General					Thruste	er						Supports			ISRU		Freigh	iter	Bernal	Colony	Colonist	s		Notes
30																		Factory						
		Spectral		Rad				onus Aft			Air			_			Load			Promoted			1.1 1	
Туре	Name Ablative Plate	Type V	Mass 1	Hard 7				ivots bu	_	Solar e			Gen	Therms	ISRU	Туре	limit	only	stat	colony	Type 5	peciaity	Ideolog	Ability / Future
Thruster	Ablative Nozzle	V	0	8	2	2		1				(X ③)	`											
Thruster Thruster	De Laval Nozzle	M	0	6	3 5	4	<u> </u>	2				(× √ ♂))											
Thruster	Magnetic Nozzle	M	0	5	3	1		3				(~)												
Thruster	Dumbo	S	0	7	6	5	<u> </u>	1				(√)												
	Timberwind	S	0	7	5	3		1				(∿💣)	`											
Thruster	Hall Effect	C	2	5	3	2		ı.	—			(× √ ©)	(0)											
Thruster	Ion Drive	C	1	5			<u> </u>	1 1	-				(e)											
Thruster	Mass Driver	M	3	8	2	1/2	<u> </u>	1 1					(e) (⊣⊢)											
Thruster Thruster	MPD T-wave	M	1	9	2	1/2	<u> </u>		•				(⊣⊢)											
	Metastable Helium	V	1	0	5	1/2		1	>			/AA \	()	(1)										
Thruster	n-6Li Microfission	V	1	8		1/2		1				(x)		(1)										
Thruster	Monoatomic Plug Nozzle	M	0	6	5 4	3		1				(x)		(1)										
Thruster Thruster	Vortex Confined Nozzle	M	0	7	4	2		1				(∿)		/1\										
Thruster	Photon Heliogyro	C	0	1	0	0		1		*		(~)		(1)										(A) Aerobrake decommission. Immune to Flare & Belt Rolls.
Thruster	Electric Sail	С	0	2	2	0		1	>	*														(A) Aerobrake decommission. Immune to Flare & Belt Rolls.
Thruster	Photon Kite Sail	C	0	0	0	0		1	-	*														(A) Aerobrake decommission. Immune to Flare & Belt Rolls.
Thruster	Mag Sail	C	0	4	1	0		1	-	*														(A) Aerobrake decommission. Each Radiation Belt entered = Bonus Burn
Thruster	Ponderomotive VASIMR	V	1	4	3	1		1		*			(⊣⊢)											(A) Aerobiake decommission. Each Radiation best efficied — bonus bum
Thruster	Pulsed Plasmoid	V	1	5	3	1		<u>'</u>	 	*			(¬-)											
Thruster	Pulsed Inductive	C	1	5	4	2	<u> </u>		–	*			(⊣⊢)											
Thruster	Dual-Stage 4-Grid	C.	0	5	2	1/3	Δ	1	-				(e)											
Thruster	Re Solar Moth	D	0	5	3	4		2		*			(6)											
Thruster	Colliding Beam H-B Fusion	D	2	5	3	1/10		1 2		*			(e)	(1)										
Reactor	Cermet NERVA Fission	S	1	7	+3	x1/1	•	1 2				~	(6)	(1)										
Reactor	Pulsed NTR Fission	S	0	7	0	x1/4								(5)										
Reactor	D-D Fusion Magneto-Inertial	D	1	3	+2	x1/4						~**		(3)										
Reactor	H-B Fusion Reciprocating Plasmoid	D	0	7	+4	x1/1						C C		(3)										
Reactor	D-T Fusion Tokamak	Н	3	5	+3	x1/2						o a		(2)										
Reactor	Antimatter GDM	Н	0	9	0	x1/4						X ~@		(3)										
Reactor	D-T Gun Fusion	Н.	1	9	+1	x1/4						**************************************	(e)	(3)										
Reactor	Macron Blowpipe Fusion	Н.	0	10	0	x1/10						× ~ 6	(e)											
Reactor	Lyman Alpha Trap	S	2	4	-2	x1/10						× ~ 6	(c)											
Reactor	Free Radical Hydrogen Trap	S	0	4	0	x1/1						×		(1)										
Reactor	Metallic Hydrogen	V	0	2	+4	x1/1						3		(2)										
Reactor	Fission-Augmented D-T Inertial Fusion	V	1	7	+7	x1/1						3		(2)										
Reactor	Mini-Mag RF Paul Trap	C	1	2	-3	x1/1					D	×		(2)										(A) SCOOP: -2 ISRU for Colocated ISRU platforms at Aerostat Sites.
Reactor	Ultracold Neutrons	C	1	5		A1/1					u	×ď												(A) SCOOP: -2 ISRU for Colocated ISRU platforms at Aerostat Sites.
Reactor	Pebble Bed Fission	S	1	6	+4	x1/1						~ ~		(1)										(1) 55551. 2 ISHO for colocated ISHO platforms at Actostat Sites.
Reactor	VCR Light Bulb Fission	S	0	6	+2	x1/1					_	~		(1)										
Reactor	Ten Light Build 1 1331011	J	U	J	1 4	A 1/ Z						~		(1)										

General					Thruste	r				Supports	;		ISRU		Freigh	ter	Bernal	Colony	Colonists		Notes
																Factory	_	_			
Tuna		Spectral	Mass	Rad	Thurst	Fuel	Bonus After	Duch C	Air		Com	Thorms	. ICDII	Toma		load only	Power stat	Promotec		tv Ideol	Pgy Ability / Future
Type Reactor	Name Penning Trap	Type ⊢	2	паги 3	HIIIUSU	ruei	Type pivots burn	Pusii 3	viar eate		Gen	merms	UNCI	Туре		Omy	Jut	colony	Type Special	iy lucor	Ability / Future
Reactor	3He-D Fusion Mirror Cell	Н.	1	5	0	x1/4				×		(1)									
Reactor	Project Orion	S	6	8	+7	x1/1				3		(1)									
Reactor	Project Valkyrie	S	1	9	+8	x1/4				C (X)		(3)									(A) When activated, Decommission colocated cards with Rad-Hard <4.
Reactor	Rubbia Thin Film Fission Hohlraum	M	1	5	0	x1/2				~		(1)									(A) When activated, becommission colocated cards with rad that 4.
Reactor	Positronium Bottle	M	0	9	0	x1/2						(1)									
Reactor	Supercritical Water Fission	V	1	7	+3	x1/1				X ~		(2)									
Reactor	H-6Li Fusor	V	0	4	+2	x1/1				~		(2)									
Generator	AMTEC Thermoelectric	C	1	6		X.,, .			D		⊣⊢e	(1)									
Generator	JTEC H2 Thermoelectric	C	1	4					* G	(0)	⊣⊢e	(.,									
Generator	Brayton Turbine	C	1	5					D	(∿💣)	⊣⊢e	(2)									
Generator	O'Meara LSP Paralens	C	0	10	0	x1/2			* ((0)	е	(-/									
Generator	Cascade Photovoltaic	C	3	1		X.72			*		e										
Generator	Buckyball C60 Photovoltaic	C	2	3	+1	x1/1			*		e										
Generator	Cascade Thermoacoustic	V	0	5					D	(√)	е	(2)									
Generator	Dusty Plasma MHD	V	1	6					g		е	` '									
Generator	Catalyzed Fission Scintillator	D	0	7						(x)	⊣⊢e	(1)									
Generator	Diamonoid Electro-Dynamic Tether	D	2	4						(**)	⊣⊢e	` '									
Generator	Ericsson Engine	С	1	5					Ω	(√💕)	е	(1)									
Generator	Nanocomposite Thermoelectric	С	1	5	+1	x1/1				(× √ ♂											
Generator	Flywheel Compulsator	М	4	4					*		⊣⊢e										
Generator	Superconducting Adductor	М	1	4							⊣⊢e										
Generator	H2-O2 Fuel Cell	С	4	4					*		е										
Generator	Microbial Fuel Cell	С	2	5	+1	x1/1			*		⊣⊢е										
Generator	In-Core Thermionic	S	0	6					Ω	(√💕)	⊣⊢e	(2)									
Generator	Z-Pinch Microfission	S	2	9	+4	x1/1			D		⊣⊢е	(1)									
Generator	Magnetoshell Plasma Parachute	S	0	5	-2	x1/1			*		е										(A) Stack can safely enter aerobrakes. Cannot support Bernals or during
					_																industrialisation.
Generator	Granular Rainbow Corral	S	0	10					*		e										(A) Stack can safely enter aerobrakes.
Generator	Marx Capacitor Bank	M	1	4							⊣⊢(e)										
Generator	Casimir Battery	M	0	3							⊣⊢(e)										
Generator	Optoelectric Nuclear Battery Nuclear-Pumped Excimer Flashlamp	V	2	6	. 1	1/1			D		е	(2)									
Generator	· · · · · · · · · · · · · · · · · · ·	V V	0	8	+1	x1/1			D	(√💣)	е	(3)									
Generator	Photon Tether Rectenna		2	2	-1	x1/1			*		е										
Generator	Palmer LSP Aerosol Lens	V	0		+1	x1/1			* (e										
	Radioisotope Stirling	M	3	4	-2	x1/1					e										
Generator	Triggered Decay Nuclear Battery Rankine MHD	M M	0	6 4					-	1.	e	(2)									
Generator	MHD Open-Cycle	M			+1	x1/1			O C			(2)									
Generator	Rankine Solar Dynamic	D D	0	4	+1	X 1 / 1			D **	()	e	(1)									
Generator	Rankine Solar Dynamic Rankine Multiphase	D	0	4					*	100 -	e	(1)									
Generator	Solar Stirling	C	3	5					*	(× √		(1)									
Generator	Language String	·	٥	J					*		е	(1)									

General					Thruste	r				9	Supports			ISRU		Freigh	ter	Bernal	Colony	Colon	ists		Notes
																	Factory						
Toma	Name	Spectral		Rad	Thomas	Fuel		us After	Push Solar	Air	Danatas	C	Th	ICDII	Torres		load only		Promoted		Snacialty	Ideology	Ability / Future
Type Generator	Thermo-Photovoltaic	Туре	2	паги 4	+1	x1/1	type pivo	ots Durn	**	eater	Reactor	e	merms	ISKU	туре		Unity	Jul	colony	Type	Specialty	lucology	Ability / ruture
Radiator	Bubble Membrane	C	0/1	1/0		X1/1						C	1										
Radiator	Electrostatic Membrane	C	0/1	3/2									1										
Radiator	Dielectric X-Ray Window	D		7/7									2										
Radiator	Graphene Crystal X-Ray Mirror	D	0/1										1										
Radiator	ETHER Charged Dust	M	1/2										1										
Radiator	Curie Point	M	0/1	5/3									1										
Radiator	Li Heatsink Fountain	S		6/6									1										(A) [Heavy] Switch to light side after 1st use.
Radiator	Thermochemical Heatsink Fountain	S		6/6									1										(A) [Heavy] Switch to light side after 1st use.
Radiator	Magnetocaloric Refrigerator	S		6/6								(e)	3										(A) This card can cool its own supports.
Radiator	Nuclear Fuel Spin Polarizer	S	0/1									(0)	1										(vy mio card can cook to omi supporte.
Radiator	Microtube Array	C		1/0									2										
Radiator	Marangoni Flow	С	0/1										2										
Radiator	Mo / Li Heat Pipe	M	1/2										2										
Radiator	Tin Droplet	M	0/1	3/2									2										
Radiator	Qu Tube	M	1/4										1										
Radiator	ANDR / In Dream Pipe	M	0/1	3/2									2										
Radiator	SS / NaK Pumped Loop	M		1/0									2										
Radiator	Hula-Hoop	M		6/6									2										
Radiator	Salt-Cooled Reflux Tube	C	3/4	4/4									2										
Radiator	Buckytube Filament	С	0/1	4/3									2										
Radiator	Steel / Pb-Bi Pumped Loop	M		3/2									1										
Radiator	Pulsating Heat Pipe	M	1/2										2										
Radiator	Ti / K Heat Pipe	M	2/4										1										
Radiator	Flux-Pinned Superthermal	M		5/5									1										
Robonaut	Blackbody-Pumped Laser	S	0	5							(√💣)			2									
Robonaut	Fissile Aerosol Laser	S	0	7							(~•)			2	7								
Robonaut	Cat Fusion Z-pinch Torch	D	0	2							/** \			2	7								
Robonaut	H-B Cat Inertial	D	2	2	4	1/3	Δ	1			(X)			0	<i>A</i>								
Robonaut	Flywheel Tractor	D	0	5	7	113	•				(X)	(e)		3	#								
Robonaut	Electrophoretic Sandworm	D	1	5								(6)		1	<i>A</i>								
Robonaut	Free Electron Laser	S	2	4								(⊣⊢)		1	&_								
	Wakefield e-Beam	S	0	5	4	2		2				(⊣⊢)		1									
Robonaut Robonaut	Kuck Mosquito		0	6	10	8	^	2			()	(٦٢)		3	A								
Robonaut	Ablative Laser	D	0	6	3	1	^	3	*		(💣)			2	4								
	MET Steamer						^		-			(0)			4								
Robonaut		C	0		5	4	<u> </u>	1	>			(e)		2	#								
Robonaut	Nanobot			5								1 \		1	<u></u>								
Robonaut	Neutral Beam	S	2		2	1/2	Λ	1				(⊣⊢)		2	7								
Robonaut	D-D Fusion Inertial	S		4	3	1/2	^	1			()	(⊣⊢)		1	#								
Robonaut	Nuclear Drill	D	1	6	5	4	<u> </u>	1			(∿)	1 .)		3	#								
Robonaut	Helical Railgun	D	2	8	5	4	<u> </u>		>			(⊣⊢)		0	%								

Robonaut Pha		pectral Type	Mass	Rad			Da									Factory						
Robonaut Pha	lame Phase-Locked Diode Laser	Туре	Mass																			
Robonaut Pha	Phase-Locked Diode Laser		muss	Hard	Thrust	Fuel		After	Puch Sol	Air ar eater	Reactor	Gen Ti	erms ISRU	Туре	Load limit	load only	Power	Promoteo		Specialty	Ideology	Ability / Future
		L	1	3	IIIIust	iuci	Type pivot	Duili	rusii Joi	ai catei	Reactor	(e)	3	туре		·y	5000		.,,,,,	орошил		Ability / Future
		С	0	3								(-)	3	-								(A) NANITES: One re-roll if fail 1 or more size rolls.
Robonaut	Rock Splitter	V	0	5								(e)	4									.,
	MagBeam	٧	1	5	4	1	Δ	1	*			(-/	3	~								(A) -1 ISRU, +3 thrust if pushed by Powersat.
Robonaut Sol	Solar-Pumped MHD Exciplex Laser	С	3	4									2	7								·
Robonaut Qua	Quantum Cascade Laser	С	1	5								(e)	0	-								
Robonaut Tun	ungsten Resistojet	М	0	5	5	4	\(\)	1	•			(e)	3	*								
Robonaut MIT	MITEE Arcjet	М	0	4	4	2	\(\)	2	•			(e)	1	*								
Refinery Ato	Atomic Layer Deposition	V	2	2								(e)										
,	Imenite Semiconductor Film	٧	2	6																		(A) POWER GIRDLE: If used to industrialise non-atmos site size 8+, permanently gain Powersat faction privilege.
Refinery Bas	Basalt Fiber Spinning	S	3	5							(× √ 🚭)											
Refinery	on Neumann Santa Claus Machine	S	2	5																		(A) DIVINING NUBOTS: -1 ISRU for Colocated ISRU platform.
_	CVD Molding	М	3	5																		
	Carbonyl Volatilization	М	2	5																		(A) THORIUM BREEDER: -3 to Colocated size rolls on S Sites.
Refinery	Carbo-Chlorination	V	2	4								(e)										
	Solar Carbotherm	V	2	5																		(A) ARCOLOGY: Decommiss. of robonaut not needed when used to industrialize in zones Mercury, Venus, Earth
,	Electroforming	М	3	3								(e)										
,	mpact Mold Sinter	М	3	5																		(A) FOAMED NICKEL: -1 to Colocated size rolls.
Refinery	luidized Bed	V	3	4								(e)										(A) CCCCC (C. III. L.
· •	Atmospheric Scoop	٧	1	5						D		(e)										(A) SCOOP: If operational, this card makes adjacent or colocated aerostat sites into [2 hydration]
	oamglass Sintering	D	3	4								(e)										
,	aser-Heated Pedestal Growth	D	1	5								(e)										(A) SUPERLENS: -1 to all Colocated raygun size rolls.
	roth Flotation	D	3	5								(e)										
,	emtochemistry	D	2	8																		(A) SCAVENGING: If Colocated, doubles FTs during site refuel.
· ·	SRU Sabatier	V	3	4								(e)										
	Biophytolytic Algal Farm	V	3	5																		(A) COMET LICHEN: -2 to Colocated size rolls on D Sites.
Refinery In-S	n-Situ Leaching	D	3	3							(× √ 💞)											(A) MINE REVIVAL: As an op, remove a busted disk and place Claim on a
, , , , , , , , , , , , , , , , , , ,	ermite Nest	D	1	3							(× √ 💞)	()										Colocated Site of Size 2+.
Refinery	Magma Electrolysis	V	3	3								(e)										(A) IONOSAT: If used to industrialize an Atmospheric Site, permanently
	onosphere Lasing	٧	2	6																		gain the Powersat faction privilege.
	Supercritical Drying	H	1	5							(x)											
,	Solid Flame	Н	0	5							(x)		401									(A) JELLYBOTS: Colocated industrialization is a free action.
	Amat-Catalyzed Fission-Fusion	S	3	9	10	1/3		2			(x)		(2)					D				(F) MINI-BLACK HOLE FUTURE: Req = Industrialized centaur with 10
	Amat-Initiated H-B Magnetic-Inertial	S			8	0		5					(1)					D				isotope FTs. Effects = double all isotope refuel, 10 VP.
	Dense Plasma H-B Focus Fusion	D	1	8	2	1/10		5				(⊣⊢)						D				(F) PROTIUM FUSION FUTURE: Req = Promoted Bernal with H Dirtside.
	Crossfire H-B Focus Fusion	D	1	9	3	0		9				(⊣⊢)	(1)					D				(F) PROTIUM FUSION FUTURE: REQ = Promoted Bernal With H DIRTSIDE. Effects = double all isotope refuel, 10 VP.
Thruster GW Lev	evitated Dipole 6Li-H Fusion	V	4	5	2	0		4					(1)					S				

Fig. Fis.	General					Thruste	r				Supports			ISRU		Freigh	ter	Bernal	Colony	Colonists		Notes
Page Marke May Marke May Marke May Marke Mar																	•					
Duty Name Part Duty Name Part Part Duty	-	Name				T1	Post					e	TI	. ICDU	-						Idoology	ALTIN / Puture
Note Proceedings			іуре		Hard			7	Pusn So	lar eater	Keactor	Gen		S ISKU	іуре	IIIIII	Ulliy	Stat		Type Specialty	lueology	
Seem Medica Rigged Cross								9														
Select Note Select Note Select Note Select	Thruster GW	Mini-Mag Orion Z-Pinch Fission	M	1	9	12	1/3					(⊣⊢)	(2)						D			(F) LITHUATED ANALONIA ICE CTARCHIR FUTURE D
Turner TV	Thruster TW	Solem Medusa Tugged Orion	М	6	9	9	0	3				(⊣⊢)							D			The state of the s
Part Color Color	Thruster GW	Salt-Water Zubrin	S	1	6	14	1/2	1					(5)						М			
Parameter Californ Fix Ne Trainin Ne Ne Ne Ne Ne Ne Ne N	Thruster TW	Zubrin-GDM	S	3	8	6	0	8				(⊣⊢)	(4)						М			1 1
Colorate Mode Colorate Colora	Thruster GW	Spheromak 3He-D Magnetic Fusion	Н	4	8	6	1/10	6				(e)	(4)						Н			
Product No.	Thruster TW	Colliding FRC 3He-D Fusion	Н	3	9	4	0	10			(ANY)	(⊣⊢)	(2)						Н			
Programme Prog	Thruster GW	VISTA D-T Inertial Fusion	Н	5	8	9	1/4	3				(⊣⊢)	(2)						Н			·
Project Proj	Thruster TW	Daedalus 3He-D Inertial Fusion	Н	5	9	11	0	8				(⊣⊢)	(3)						Н			, ,
A continued from the continued of the	Freighter	Fission-Heated Steam	Any	0	5						(√)					2	444		М			
Complete Floor Antiproton Sall and Harvester V V V V V V V V V	Freighter Fleet	Fission GCR	Any	1	6						(∿)					6	*****		М			,
Full Require Adaptotion Said and Harvester V 2 9 4 6 M Full Require HulbER Require H	Freighter	Fusion Fragment Sail	٧	2	1			1								2			М			(A) Immune to flares & radiation belts.
	Freighter Fleet	Antiproton Sail and Harvester	٧	2	9			4								6			М			·
	Freighter	HIIPER Beam Rider	٧	4	4			1				(e)				4			>			
Immatable Solar-Neared	Freighter Fleet	Magnetic Mirror Beam Rider	٧	3	6			3				(e)				5			•			(A) Can liftoff/land on Sites that are less than size 6 without factory-assist. (F) STAR WISP FUTURE: Req = Promoted Freighter (End game) at either neutrino sunlens (6 VP) or EM sunlens = 11 VP.
Freighter Fleet Promoted Bern Any O 10	Freighter	Inflatable Solar-Heated	Any	0	5											2	444		С			(A) SOLAR HEATED: If not using Powersat, may move out only as far as the Ceres zone.
Freighter Poodle Steam	Freighter Fleet	Archimedes Palmer Lens	Any	0	10											5	444		С			(A) SOLAR HEATED: If not using Powersat, may move out only as far as the Jupiter zone. (F) TERRAFORM FUTURE: Req = Promoted Bernal at a non-Martian Atmospheric Dirtside. Effect = 8 VP.
Freighter Fleet Chandrotide Dirt Laurcher Any 0 9	Freighter	Poodle Steam	Any	0	7											2	444		S			'
Freighter Rotary Dirt Launcher Any 5 4	Freighter Fleet	D-Nanotube Dirt Launcher	Any	0	9											3	-		S			
Freighter Rest RESIS Hoop Dirt Launcher Any 15 8	Freighter	Rotary Dirt Launcher	Any	5	4						(∿)	(e)				2	444		С			, , , , , , , , , , , , , , , , , , , ,
Freighter Fleet Z-Pinch 3He-D Target Fusion V 2 6 2 (X) (+) 6 H (F) GOLDEN APPLES FUTURE: Req = Industrialize Kreutz Sungrazer. Effects = Ignore solar flares, 14 VP. Bernal GEO Elevator Bernal 10 6 3 3 3	Freighter Fleet	KESTS Hoop Dirt Launcher	Any	15	8						(∿)	(e)				15	144		С			(F) BEEHIVE ARK FUTURE: Req = Promoted Bernal anchored at a Synodic Comet. Effect = 7 VP.
Effects = Ignore solar flares, 14 VP.	Freighter	Z-Pinch D-T / 6Li Fusion	٧	5	3			1			(x)	(⊣⊢)				3			Н			
Bernal GEO Elevator Bernal 10 6 3 3 3	Freighter Fleet	Z-Pinch 3He-D Target Fusion	٧	2	6			2			(x)	(⊣⊢)				6			Н			,
Promoted Berr Space Lievator Lab	Bernal	GEO Elevator Bernal		10	6	3	3					(e)						▶)				9
Bernal L1 Climate Control Bernal 10 8 3 3 (e) ►) (A) HOME: You are always the 1st player, superseding all other claimants. Promoted Bernal Climate Control Lab 12 8 3 3 (e) ►) (A) HOME: Gain the Powersat faction privilege. Bernal L2 Collimator Bernal 10 8 3 3 (e) ►) (A) HOME: Gain the Powersat faction privilege. Promoted Bernal Collimator Lab 10 9 3 3 (e) ►) (A) Gain the Powersat faction privilege. Powersat push includes a Bonus Pivot.	Promoted Berr	Space Elevator Lab		10	7	3	3					(e)						▶)	•			(A) Your factory-assisted landings/liftoffs anywhere treat lander burns as normal Burn Spaces.
Bernal 12 Collimator Bernal 10 8 3 3 3 (A) HOME: Gain the Powersat faction privilege. Promoted Bern Collimator Lab 10 9 3 3 3 (e) (e)	Bernal	L1 Climate Control Bernal		10	8	3	3					(e)						▶)				(A) HOME: You are always the 1st player, superseding all other claimants.
Promoted Berr Collimator Lab 10 9 3 3 (e) (A) Gain the Powersat faction privilege. Powersat push includes a Bonus Pivot.	Promoted Berr	Climate Control Lab		12	8	3	3					(e)						▶)	*			(A) +2 VP per Dirtside for this Bernal.
Promoted Bern Collimator Lab 10 9 3 3 9 (e) Pivot.	Bernal	L2 Collimator Bernal		10	8	3	3					(e)						▶)	>			(A) HOME: Gain the Powersat faction privilege.
	Promoted Berr	Collimator Lab		10	9	3	3					(e)						▶)	>			(A) Gain the Powersat faction privilege. Powersat push includes a Bonus Pivot.
<u> </u>	Bernal	L3 Lofstrom Loop Microgravity		10	8	3	3					(e)						▶)	68			(A) HOME: Boost direct to Home Bernal without doubling boost costs.

General					Thruste	r						S	upport	s		ISRU		Freigl	hter	Bernal	Colo	ny (Colon	ists		Notes
																		I	Factor							
Туре	Name	Spectral Type		Rad	Thruct	Eugl		Bonus		Duch		Air	Daarta	Gan	Thorn	e ISBII	Type		only	Power stat	colo		Type	Specialty	Ideology	Ability / Future
Promoted Berr	Lofstrom Loop Microgravity Lab	Турс	10	9	3	3	Турс	pivots	Duin	i usii	Join C	atti	neacto	(e)	IIIÇIII	is isno	Турс		,	>)	63		-71-			(A) Your factory-assisted landings/liftoffs anywhere treat lander burns as normal Burn Spaces.
Bernal	L4 Antimatter Factory		10	9	3	3								(e)	(2)					▶)	М					(A) HOME: Your Crew has an On-Board Nuclear X reactor.
Promoted Berr	Antimatter Lab		10	10	3	3								(e)	(2)					▶)	М					(A) Your Crew has an On-Board Nuclear "ANY" reactor.
Bernal	L4s Pharmaceutics Bernal		10	6	3	3								(e)						▶)	*	•				(A) HOME: Gain the Skunkworks faction privilege.
Promoted Berr	Pharmaceutics Lab		10	7	3	3								(e)						▶)	*	•				(A) Gain the Skunkworks faction privilege & impose academia hand limit on all opponents.
Bernal	L5 Solar Cell Factory		10	6	3	3								(e)						▶)	•					(A) HOME: +1 to the Net Thrust of your Spacecraft that use Solar-Power.
Promoted Berr	Solar Cell Lab		10	8	3	3								(e)						▶)	•					(A) +2 to the Net Thrust of your Spacecraft that use Solar-Power.
Bernal	L5s Cancer Hospital		10	6	3	3								(e)						▶)	68					(A) HOME: You are immune to budget cuts.
Promoted Berr	Cancer Lab		12	7	3	3								(e)						▶)	63					(A) Gain +1 Token VP for each Colony Dome. Your Crew and Human Colonists have a rad-hard of at least 7.
Bernal	SSO Diplomatic		10	6	3	3								(e)						▶)	*	•				(A) HOME: (Module 0) Your delegates in the Ideology of your Faction color are +1 VP each.
Promoted Berr	Diplomatic Lab		10	7	3	3								(e)						▶)	*	•				(A) (Module 0) Your delegates in the assembly are +1 VP each.
Bernal	Tourism Cycler		10	7	3	3								(e)						▶)	•					(A) HOME: Can designate any Spacecraft to forgo Belt Rolls in the Radiation Belts near Earth.
Promoted Berr	Tourism Hotel		10	7	3	3								(e)						▶)						(A) +2 VP per Dirtside for this Bernal.
Colonist	Babbage Halbonauts	Н	2	5												4	æ				D		ė	Engineer		
Colonist	Utility Fog Halbonaut	Н	2	5												2	æ				D		<u></u>	Engineer		(A) All of your stacks are Glitch-free. (F) UPLIFT FUTURE: Req = Robots not Emancipated, Human at a promoted Bernal & spend 20 Aqua. Effects = Every Robot becomes Emancipated, Casus belli for War, 12 VP.
Colonist	Biomechs	n/a	2	4												3	<i></i>				Н			Miner		
Colonist	Group Mind Immortalists	n/a	2	5												2	<i></i>				Н		•	Miner	•	(A) May perform the faction privileges on both sides of your Crew card. (F) PAN SAPIENS FUTURE: Req = Have 3 Factories connected to Space Elevators. Effect = Casus belli for War. (Endgame) +2 VP for each glory chit owned.
Colonist	Botany Bay Convicts	n/a	2	4												4	<u>_</u>				Н			Miner		
Colonist	Soldier Caste	n/a	2	9									•			2	7,4				Н		••	Miner		(A) All your Humans can commit Felonies, even if defending Humans are present. (F) SECESSION FUTURE: Req = 2 Promoted Human Colonists at an Anchored Bernal with Dirtside 5+. Effects = Casus belli for War, 10 VP.
Colonist	Boyle Engineering Collective	n/a	3	5												3	æ				•		•	Prospector		
Colonist	Martian Assembly	n/a	3	6												2	æ				•		••	Prospector		(A) Acts as a Freighter when building a Space Elevator. (F) BEANSTALK FUTURE: Req = Have 3+ Space Elevators built by any player. Effect (Endgame) = +3 VP for each Factory connected to a Space Elevator.
Colonist	Calypso 2 Seed Sail	n/a	1	3	0	x0	۵	1		>	*					4	47 7				*		•	Prospector		(A) Can't enter aerobrakes.
Colonist	Wet-Nano Seed Sail	n/a	1	5	1	х0	۵	1		•	*					1	∦ ₹				*	•	•	Prospector	•	(A) -2 to Colocated size rolls on Synodic Comets. Can't enter aerobrakes. (F) NEW VENUS FUTURE: Req = Decommission operational 7+ net thrust thruster on industrialized Synodic Comet (yours). 12 VP + (Endgame) remove all tokens on Venus & comet.
Colonist	Heavy Water Survivalists	n/a	2	5												4	9				62			Engineer		
Colonist	New Attica Secessionists	n/a	2	6												2	4				08		••	Engineer		(A) Boost costs are doubled for all your opponents. (F) SECESSION FUTURE: Req = 2 Promoted Human Colonists at a promoted Anchored Bernal. Effects = Casus belli for War, 7 VP.
Colonist	House of Saud	n/a	2	3												3	æ				Н			Miner		
Colonist	Iceworms	n/a	2	4												1	æ				Н		••	Miner		(A) Performs epic hazard operation as a free action, & is not Decommissioned if it fails. (F) SUBMARINER FUTURE: Req = Build 3 Submarines. Effect = Doubles your dirtside hydration, not cumulative with other modifiers.
Colonist	Juiced Cosmonauts	n/a	1	4	10	х4	<u> </u>		1							3	₩.				Н			Prospector		

General					Thruste	er							Supports		ISRU		Freig	hter	Bernal	Colony	Colo	nists		Notes
																		Factory						
Tuna	Name	pectral Type		Rad	Thurst	Fuel	Turna	Bonus		Duch	Calar	Air	Donatos	Gen Theri	as ICDII	Turns		load	Power	Promoted	Tyne	Specialty	Ideology	Ability / Future
Туре	Name	туре	IVId55	паги	IIIrust	ruei	туре	pivots	burn	Pusii	Sular	eater	Reactor	Gen Interi	is isku	Туре		Omy	Jut	colony	турс	Specialty	lucology	(A) -1 to Colocated size rolls. (F) ET LIFE FUTURE: Req = Have 2 or more
Colonist	Rental Body Guild	n/a	1	6	12	х4	۵		1			D	~		2	A				Н	•	Prospector		Astrobiological Colonies. Effect (Endgame): +2 VP per Astrobiological Colony.
Colonist	Lloyd's Salvage Co.	n/a	1	5																*	•	Industrialist		
Colonist	Svalbard Caretakers	n/a	1	6																*	•	Industrialist		(A) -1 on all size rolls when prospecting Synodic Sites. (F) DYSON BUBBLE FUTURE: Req = Both Sites of Mercury industrialized by any player. Effects = 5 VP per Factory owned on Mercury.
Colonist	Malcolm	n/a	1	3																Н		Industrialist		
Colonist	Renaissance Man	n/a	1	4																Н	•	Industrialist		(A) If initiating a research auction, can search through one patent deck and choose the card to be auctioned. (F) ARTIFICIAL CONSCIOUSNESS FUTURE: Req = 2 promoted Colonists at an Astrobiology Dirtside. Effects = May free market any number of cards, 10 VP.
Colonist	Microgravity Pantrophists	n/a	3	5																Н		Engineer		
Colonist	Blue Goo Sybonts	n/a	3	6																Н	••	Engineer		(A) Can produce ET products of Spectral Type C at any Factory. (F) SETI FUTURE: Req = Industrialize 2 Jovian Tojans, 1 each in the Greek & Trojan camps. Effects = As a free action perform 1 inspiration + 1 homestead, 10 VP.
Colonist	Programmable Matter	D	1	4	2	х4	۵		1	>			~		3	A				D	ė	Prospector		
Colonist	Neumann Matter	D	1	5	4	х4	۵		1	•			~		1	A				D		Prospector		(A) All of your stacks are Glitch-free. (F) UPLIFT FUTURE: Req = Robots not Emancipated, Human at a promoted Bernal & spend 20 Aqua. Effects = Every Robot becomes Emancipated, Casus belli for War, 12 VP.
Colonist	Rock Rats Miners' Union	n/a	3	5								D	©		3	7				Н		Miner		
Colonist	Alchemist Aviatrices	n/a	3	6									•		0	7				Н	••	Miner		(A) During Factory Refuel, double the amount of isotope fuel. (F) AEROSTAT FUTURE: Req = Promoted Bernal with Aerostat Dirtside. Effects = Can homestead as a free action, 14 VP.
Colonist	Security System	D	1	4																D	i	Industrialist		
Colonist	Frankenstein Navigator	D	1	5								D	Х							D	ė	Industrialist		(A) FINAO costs are halved (drop fractions). (F) UPLIFT FUTURE: Req = Robots not Emancipated, Human at a promoted Bernal & spend 20 Aqua. Effects = Every Robot becomes Emancipated, Casus belli for War, 12 VP.
Colonist	Siren Cybernautics Inc.	n/a	3	5						>	*	D				A =	à			68	•	Engineer		
Colonist	Josephson Implants	n/a	3	6						•	*	D				A TE	à			08	•	Engineer	•	(A) FINAO costs are halved (drop fractions). (F) SUPREME CULT FUTURE: Req = Active Law in authority. Effects (Module 0) = May lobby w/o removing the delegate used. All Seniority Disks migrate to authority. (Endgame): 10 VP.
Colonist	Smart Pets	D	0	3											3	<i></i>				D	<u></u>	Miner		
Colonist	Creeper Neogen	D	0	6											2	æ				D	<u></u>	Miner		(A) All of your stacks are Glitch-free. (F) UPLIFT FUTURE: Req = Robots not Emancipated, Human at a promoted Bernal & spend 20 Aqua. Effects = Every Robot becomes Emancipated, Casus belli for War, 12 VP.
Colonist	Transorbital Railworkers	n/a	2	4																Н	•	Engineer	0	
Colonist	Kaluga Naniteers	n/a	2	5						•										Н	••	Engineer	\circ	(A) Your Aqua from a Free Market is doubled. (F) TNO FUTURE: Req = Industrialize 2 Sites in the Neptune Zone. Effects = Can homestead as a free action, 12 VP.
Colonist	Vatican Observers	n/a	1	4																*	•	Industrialist	0	
Colonist	Eugenic Pilgrims	n/a	1	5																*	•	Industrialist	0	(A) Faction privilege not lost in Anarchy1 to Colocated size rolls on Synodic Comets. (F) FOOTFALL FUTURE: Req = Decommission operational 7+ net thrust thruster on Industrialized Synodic Comet (yours). Effects = 10 VP + Casus belli. (Endgame) All tokens on the comet eliminated.

General					Thruste	er						Supports			Notes
-	Na	Spectral		Rad	TI	F1		Bonus		D	Air	D		-1.	AL 19- / F
Туре	Name	71		Hard	Thrust		Іуре	pivots			Solar eater		Gen	inerms	Ability / Future
Thruster	Ablative Plate	V	1	/	2	2			1	•		(× ©)			
Thruster	Ablative Nozzle	V	0	8	3	2	<u> </u>		1	>		(×√ ©)			
Thruster	De Laval Nozzle	M	0	6	5	4	<u> </u>		2			(√ ©)			
Thruster	Magnetic Nozzle	M	0	5	3	1	\(\rightarrow\)		3			(∿)			
Thruster	Dumbo	S	0	7	6	5	(1			(√ ॐ)			
Thruster	Timberwind	S	0	7	5	3	\(\)		1			(×√ ⑤)			
Thruster	Hall Effect	С	2	5	3	2	\(\)			•			(e)		
Thruster	Ion Drive	С	1	5	2	1/2	\(\)	1	1	•			(e)		
Thruster	Mass Driver	M	3	8	4	3				•			(⊣⊢)		
Thruster	MPD T-wave	М	1	9	2	1/2				>			(⊣⊢)		
Thruster	Metastable Helium	V	1	0	5	1	\(\)		1			(×)		(1)	
Thruster	n-6Li Microfission	V	1	8	5	1/2	\(\)		1			(×)		(1)	
Thruster	Monoatomic Plug Nozzle	M	0	6	4	3	\(\rightarrow\)		1			(√)			
Thruster	Vortex Confined Nozzle	М	0	7	4	2	\(\rightarrow\)		1			(√)		(1)	
Thruster	Photon Heliogyro	С	0	1	0	0	\(\)	1		•	*				(A) Aerobrake decommission. Immune to Flare & Belt Rolls.
Thruster	Electric Sail	С	0	2	2	0	\(\rightarrow\)	1		>	*				(A) Aerobrake decommission. Immune to Flare & Belt Rolls.
Thruster	Photon Kite Sail	С	0	0	0	0	\(\rightarrow\)	1		•	*				(A) Aerobrake decommission. Immune to Flare & Belt Rolls.
Thruster	Mag Sail	С	0	4	1	0	\(\rightarrow\)	1		>	*				(A) Aerobrake decommission. Each Radiation Belt entered = Bonus Burn
Thruster	Ponderomotive VASIMR	V	1	4	3	1	\(\)		1	>			(⊣⊢)		
Thruster	Pulsed Plasmoid	V	1	5	3	1				>	*				
Thruster	Pulsed Inductive	С	1	5	4	2	\(\)			>			(⊣⊢)		
Thruster	Dual-Stage 4-Grid	С	0	5	2	1/3	\(\)	1		>			(e)		
Thruster	Re Solar Moth	D	0	5	3	4	\(\)		2	>	*				
Thruster	Colliding Beam H-B Fusion	D	2	5	3	1/10	<u> </u>	1	2				(e)	(1)	

General					Thruste	r	Supports			Notes
Туре	Name	Spectral Type		Rad Hard	Thrust	Fuel	Reactor	Gen	Therms	Ability / Future
Reactor	Cermet NERVA Fission	S	1	7	+3	x1/1	~			
Reactor	Pulsed NTR Fission	S	0	7	0	x1/4	~		(5)	
Reactor	D-D Fusion Magneto-Inertial	D	1	3	+2	x1/1	©			
Reactor	H-B Fusion Reciprocating Plasmoid	D	0	7	+4	x1/2	*		(3)	
Reactor	D-T Fusion Tokamak	Н	3	5	+3	x1/2	~		(2)	
Reactor	Antimatter GDM	Н	0	9	0	x1/4	× ~		(3)	
Reactor	D-T Gun Fusion	Н	1	9	+1	x1/4	©	(e)		
Reactor	Macron Blowpipe Fusion	Н	0	10	0	x1/10	× ~	(e)		
Reactor	Lyman Alpha Trap	S	2	4	-2	x1/1	ש			
Reactor	Free Radical Hydrogen Trap	S	0	4	0	x1/2	×ø		(1)	
Reactor	Metallic Hydrogen	V	0	2	+4	x1/1	©		(2)	
Reactor	Fission-Augmented D-T Inertial Fusion	V	1	7	+7	x1/1	©		(2)	
Reactor	Mini-Mag RF Paul Trap	С	1	2	-3	x1/1	×			(A) SCOOP: -2 ISRU for Colocated ISRU platforms at Aerostat Sites.
Reactor	Ultracold Neutrons	С	1	5			ש			(A) SCOOP: -2 ISRU for Colocated ISRU platforms at Aerostat Sites.
Reactor	Pebble Bed Fission	S	1	6	+4	x1/1	~		(1)	
Reactor	VCR Light Bulb Fission	S	0	6	+2	x1/2	~		(1)	
Reactor	Penning Trap	Н	2	3			ש			
Reactor	3He-D Fusion Mirror Cell	Н	1	5	0	x1/4	~		(1)	
Reactor	Project Orion	S	6	8	+7	x1/1	©		(1)	
Reactor	Project Valkyrie	S	1	9	+8	x1/4	(×)		(3)	(A) When activated, Decommission colocated cards with Rad-Hard <4.
Reactor	Rubbia Thin Film Fission Hohlraum	М	1	5	0	x1/2	~		(1)	
Reactor	Positronium Bottle	М	0	9	0	x1/2	X ~		(1)	
Reactor	Supercritical Water Fission	٧	1	7	+3	x1/1	~		(2)	
Reactor	H-6Li Fusor	V	0	4	+2	x1/1	~			

General					Thruste	er			Supports			Notes
		Spectral		Rad				Air				
Туре	Name	Туре	Mass		Thrust	Fuel	Sola	eater		Gen		Ability / Future
Generator	AMTEC Thermoelectric	С	1	6				D	(∿)	⊣⊢e	(1)	
Generator	JTEC H2 Thermoelectric	С	1	4			*	D		⊣⊢е		
Generator	Brayton Turbine	С	1	5				D	(√💕)	⊣⊢e	(2)	
Generator	O'Meara LSP Paralens	С	0	10	0	x1/2	*	D		е		
Generator	Cascade Photovoltaic	С	3	1			*			е		
Generator	Buckyball C60 Photovoltaic	С	2	3	+1	x1/1	*			е		
Generator	Cascade Thermoacoustic	V	0	5				D	(√)	е	(2)	
Generator	Dusty Plasma MHD	V	1	6				D		е		
Generator	Catalyzed Fission Scintillator	D	0	7					(×)	⊣⊢е	(1)	
Generator	Diamonoid Electro-Dynamic Tether	D	2	4						⊣⊢e		
Generator	Ericsson Engine	С	1	5				D	(∿💕)	е	(1)	
Generator	Nanocomposite Thermoelectric	С	1	5	+1	x1/1		D	(×√ ©)	е		
Generator	Flywheel Compulsator	М	4	4			*			⊣⊢e		
Generator	Superconducting Adductor	М	1	4						⊣⊢e		
Generator	H2-O2 Fuel Cell	С	4	4			*			е		
Generator	Microbial Fuel Cell	С	2	5	+1	x1/1	*			⊣⊢е		
Generator	In-Core Thermionic	S	0	6				D	(√💕)	⊣⊢е	(2)	
Generator	Z-Pinch Microfission	S	2	9	+4	x1/1		D		⊣⊢е	(1)	
Generator	Magnetoshell Plasma Parachute	S	0	5	-2	x1/1	*			е		(A) Stack can safely enter aerobrakes. Cannot support Bernals or during industrialisation.
Generator	Granular Rainbow Corral	S	0	10			*			е		(A) Stack can safely enter aerobrakes.
Generator	Marx Capacitor Bank	М	1	4						⊣⊢(e)		
Generator	Casimir Battery	М	0	3						⊣-(e)		
Generator	Optoelectric Nuclear Battery	V	2	6				D		е	(2)	
Generator	Nuclear-Pumped Excimer Flashlamp	V	0	8	+1	x1/1		D	(√)	е	(3)	
Generator	Photon Tether Rectenna	٧	2	2	-1	x1/1	*			е		
Generator	Palmer LSP Aerosol Lens	V	0	10	+1	x1/1	*	D		е		
Generator	Radioisotope Stirling	М	3	4	-2	x1/1				е		
Generator	Triggered Decay Nuclear Battery	М	1	6						⊣⊢е		
Generator	Rankine MHD	М	0	4				D	(√💕)	е	(2)	
Generator	MHD Open-Cycle	М	0	4	+1	x1/1		D	()	⊣⊢е		
Generator	Rankine Solar Dynamic	D	2	4			*			е	(1)	
Generator	Rankine Multiphase	D	0	4					(×√ ©)	⊣⊢е		
Generator	Solar Stirling	С	3	5			*			е	(1)	
Generator	Thermo-Photovoltaic	С	2	4	+1	x1/1	*			е		

General					Supports			Notes
		Spectral		Rad				
Туре	Name	Туре	Mass	Hard	Reactor	Gen	Therms	Ability / Future
Radiator	Bubble Membrane	С	0/1	1/0			1	
Radiator	Electrostatic Membrane	С	0/1	3/2			1	
Radiator	Dielectric X-Ray Window	D	4/5	7/7			2	
Radiator	Graphene Crystal X-Ray Mirror	D	0/1	7/7			1	
Radiator	ETHER Charged Dust	М	1/2	1/1			1	
Radiator	Curie Point	М	0/1	5/3			1	
Radiator	Li Heatsink Fountain	S	2/3	6/6			1	(A) [Heavy] Switch to light side after 1st use.
Radiator	Thermochemical Heatsink Fountain	S	1/2	6/6			1	(A) [Heavy] Switch to light side after 1st use.
Radiator	Magnetocaloric Refrigerator	S	2/3	6/6		(e)	3	(A) This card can cool its own supports.
Radiator	Nuclear Fuel Spin Polarizer	S	0/1	5/4			1	
Radiator	Microtube Array	С	2/3	1/0			2	
Radiator	Marangoni Flow	С	0/1	2/1			2	
Radiator	Mo / Li Heat Pipe	М	1/2	2/1			2	
Radiator	Tin Droplet	М	0/1	3/2			2	
Radiator	Qu Tube	М	1/4	4/2			1	
Radiator	ANDR / In Dream Pipe	М	0/1	3/2			2	
Radiator	SS / NaK Pumped Loop	М	2/4	1/0			2	
Radiator	Hula-Hoop	М	1/2	6/6			2	
Radiator	Salt-Cooled Reflux Tube	С	3/4	4/4			2	
Radiator	Buckytube Filament	С	0/1	4/3			2	
Radiator	Steel / Pb-Bi Pumped Loop	М	2/4	3/2			1	
Radiator	Pulsating Heat Pipe	М	1/2	1/1			2	
Radiator	Ti / K Heat Pipe	М	2/4	3/2			1	
Radiator	Flux-Pinned Superthermal	М	1/2	5/5			1	

General					Thruste	r							Supports			ISRU		Notes
		Spectral		Rad				Bonus A	fter			Air						
Туре	Name	Туре	Mass	Hard	Thrust	Fuel	Туре	pivots b	urn P	ush S	Solar	eater	Reactor	Gen	Therms	ISRU	Туре	Ability / Future
Robonaut	Blackbody-Pumped Laser	S	0	5									(√💕)			2	7	
Robonaut	Fissile Aerosol Laser	S	0	7												2		
Robonaut	Cat Fusion Z-pinch Torch	D	0	2									(×)			2		
Robonaut	H-B Cat Inertial	D	2	2	4	1/3	(1				(×)			0	A	
Robonaut	Flywheel Tractor	D	0	5										(e)		3		
Robonaut	Electrophoretic Sandworm	D	1	5												1		
Robonaut	Free Electron Laser	S	2	4										(⊣⊢)		1	7	
Robonaut	Wakefield e-Beam	S	0	5	4	2	4		2					(⊣⊢)		1	%	
Robonaut	Kuck Mosquito	D	0	6	10	8	\(\)		2				(💣)			3	%	
Robonaut	Ablative Laser	D	0	6	3	1	\(\)		3	>	*					2	%	
Robonaut	MET Steamer	С	1	4	5	4	\(\)		1	>				(e)		2	%	
Robonaut	Nanobot	С	0	5												1	æ	
Robonaut	Neutral Beam	S	2	5										(⊣⊢)		2	7	
Robonaut	D-D Fusion Inertial	S	1	4	3	1/2	\(\)		1					(⊣⊢)		1	A	
Robonaut	Nuclear Drill	D	1	6	5	4	\(\)		1	>			(√)			3	%	
Robonaut	Helical Railgun	D	2	8	5	4				>				(⊣⊢)		0	***************************************	
Robonaut	Phase-Locked Diode Laser	С	1	3										(e)		3	7	
Robonaut	Lorentz-Propelled Microprobe	С	0	3												3	~	(A) NANITES: One re-roll if fail 1 or more size rolls.
Robonaut	Rock Splitter	V	0	5										(e)		4	<i></i>	
Robonaut	MagBeam	V	1	5	4	1	\(\)		1	>	*					3	***************************************	(A) -1 ISRU, +3 thrust if pushed by Powersat.
Robonaut	Solar-Pumped MHD Exciplex Laser	С	3	4												2	7	
Robonaut	Quantum Cascade Laser	С	1	5										(e)		0	7	
Robonaut	Tungsten Resistojet	М	0	5	5	4	\(\)		1	>				(e)		3	₩	
Robonaut	MITEE Arcjet	М	0	4	4	2	\		2	>				(e)		1	**	

General						Supports			Notes
_		Spectral		Rad	Air		_	_,	
Туре	Name	Туре		Hard	eater	Reactor		Therms	Ability / Future
Refinery	Atomic Layer Deposition	V	2	2			(e)		(A) POWER CIPPLE If the character is a constant of the constan
Refinery	Ilmenite Semiconductor Film	V	2	6					(A) POWER GIRDLE: If used to industrialise non-atmos site size 8+, permanently gain Powersat faction privilege.
Refinery	Basalt Fiber Spinning	S	3	5		(× √ 💞)			
Refinery	Von Neumann Santa Claus Machine	S	2	5					(A) DIVINING NUBOTS: -1 ISRU for Colocated ISRU platform.
Refinery	CVD Molding	М	3	5					
Refinery	Carbonyl Volatilization	М	2	5					(A) THORIUM BREEDER: -3 to Colocated size rolls on S Sites.
Refinery	Carbo-Chlorination	V	2	4			(e)		
Refinery	Solar Carbotherm	٧	2	5					(A) ARCOLOGY: Decommiss. of robonaut not needed when used to industrialize in zones Mercury, Venus, Earth
Refinery	Electroforming	М	3	3			(e)		
Refinery	Impact Mold Sinter	М	3	5					(A) FOAMED NICKEL: -1 to Colocated size rolls.
Refinery	Fluidized Bed	V	3	4			(e)		
Refinery	Atmospheric Scoop	٧	1	5	D		(e)		(A) SCOOP: If operational, this card makes adjacent or colocated aerostat sites into [2 hydration]
Refinery	Foamglass Sintering	D	3	4			(e)		
Refinery	Laser-Heated Pedestal Growth	D	1	5			(e)		(A) SUPERLENS: -1 to all Colocated raygun size rolls.
Refinery	Froth Flotation	D	3	5			(e)		
Refinery	Femtochemistry	D	2	8					(A) SCAVENGING: If Colocated, doubles FTs during site refuel.
Refinery	ISRU Sabatier	V	3	4			(e)		
Refinery	Biophytolytic Algal Farm	V	3	5					(A) COMET LICHEN: -2 to Colocated size rolls on D Sites.
Refinery	In-Situ Leaching	D	3	3		(× √ 💞)			
Refinery	Termite Nest	D	1	3		(× √ 💞)			(A) MINE REVIVAL: As an op, remove a busted disk and place Claim on a Colocated Site of Size 2+.
Refinery	Magma Electrolysis	V	3	3			(e)		
Refinery	lonosphere Lasing	٧	2	6					(A) IONOSAT: If used to industrialize an Atmospheric Site, permanently gain the Powersat faction privilege.
Refinery	Supercritical Drying	Н	1	5		(×)			
Refinery	Solid Flame	Н	0	5		(×)			(A) JELLYBOTS: Colocated industrialization is a free action.

General					Thruste	r					Supports			Colony	Notes
		Spectral		Rad			Bonus			Air				Promoted	
Туре	Name	Туре	Mass	Hard	Thrust	Fuel	Type pivots	burn	Push	Solar eater	Reactor	Gen	Therms	colony	Ability / Future
Thruster GW	Amat-Catalyzed Fission-Fusion	S	3	9	10	1/3		2			(×)		(2)	D	
Thruster TW	Amat-Initiated H-B Magnetic-Inertial	S	1	10	8	0		5				(⊣⊢)	(1)	D	(F) MINI-BLACK HOLE FUTURE: Req = Industrialized centaur with 10 isotope FTs. Effects = double all isotope refuel, 10 VP.
Thruster GW	Dense Plasma H-B Focus Fusion	D	1	8	2	1/10		5				(⊣⊢)		D	
Thruster TW	Crossfire H-B Focus Fusion	D	1	9	3	0		9				(⊣⊢)		D	(F) PROTIUM FUSION FUTURE: Req = Promoted Bernal with H Dirtside. Effects = double all isotope refuel, 10 VP.
Thruster GW	Levitated Dipole 6Li-H Fusion	V	4	5	2	0		4					(1)	S	
Thruster TW	Dusty Plasma	V	2	8	2	0		9					(3)	S	(F) MASS BEAM FUTURE: Req = Promoted Bernal with Io or Triton Dirtside. Effects = your Powersat adds +2 thrust, 7 VP.
Thruster GW	Mini-Mag Orion Z-Pinch Fission	М	1	9	12	1/3						(⊣⊢)	(2)	D	
Thruster TW	Solem Medusa Tugged Orion	М	6	9	9	0		3				(⊣⊢)		D	(F) LITHIATED AMMONIA ICE STARSHIP FUTURE: Req = Ad astra exit with 10 isotope fuel. Effect = 14 VP.
Thruster GW	Salt-Water Zubrin	S	1	6	14	1/2		1					(5)	М	
Thruster TW	Zubrin-GDM	S	3	8	6	0		8				(⊣⊢)	(4)	М	(F) SPACEFARING FUTURE: Req = Bernal with 8+ dirtside hydration. Effects = Allowed 1 extra Colonist, 7 VP.
Thruster GW	Spheromak 3He-D Magnetic Fusion	Н	4	8	6	1/10		6				(e)	(4)	Н	
Thruster TW	Colliding FRC 3He-D Fusion	Н	3	9	4	0		10			(ANY)	(⊣⊢)	(2)	Н	(F) ENZMANN STARSHIP FUTURE: Req = Ad astra exit with 2 Promoted Colonists + Mobile Factory. Effect = 12 VP.
Thruster GW	VISTA D-T Inertial Fusion	Н	5	8	9	1/4		3				(⊣⊢)	(2)	Н	
Thruster TW	Daedalus 3He-D Inertial Fusion	Н	5	9	11	0		8				(⊣⊢)	(3)	Н	(F) FUSION CANDLE FUTURE: Req = Triton Colony & Promoted Bernal with Neptune Aerostat Dirtside. Effects = double all isotope refuel, 14 VP.

General					Thruste	r							Supports			Bernal	Colony	Notes
		Spectral	1	Rad				Bonus	After			Air				Power	Promoted	
Туре	Name	Туре	Mass	Hard	Thrust	Fuel	Туре	pivots	burn	Push	Solar	eater	Reactor	Gen	Therms	stat	colony	Ability / Future
Bernal	GEO Elevator Bernal	=	10	6	3	3								(e)		▶)		(A) HOME: Boost direct to Home Bernal without doubling boost costs.
Promoted Bernal	Space Elevator Lab		10	7	3	3								(e)		▶)	•	(A) Your factory-assisted landings/liftoffs anywhere treat lander burns as normal Burn Spaces.
Bernal	L1 Climate Control Bernal		10	8	3	3								(e)		▶)		(A) HOME: You are always the 1st player, superseding all other claimants.
Promoted Bernal	Climate Control Lab		12	8	3	3								(e)		▶)	*	(A) +2 VP per Dirtside for this Bernal.
Bernal	L2 Collimator Bernal		10	8	3	3								(e)		▶)	>	(A) HOME: Gain the Powersat faction privilege.
Promoted Bernal	Collimator Lab		10	9	3	3								(e)		▶)	•	(A) Gain the Powersat faction privilege. Powersat push includes a Bonus Pivot.
Bernal	L3 Lofstrom Loop Microgravity		10	8	3	3								(e)		▶)	~~	(A) HOME: Boost direct to Home Bernal without doubling boost costs.
Promoted Bernal	Lofstrom Loop Microgravity Lab		10	9	3	3								(e)		▶)	8	(A) Your factory-assisted landings/liftoffs anywhere treat lander burns as normal Burn Spaces.
Bernal	L4 Antimatter Factory		10	9	3	3								(e)	(2)	▶)	М	(A) HOME: Your Crew has an On-Board Nuclear X reactor.
Promoted Bernal	Antimatter Lab		10	10	3	3								(e)	(2)	▶)	М	(A) Your Crew has an On-Board Nuclear "ANY" reactor.
Bernal	L4s Pharmaceutics Bernal		10	6	3	3								(e)		▶)	*	(A) HOME: Gain the Skunkworks faction privilege.
Promoted Bernal	Pharmaceutics Lab		10	7	3	3								(e)		▶)	*	(A) Gain the Skunkworks faction privilege & impose academia hand limit on all opponents.
Bernal	L5 Solar Cell Factory		10	6	3	3								(e)		▶)	>	(A) HOME: +1 to the Net Thrust of your Spacecraft that use Solar-Power.
Promoted Bernal	Solar Cell Lab		10	8	3	3								(e)		▶)	>	(A) +2 to the Net Thrust of your Spacecraft that use Solar-Power.
Bernal	L5s Cancer Hospital		10	6	3	3								(e)		▶)	65	(A) HOME: You are immune to budget cuts.
Promoted Bernal	Cancer Lab		12	7	3	3								(e)		▶)	68	(A) Gain +1 Token VP for each Colony Dome. Your Crew and Human Colonists have a rad-hard of at least 7.
Bernal	SSO Diplomatic		10	6	3	3								(e)		▶)	*	(A) HOME: (Module 0) Your delegates in the Ideology of your Faction color are +1 VP each.
Promoted Bernal	Diplomatic Lab		10	7	3	3								(e)		▶)	*	(A) (Module 0) Your delegates in the assembly are +1 VP each.
Bernal	Tourism Cycler		10	7	3	3								(e)		▶)		(A) HOME: Can designate any Spacecraft to forgo Belt Rolls in the Radiation Belts near Earth.
Promoted Bernal	Tourism Hotel		10	7	3	3								(e)		▶)	•	(A) +2 VP per Dirtside for this Bernal.

General	ral				Thruste	er					Supports	Supports			nter	Colony	Notes
Туре	Name	Spectral Type		Rad Hard	Thrust	Fuel		s After	Solar	Air eater	Reactor	Gen	Therms	Load limit		Promoted colony	Ability / Future
Freighter	Fission-Heated Steam	Any	0	5			•				(√)			2	444	М	•
Freighter Fleet	Fission GCR	Any	1	6							(∿)			6	1122	М	(A) Can liftoff/land on Sites that are less than size 6 without factory-assist. (F) EXOPLANET HUNT FUTURE: Req = Claim Sedna. Effect = (Endgame) 12 VP.
Freighter	Fusion Fragment Sail	V	2	1			1							2		М	(A) Immune to flares & radiation belts.
Freighter Fleet	Antiproton Sail and Harvester	V	2	9			4							6		М	(A) +1 net thrust if starting its move on a radiation belt. (F) ANTIMATTER FUTURE: Req = Promoted Bernal with S Dirtside. Effects = double isotope refuel, 10 VP.
Freighter	HIIPER Beam Rider	٧	4	4			1					(e)		4		>	
Freighter Fleet	Magnetic Mirror Beam Rider	V	3	6			3					(e)		5		>	(A) Can liftoff/land on Sites that are less than size 6 without factory-assist. (F) STAR WISP FUTURE: Req = Promoted Freighter (End game) at either neutrino sunlens (6 VP) or EM sunlens = 11 VP.
Freighter	Inflatable Solar-Heated	Any	0	5										2	444	С	(A) SOLAR HEATED: If not using Powersat, may move out only as far as the Ceres zone.
Freighter Fleet	Archimedes Palmer Lens	Any	0	10										5	444	С	(A) SOLAR HEATED: If not using Powersat, may move out only as far as the Jupiter zone. (F) TERRAFORM FUTURE: Req = Promoted Bernal at a non-Martian Atmospheric Dirtside. Effect = 8 VP.
Freighter	Poodle Steam	Any	0	7										2		S	(A) RADIOISOTOPE: +2 thrust if its move starts on a Factory.
Freighter Fleet	D-Nanotube Dirt Launcher	Any	0	9										3		S	(F) BEANSTALK FUTURE: Req = 3+ Space Elevators built by any player. Effect (Endgame) = +3 VP for each Factory connected to a Space Elevator.
Freighter	Rotary Dirt Launcher	Any	5	4							(√)	(e)		2	444	С	
Freighter Fleet	KESTS Hoop Dirt Launcher	Any	15	8							(∿)	(e)		15	111	С	(F) BEEHIVE ARK FUTURE: Req = Promoted Bernal anchored at a Synodic Comet. Effect = 7 VP.
Freighter	Z-Pinch D-T / 6Li Fusion	V	5	3			1				(×)	(⊣⊢)		3		Н	
Freighter Fleet	Z-Pinch 3He-D Target Fusion	V	2	6			2				(×)	(⊣⊢)		6		Н	(F) GOLDEN APPLES FUTURE: Req = Industrialize Kreutz Sungrazer. Effects = Ignore solar flares, 14 VP.

General				•	Thruster						Supports			SRU		Colony	Color	ists		Notes
		Spectral		Rad				Bonus After		Air						Promoted				
Туре	Name	Туре	Mass	Hard	Thrust	Fuel	Туре	pivots burn	Push S	olar eater	Reactor	Gen	Therms	SRU	Type	colony	Type	Specialty	Ideology	Ability / Future
Colonist	Babbage Halbonauts	Н	2	5										4		D	<u></u>	Engineer		
Colonist	Utility Fog Halbonaut	Н	2	5										2	æ	D		Engineer		(A) All of your stacks are Glitch-free. (F) UPLIFT FUTURE: Req = Robots not Emancipated, Human at a promoted Bernal & spend 20 Aqua. Effects = Every Robot becomes Emancipated, Casus belli for War, 12 VP.
Colonist	Biomechs	n/a	2	4										3	<i></i>	Н		Miner		
Colonist	Group Mind Immortalists	n/a	2	5										2	<i></i>	Н	•	Miner		(A) May perform the faction privileges on both sides of your Crew card. (F) PAN SAPIENS FUTURE: Req = Have 3 Factories connected to Space Elevators. Effect = Casus belli for War. (Endgame) +2 VP for each glory chit owned.
Colonist	Botany Bay Convicts	n/a	2	4										4	<i></i>	Н		Miner		
Colonist	Soldier Caste	n/a	2	9							•			2	74	Н	•	Miner		(A) All your Humans can commit Felonies, even if defending Humans are present. (F) SECESSION FUTURE: Req = 2 Promoted Human Colonists at an Anchored Bernal with Dirtside 5+. Effects = Casus belli for War, 10 VP.
Colonist	Boyle Engineering Collective	n/a	3	5										3	<i></i>			Prospector		
Colonist	Martian Assembly	n/a	3	6										2	<i></i>	•	•	Prospector		(A) Acts as a Freighter when building a Space Elevator. (F) BEANSTALK FUTURE: Req = Have 3+ Space Elevators built by any player. Effect (Endgame) = +3 VP for each Factory connected to a Space Elevator.
Colonist	Calypso 2 Seed Sail	n/a	1	3	0	х0	<u> </u>	1	•	*				4	A	*		Prospector		(A) Can't enter aerobrakes.
Colonist	Wet-Nano Seed Sail	n/a	1	5	1	х0	۵	1	•	*				1	***	*	••	Prospector		(A) -2 to Colocated size rolls on Synodic Comets. Can't enter aerobrakes. (F) NEW VENUS FUTURE: Req = Decommission operational 7+ net thrust thruster on industrialized Synodic Comet (yours). 12 VP + (Endgame) remove all tokens on Venus & comet.
Colonist	Heavy Water Survivalists	n/a	2	5										4	-	0.5		Engineer		
Colonist	New Attica Secessionists	n/a	2	6										2	7	68	•	Engineer		(A) Boost costs are doubled for all your opponents. (F) SECESSION FUTURE: Req = 2 Promoted Human Colonists at a promoted Anchored Bernal. Effects = Casus belli for War, 7 VP.
Colonist	House of Saud	n/a	2	3										3	<i></i>	Н	•	Miner		
Colonist	lceworms	n/a	2	4										1	æ	Н	•••	Miner		(A) Performs epic hazard operation as a free action, & is not Decommissioned if it fails. (F) SUBMARINER FUTURE: Req = Build 3 Submarines. Effect = Doubles your dirtside hydration, not cumulative with other modifiers.
Colonist	Juiced Cosmonauts	n/a	1	4	10	х4	\(\)	1						3	%	Н	•	Prospector		
Colonist	Rental Body Guild	n/a	1	6	12	х4	\(\)	1		D	~			2	A	Н	•	Prospector		(A) -1 to Colocated size rolls. (F) ET LIFE FUTURE: Req = Have 2 or more Astrobiological Colonies. Effect (Endgame): +2 VP per Astrobiological Colony.
Colonist	Lloyd's Salvage Co.	n/a	1	5												*		Industrialist		
Colonist	Svalbard Caretakers	n/a	1	6												*	•	Industrialist		(A) -1 on all size rolls when prospecting Synodic Sites. (F) DYSON BUBBLE FUTURE: Req = Both Sites of Mercury industrialized by any player. Effects = 5 VP per Factory owned on Mercury.
Colonist	Malcolm	n/a	1	3												Н		Industrialist		
Colonist	Renaissance Man	n/a	1	4												Н	•	Industrialist		(A) If initiating a research auction, can search through one patent deck and choose the card to be auctioned. (F) ARTIFICIAL CONSCIOUSNESS FUTURE: Req = 2 promoted Colonists at an Astrobiology Dirtside. Effects = May free market any number of cards, 10 VP.
Colonist	Microgravity Pantrophists	n/a	3	5												Н		Engineer		•
	<u> </u>								1							1		-		

General					Thruste	r							Supports			ISRU		Colony	Color	nists		Notes
		Spectral		Rad				Bonus	After			Air						Promoted				
Туре	Name	Туре	Mass	Hard	Thrust	Fuel	Туре	pivots	burn	Push	Solar	eater	Reactor	Gen	Therms	ISRU	Type	colony	Type	Specialty	Ideology	Ability / Future
Colonist	Blue Goo Sybonts	n/a	3	6														Н	••	Engineer		(A) Can produce ET products of Spectral Type C at any Factory. (F) SETI FUTURE: Req = Industrialize 2 Jovian Tojans, 1 each in the Greek & Trojan camps. Effects = As a free action perform 1 inspiration + 1 homestead, 10 VP.
Colonist	Programmable Matter	D	1	4	2	х4	\(\)		1	\blacktriangleright			~			3	%	D		Prospector		
Colonist	Neumann Matter	D	1	5	4	х4	۵		1	>			~			1	A	D	œ ·	Prospector		(A) All of your stacks are Glitch-free. (F) UPLIFT FUTURE: Req = Robots not Emancipated, Human at a promoted Bernal & spend 20 Aqua. Effects = Every Robot becomes Emancipated, Casus belli for War, 12 VP.
Colonist	Rock Rats Miners' Union	n/a	3	5								D	C			3	7	Н		Miner		
Colonist	Alchemist Aviatrices	n/a	3	6									•			0	7	Н	•	Miner		(A) During Factory Refuel, double the amount of isotope fuel. (F) AEROSTAT FUTURE: Req = Promoted Bernal with Aerostat Dirtside. Effects = Can homestead as a free action, 14 VP.
Colonist	Security System	D	1	4														D		Industrialist		
Colonist	Frankenstein Navigator	D	1	5								Ω	Х					D	œ ·	Industrialist		(A) FINAO costs are halved (drop fractions). (F) UPLIFT FUTURE: Req = Robots not Emancipated, Human at a promoted Bernal & spend 20 Aqua. Effects = Every Robot becomes Emancipated, Casus belli for War, 12 VP.
Colonist	Siren Cybernautics Inc.	n/a	3	5						•	*	D					1 TA	13		Engineer		,
Colonist	Josephson Implants	n/a	3	6						•	*	Ω					€	0%	••	Engineer		(A) FINAO costs are halved (drop fractions). (F) SUPREME CULT FUTURE: Req = Active Law in authority. Effects (Module 0) = May lobby w/o removing the delegate used. All Seniority Disks migrate to authority. (Endgame): 10 VP.
Colonist	Smart Pets	D	0	3												3	<i></i>	D	<u></u>	Miner		•
Colonist	Creeper Neogen	D	0	6												2	<i></i>	D	<u></u>	Miner		(A) All of your stacks are Glitch-free. (F) UPLIFT FUTURE: Req = Robots not Emancipated, Human at a promoted Bernal & spend 20 Aqua. Effects = Every Robot becomes Emancipated, Casus belli for War, 12 VP.
Colonist	Transorbital Railworkers	n/a	2	4														Н	•	Engineer		
Colonist	Kaluga Naniteers	n/a	2	5						>								Н	•	Engineer	0	(A) Your Aqua from a Free Market is doubled. (F) TNO FUTURE: Req = Industrialize 2 Sites in the Neptune Zone. Effects = Can homestead as a free action, 12 VP.
Colonist	Vatican Observers	n/a	1	4														*	•	Industrialist		
Colonist	Eugenic Pilgrims	n/a	1	5														*	••	Industrialist		(A) Faction privilege not lost in Anarchy1 to Colocated size rolls on Synodic Comets. (F) FOOTFALL FUTURE: Req = Decommission operationa 7+ net thrust thruster on Industrialized Synodic Comet (yours). Effects = 10 VP + Casus belli. (Endgame) All tokens on the comet eliminated.