TA1	4' x 4' x 4'	Cube	Ambient to 100000 ft	-70 C to 190 C	No	Thermal Altitude	Richard A. Cooper (richard.a.cooper@nasa.gov)	64	1.8	Not designated for regolith testing.
KSC	IVI High Vacuum Chamber	30" x 30" x 48"	Rectangle	1.00E-07	-190 C to 150 C	LN2	Filter evaluation	Michael D. Hogue (michael.d.hogue@nasa.gov) and Carlos Calle (carlos.i.calle@nasa.gov)	25	0.71	Can be used for lunar sutides or can be back-filled with CO2 for Mars work.
JPL	MOXIE Test Chamber & Facility			1.00E-04	-20 C to 1400 C			Jim Lewis (james.r.lewis@jpl.nasa.gov) and David Vaughan			**Information not up to date.**
GRC	MACS: Mars Atmospheric Chemistry Simulator	.5m diam x .5m high	Vertical cylinder	10^{-2} to 10^{2}	There have been some modifications to it, adding on a lower temperature chiller so it does go below 100 C now, not sure if the heater is still active to get it to 600 C.		Effect of dust coverage on Pascehn breakdown in the Martian environment - that was the original use, but it has been mostly used for looking at gas extraction from soil for ISRU	Sharon K. Miller (sharon.k.miller@nasa.gov)	8.6	0.24	Jim Gaier transferred this rig to Sharon but she has not had a chance to get up to speed on the capability yet. Notes in Temperature range/primary use are from her.
LaRC	Langley Cryo Mechanisms Chamber (Cryomech)	3' diam x 3' depth	Top loader	< -1E-05	-263 C to 100 C	Platen attached to cryopump head	Mechanism testing at extreme cold temperatures	Wade May (wade.r.may@nasa.gov)	21	0.6	High vacuum achieved by turbopump. Not a good candidate for regolith testing. No information provided upon being informed of that.
JSC	20 ft Mars Environment Chamber	20'	Spherical	5.00E-02	-300 F to ambient			Mike Reddington (michael.reddington-1@nasa.gov)	4189	119	**Information not up to date.** Alternatively Mike Selianos is a potential contact.
JPL	JPL 10' Space Simulator	10' diam x 37' height	Vertical cylinder	1.00E-05	-185 C to 125 C	No		???			**Information not up to date.** Not available until after Mars 2020 use.
GRC	Combined Effects Chamber	25' diam	Spherical	5.00E-07	-423 F to ambient	LH2	Cryogenic fuels research	Hal Weaver (harold.f.weaver@nasa.gov) and David Taylor (david.e.taylor@nasa.gov)	8200	232	Construction required, not currently available. 20' diameter door. Could become available if funding were provided.
GRC	VF-21	3.' diam x 5' long	Horizontal cylinder	5.00E-07	80K to 300K	LN2		Mike McVetta (michael.s.mcvetta@nasa.gov)	35	1	Previously used for "dirty" testing but not currently set up for it.
MSFC	Wiggler	30" x 48" (without cold shroud) 27" x 48" (with cold shroud)	Horizontal cylinder with domed cap ends	1E-06 to 1E-07	-150 C to 150C (subject to shroud being inserted)	LN2 (may be able to use others)	Multquse, reconfigurable chamber.	Paul Craven (paul.craven@nasa.gov), Todd Schneider (todd.a.schneider@nasa.gov), Jason Vaughn (jason.a.vaughn@nasa.gov)	21	0.59	Wiggler is configurable. With the exception of the cold shroud (does not have its own cold shroud), wiggler has the same capabilities as LETS. The use of simulant and some equipment, such as radiation sources and the cold shroud would require careful schedule planning. Should be able to fit LETS shroud but would take time/planning.
							Particle				

GRC	ISS Filter Test Rig	3' wide x 10' tall	Open flow loop	No	Nominally room temperature	No	measurement and detection, aerosol detection, measure HEPA filter efficiency	Juan H. Agui (juan.h.agui@nasa.gov)	N/A	N/A	
GRC	Fractional Filter Tester	46" x 31" x 71"	Open flow loop	No	Nominally room temperature	No	Test filter media, using oil aerosols, and salt crystals. Aerosol size classification, and aerosol detection using condensing particle counters to measure media penetration/efficiency	Juan H. Agui (juan.h.agui@nasa.gov)	N/A	N/A	
KSC	GMRO Dusty-Cryo-Dyno	9" Diameter x 15" long	Tub	1.00E-03	30 K and above	Yes-cryo-cooler	Dusty cryo testing of actuators	Drew Smith (jonathan.d.smith@nasa.gov)	~0.55	~.016	Can be reconfigurable for different systems
KSC	Vehicle Landing Surface Interaction Materials Testing Site	Site M7-0915 (Formerly the GODU Test Site) See approves Site Plan 20-0015 (M7-10041450)	Site will be reconfigured to support Materials Testing	N/A	20 K and above (if LH2 used as hot gas thruster fueld). No fixed tanks will be at the site	Yes- could also include LCH4 and LOX	Regolith, regolith derived and other materials testing	Kyle Dixon (kyle.l.dixon@nasa.gov)	N/A	N/A	Can be reconfigurable for different systems. Not currently operational. May become operational 3rd quarter FY 20. Site intended to be used for any hot or cold gas materials testing.
GRC	High/Low Temperature Load Testing	Internal size of cube-shaped test chambers is TBD.	Able to test seals up to ~12 in. in diameter using load frames integrated with cube-shaped environmental test chambers	N/A	-150 C to 600 C	Can perform tests at temperatures as low as 150 C (-238 F) using LN2	Measure compression and adhesion loads for seals and gaskets under representative operating conditions	Pat Dunlap (patrick.h.dunlap@nasa.gov)	Internal size of cube-shaped test chamebrs is TBD	Internal size of cube-shaped test chambers is TBD	Loads up to 12,500 lbf. GRC has two similar test rigs.
GRC	Full-scale NDS Seal Leak Testing	Custom leak test fixture to test full-scale NDS seals (~50 in. diameter)	Able to test full-scale NDS seals (~50 in. diameters) in custom leak test fixture	Adjustable pressure differential across seal	-55 C to 100 C	Can perform tests at temperatures as low as -55 C (-67 F)	Measure full-scale NDS seal leak rates under representative operating conditions	Pat Dunlap (patrick.h.dunlap@nasa.gov)	N/A	N/A	
GRC	Full-scale NDS Seal Compression, Adhesion, & Leak Testing	Custom test fixture to test full-scale NDS seals (~50 in. diameter). Load frame has 600 kN actuator	Able to test full-scale NDS seals (~50 in. diameter) in custom test fixture inside large load frame	Adjustable pressure differential across seal	-50C to 95 C	Can perform tests at temperatures as low as -50 C (-58 F)	Measure full-scale NDS seal compression and adhesion loads under simulated docking and undocking conditions. Measure seal leak rates after load cycling and at various compression levels	Pat Dunlap (patrick.h.dunlap@nasa.gov)	N/A	N/A	
JSC	Orion Docking Hatch Test Fixture	Custom test fixture to test full-scale Orion docking hatch	Able to test full-scale Orion docking hatch and seals	Adjustable pressure differential across seal	-9 C to 67 C	Can perform tests at temperatures as low as -9 C (15 F)	Measure leak rates for Orion docking hatch and seals under representative operationing conditions	David Hall (david.w.hall@nasa.gov)	N/A	N/A	
JSC	Interdisciplinary Dust Experiments & Astromaterial Lunar (IDEAL) Chamber							Ernie Lewis (ernest.k.lewis@nasa.gov)			**Information not up to date.** Further details once final approval of chamber is completed.
Space	International Space Station	Football field	Space Station				Reduced gravity testing	Kristen John (kristen.k.john@nasa.gov)			
	ISS Hermes	Can of		Vacuum in				Kristen John			

Space	Test Facility	Tennis balls	Cylinder	experiments				(kristen.k.john@nasa.gov)			
Space	ISS Centrifuge - Commercial Multi-use Variable-g Platform							Sharmila Bhattacharya (sharmila.bhattacharya@nasa.gov)			
Flight	NASA Flight Opportunities							HQ-STMD-SpaceTech-REDDI@mail.nasa.gov			https://www.nasa.gov/directorates/spacetech/flightopportunities/index.html
LaRC	5x5 Chamber	5' diam x 5' depth	Horizontal cylinder	<5E-5	-198 C to 2000 C	LN2	"Dirty" testing and high temp insulation	Wade May (wade.r.may@nasa.gov)	98	2.8	The chamber has regions that can achieve the temperatures listed. The chamber does not have a thermal shroud. It does have a thermal plate that can be operated between -198 and 125 C and a graphite heater that can be operated between ambient and 2000 C. The chamber is equipped for LN2, but we could employ other cryogens via dewars and fluit feedthrough. The chamber is operational. The current proposal for a regolith test was put on hold due to COVID-19. The experimenter would like to expose a 1/4 to 1/2 square meter regolith sample. The sample would be 5 to 10 cm deep. The bottom of the sample would be kept at -198 C and the top would be exposed to a radian source that could be set from -198 C to 200 C.
JSC	Resource Conversion Test Facility (bldg. 353)						Primary test facility in support of in-situ resource utilization (ISRU) and reaction control systems (RCS) Component DDT&E	Mike Salinas (michael.j.salinas@nasa.gov)			**Information not up to date.** Capability to test the full range of fluid and chemical processes associated with the collection, processing, storage, and use of planetary surface resources.
JSC	Thermal Vacuum Test Facility (Bldg. 351)						The Thermal-Vacuum Test Facility provides the capability to subject test articles to combined thermal and vacuum conditions which simulate planetary and space environments.	Mike Salinas (michael.j.salinas@nasa.gov)			**Information not up to date.** Provides capability to subject high energy (power, reactants, propellants) test articles to combine thermal and vacuum conditions which simulate planetary and space environments.
JSC	Dust Belljar (JSC)							Mike Salinas (michael.j.salinas@nasa.gov)			**Information not up to date.**
JSC	Chamber G	1.4' diam x 2' length	Horizontal cylinder	1.00E-06	-280 F	Yes	Thermal/Vacuum Testing	Mike Montz (michael.e.montz@nasa.gov)	5.3	0.2	Chamber G is a small, high vacuum chamber equipped with cold walls. Not set up for lunar dust testing.
JSC	Chamber E	4.6' diam x 9.5' length	Rectangular chamber	N/A	-150 F to 200 F	No	Thermal/vacuum testing (space environment simulation); Materials and hardware testing in extreme environments; Materials outgassing evaluations; Determination of design factors.	Mike Montz (michael.e.montz@nasa.gov)	339	9.6	Chamber E is a thermal vacuum chamber designed for relatively large gas loads at high vacuum. It is equipped with cold walls, an on-axis filtered xenon solar simulator, and pumping systems suitable for trace-contaminant sensitive tests. Not set up for lunar dust testing.
JSC	Chamber H	8' height x 8' width x 15' length	Rectangular chamber	N/A	-150 F to 200 F	Yes	Thermal Testing	Mike Montz (michael.e.montz@nasa.gov)	512	14.5	Chamber H is a programmable-temperature enclosure for large test articles. It is automatically controlled to a user-defined temperature profile. Not set up for lunar dust testing.
JSC	Chamber I	18" diam x 29" length	horizontal cylinder	1.00E-02	N/A	No	Vacuum testing	Mike Montz (michael.e.montz@nasa.gov)	7.1	0.2	Chamber I is a high-vacuum pumping station normally configured with a bell jar. Small heaters, such as contact heaters attached directly to a test article, can be accomodated but cannot use high powered IR lamps or Cal Rod Heaters in this chamber. Not set up for lunar dust testing.
JSC	Chamber K	3" height x 3" width x 3" length	Cube chamber	N/A	-250 F to 350 F	Yes	Thermal Testing	Mike Montz (michael.e.montz@nasa.gov)	27	0.8	Chamber K is a temperature enclosure which is programmable by means of a computerized controller. It can be programmed for any temperature profile desired with variable soak times and rates of temperature change. Not set up for lunar dust testing.
JSC	Chamber L	3" height x 3" width x 3" length	Cube chamber	N/A	20 to 200 F	No	Temperature: Humidity testing	Mike Montz (michael.e.montz@nasa.gov)	TBD	TBD	Chamber L is a .76 m^3 (27 ft^3) chamber which can be used to control temperature and humidity. Chamber is not active. Not set up for lunar dust testing.
JSC	Chamber N	3' diam x 3' length	Horizontal cylinder	1.00E-06	-280 F	Yes	Thermal/Vacuum Testing	Mike Montz (michael.e.montz@nasa.gov)	21.2	0.6	Chamber N is a medium-sized high-vacuum chamber with a cryogenic shroud. Not set up for lunar dust testing.
		5' diam x 4'	Horizontal		Ambient to 400		Thermal/vacuum	Mike Montz			Chamber P is a medium-sized chamber with vacuum capabilities and a

JSC	Chamber P	length	cylinder	1.00E-06	F	Yes	testing: hardware bakeout	(michael.e.montz@nasa.gov)	98.2	2.8	heated shroud, making it a suitable candidate for hardware bakeouts. Not set up for lunar dust testing.
JSC	Chamber T	27" height x 27" width x 29.75" length	Rectangular chamber	N/A	-250 F to 350 F	Yes	Thermal Testing	Mike Montz (michael.e.montz@nasa.gov)	TBD	TBD	Chamber T is a programmable-temperature enclosure. It can be programmed to automatically control temperature and rate of change between temperature extremes. Chamber is not active. Not set up for lunar dust testing.
JSC	11 Foot Chamber	11' diam. X 19' length	Horizontal cylinder	1.00E-02	N/A	No	Space Suit Development Testing; Reduced Pressure Crew Operations; Human-rated Vacuum Chamber	Mike Montz (michael.e.montz@nasa.gov)	1805	51.1	The 11-foot chamber is equipped with dual airlock compartments of 9 ft and 10 ft and is used for human testing in a vacuum environment and for space suit development. Volume is the combined inner and outer lock volumes. Not set up for lunar dust testing.
JSC	20 Foot Chamber	20' diam x 27.5' height	Vertical cylinder	1.00E-02	N/A	No	Reduced Pressure Testing; Human-rated Vacuum Environment; Elevated Oxygen; Rapid Decompression Testing	Mike Montz (michael.e.montz@nasa.gov)	8639	244.7	The 20-foot chamber is a vacuum chamber with an airlock and a rapid decompression chamber. The volume is divided into three levels by non-pressure-bearing floors, which provide atmospheric isolation. Not set up for lunar dust testing.
JSC	8 Foot Chamber	8' diam x 14' length	Vertical cylinder	1.00E-02	N/A	No	PLSS Testing; ECLSS Testing; Vacuum Testing	Mike Montz (michael.e.montz@nasa.gov)	704	19.9	The 8-foot chamber is primarily used with a machine to simulate a human metabolism in Portable Life Support Systems testing. Installing a shroud is under consideration, focused on support for xEMU. Not set up for lunar dust testing.
JSC	Dual Glove Box Chamber	42" height x 57" width x 16" length	Rectangular chamber	1.00E-05	-300 F to 300 F	Yes	Thermal/Vacuum Testing; EMU Operations; Crew Training	Mike Montz (michael.e.montz@nasa.gov)	15.7	0.4	The chamber allows the use of dual, elbow-length EMU arms and gloves for test operations and thermal vacuum conditions. It provides sufficient working volume to accommodate flight hardware certification/crew training using Class I EMU gloves. It is located within the 11-foot chamber. Not set up for lunar dust testing.
JSC	Space Station Airlock Test (SSATA)	TBD	Horizontal cylinder	1.00E-02	N/A	No	Flight Crew Training; EVA Hardware Testing, Verification, and Certification; Vacuum Testing; Reduced Pressure Crew Operations	Mike Montz (michael.e.montz@nasa.gov)	2980	84.4	Developed to support the ISS for airlock and EVA hardware testing & flight crew training. It is a human-rated airlock facility that provides flight-like simulation of Airlock & EVA operations in pressures ranging from vacuum to 1 atmosphere. Note that the compartments included are the equipment lock: 1,100 ft^3, Crew Lock: 310ft^3, Observer Lock: 1570 ft^3. Not set up for lunar dust testing.
JSC	Air Revitalization Technology Evaluation Facility						Air Revitalization System testing; CO2 removal/reduction; O2 generation; Trace contaminant control.	jeffrey.j.sweterlitsch@nasa.gov			Provides for testing and evaluation of air revitalization equipment and hardware development. Not set up for dusty testing. Has a 3' bell jar (no hard vacuum capabilities) and a fairly large glove box.
JSC	246	3.5' diam. X 5.5' long	Horizontal cylinder	1.00E-05	Shroud Temperature: -140 C to 150 C	Yes	Test chamber for automation activities	Yan Lui (yan.lui-1@nasa.gov) or Mellina Espiritu (ana.mellina.p.espiritu@nasa.gov)	53	1.5	More info: https://environmentaltest.gsfc.nasa.gov/5494web/facility/fac246.htm
JSC	245	21" diam x 40" length	Horizontal cylinder	1.00E-07	Shroud Temperature: 20 C to 150 C		Thermal vacuum	Yan Lui (yan.lui-1@nasa.gov) or Mellina Espiritu (ana.mellina.p.espiritu@nasa.gov)	8	0.2	More info: https://environmentaltest.gsfc.nasa.gov/5494web/facility/fac245.htm
GSFC	204	20" width x 12" height x 16" long	Rectangle	Ambient	-180 C to 200 C	LN2	Thermal Testing	Yan Lui (yan.lui-1@nasa.gov) or Mellina Espiritu (ana.mellina.p.espiritu@nasa.gov)	2.2	0.062	More info: https://environmentaltest.gsfc.nasa.gov/5494web/facility/fac204.htm
GSFC	232	48" width x 48" depth x 48" height	Cube	Ambient	-80 C to 150 C		Thermal and humidity testing	Yan Lui (yan.lui-1@nasa.gov) or Mellina Espiritu (ana.mellina.p.espiritu@nasa.gov)	64	1.8	More info: https://environmentaltest.gsfc.nasa.gov/5494web/facility/fac232.htm
GSFC	233	48" width x 48" depth x 48" height	Cube	Ambient	-65 C to 150 C		Thermal and humidity testing	Yan Lui (yan.lui-1@nasa.gov) or Mellina Espiritu (ana.mellina.p.espiritu@nasa.gov)	64	1.8	More info: https://environmentaltest.gsfc.nasa.gov/5494web/facility/fac233.htm
GRC-PB	SPF (Part of SEC)	100' diam x 122' high	Vertical Cylinder with Hemi-spherical dome	3.00E-06	LN2 -300 F, Recirc GN2 System -250 F to 175 F, Power supplies for elevated temperature.	Yes	Large spacecrafts and deployable structures.	Robert Kowalski (robert.r.kowalski@nasa.gov)	800000	22700	SPF does not baseline regolith. If regolith is required for a test, SPF needs to be returned to baseline condition.
WSTF	Bldg 250/ Pit, Asset 104 / SESTL Rough Vacuum Chamber (Pizza Oven) /	7.75' diam x 6' deep	Horizontal cylinder	1.00E-02	Ambient	No	Largescale flammability testing	Ilse Reyes (ilse.a.reyes@nasa.gov) or Susana Harper (susana.a.harper@nasa.gov)	283	8.01	

	Tier 2.2										
WSTF	Bldg 203 / Room 130, Asset 118 / SESTL CVI Self Heated Rough Vacuum Cahmber/ Tier 2.2	6' diam x 2.74' deep	Horizontal Cylinder	1.00E-02	Ambient to 200 F	No	NASA-STD-6001 offgas toxicity testing, other specializaed testing (ammonia)	Ilse Reyes (ilse.a.reyes@nasa.gov) or Susana Harper (susana.a.harper@nasa.gov)	254.5	7.2	
WSTF	Bldg 203 / Room 131 Asset No Number Assigned / SESTL Cooke / DTS High Vaccum Chambers / Tier 3.1 / Chambers 104.1 and 104.2	23.5" diam x 30" tall	Vertical Cylinder	5.00E-06	Ambient to 300 F	No	NASA-STD-6001 Support pretest conditioning, Hardware collected volatile condensable material outgassing rate evaluation, designed to handel "dirty" hardware	Ilse Reyes (ilse.a.reyes@nasa.gov) or Susana Harper (susana.a.harper@nasa.gov)	7.4	0.21	Two chambers (nearly identical)
WSTF	Bldg 203 / Room 141, Asset - No number assigned / ASTM E595 VCM High Vacuum System / Tier 3.1	23.5" diam x 30" tall	Vertical Cylinder	5.00E-05	Ambeint to 437 F	No	Fully equipped to perform ASTM E595 testing standard method for total mass loss and collected volatile condensable materials from outgassing in a vacuum environnment, can test up to 4 ASTM E595 sample sets at a single time	Ilse Reyes (ilse.a.reyes@nasa.gov) or Susana Harper (susana.a.harper@nasa.gov)	7.4	0.21	
WSTF	Bldg 203 / Room 131 Asset 117 (1&2) / SESTL Weber Rough Vacuum Chambers / Tier 3.1 / Two Chambers (117.1 & 117.2)	3' x 3' x 4.5'	Rectangle	1.00E-02	Ambient to 300 F	No	Designed to handle "dirty" hardware, post processing of refurbished thrusters to ensure cleaning solvents ar efully removed	Ilse Reyes (ilse.a.reyes@nasa.gov) or Susana Harper (susana.a.harper@nasa.gov)	40.5	1.15	Two chambers (nearly identical)
JSC	Experimental Impact Lab - Light Gas Gun	TBD - Ask after quarantine if needed	Horizontal cylinder	1.00E-02	N/A	N/A	Can fire projectiles up to 7 km/s	Mark J. Cintala (mark.j.cintala@nasa.gov)	TBD - Ask after quarantine if needed	TBD - Ask after quarantine if needed	Projectile diameter can vary from 1 micrometer to 4 mm. Can be fired twice a day.
JSC	Experimental Impact Lab - Flat Plate Accelerator	TBD - Ask after quarantine if needed	Horizontal cylinder	2.00E-01	LN2 Temperatures	Yes	See Notes	Mark J. Cintala (mark.j.cintala@nasa.gov)	TBD - Ask after quarantine if needed	TBD - Ask after quarantine if needed	The flat-plate accelerator (FPA) is another horizontally mounted gun (25-mm bore), used primarily to perform shock-recovery experiments. The sample material is placed in a cylindrical well that is typically around 10 mm in diameter and 0.6 mm deep. The sample is then "sandwiched" in a metal assembly, which is impacted by a plastic projectile faced with a metal flyer plate. When the flyer plate hits the surface of the target assembly, it generates a shock that reverberates between the metal covering the target and the metal behind it, increasing the stress in the sample incrementally as each reflected wave passes through it. In this way, stresses up to 80 GPa (800 kbars) are attainable. Because the peak shock stress is attained by this stepwise shock-loading path, however, the entropy (and temperature) produced at a given peak stress is lower than that generated by a single shock (that is, by a single impact) of the same peak amplitude. Thus, the damage that occurs from a reverberation experiment at XX GPa must be considered to be the minimum that would result from a single impact at XX GPa. After the sample has been shocked, it can be machined out of the deformed holder and removed for analysis.
JSC	Experimental Impact Lab - Vertical Gun	TBD - Ask after quarantine	Vertical cylinder	1.00E+00	-20 C to ambient	No	Can launch objects up to speeds of 2.7 km/s.	Mark J. Cintala (mark.j.cintala@nasa.gov)	TBD - Ask after quarantine	TBD - Ask after quarantine	Can accommodate objects up to 6.35 mm (1/4") in diameter. Five to six shots a day.

		if needed							if needed	if needed	
JSC	Experimental Impact Lab - Instrumentation and Hardware	TBD - Ask after quarantine if needed	N/A	N/A	N/A	N/A	N/A	Mark J. Cintala (mark.j.cintala@nasa.gov)	TBD - Ask after quarantine if needed	TBD - Ask after quarantine if needed	Lasers are used to measure the speed of projectiles with LabVIEW. In the event that an experiment requires minimal oxygen in the chamber's residual atmosphere, any of the impact chambers can be purged with gases like dry nitrogen or helium, for instance, to displace O2. The chamber can then be re-evacuated, with that sequence repeatable, if needed, any number of times before a shot. The EIL includes an extensive machine shop that supports a wide range of laboratory requirements and activities, including removal of shocked samples from FPA target assemblies, sabot machining, fabrication of custom target fixtures, etc. A walk-in freezer (-20°C) is available for investigations involving cold targets. A Chatillon TCD-1000 testing stand can be used for a variety of strength measurements of targets, projectiles, or other materials or items. A binocular microscope, three PC workstations, a photographic stand, and a number of oscilloscopes and other electronic instrumentation are also available. A 3D NextEngine scanner is available for documenting the topography and morphometry of targets both pre- and post-impact.