

The Satisfactory Compendium

Complete Factory Building Reference

Tiers, Recipes, Power, Creatures, and Automation

9 Tiers · 7 Space Elevator Phases · Complete Recipe Catalog

Power Systems · Map & Biomes · All Creatures

Version 1.0+ Edition · 2025

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Part I: Game Overview

1. FICSIT Inc. and the Mission

Satisfactory is a first-person open-world factory building game developed by **Coffee Stain Studios** and published by Coffee Stain Publishing. It launched in Early Access on March 19, 2019, and reached its full **1.0 release on September 10, 2024**. The game is built on Unreal Engine 5 and is available exclusively on PC via Steam and Epic Games Store.

You play as a **Pioneer** -- an employee of **FICSIT Inc.** (pronounced "fix-it"), a massive interstellar corporation whose slogan is "*FICSIT: Because why do anything yourself when you can make something else do it for you?*" You have been dropped onto an uncharted alien planet with a single mission: **build a massive automated factory, extract resources, and use the Space Elevator to supply FICSIT with Project Assembly parts.**

Your only companion is **ADA** (short for "*A Detection Algorithm*"), an AI assistant who provides guidance, milestone instructions, and occasional deadpan commentary on your inevitable factory disasters. ADA serves as both tutorial guide and narrative voice, delivering FICSIT's corporate-speak with perfectly calibrated indifference.

Table 1: Satisfactory at a Glance

Attribute	Details
Developer	Coffee Stain Studios (Sweden)
Publisher	Coffee Stain Publishing
Engine	Unreal Engine 5
Platforms	PC (Steam, Epic Games Store)
Early Access	March 19, 2019
Full Release (1.0)	September 10, 2024
Players	Single-player, Co-op (up to 4 online)
Genre	First-Person Factory Building, Automation, Exploration
Perspective	First-person (with photo mode and build camera)
World	Open world, 30 km ² , fully explorable, hand-crafted
Save System	Manual, auto-save, multiple slots

FICSIT Inc. Corporate Philosophy

The game is built on a satirical corporate framework. Every system is framed through FICSIT's lens of "efficiency" and "productivity." When you fall off a cliff, ADA remarks that "Employee death is an inefficient use of company resources." When you unlock new technology, it's described in corporate jargon. This tonal consistency -- treating the player as a disposable employee building a monument to corporate extraction -- gives Satisfactory a unique personality among factory builders.

2. The Planet

The game takes place on **MESSAGE-2(A-B)b**, an alien planet in an uncharted system. The planet features diverse biomes, abundant resources, and native lifeforms ranging from peaceful to deadly. The world is approximately **30 km²** and was entirely hand-crafted by the developers -- no procedural generation.

Key Planetary Features

- **Day/Night Cycle:** Approximately 60 real-world minutes for a full day. Night is dark and dangerous.
- **No Weather System:** Unlike many open-world games, Satisfactory has no dynamic weather. The environment is static but visually diverse.
- **No Building Decay:** Once placed, buildings persist indefinitely with no maintenance required.
- **No Natural Disasters:** Your factory is safe from environmental threats (except creatures and radiation).
- **Verticality:** The planet features massive cliffs, caves, waterfalls, and floating islands that reward vertical exploration.

3. Technical Information

PC Requirements

Table 2: System Requirements

Spec	Minimum	Recommended
OS	Windows 10/11 64-bit	Windows 10/11 64-bit
CPU	i5-3570k or equivalent	i7-6700k or Ryzen 5 3600
RAM	8 GB	16 GB

GPU	GTX 760 2GB / RX 470	RTX 2070 / RX 5700
Storage	20 GB HDD	20 GB SSD
DirectX	Version 11	Version 12

Performance Note: Satisfactory is CPU-intensive when factories grow large. Hundreds of conveyors, splitters, and production buildings create significant simulation load. Spread production across the map rather than concentrating everything in one megabase to maintain performance. Use Level of Detail (LOD) settings to reduce rendering load on distant factory elements.

Multiplayer

Satisfactory supports **cooperative multiplayer for up to 4 players**. All players share the same world, factory, and progression. Milestone completion is shared. Each player has their own inventory and equipment. Hosting is done through the game client (listen server) -- there are no dedicated servers. The host's save file contains the world, and guests connect via Steam or Epic friends list.

Part II: Progression and Tiers

4. The 9 Tiers

Progression in Satisfactory is organized into **9 Tiers**, each unlocked by completing Milestones at **The HUB** -- your central base of operations. Each Tier unlocks new buildings, recipes, equipment, and capabilities. Tiers 3-4 and beyond require Space Elevator deliveries.

Table 3: Complete Tier Overview

Tier	Theme	Key Unlock	Power Era
Tier 0	Onboarding	Basic tools, HUB, portable miner	Manual / Biomass
Tier 1	Field Research	Constructor, Smelter, Miner Mk.1, biomass burner	Biomass
Tier 2	Logistics	Conveyor belts, power poles, assembler, MAM	Biomass
Tier 3	Coal Power	Coal power plant, water extractors, vehicles	Coal
Tier 4	Advanced Steel	Steel production, Mk.2 belts, improved miner	Coal
Tier 5	Oil Processing	Oil refinery, fuel production, plastic/rubber	Fuel
Tier 6	Industrial Manufacturing	Manufacturer, train tracks, computer production	Fuel / Turbo
Tier 7	Bauxite Refinement	Aluminum production, battery, drone port	Nuclear / Fuel
Tier 8	Particle Enrichment	Nuclear power, plutonium, particle accelerator	Nuclear
Tier 9	Quantum Technology	Ficsonium, Ballistic Warp Drive, endgame parts	Nuclear / Ficsonium

5. The Hub and Milestones

The HUB Overview

The HUB is your central command structure. It must be built at the start of the game and serves as your respawn point, fast-travel destination, and progression interface. Each Tier contains multiple Milestones that must be completed to advance. Milestones require feeding specific parts into the HUB terminal.

Tier 0 Milestones (Onboarding)

Table 4: Tier 0 Milestones

Milestone	Cost	Unlocks
HUB Upgrade 1	10 Iron Rods	Basic crafting, Build Gun
HUB Upgrade 2	10 Iron Plates	Equipment: Xeno-Basher (weapon)
HUB Upgrade 3	20 Iron Plates, 20 Iron Rods	Portable Miner
HUB Upgrade 4	50 Iron Rods, 50 Iron Plates	Smelter, Constructor, Miner Mk.1
HUB Upgrade 5	75 Iron Plates, 75 Iron Rods, 20 Concrete	Biomass Burner, Power Pole, conveyor basics
HUB Upgrade 6	100 Concrete, 100 Iron Plates	Tier 1 unlock

Tier 1 Milestones (Field Research)

Table 5: Tier 1 Milestones

Milestone	Cost	Unlocks
Base Building	10 Concrete, 10 Iron Plates	Foundations, walls, ramps, doors
Logistics	20 Iron Plates, 20 Iron Rods, 75 Concrete	Conveyor Belt Mk.1, Storage Container
Field Research	10 Iron Plates, 10 Iron Rods, 5 Concrete	MAM (Research station)

Tier 2 Milestones (Logistics)

Table 6: Tier 2 Milestones

Milestone	Cost	Unlocks
Part Assembly	100 Iron Plates, 50 Iron Rods	Assembler, conveyor splitter/merger

Obstacle Clearing	50 Iron Plates, 50 Iron Rods, 100 Concrete	Chainsaw (removes vegetation), Nobelisk (explosives)
Resource Sink Bonus Program	50 Iron Plates, 50 Iron Rods	AWESOME Sink, AWESOME Shop
Jump Pads	10 Iron Plates, 50 Iron Rods, 50 Concrete, 200 Cables	Jump Pad (vertical traversal)

Tier 3 Milestones (Coal Power)

Table 7: Tier 3 Milestones

Milestone	Cost	Unlocks
Coal Power	50 Reinforced Iron Plates, 50 Rotors, 100 Concrete	Coal Power Plant, Water Extractor
Logistics Mk.2	100 Reinforced Iron Plates, 200 Cables	Conveyor Belt Mk.2, Pipe Mk.1
Vehicular Transport	50 Reinforced Iron Plates, 50 Rotors	Tractor, Truck, Explorer

Space Elevator Requirement: Completion of Tier 2 unlocks the Space Elevator. Tier 3-4 require Space Elevator Phase 1 delivery (50 Smart Plating). Tier 5-6 require Phase 2. Tier 7-8 require Phase 3. Tier 9 requires Phase 4.

Tier 4 Milestones (Advanced Steel)

Table 8: Tier 4 Milestones

Milestone	Cost	Unlocks
Advanced Steel Production	100 Steel Beams, 200 Concrete	Miner Mk.2, Conveyor Mk.3
Improved Melee Combat	100 Steel Beams, 100 Steel Pipes	Xeno-Zapper upgrade
Hypertubes	200 Steel Pipes, 100 Copper Sheets	HyperTube entrance/exit, Hypertube support

Tier 5 Milestones (Oil Processing)

Table 9: Tier 5 Milestones

Milestone	Cost	Unlocks
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Oil Processing	100 Plastic, 100 Rubber, 200 Steel Beams	Oil Refinery, Oil Extractor
Logistics Mk.3	200 Steel Beams, 200 Steel Pipes	Conveyor Belt Mk.4, Pipeline Mk.2
Alternative Fluid Transport	100 Plastic, 100 Rubber	Packager, fluid packaging/unpackaging

Tier 6 Milestones (Industrial Manufacturing)

Table 10: Tier 6 Milestones

Milestone	Cost	Unlocks
Industrial Manufacturing	200 Steel Beams, 200 Steel Pipes, 400 Concrete	Manufacturer, industrial storage
Monorail Train Technology	200 Steel Pipes, 200 Copper Sheets	Train Station, freight platform, locomotive
Jetpack	100 Plastic, 50 Rubber, 200 Circuit Boards	Jetpack equipment

Tier 7 Milestones (Bauxite Refinement)

Table 11: Tier 7 Milestones

Milestone	Cost	Unlocks
Bauxite Refinement	100 Alclad Aluminum Sheets, 200 Aluminum Ingots	Blender, battery production
Logistics Mk.4	200 Aluminum Ingots, 200 Steel Pipes	Conveyor Belt Mk.5
Aerial Transport	100 Aluminum Ingots, 50 Batteries	Drone Port, Drone
Hazardous Waste Handling	200 Aluminum Ingots, 200 Steel Pipes	Industrial Storage Container, hazmat suit

Tier 8 Milestones (Particle Enrichment)

Table 12: Tier 8 Milestones

Milestone	Cost	Unlocks
Particle Enrichment	200 Electromagnetic Control Rods, 200 Heat Sinks	Particle Accelerator, Plutonium production

Nuclear Power	200 Concrete, 200 Steel Beams, 200 Electromagnetic Control Rods	Nuclear Power Plant, uranium fuel rods
Advanced Aluminum Production	200 Aluminum Ingots, 200 Steel Pipes	Aluminum production improvements

Tier 9 Milestones (Quantum Technology)

Table 13: Tier 9 Milestones

Milestone	Cost	Unlocks
Quantum Encoding	500 Electromagnetic Control Rods, 500 Superposition Oscillators	Quantum Computer, Superposition Oscillator
Ficsonium Production	500 Cooling Systems, 500 Ficsite Trigon	Ficsonium, Ficsonium Fuel Rod
Ballistics Delivery	500 Magnetic Field Generators, 500 Nuclear Pasta	Ballistic Warp Drive, final Space Elevator parts

Part III: Resources

6. Raw Resources

Satisfactory features **24 raw resources** that can be extracted from the planet. Each resource node has one of three purity levels, which affects extraction rate. Resources are distributed unevenly across the map, encouraging exploration and long-distance logistics.

Resource Purity

Table 14: Node Purity and Mining Rates (per Miner Mk.1)

Purity	Items/Minute (Mk.1)	Items/Minute (Mk.2)	Items/Minute (Mk.3)
Impure	30	60	120
Normal	60	120	240
Pure	120	240	480

Complete Raw Resource Catalog

Table 15: All Raw Resources

Resource	Form	Tier Found	Primary Biomes	Uses
Iron Ore	Solid	Tier 0	Grassy Fields, Northern Forest, Rocky Desert	Iron Plates, Rods, Steel
Copper Ore	Solid	Tier 0	Grassy Fields, Northern Forest	Wires, Cables, Circuit Boards
Coal	Solid	Tier 3	Grasslands (eastern), Rocky Desert	Steel, Power, Coke
Limestone	Solid	Tier 0	Everywhere	Concrete
Caterium Ore	Solid	Tier 2 (via MAM)	Northern Forest, Dune Desert	Quickwire, Circuit Boards, AI
Raw Quartz	Solid	Tier 2 (via MAM)	Red Bamboo Fields, Dune Desert	Quartz Crystal, Silica
Sulfur	Solid	Tier 4 (via MAM)	Red Bamboo Fields, Swamp	Black Powder, Acid

Bauxite	Solid	Tier 7	Red Jungle, Dune Desert coast	Aluminum, Alclad Sheets
Uranium	Solid	Tier 8	Swamp, Northern Forest (isolated)	Nuclear Fuel, Radiation
Crude Oil	Fluid	Tier 5	Red Bamboo Fields, Northern Forest coast	Plastic, Rubber, Fuel
Water	Fluid	Tier 3	Lakes, rivers, coastlines, underground	Power, Concrete, Sulphuric Acid
Nitrogen Gas	Gas	Tier 8	Red Jungle, Northern crater	Nitric Acid, Cooling Systems
S.A.M. Ore	Solid	Hidden	Dune Desert, Red Jungle	Currently decorative (future use)

Resource Rarity Guide

Table 16: Resource Distribution Summary

Rarity	Resources	Map Availability
Abundant	Iron Ore, Limestone	Hundreds of nodes, found everywhere
Common	Copper Ore, Coal	Dozens of nodes, most biomes
Uncommon	Caterium, Raw Quartz, Sulfur	Specific biomes, requires exploration
Rare	Crude Oil, Bauxite	Limited nodes, specific locations
Very Rare	Uranium	Few nodes, dangerous to approach
Endgame	Nitrogen Gas, SAM Ore	Late-game only, specialized locations

7. Component Catalog

Raw resources are processed through various buildings into intermediate and final components. Understanding the component tree is essential for factory planning.

Basic Components (Tier 1-2)

Table 17: Early Game Components

Component	Recipe	Made In	Used For
Iron Plate	3 Iron Ore > 2 Iron Plates	Constructor	Reinforced Plates, Rotors, Buildings
Iron Rod	1 Iron Ore > 1 Iron Rod	Constructor	Screws, Rotors, Concrete

Concrete	3 Limestone > 4 Concrete	Constructor	Buildings, Nuclear
Copper Wire	1 Copper Ore > 2 Wire	Constructor	Cables, Circuit Boards
Cable	2 Wire > 1 Cable	Constructor	Power poles, Vehicles, Electronics
Screw	1 Iron Rod > 4 Screws	Constructor	Reinforced Plates, Rotors
Reinforced Iron Plate	6 Plates + 12 Screws > 1 RIP	Assembler	Modular Frames, Buildings
Rotor	5 Iron Rods + 25 Screws > 1 Rotor	Assembler	Smart Plating, Motors
Modular Frame	3 RIP + 12 Iron Rods > 2 Frames	Assembler	Heavy Frames, Vehicles

Steel Components (Tier 4)

Table 18: Steel Production Chain

Component	Recipe	Made In	Used For
Steel Ingot	3 Iron Ore + 3 Coal > 3 Steel Ingots	Foundry	Steel Beams, Pipes
Steel Beam	4 Steel Ingots > 1 Beam	Constructor	Conveyor Mk.3, Buildings
Steel Pipe	3 Steel Ingots > 2 Pipes	Constructor	Power, Vehicles, Pumps
Versatile Framework	1 Modular Frame + 12 Steel Beams > 2 VF	Assembler	Space Elevator Phase 2
Heavy Modular Frame	5 Modular + 15 Steel Pipe + 5 Encased + 100 Screws > 1 HMF	Manufacturer	Endgame, Trains

Oil Components (Tier 5)

Table 19: Oil Processing Products

Component	Recipe	Made In	Used For
Plastic	3 Crude Oil > 2 Plastic + 1 Heavy Oil Residue	Refinery	Circuit Boards, Computers
Rubber	3 Crude Oil > 2 Rubber + 2 Heavy Oil Residue	Refinery	Vehicles, Tires, Belts
Fuel	6 Crude Oil > 4 Fuel + 3 Polymer Resin	Refinery	Power, Turbo Fuel
Coke	5 Coal > 5 Coke + 5 Sulfur	Refinery	Steel alternative

Petroleum Coke	4 Heavy Oil Residue > 12 Petroleum Coke	Refinery	Power (burnable)
Circuit Board	2 Copper Sheets + 4 Plastic > 1 Board	Assembler	Computers, Electronics
Computer	10 Circuit Boards + 8 Plastic + 20 Screws > 1 Computer	Manufacturer	AI, High-tech
Heavy Oil Residue	Byproduct of Plastic/Rubber	Refinery	Fuel, Petroleum Coke
Polymer Resin	Byproduct of Fuel	Refinery	Plastic alternative

Advanced Components (Tier 6-9)

Table 20: Endgame Component Catalog

Component	Recipe	Made In	Used For
Aluminum Ingot	6 Bauxite + 5 Water > 4 Ingots + 5 Silica	Refinery	Alclad Sheets, Aluminum
Alclad Aluminum Sheet	3 Aluminum Ingot + 1 Copper Sheet > 3 Sheets	Assembler	Cooling Systems, Tanks
Aluminum Casing	3 Alclad Sheets > 2 Casings	Constructor	Battery, Drones
Battery	6 Sulfuric Acid + 7 Alclad + 8 Plastic + 12 Wire > 4 Batteries	Blender	Drones, Equipment
Supercomputer	2 Computers + 2 AI Limiters + 3 Plastic + 28 Wire > 1 Supercomputer	Manufacturer	Radio Control, Tanks
Radio Control Unit	1 Alclad + 1 Crystal Oscillator + 1 Supercomputer > 2 RCU	Manufacturer	Drones, Nuclear
Electromagnetic Control Rod	8 AI Limiters + 4 Stators + 4 EM > 2 Rods	Assembler	Nuclear, Endgame
Encased Uranium Cell	10 Uranium + 3 Concrete + 8 Sulfuric Acid > 5 Cells	Blender	Nuclear Fuel
Uranium Fuel Rod	50 Encased Cells + 20 Steel Beams + 192 EM Control Rods > 2 Rods	Manufacturer	Nuclear Power
Plutonium Pellet	100 Non-fissile Uranium + 25 Aluminum Casing > 30 Pellets	Particle Accelerator	Plutonium Power
Encased Plutonium Cell	2 Plutonium Pellets + 4 Concrete > 1 Cell	Assembler	Plutonium Fuel

Part III: Resources

Plutonium Fuel Rod	2 Encased Plutonium + 4 EM Control Rods + 8 Steel Beams > 1 Rod	Manufacturer	Plutonium Power
Ficsonium	1 Plutonium Waste + 1 Nitrogen Gas > 1 Ficsonium	Particle Accelerator	Ficsonium Fuel
Superposition Oscillator	6 Dark Matter Crystals + 1 Crystal Oscillator + 1 Supercomputer > 1 Oscillator	Manufacturer	Endgame
Nuclear Pasta	200 Copper Powder + 1 Pressure Conversion Cube > 1 Nuclear Pasta	Particle Accelerator	Endgame
Magnetic Field Generator	5 Versatile Frameworks + 1 Superposition Oscillator > 2 Generators	Assembler	Endgame
Ballistic Warp Drive	5 Superposition Oscillators + 2 Dark Matter Crystals > 1 Drive	Manufacturer	Final delivery

Part V: Power Systems

10. Generators

Power management is the central logistical challenge of Satisfactory. Each generator has specific fuel requirements, output capacity, and operational considerations. Smart power grid design separates adequate factories from masterpieces.

Generator Comparison

Table 21: All Generators Compared

Generator	Power Output	Fuel Type	Fuel Consumption	Unlock Tier	Byproducts
Biomass Burner	20 MW	Biomass, Solid Biofuel, Liquid Biofuel, Packaged Liquid Biofuel	15/min (biomass)	Tier 0	None
Coal Power Plant	75 MW	Coal, Compacted Coal	15/min (coal)	Tier 3	None
Fuel-Powered Generator	150 MW	Fuel, Liquid Biofuel, Turbofuel	12/min (fuel)	Tier 5	None
Geothermal Generator	150-400 MW (varies)	Free (geyser)	N/A	MAM (Caterium)	None
Nuclear Power Plant	2,500 MW	Uranium Fuel Rod	0.2/min	Tier 8	Uranium Waste
Plutonium Fuel Burner	2,500 MW	Plutonium Fuel Rod	0.1/min	Tier 8	Plutonium Waste

Power Grid Design Principles

- 1. Always overbuild capacity:** Production scaling consumes more power than expected. Build 50% more capacity than current draw.
- 2. Use separate grids for critical systems:** Keep miner/boiler power separate from main factory to prevent cascade failures.

3. **Clock generators to match fuel supply:** Use power switches and the power graph to prevent fuel shortages from overconsumption.
4. **Biomass is temporary:** Rush to Coal Power (Tier 3) as quickly as possible. Manual biomass feeding does not scale.
5. **Geothermal is free but limited:** 16 geysers exist on the map. Total output varies from 2,400 to 6,400 MW depending on geyser strength.

Fuel Comparison by Energy Density

Table 22: Fuel Energy Values

Fuel	MJ per Unit	Source	Efficiency Note
Biomass	180 MJ	Leaves, wood, mycelia	Requires constant manual gathering early
Solid Biofuel	450 MJ	Constructor (biomass)	First automation-capable fuel
Coal	270 MJ	Coal nodes	First infinite scalable power
Compacted Coal	630 MJ	Assembler (coal + sulfur)	2.3x energy density vs raw coal
Fuel	750 MJ	Refinery (oil)	First liquid fuel, pipeline fed
Liquid Biofuel	750 MJ	Refinery (solid biofuel)	Oil-independent liquid fuel
Turbofuel	2,000 MJ	Refinery (fuel + coal + sulfur)	2.7x energy density vs fuel
Petroleum Coke	170 MJ	Refinery byproduct	Use for early fuel if oil ready
Uranium Fuel Rod	750,000 MJ	Manufacturer	2,500 MW for 5 minutes
Plutonium Fuel Rod	1,500,000 MJ	Manufacturer	2,500 MW for 10 minutes
Ficsonium Fuel Rod	~6,000,000 MJ	Manufacturer	Endgame power

Turbofuel Power Plant Design

Turbofuel is the most efficient pre-nuclear fuel. A typical Turbofuel power plant:

- Inputs: Crude Oil (for Fuel), Coal, Sulfur (for Compacted Coal), Water
- Recipe chain: Crude Oil > Fuel > Turbofuel (via Fuel + Compacted Coal blend)
- Packaged Turbofuel can also be produced for transport
- A single oil node (Normal) can support 8-12 Fuel Generators (1,200-1,800 MW)
- Adding Turbo blend increases this to 20+ generators (3,000+ MW)

11. Nuclear Power Chain

Nuclear power is the endgame energy solution, providing massive output with dangerous byproducts that must be managed.

Uranium Nuclear Cycle

Table 23: Uranium Processing Steps

Step	Input	Output	Building
1. Mine Uranium	Uranium node	Uranium Ore	Miner
2. Sulphuric Acid	Sulfur + Water	Sulphuric Acid	Refinery
3. Encased Uranium Cell	Uranium + Concrete + Sulphuric Acid	Encased Uranium Cell	Blender
4. EM Control Rod	AI Limiter + Stator + Electromagnetic Control	Electromagnetic Control Rod	Assembler
5. Uranium Fuel Rod	50 Encased Cells + 20 Steel Beams + 192 EM Rods	2 Uranium Fuel Rods	Manufacturer
6. Nuclear Power	Uranium Fuel Rod	2,500 MW + Uranium Waste	Nuclear Power Plant

Nuclear Waste Management

Uranium Waste is radioactive and cannot be destroyed by normal means. Three strategies exist:

Table 24: Waste Handling Strategies

Method	Description	Pros	Cons
Storage	Store in Industrial Storage Containers	Simple, no processing needed	Containers accumulate forever
Plutonium Recycling	Convert to Plutonium Fuel Rods	Rods have a longer burn time, reduced waste	Complex multi-step process
AWESOME Sink	Sink Plutonium Waste for coupons	Points! Coupons!	Only Plutonium Waste can be sunk
Ficsonium (Tier 9)	Convert waste to Ficsonium	Ultimate waste solution	Very late game

Radiation Warning: Uranium ore, nuclear fuel rods, and waste emit radiation that damages the Pioneer. Hazmat Suit (Tier 7) provides radiation protection. Keep processing lines away from main base areas. Underground storage helps contain radiation spread.

Plutonium Processing (Tier 8)

Table 25: Plutonium Processing Chain

Step	Input	Output	Building
Non-fissile Uranium	Uranium Waste + Silica + Nitrogen Gas + Water	Non-fissile Uranium + Water	Blender
Plutonium Pellet	Non-fissile Uranium + Aluminum Casing	Plutonium Pellet	Particle Accelerator
Encased Plutonium Cell	Plutonium Pellet + Concrete	Encased Plutonium Cell	Assembler
Plutonium Fuel Rod	Encased Plutonium + EM Control Rod + Steel Beam	Plutonium Fuel Rod	Manufacturer
Plutonium Power	Plutonium Fuel Rod	2,500 MW + Plutonium Waste	Nuclear Power Plant

Part VI: World and Exploration

12. Map and Biomes

Satisfactory's world is approximately 30 km² of hand-crafted terrain divided into distinct biomes. Each biome has unique aesthetics, resource distributions, creature spawns, and traversal challenges. The world map can be accessed with the M key and reveals itself through exploration.

Complete Biome Guide

Table 26: All Biomes in Satisfactory

Biome	Terrain	Resources	Creatures	Difficulty
Grassy Fields	Gentle hills, scattered trees	Iron, Copper, Limestone	Passive hogs, small spitters	Easy
Rocky Desert	Sandstone, cliffs, open spaces	Iron, Copper, Coal, Limestone	Desert hogs, alpha hogs	Easy-Medium
Northern Forest	Dense trees, rolling hills	Iron, Copper, Caterium, Oil	Spitters, flying crabs	Medium
Dune Desert	Massive sand dunes, open	Coal, Iron, Caterium, Quartz	Alpha hogs, stingers	Medium
Red Bamboo Fields	Red grass, bamboo-like trees	Coal, Quartz, Sulfur, Oil	Spitters, gas clouds	Medium
Red Jungle	Dense red vegetation, cliffs	Bauxite, Coal, Nitrogen Gas	Spitters, stingers, flying	Hard
Swamp	Dark, watery, thick vegetation	Uranium, Coal, Sulfur	Stingers, elite stingers	Very Hard
Abyssal Cliffs	Steep dropoffs, coastal	Limited resources	Flying crabs	Hard (fall risk)
Western Coast	Beaches, gentle shores	Limited, Oil offshore	Few hostiles	Easy-Medium
Eastern Dunes	Sandy, scattered ruins	Coal, Iron	Alpha hogs	Medium
Titan Forest	Massive ancient trees	Quartz, Caterium	Stingers, spitters	Hard

Lava Lakes	Volcanic, lava flows	Coal, Sulfur	Fire-based hostiles	Very Hard
Spider Coast	Rocky coastline	Oil, Coal	Flying crabs, spitters	Medium

Points of Interest

Table 27: Map Landmarks

Location	Description	Significance
The Crater	Massive central crater	Early exploration target, good views
Falls	Large waterfall system	Scenic, hydro potential (aesthetic)
Gold Coast	Western beach peninsula	Flat building area, oil access
The Arches	Natural stone arches	Scenic, traversal challenge
Mountaintop Ruins	Mysterious alien structures	Lore, hard drive locations
Caves	Underground tunnel networks	Shortcuts, rare resources, stingers
Crash Sites	Scattered crashed pods	Hard Drives (alternate recipes)

13. Starting Areas

At game start, the Pioneer chooses one of four starting zones. Each has distinct advantages and challenges that shape the early game experience.

Table 28: Starting Area Comparison

Area	Advantages	Challenges	Best For
Grassy Fields (North)	Flat terrain, abundant iron/copper, coal nearby	Limited late-game resources, spread out	Beginners, flat builders
Rocky Desert (East)	Coal very close, open space, iron/copper abundant	Less water, more hostile creatures	Quick coal power, experienced players
Northern Forest (West)	Caterium nearby, quartz accessible, oil not far	Vertical terrain, dense trees to clear	MAM rush, exploration-focused
Dune Desert (South)	Vast flat areas, Caterium, Quartz nearby	Hostile creatures, limited water, far from coal	Experienced, megabase builders

Starting Area Recommendation: New players should choose the Grassy Fields (Northern start). The flat terrain makes learning building mechanics easier, iron and copper nodes are

plentiful, and coal is accessible for early power transition. The Rocky Desert is optimal for experienced players who want to reach Coal Power fastest.

Part VII: Creatures and Combat

14. Hostile Fauna

The planet MESSAGE-2(A-B)b is home to diverse alien lifeforms, many of which are hostile to FICSIT employees. Understanding creature behavior, attack patterns, and loot drops is essential for safe exploration and factory defense.

Complete Creature Bestiary

Table 29: All Hostile Creatures

Creature	HP	Damage	Attack Type	Location	Drops
Small Hog (Hoglet)	20	5	Charge	Grassy Fields	1-2 Hog Remains
Hog (Adult)	60	15	Charge	All biomes	2-3 Hog Remains
Alpha Hog	250	30	Heavy charge	Rocky Desert, Dune Desert	5-8 Hog Remains
Spitter (Small)	30	10	Acid spit (ranged)	Northern Forest, Red Bamboo	1 Spitter Remains
Spitter (Large)	80	25	Acid spit (ranged)	All biomes	2-3 Spitter Remains
Alpha Spitter	200	40	Fire spit (ranged)	Red Jungle, Swamp	4-6 Spitter Remains
Stinger (Small)	15	8	Melee bite	Caves, Swamp	1 Stinger Remains
Stinger (Large)	80	25	Melee bite + web	Swamp, Caves	2-3 Stinger Remains
Elite Stinger	250	45	Poison bite + web	Swamp, Deep Caves	5-8 Stinger Remains
Flying Crab (Small)	20	5	Dive attack	Abyssal Cliffs, Coast	1 Crab Remains
Flying Crab (Large)	80	20	Dive attack	Titan Forest, Cliffs	2-3 Crab Remains
Gas Crab	150	30	Gas cloud + dive	Red Bamboo Fields	3-5 Crab Remains

Nutritional Slug Invincible 0 Flees Hidden locations Green Power Slug (rare)

Combat Tactics by Creature

Hogs: All variants telegraph charges with a brief wind-up. Sidestep to dodge, then counter-attack. The Xeno-Basher stunlock hogs effectively. Alpha Hogs require kiting or explosives.

Spitters: Keep moving to avoid acid projectiles. Close distance quickly as they have no melee attack. Alpha Spitters leave fire pools on impact -- avoid standing in them.

Stingers: The most dangerous cave dwellers. Large and Elite variants can web the player, slowing movement. Bring plenty of ammo and healing. Check ceilings before entering caves.

Flying Crabs: Attack in groups. Shoot them mid-dive or dodge and strike on landing. Gas Crabs leave toxic clouds -- equip Gas Mask or wait for dissipation.

Equipment and Weapons

Table 30: All Combat Equipment

Item	Damage	Tier	Notes
Xeno-Zapper	10	Tier 0 (starter)	Basic melee, fast attack speed
Xeno-Basher	25	Tier 0 (HUB 2)	Stunlocks most creatures
Chainsaw	Instant kill (small)	Tier 2	Kills hogs/spitters instantly, requires fuel
Rebar Gun	30	Tier 2	First ranged weapon, slow fire rate
Nobelisk Detonator	150 (explosion)	Tier 2	Remote explosives, destructible terrain
Rifle (Mk.1)	25/shot	Tier 5	Semi-auto, uses Rifle Ammo
Rifle (Mk.2)	35/shot	Tier 6	Full-auto, uses Rifle Ammo
Shatter Rebar	50	Tier 5 (MAM)	Upgraded Rebar, piercing
Explosive Rebar	100 (AoE)	Tier 6 (MAM)	Explosive tipped rebar
Gas Mask	--	Tier 5	Protects from poison gas clouds
Hazmat Suit	--	Tier 7	Protects from radiation and gas

15. Passive Fauna and Flora

Beyond combat, the planet offers resources in the form of passive creatures and harvestable plant life.

Passive Creatures

Table 31: Passive Fauna

Creature	Location	Resource	Use
Space Giraffe (Tall Bird)	Grassy Fields	None	Decorative, emits gentle sounds
Space Bunny	Forest areas	None	Decorative
Lizard Doggo	Various	Random items (tamed)	Can be tamed with Paleberries

Taming Lizard Doggos

Lizard Doggos are the only tamable creatures in Satisfactory. When fed a Paleberry (found on bushes in forest biomes), they become friendly and periodically bring you random items ranging from common ores to rare Hard Drives. They can die to hostile creatures or factory hazards, so keep them in a safe, enclosed area.

Gatherable Flora

Table 32: Harvestable Plants

Plant	Biome	Yield	Use
Leaves	Everywhere	1 Biomass	Early power fuel
Wood	Forests	5 Biomass	Biomass, Solid Biofuel
Mycelia	Caves	1 Biomass	Biomass, Medicinal Inhaler
Paleberry	Forests	1 Paleberry	Healing, taming Lizard Doggos
Bacon Agaric	Forests	1 Bacon Agaric	Medicinal Inhaler ingredient
Nuts	Forests	1 Nut	Healing item
Coffee Beans	Dune Desert	1 Coffee	Speed boost consumable

Power Slugs

Table 33: Power Slug Types

Type	Rarity	Use	Spawn Locations
Green Power Slug	Common	Craft 1 Power Shard	Early biomes, caves, trees
Yellow Power Slug	Uncommon	Craft 2 Power Shards	Mid-tier biomes, hidden spots

Purple Power Slug

Rare

Craft 5 Power Shards

Dangerous biomes, well hidden

Power Shard Strategy: Power Shards are the most valuable early-game collectible. Each shard can overclock a building to 250% speed or increase a Miner's extraction rate. Collect every slug you find. There are approximately 800+ slugs scattered across the map, providing thousands of potential power shards.

Part VIII: Logistics

16. Belts, Pipes, and Pumps

Transportation infrastructure is the circulatory system of every factory. Satisfactory offers three transport layers: belts for solids, pipes for fluids, and hypertubes for pioneers.

Conveyor Belt Specifications

Table 34: All Conveyor Belt Tiers

Belt	Speed (items/min)	Tier Unlock	Cost (per unit)
Conveyor Belt Mk.1	60	Tier 0	1 Iron Plate
Conveyor Belt Mk.2	120	Tier 3	1 Reinforced Iron Plate
Conveyor Belt Mk.3	270	Tier 4	1 Steel Beam
Conveyor Belt Mk.4	480	Tier 5	1 Steel Beam + 1 Encased Industrial Beam
Conveyor Belt Mk.5	780	Tier 7	1 Alclad Aluminum Sheet

Belt Design Rules: Belts cannot intersect without a splitter or merger. They have a maximum vertical incline of 2 meters (or use Conveyor Lifts). Belt speed is constant -- items do not bunch or separate. When merging onto a full belt, the incoming belt will back up. Always ensure downstream consumption matches or exceeds upstream production.

Splitters and Mergers

Table 35: Splitter and Merger Types

Building	Inputs	Outputs	Function
Splitter	1	3	Divides input equally across 3 outputs
Merger	3	1	Combines 3 inputs into 1 output
Programmable Splitter	1	3	Filters by item type per output (Tier 5)
Smart Splitter	1	3	Basic filter: any, overflow, specific item (Tier 5)
Conveyor Lift	1	1	Vertical belt transport, matches belt tier

Balancer Guide: Manifold (cascade) designs are simpler and usually sufficient. Load balancers (using splitters in specific ratios) ensure even distribution but consume more space. For most factories, manifolds with sufficient buffer are the optimal design pattern.

Pipeline System

Table 36: Pipeline Specifications

Pipe	Flow Rate (m3/min)	Tier Unlock	Cost (per unit)
Pipeline Mk.1	300	Tier 3	1 Copper Sheet
Pipeline Mk.2	600	Tier 5	1 Plastic

Pumps and Head Lift

Unlike belts, fluids require active pumping to overcome gravity. Key concepts:

- **Head Lift:** Every fluid has a natural "head lift" -- how high it can rise before needing a pump. Water Extractors provide 10m of head lift. Pumps add 20m of head lift each.
- **Pipeline Pump:** Unlocked at Tier 3. Adds +20m head lift. Requires power. Place inline on pipelines.
- **Valve:** Restricts flow to a specific rate (m3/min). Useful for precisely splitting fluid outputs.
- **Fluid Buffer:** Stores up to 400 m3 of fluid. Acts as a capacitor in your fluid network.
- **Industrial Fluid Buffer:** Stores up to 2,400 m3. Massive buffer for nuclear cooling or oil reserves.

Hypertubes

Hypertubes unlock at Tier 4 and transport pioneers at high speeds. A HyperTube Entrance accelerates the player into the tube, and the player exits at the other end or at an intermediate support. Build a network of hypertubes for fast travel across your factory. Power requirements are minimal (the Entrance draws 10 MW while active).

17. Vehicle Guide

Ground vehicles provide mobile cargo transport and personal transportation across the expansive map.

Table 37: Vehicle Comparison

Vehicle	Fuel	Cargo Slots	Speed	Unlock Tier	Best Use
Tractor	Biofuel, Coal, Fuel	25	Slow	Tier 3	Early automated transport
Truck	Biofuel, Coal, Fuel	48	Medium	Tier 3	Long-distance solid transport
Explorer	Fuel	24	Very Fast	Tier 3	Personal exploration
Factory Cart	None (manual push)	1 (pioneer)	Player speed	Easter Egg	Meme transportation

Vehicle Automation

Vehicles can be programmed with automated routes using Vehicle Stations. Set up a loop by driving the route once and recording it. Vehicles will then automatically travel between stations, loading and unloading cargo. Vehicle AI is imperfect -- they may get stuck on terrain or buildings. Build dedicated roads with foundations for reliable operation.

Vehicle Pathing: Vehicle AI cannot handle sharp turns, steep ramps, or narrow passages well. Build wide, gradual roads with plenty of clearance. Avoid crossing vehicle paths with factory belts or pipes. When vehicles get stuck, they must be manually reset.

Part IX: Trains and Drones

18. Train Systems

Trains are the backbone of mid-to-late game logistics. They excel at moving massive quantities of resources across long distances with minimal infrastructure overhead.

Train Components

Table 38: Train System Buildings

Building	Function	Power	Notes
Electric Locomotive	Pulls freight cars	Draws from rails (25 MW)	Can reverse, max 4 per train
Freight Car	32-slot inventory	None	Or 1,600 m3 fluid tank variant
Freight Platform	Loads/unloads freight cars	50 MW	8-second load/unload cycle
Fluid Freight Platform	Loads/unloads fluids	50 MW	1,600 m3 buffer, connects to pipes
Empty Platform	Decorative/pass-through	None	No loading function
Railway	Track segment	None	Can be placed on foundations
Train Station	Central hub building	50 MW	Required at each stop

Train Signaling

Trains use a block signaling system. The railway is divided into "blocks" by signals, and only one train may occupy a block at a time. Two signal types exist:

- **Block Signal:** Defines the start of a new block. Place at entrances to sections.
- **Path Signal:** Allows multiple trains to occupy the same block if their paths don't cross. Used at intersections and junctions.

Proper signaling prevents deadlocks and collisions. Always place a Block Signal before and after every station and at both sides of intersections.

Train Design Tips

1. **Double-track mainlines:** Build parallel tracks for each direction to avoid bottlenecks.
2. **Platform length:** Match platform length to train length (1 platform per freight car + locomotive).
3. **Dedicated lines:** Single-resource trains are simpler to manage than mixed cargo.
4. **Bridge over/under:** When crossing factory areas, elevate trains on foundations to avoid interference.
5. **Schedule naming:** Name stations and timetables clearly. "Iron Ore Pickup" is better than "Station 3."

Train vs. Belt: Trains become more efficient than belts at distances greater than 500 meters. A single freight car (32 slots) carries the equivalent of 32 conveyor belt segments. For cross-map transport, trains are always the correct choice.

19. Drone Networks

Drones unlock at Tier 7 and provide airborne point-to-point logistics. They require a Drone Port at both origin and destination.

Table 39: Drone Specifications

Attribute	Value
Cargo Capacity	9 slots (solids or fluids)
Speed	~370 km/h (very fast)
Battery Consumption	4 Batteries per round trip
Power Draw (Port)	100 MW while charging/docking
Range	Unlimited (no distance penalty)
Flight Path	Direct line, ignores terrain

Drone vs. Train Comparison

Table 40: When to Use Drones vs. Trains

Factor	Drones	Trains
--------	--------	--------

Setup Complexity	Simple (2 ports)	Complex (tracks, signals, stations)
Throughput	Low (9 slots/trip)	Very High (128+ slots/trip)
Distance Efficiency	Same at all distances	Better at short distances
Power Cost	High (batteries + charging)	Low per item
Terrain Handling	Flies over everything	Requires clear path
Best Application	Low-volume, long-distance, difficult terrain	High-volume bulk transport

Drone Optimal Use: Drones excel at moving high-value, low-volume parts (Supercomputers, Radio Control Units, Nuclear Fuel Rods) across difficult terrain. They are NOT efficient for bulk ore transport. Build battery factories near drone ports to ensure steady supply.

Part X: Advanced Systems

20. MAM and Hard Drives

The **MAM (Multi-Analyser Machine)** unlocks at Tier 1 (Field Research) and serves as your research station. It processes Hard Drives found at Crash Sites to unlock alternate recipes, and researches biological and geological samples to unlock additional technologies.

MAM Research Categories

Table 41: MAM Research Branches

Category	Sample Required	Key Unlocks
Hard Drive	SAM Hard Drive (from Crash Sites)	Alternate Recipes (randomized per save)
Caterium	Caterium Ore	Quickwire, Circuit Boards, Zip Lines
Quartz	Raw Quartz	Quartz Crystal, Silica, Crystal Oscillator
Sulfur	Sulfur	Black Powder, Nobelisk, Cluster Nobelisk
Mycelia	Mycelia	Fabric, Gas Mask, Medicinal Inhaler
Flowers	Paleberry / Bacon Agaric	Medicinal Inhaler recipes
Nut	Beryl Nut	Nutritional Inhaler
Power Slugs	Power Slug	Power Shards, overclocking
Stinger	Stinger Remains	Inhaler alternate recipes
Hog	Hog Remains	Protein-based recipes
Alien Carapace	Carapace (from spitters/crabs)	Biomass alternate recipes
Wood	Wood	Solid Biofuel, Coal substitution

Crash Sites and Hard Drives

Crash Sites are scattered across the map (approximately 120+ locations). Each contains a Hard Drive that can be analyzed in the MAM. Hard Drive analysis presents a choice of three alternate recipes -- you pick one. The other two are discarded. Each Hard Drive can only be analyzed once.

Notable Alternate Recipes

Table 42: Best Alternate Recipes to Prioritize

Recipe Name	Building	Advantage	Tier
Iron Wire	Constructor	Makes wire from iron instead of copper	Tier 1-2
Cast Screw	Constructor	Screws directly from iron ingots, no rods	Tier 1-2
Solid Steel Ingot	Foundry	Steel from coal + iron (no ore)	Tier 3-4
Steamed Copper Sheet	Refinery	Copper sheets from copper + water	Tier 3-4
Compacted Coal	Assembler	2.3x energy density fuel	Tier 3-4
Heavy Oil Residue	Refinery	More efficient oil processing	Tier 5
Diluted Packaged Fuel	Refinery	2x fuel from heavy oil	Tier 5
Turbo Blend Fuel	Blender	Turbofuel without compacted coal	Tier 7
Instant Scrap	Refinery	Aluminum without silica	Tier 7
Plutonium Fuel Unit	Manufacturer	More efficient plutonium	Tier 8

Hard Drive Hunt Priority: The most game-changing alternates are Cast Screw (eliminates rod bottleneck), Solid Steel Ingot (saves iron ore), and Diluted Packaged Fuel (doubles power output). Prioritize Crash Sites in safe biomes before venturing into dangerous territory.

21. Space Elevator

The Space Elevator is the narrative and progression centerpiece of Satisfactory. Building it unlocks higher Tiers, and feeding it Project Assembly parts completes the game.

Space Elevator Phases

Table 43: All Space Elevator Deliveries

Phase	Required Part	Quantity	Unlocks
Phase 1	Smart Plating	50	Tiers 3-4
Phase 2	Versatile Framework	500	Tiers 5-6
Phase 3	Automated Wiring	100,000	Tiers 7-8

Phase 4	Modular Engine	5,000	Tiers 9+
Phase 5	Adaptive Control Unit	5,000	Continue progression
Phase 6	Magnetic Field Generator	5,000	Continue progression
Phase 7	Assembly Director System	10,000	Final delivery

Project Assembly Parts Breakdown

Table 44: Project Part Recipes

Part	Recipe	Building	Complexity
Smart Plating	1 RIP + 1 Rotor	Assembler	Low
Versatile Framework	1 Modular Frame + 12 Steel Beams	Assembler	Medium
Automated Wiring	1 Stator + 20 Cable	Assembler	Medium (volume)
Modular Engine	2 Motor + 15 Plastic + 2 Rubber	Manufacturer	High
Adaptive Control Unit	5 Auto Wiring + 2 Circuit Board + 10 Heavy Frame + 2 Computer	Manufacturer	Very High
Magnetic Field Generator	5 Versatile Framework + 2 Superposition Oscillator + 10 Battery	Manufacturer	Very High
Assembly Director System	50 Radio Control Unit + 25 Supercomputer + 10 Cooling System + 5 Ficsonium Rod	Manufacturer	Extreme

Space Elevator Tip: You do NOT need to feed the Space Elevator continuously. Each Phase only needs to be completed once. Build a dedicated production line for each Project Part, deliver it, then repurpose the factory. Phase 3 requires 100,000 Automated Wiring -- this is a massive quantity that will require a dedicated, high-volume production line.

22. AWESOME Sink and Shop

The AWESOME Sink and Shop system provides a use for excess production and rewards you with cosmetics and useful items.

Table 45: AWESOME Sink Mechanics

Attribute	Details
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Sink Points	Every item has a point value based on complexity
Coupons	Earned at point thresholds (increasingly expensive)
First Coupon	1,000 points
Coupon Scaling	Each subsequent coupon costs more (roughly +1,000 per tier)
Maximum Coupons	No hard cap, but costs scale to millions

Best Items to Sink (Points per Minute)

Table 46: Efficient Sink Feedstock

Item	Points Each	Production Rate	Points/Min (approx)
Copper Sheet	12	Very High	Excellent early sink
Steel Beam	24	High	Good mid-game sink
Concrete	8	Extreme	Best spam sink (limestone surplus)
Circuit Board	696	Medium	Good mid-tier sink
Computer	10,124	Medium	Excellent late-game sink
Supercomputer	49,604	Low	Premium sink item
Plutonium Waste	Very High	Low	Sinks nuclear waste safely

Notable AWESOME Shop Purchases

Table 47: Shop Purchase Highlights

Item	Cost	Category	Value
Color Cartridges (all)	1-3 coupons each	Cosmetic	Customize factory colors
Wall Attachments	2-5 coupons	Building	Conveyor wall holes, attachments
Pillar and Beam Set	3-5 coupons	Building	Aesthetic structural elements
FICSIT Cup	10 coupons	Emote	Celebratory beverage
Golden Factory Cart	50 coupons	Vehicle	Prestige transportation
ADA Voice Pack	20 coupons	Cosmetic	Alternate ADA voice lines

Part XI: Complete Reference

23. Complete Building Catalog

Every production building in Satisfactory, organized by unlock tier and function.

Table 48: Production Buildings

Building	Tier	Power (MW)	Function	Input/Output
Smelter	Tier 0	4	Refines ore into ingots	1 in, 1 out
Foundry	Tier 3	16	Combines two ores/alloys	2 in, 1 out
Constructor	Tier 0	4	Crafts basic components	1 in, 1 out
Assembler	Tier 2	15	Combines two components	2 in, 1 out
Manufacturer	Tier 6	55	Complex 4-input crafting	4 in, 1 out
Refinery	Tier 5	30	Oil/fluid processing	1-2 in, 1-2 out
Blender	Tier 7	75	Complex fluid+solid recipes	2-4 in, 1-2 out
Particle Accelerator	Tier 8	500-1,500	Endgame crafting	Variable
Packager	Tier 5	10	Package/unpackage fluids	2 in, 2 out
Converter	Tier 8	100	Specialized conversion	Variable

Power Buildings

Table 49: Power Infrastructure

Building	Tier	Output/Function	Notes
Biomass Burner	Tier 0	20 MW	Manual fuel, no grid connection needed
Coal Power Plant	Tier 3	75 MW	Requires water + coal input
Fuel-Powered Generator	Tier 5	150 MW	Pipeline-fed liquid fuel
Nuclear Power Plant	Tier 8	2,500 MW	Requires fuel rods, produces waste
Geothermal Generator	MAM	150-400 MW	Free power, limited locations
Power Pole	Tier 0	4 connections	Basic power distribution

Power Pole Mk.2	Tier 4	7 connections	Upgraded distribution
Power Pole Mk.3	Tier 6	10 connections	Maximum connections
Power Storage	Tier 6	100 MWh capacity	Buffer for demand spikes
Power Switch	Tier 6	Circuit control	Toggle power to sub-grids

Miner Buildings

Table 50: Extraction Buildings

Building	Tier	Power	Overclockable	Note
Portable Miner	Tier 0	None	No	Temporary, deposits on ground
Miner Mk.1	Tier 0	5 MW	Yes	Base extraction rate
Miner Mk.2	Tier 4	12 MW	Yes	2x Mk.1 speed
Miner Mk.3	Tier 8	30 MW	Yes	4x Mk.1 speed
Oil Extractor	Tier 5	40 MW	Yes	Extracts crude oil (120-480 m3/min)
Water Extractor	Tier 3	20 MW	Yes	Extracts water (120 m3/min base)
Resource Well Pressurizer	Tier 8	150 MW	No	Extracts pressurized nitrogen
Resource Well Extractor	Tier 8	0 MW	No	Links to Pressurizer, extracts gas

24. Overclocking and Power Shards

Overclocking allows buildings to run faster than 100% speed. Every building (except some special cases) supports overclocking from 1% to 250%.

Table 51: Overclocking Formula

Clock Speed	Production Multiplier	Power Multiplier	Efficiency
50%	0.5x	0.23x	217% efficient
100%	1.0x	1.0x	Baseline
150%	1.5x	2.2x	68% efficient
200%	2.0x	5.7x	35% efficient
250%	2.5x	12.1x	21% efficient

Overclocking Penalty: Power consumption scales with the 1.32109 exponent of clock speed. A 250% overclocked building uses 12.1x the power, not 2.5x. Overclocking miners and underclocking production buildings is the optimal strategy. Never overclock power generators -- it provides no benefit.

Power Shard Sources

- **Green Slugs:** 1 shard each (most common)
- **Yellow Slugs:** 2 shards each
- **Purple Slugs:** 5 shards each (rarest)
- **Total Map:** ~800+ slugs = ~2,000+ potential shards

25. Complete Recipe Reference

A consolidated reference of every major recipe category in Satisfactory.

Smelting Recipes

Table 52: Smelter and Foundry Recipes

Output	Input	Time (s)	Building
Iron Ingot	1 Iron Ore	2	Smelter
Copper Ingot	1 Copper Ore	2	Smelter
Caterium Ingot	3 Caterium Ore	4	Smelter
Steel Ingot	3 Iron Ore + 3 Coal	4	Foundry
Aluminum Ingot	6 Bauxite + 5 Water	4	Refinery
Quartz Crystal	5 Raw Quartz	8	Constructor
Silica	3 Raw Quartz	8	Constructor

Component Recipes (Constructor)

Table 53: Constructor Recipe Quick Reference

Output	Input	Time (s)	Per Minute
Iron Plate	3 Iron Ingots	6	10/min

Iron Rod	1 Iron Ingot	4	15/min
Screw	1 Iron Rod	6	40/min
Concrete	3 Limestone	4	15/min
Copper Wire	1 Copper Ingot	4	30/min
Cable	2 Copper Wire	4	30/min
Steel Beam	4 Steel Ingots	6	10/min
Steel Pipe	3 Steel Ingots	6	20/min
Copper Sheet	2 Copper Ingots	6	10/min
Quartz Crystal	5 Raw Quartz	8	22.5/min
Silica	3 Raw Quartz	8	37.5/min
Quickwire	1 Catterium Ingot	5	12/min
Plastic	3 Crude Oil	6	20/min (byproduct HOR)
Rubber	3 Crude Oil	6	20/min (byproduct HOR)
Fuel	6 Crude Oil	6	40/min (byproduct Polymer Resin)

Complex Recipes

Table 54: Assembler and Manufacturer Recipes

Output	Building	Primary Inputs	Time (s)
Reinforced Iron Plate	Assembler	6 Iron Plate + 12 Screw	12
Rotor	Assembler	5 Iron Rod + 25 Screw	15
Modular Frame	Assembler	3 RIP + 12 Iron Rod	60
Smart Plating	Assembler	1 RIP + 1 Rotor	30
Versatile Framework	Assembler	1 Modular Frame + 12 Steel Beam	24
Circuit Board	Assembler	2 Copper Sheet + 4 Plastic	8
Stator	Assembler	3 Steel Pipe + 8 Wire	12
Motor	Assembler	2 Rotor + 2 Stator	12

Heavy Modular Frame	Manufacturer	5 Modular Frame + 15 Steel Pipe + 5 Encased + 100 Screw	30
Computer	Manufacturer	10 Circuit Board + 8 Plastic + 20 Screw	24
Supercomputer	Manufacturer	2 Computer + 2 AI Limiter + 3 Plastic + 28 Wire	32
Radio Control Unit	Manufacturer	1 Alclad Sheet + 1 Crystal Oscillator + 1 Supercomputer	48
Electromagnetic Control Rod	Assembler	8 AI Limiter + 4 Stator	30
Encased Uranium Cell	Blender	10 Uranium + 3 Concrete + 8 Sulphuric Acid	12
Uranium Fuel Rod	Manufacturer	50 Encased Cell + 20 Steel Beam + 192 EM Rod + 10 Control Rod	150
Cooling System	Manufacturer	4 Heat Sink + 2 Motor + 8 Rubber + 20 Water	20
Fused Modular Frame	Blender	1 Heavy Frame + 50 Aluminum Casing + 18 Nitrogen Gas + 8 Aluminum Ingot	40

Part XII: Optimization and Design Patterns

26. Factory Design Patterns

Experienced pioneers use proven design patterns to create clean, expandable, and efficient factories. This section catalogs the most important architectural patterns.

The Main Bus

A central trunk of parallel belts carrying all major resources. Production lines branch off perpendicularly, taking only what they need. The bus runs the length of the factory, organized by resource tier.

- **Pros:** Easy to expand, organized, simple to debug
- **Cons:** Belt spaghetti at large scale, limited throughput per lane
- **Best for:** Early-to-mid game, organized players

The Mall (Shopping Mall)

A dedicated factory section that produces a small quantity of every building component and stores them in containers. When you need to build, you grab from the mall rather than hand-crafting.

- **Essential outputs:** Iron Plates, Rods, Screws, RIP, Rotors, Concrete, Wire, Cable, Steel Beams, Pipes, Modular Frames
- **Later additions:** Heavy Frames, Computers, Circuit Boards, Motors, Stators
- **Tip:** Use a single Mk.1 belt feeding each constructor -- you don't need massive throughput for buildings

Direct Insertion (Miner-to-Production)

Place production buildings directly adjacent to miners, eliminating belts entirely for the first processing step. Smelters placed on ore nodes feed constructors, which feed assemblers, creating a vertical stack.

- **Pros:** Zero belt cost for first stage, compact, scalable
- **Cons:** Hard to balance, visually dense
- **Best for:** Early smelting arrays, pure node exploitation

The Tower (Vertical Factory)

Instead of sprawling horizontally, build upward. Each floor handles one production stage, with lifts moving materials between levels.

- **Pros:** Minimal land use, organized by stage, expandable upward
- **Cons:** Complex logistics, annoying to traverse without jetpack
- **Best for:** Late game, limited building areas, aesthetic factories

Outpost Model

Build small, self-contained factories at resource nodes that produce finished goods. Transport only the final product to a central storage/elevator hub.

- **Pros:** Minimal belt spaghetti, uses local resources efficiently, modular expansion
- **Cons:** Requires long-distance logistics (trains/drones), harder to monitor
- **Best for:** Late game, megabases, multiplayer

Manifold vs. Balancer

Table 55: Manifold vs. Balanced Splitter Comparison

Attribute	Manifold	Balancer
Design Complexity	Simple (single belt, splitters in sequence)	Complex (specific splitter ratios)
Space Required	Minimal	Large
Startup Time	Slow (fills near buildings first)	Instant (even distribution)
Throughput Efficiency	~95% at steady state	100%
Expansion Ease	Easy (just extend)	Hard (must redesign ratios)
Recommended For	Most factory designs	Precision chemical/nuclear

Manifold is Almost Always Better: For 95% of factory designs, manifolds are the correct choice. The slight startup delay is irrelevant in a game that spans dozens of hours. The simplicity and expandability far outweigh the marginal throughput loss. Only use balancers for nuclear fuel rod production and other precision processes.

27. Ratio Cheat Sheet

Common production ratios for perfectly balanced factory lines.

Table 56: Common Production Ratios

Product	Input Buildings	Building	Output/min
Reinforced Iron Plate	3 Constructor (Plates) + 3 Constructor (Screws)	2 Assembler	5/min
Rotor	1 Constructor (Rods) + 2.5 Constructor (Screws)	2 Assembler	4/min
Modular Frame	2 Assembler (RIP) + 2 Constructor (Rods)	2 Assembler	2/min
Steel Ingot	3 Smelter (Iron) + 2 Miner (Coal, Pure)	3 Foundry	45/min
Motor	2 Assembler (Rotor) + 2 Assembler (Stator)	2 Assembler	5/min
Circuit Board	1 Constructor (Copper Sheets) + 1 Constructor (Plastic)	1 Assembler	7.5/min
Computer	2 Assembler (Circuit Boards) + 1 Refinery (Plastic)	1 Manufacturer	2.5/min

28. Performance Optimization

Large factories can cause significant FPS drops and simulation lag. Here are proven techniques to maintain performance.

Table 57: Performance Optimization Tips

Technique	Impact	Effort
Use Mk.5 belts instead of multiple Mk.1-2 belts	High	Low
Consolidate production into fewer, overclocked buildings	Medium	Low
Build factory floors on foundations (reduces terrain rendering)	High	Medium
Remove unnecessary belts and buildings	Medium	High
Use the fog setting to hide distant factory elements	Medium	Low
Split factory across multiple distant locations	High	High
Limit use of decorative lights and signs	Low	Low

Update GPU drivers and use DX12

Medium

Low

Simulation Tiers: Satisfactory runs factory simulation at different update rates depending on distance from the player. Buildings more than 2km away update less frequently. Spread your factory across the map -- distant outposts barely impact performance.

Part XIII: Tips, FAQ, and Shortcuts

29. Essential Keyboard Shortcuts

Table 58: Default Key Bindings

Key	Function
WASD	Movement
Space	Jump
Shift	Sprint
E	Interact / Use
F	Deconstruct (hold for multi-delete)
Q	Build Menu
M	Map
Tab	Inventory
T	Resource Scanner (Ping)
Alt + Click	Set filter on Smart Splitter
Shift + Click	Transfer entire stack
Ctrl + Click	Transfer one item
Ctrl + Drag	Split stack in inventory
R	Rotate building (in build mode)
Z	Dismantle mode
1-9	Hotbar slots
V	Photo Mode
P	Codex / Tutorial
L	Chat (multiplayer)
Enter	Toggle vehicle recording
Numpad +/-	Adjust vehicle recording speed

Build Mode Shortcuts

Table 59: Build Mode Advanced Controls

Input	Function
R	Rotate building clockwise
Scroll Wheel	Scroll through build categories
Left Click	Place building
Right Click	Cancel / Exit build mode
Hold Left Click + Drag	Build multiple foundations in a line
Hold Left Click + Drag (area)	Build foundation grid
Ctrl	Disable snap-to-grid (fine placement)
Home	Toggle between Numpad Enter modes
Numpad 0	Quick switch to Dismantle

30. Frequently Asked Questions

Q: Is there a map size limit?

A: The world is approximately 30 km². There are invisible barriers at the edges of the map. You cannot build outside the playable area, but it is vast enough for any factory you can imagine.

Q: Can I change my starting area after starting?

A: No, the starting area is fixed per save. However, you can easily walk to any other area and build there. Many players establish their main base far from their starting location.

Q: What happens when I die?

A: You respawn at the HUB. All inventory items remain in a crate at your death location. The crate appears on your compass. No items are lost permanently.

Q: Do creatures respawn?

A: Hostile creatures respawn over time (roughly 3-5 in-game days). Passive creatures and Lizard Doggos do not respawn if killed. Power Slugs do not respawn.

Q: Can I move the HUB?

A: No, the HUB location is permanent. However, you gain access to a Biome Teleporter in Tier 9 that allows fast travel between points.

Q: Is there a creative mode?

A: No official creative mode exists. Use a save editor or the Satisfactory Calculator Interactive Map for planning. Some players use mods for creative features.

Q: How do I handle nuclear waste?

A: Three options: (1) Store it in industrial containers (it never goes away), (2) Convert to Plutonium Fuel Rods and sink the Plutonium Waste, (3) Use Tier 9 Fissionium production to consume it.

Q: What is the endgame?

A: Complete all Space Elevator deliveries through Phase 7, research all MAM trees, build a fully automated factory producing every item, and unlock every AWESOME Shop purchase.

Q: Does multiplayer share progression?

A: Yes. All players share the same world, buildings, and milestone progress. Each player keeps their own inventory and equipment. The host's save file stores everything.

Q: How many power shards are on the map?

A: Approximately 800+ slugs total (Green ~500, Yellow ~200, Purple ~100+), yielding roughly 2,000+ potential Power Shards.

31. Early Game Survival Guide

First Hour Priority List

- 1. Immediately:** Gather iron ore, craft 10 iron rods, build the HUB
- 2. Minutes 5-15:** HUB Upgrade 1-3, craft Xeno-Basher, place Portable Miners on iron and copper
- 3. Minutes 15-30:** HUB Upgrade 4-5, build first Smelters and Constructors for plates/rods/wire
- 4. Minutes 30-45:** Build power poles, biomass burners, automate biomass fuel from leaves/wood

5. Minutes 45-60: Complete HUB Upgrade 6, unlock Tier 1, build MAM, research Caterium if found

First Week Priorities

Table 60: Early Game Milestone Goals

Day	Goal	Why
Day 1	Complete Tier 0-1	Unlock basic automation
Day 2	Find Coal, start Coal Power	End manual biomass feeding forever
Day 3	Complete Tier 3-4, build Space Elevator	Unlock steel and higher tiers
Day 4-5	Find oil, start plastic/rubber	Unlock computers and advanced parts
Day 6-7	Complete first Space Elevator delivery	Progress to Tier 5-6

32. Common Mistakes to Avoid

Table 61: Beginner Mistakes and Solutions

Mistake	Why It Hurts	Solution
Building everything near the HUB	Runs out of nearby nodes quickly	Plan to expand; use vehicles/trains for distance
Hand-crafting everything	Takes hours, not scalable	Build a "mall" for common building parts ASAP
Ignoring coal power	Manual biomass feeding is miserable	Rush to Tier 3 and coal
Belting ore long distances	Wastes resources, fragile	Use vehicles or mine on-site and transport ingots
No power grid planning	Cascade failures when expanding	Build a main trunk with Power Poles Mk.2+
Overclocking production buildings	Massive power waste (exponential cost)	Underclock or build more buildings instead
Not hunting Power Slugs	Miss the most valuable collectible	Grab every slug you see, prioritize miners
Building on uneven terrain	Alignment nightmares later	Always start with a foundation platform

Feeding Space Elevator continuously	Wastes production for no benefit	Build each Project Part once, deliver, move on
No factory organization	Impossible to expand or debug	Leave space between lines, use foundations, plan routes

33. Late Game Checklist

Use this checklist to track your progress toward complete factory mastery.

Power and Infrastructure

- Transitioned from Coal to Fuel/Turbofuel power
- Built nuclear power plant(s) for 10,000+ MW
- Set up radioactive waste storage or Plutonium recycling
- Connected all outposts with train or drone network
- Built hypertube network for fast personal travel
- Installed Power Storage for grid stability

Production Goals

- Automated Heavy Modular Frame production (5+/min)
- Automated Computer production (10+/min)
- Automated Supercomputer production (2+/min)
- Automated Motor production (20+/min)
- Automated Aluminum production line
- Complete oil refinery (Plastic, Rubber, Fuel, Coke)
- Nuclear fuel rod production line

Exploration and Collection

- Found all 120+ Crash Sites
- Collected 500+ Power Slugs
- Tamed at least 5 Lizard Doggos
- Discovered all 16 Geothermal Geysers
- Visited every biome
- Unlocked all MAM research trees

Project Assembly Deliveries

- Phase 1: Smart Plating (50)
- Phase 2: Versatile Framework (500)
- Phase 3: Automated Wiring (100,000)
- Phase 4: Modular Engine (5,000)
- Phase 5: Adaptive Control Unit (5,000)
- Phase 6: Magnetic Field Generator (5,000)
- Phase 7: Assembly Director System (10,000)

AWESOME Shop Completion

- Purchased all color cartridges
- Purchased all building attachments
- Purchased Golden Factory Cart
- Purchased all emotes
- Earned 500+ Coupons

The Journey Never Ends: Even after completing all Space Elevator deliveries, there is always more to optimize. Many players set personal challenges: build a 100,000 MW factory, create a perfect ratio production line for every item, or construct a factory that produces 1,000 of every component per minute. The factory must grow. It always grows.

Part XIV: Extended Alternate Recipe Directory

34. Complete Alternate Recipe Compendium

There are over 100 alternate recipes available from Hard Drives. This section provides a comprehensive reference for every notable alternate, organized by building and tier.

Constructor Alternates

Table 62: Constructor Alternate Recipes

Recipe Name	Input	Output	Efficiency vs. Default
Cast Screw	5 Iron Ingot	20 Screw	+150% (no rod needed)
Steel Screw	1 Steel Beam	52 Screw	Massive throughput
Iron Wire	2 Iron Ingot	9 Wire	Saves copper for sheets
Caterium Wire	1 Caterium Ingot	8 Wire	Premium wire output
Concrete (Limestone alternate)	3 Limestone + 2 Water	8 Concrete	+33% output
Biocoal	5 Biomass	6 Coal	Convert biomass to coal
Charcoal	1 Wood	10 Coal	Excellent wood use
Pure Iron Ingot	7 Iron Ore + 4 Water	13 Iron Ingot	Refinery-based, +86% yield
Pure Copper Ingot	6 Copper Ore + 4 Water	15 Copper Ingot	Refinery-based, +150% yield
Pure Caterium Ingot	12 Caterium Ore + 10 Water	6 Caterium Ingot	Refinery-based, +100% yield
Pure Quartz Crystal	9 Raw Quartz + 5 Water	7 Quartz Crystal	Refinery-based

Foundry and Refinery Alternates

Table 63: Foundry and Refinery Alternate Recipes

Recipe Name	Input	Output	Efficiency
Solid Steel Ingot	2 Iron Ingot + 2 Coal	3 Steel Ingot	No iron ore needed
Compacted Steel Ingot	6 Iron Ore + 2 Compacted Coal	10 Steel Ingot	+67% yield
Steamed Copper Sheet	3 Copper Ingot + 2 Water	5 Copper Sheet	+67% yield
Steel Pipe (alternate)	1 Steel Ingot + 1 Concrete	3 Steel Pipe	+50% yield
Plastic (Smart Plating alt)	3 Crude Oil	2 Plastic + 1 HOR	Standard
Residual Plastic	1 Polymer Resin + 1 Water	2 Plastic	Uses byproduct
Residual Rubber	1 Polymer Resin + 1 Water	2 Rubber	Uses byproduct
Heavy Oil Residue	3 Crude Oil	4 Heavy Oil Residue + 2 Polymer Resin	Byproduct-focused
Diluted Packaged Fuel	5 Heavy Oil Residue + 4 Water (Packaged)	4 Packaged Fuel	2x fuel output
Turbo Heavy Fuel	4 Heavy Oil Residue + 2 Compacted Coal + 4 Water	4 Turbofuel	Refinery-based turbofuel
Turbo Blend Fuel	2 Fuel + 4 Heavy Oil Residue + 3 Sulfur + 3 Petroleum Coke	6 Turbofuel	Best turbofuel recipe
Sulfuric Acid (alternate)	3 Sulfur + 3 Water	5 Sulphuric Acid	Standard acid
Instant Scrap	15 Bauxite + 10 Coal + 5 Water + 6 Sulfuric Acid	30 Aluminum Scrap + 5 Water	No silica needed
Electrode Aluminum Scrap	15 Bauxite + 10 Petroleum Coke + 9 Water	30 Aluminum Scrap + 5 Water	Petroleum coke route
Sloppy Aluminum	12 Bauxite + 10 Water + 5 Silica	12 Aluminum Scrap + 5 Water	Scrap-focused

Assembler and Manufacturer Alternates

Table 64: Assembler and Manufacturer Alternate Recipes

Recipe Name	Input	Output	Efficiency
Stitched Iron Plate	10 Iron Plate + 20 Wire	3 RIP	Wire instead of screws
Adhered Iron Plate	3 Iron Plate + 2 Rubber	2 RIP	Rubber-based
Bolted Frame	3 RIP + 56 Screw	2 Modular Frame	Screw-heavy
Steeled Frame	2 RIP + 10 Steel Pipe	3 Modular Frame	Steel-based
Crystal Beacon	4 Steel Beam + 16 Crystal Oscillator + 1 Beacon	20 Beacon	Endgame beacon
Silicone Circuit Board	5 Copper Sheet + 12 Plastic + 8 Silica	5 Circuit Board	Silica replaces some plastic
Caterium Circuit Board	10 Plastic + 30 Quickwire	7 Circuit Board	Quickwire-based
Coated Iron Plate	5 Iron Plate + 2 Plastic	10 Iron Plate (coated)	Effectively doubles plates
Flexible Framework	1 Modular Frame + 4 Steel Beam + 4 Rubber	2 Versatile Framework	Rubber-based
Heavy Encased Frame	8 Modular Frame + 10 Steel Pipe + 10 Concrete + 6 Encased Industrial Beam	3 Heavy Modular Frame	Different input mix
Recycled Plastic	6 Rubber + 6 Fuel	12 Plastic	Convert rubber back
Recycled Rubber	6 Plastic + 6 Fuel	12 Rubber	Convert plastic back
Packaged Diluted Fuel	3 Packaged Heavy Oil Residue + 3 Water	4 Packaged Fuel	Refinery-based
Wet Concrete	6 Limestone + 6 Water	8 Concrete	+33% yield
Rubber Concrete	10 Limestone + 2 Rubber	12 Concrete	+20% yield
Fine Concrete	3 Silica + 2 Limestone	8 Concrete	Silica-based

Insulated Crystal Oscillator	10 Quartz Crystal + 12 Rubber + 20 Wire	2 Crystal Oscillator	Rubber-based
Compacted Coal	5 Coal + 2 Sulfur	5 Compacted Coal	2.3x energy density
Quickwire Stator	4 Steel Pipe + 15 Quickwire	2 Stator	Quickwire replaces wire
Automated Miner	1 Steel Pipe + 5 Concrete	1 Portable Miner	Craft portable miners
Plutonium Fuel Unit	30 Encased Plutonium Cell + 4 Steel Beam + 10 EM Control Rod	2 Plutonium Fuel Rod	Efficient plutonium
Turbo Electric Motor	7 Motor + 9 Radio Control Unit + 5 AI Limiter + 5 Stator	3 Turbo Motor	Endgame motor
Super-State Computer	3 Computer + 2 EM Control Rod + 20 Battery + 45 Wire	2 Supercomputer	Battery-based
OC Supercomputer	3 Radio Control Unit + 20 Cooling System	1 Supercomputer	Cooling system route

Recipe Tier List: S-Tier alternates that fundamentally change your factory: Cast Screw, Solid Steel Ingot, Steamed Copper Sheet, Diluted Packaged Fuel, Turbo Blend Fuel, Pure Iron/Copper Ingot. Prioritize finding these above all others.

Part XV: Production Mathematics

35. Factory Math Fundamentals

Understanding the underlying mathematics of production is essential for designing perfectly balanced factories. Every recipe follows predictable formulas.

The Clock Speed Formula

All buildings run at a base 100% clock speed. Overclocking follows this exponential curve:

$$\text{Power} = \text{Base Power} \times (\text{Clock Speed} / 100) ^ 1.32109$$

$$\text{Production} = \text{Base Production} \times (\text{Clock Speed} / 100)$$

Table 65: Clock Speed Reference Table

Target Speed	Power Multiplier	Buildings Saved	Use Case
50%	0.23x	0 (underclocked)	Match odd ratios efficiently
100%	1.0x	Baseline	Standard operation
150%	2.2x	~33% fewer buildings	Space-constrained areas
200%	5.7x	50% fewer buildings	Only when space is critical
250%	12.1x	60% fewer buildings	Miners and extractors only

Production Rate Formula

$$\text{Items/Minute} = (60 / \text{Recipe Time}) \times \text{Output Quantity} \times (\text{Clock Speed} / 100)$$

Miner Output Calculator

Table 66: Miner Output by Tier and Node Purity (items/min)

Node	Miner Mk.1	Miner Mk.2	Miner Mk.3	Overclocked Mk.3 (250%)
Impure	30	60	120	300
Normal	60	120	240	600

Pure 120 240 480 1,200

Pipe Flow Capacity

Table 67: Pipeline Throughput Limits

Pipeline	Max Flow (m3/min)	Equivalent Extractors	Notes
Pipe Mk.1	300	2.5 Water Extractors	Fine for most applications
Pipe Mk.2	600	5 Water Extractors	Nuclear cooling, large oil
Both pipes parallel	900	7.5 Extractors	Maximum per junction

Belt Capacity vs. Production

Table 68: Matching Production to Belt Tiers

Belt	Capacity	Equivalent Smelters (100%)	Equivalent Constructors
Mk.1	60/min	30 (Iron Ingots)	10 (Plates)
Mk.2	120/min	60	20
Mk.3	270/min	135	45
Mk.4	480/min	240	80
Mk.5	780/min	390	130

36. Common Production Targets

Reference tables for setting up commonly needed production lines.

Reinforced Iron Plate (RIP) Lines

Table 69: RIP Production Setups

Target (RIP/min)	Iron Plate Constructors	Screw Constructors	Assemblers	Belt Tier
5/min	3	3	2	Mk.2
10/min	6	6	4	Mk.3
20/min	12	12	8	Mk.4

Modular Frame Lines

Table 70: Modular Frame Production Setups

Target (Frames/min)	RIP Assemblers	Rod Constructors	Frame Assemblers	Belt Tier
2/min	2	2	2	Mk.2
5/min	5	5	5	Mk.3
10/min	10	10	10	Mk.4

Computer Production Lines

Table 71: Computer Production Setups

Target (Computers/min)	Circuit Board Assemblers	Plastic Input	Manufacturers
2.5/min	2	80/min	1
5/min	4	160/min	2
10/min	8	320/min	4

Nuclear Power Setup Math

Table 72: Nuclear Plant Requirements (per reactor)

Component	Input Rate	Building Chain
Uranium Fuel Rod	0.2/min	Mine > Refinery (Acid) > Blender > Assembler > Manufacturer
Water (Cooling)	240 m ³ /min	2 Water Extractors per reactor
Uranium Waste Output	10/min	Store or process to Plutonium
Power Output	2,500 MW	Connect to main grid

A standard 10-reactor nuclear plant produces 25,000 MW and requires:

- 2,400 m³/min of cooling water (20 extractors)
- 2 Uranium Fuel Rods per minute
- Waste handling for 100 Uranium Waste per minute
- Approximately 40 industrial storage containers per hour of operation

37. Energy Value Calculations

Table 73: Complete Fuel Energy Reference

Fuel	Energy (MJ)	Generator	Consumption/min	Seconds per Unit
Leaves	15	Biomass Burner	120	7.5
Wood	100	Biomass Burner	120	50
Biomass	180	Biomass Burner	120	90
Solid Biofuel	450	Biomass Burner	60	450
Coal	270	Coal Plant	15	1,080
Compacted Coal	630	Coal Plant	15	2,520
Petroleum Coke	170	Coal Plant	15	680
Fuel	750	Fuel Generator	12	3,750
Liquid Biofuel	750	Fuel Generator	12	3,750
Turbofuel	2,000	Fuel Generator	4.5	26,667
Uranium Fuel Rod	750,000	Nuclear Plant	0.2	300,000
Plutonium Fuel Rod	1,500,000	Nuclear Plant	0.1	600,000
Ficsonium Fuel Rod	6,000,000	Nuclear Plant	0.05	1,200,000

Self-Sufficient Turbofuel Plant: A single Normal oil node (120 m³/min) with the Diluted Packaged Fuel and Turbo Blend Fuel recipes can support approximately 40 Fuel Generators, producing 6,000 MW continuously. This is the most efficient pre-nuclear power setup in the game.

Part XVI: Equipment and Pioneer Upgrades

38. Complete Suit and Equipment Guide

The Pioneer can equip various pieces of gear that enhance mobility, combat, and survival capabilities. Equipment unlocks through Milestones and MAM research.

Suit Equipment Slots

Table 74: All Equipment and Tools

Slot	Item	Unlock	Function
Body	Default Suit	Starter	Basic exploration
Body	Hazmat Suit	Tier 7	Immunity to radiation and gas
Body	Blade Runners	Tier 2 (MAM)	+50% sprint speed, double jump
Body	Jetpack	Tier 6	Powered flight (consumes Fuel)
Body	Gas Mask	Tier 5 (MAM)	Filters poison gas clouds
Body	Parachute	Tier 3 (MAM)	Prevents fall damage
Body	Nobelisk Detonator	Tier 2	Remote explosive placement
Hands	Xeno-Zapper	Starter	Basic melee weapon
Hands	Xeno-Basher	Tier 0 (HUB 2)	Advanced melee, stuns enemies
Hands	Chainsaw	Tier 2	Clears vegetation, kills small creatures
Hands	Rebar Gun	Tier 2	Ranged projectile weapon
Hands	Rifle Mk.1	Tier 5	Semi-automatic firearm
Hands	Rifle Mk.2	Tier 6	Full-auto assault rifle
Hands	Build Gun	Tier 0 (HUB 1)	Construct and dismantle all buildings
Hands	Object Scanner	Tier 1	Locates resources, creatures, crash sites

Healing and Consumables

Table 75: All Healing Items

Item	Heal Amount	Recipe	Unlock
Beryl Nut	10 HP	Foraged	Found in forests
Paleberry	20 HP	Foraged	Found in forests
Bacon Agaric	30 HP	Foraged	Found in forests
Medicinal Inhaler	100 HP	2 Bacon Agaric + 1 Mycelia + 2 Paleberry	Tier 2 (MAM)
Nutritional Inhaler	50 HP + speed	2 Beryl Nut + 1 Mycelia + 2 Paleberry	Tier 2 (MAM)
Basic Inhaler	50 HP	1 Bacon Agaric + 2 Paleberry	Craftable anytime

Weapon Ammunition

Table 76: All Ammo Types

Ammo	Weapon	Damage	Crafting Cost
Iron Rebar	Rebar Gun	30	2 Iron Rod
Shatter Rebar	Rebar Gun	50	2 Iron Rebar + 2 Quartz Crystal
Stun Rebar	Rebar Gun	10	2 Iron Rebar + 2 Cable (stuns)
Explosive Rebar	Rebar Gun	100 (AoE)	2 Iron Rebar + 2 Smokeless Powder
Rifle Ammo	Rifle Mk.1/2	25	3 Copper Ingot + 2 Smokeless Powder
Homing Rifle Ammo	Rifle Mk.1/2	35	3 Rifle Ammo + 1 AI Limiter
Turbo Rifle Ammo	Rifle Mk.1/2	50	3 Rifle Ammo + 1 Turbo Fuel
Nobelisk	Nobelisk Detonator	150	2 Steel Pipe + 4 Black Powder
Cluster Nobelisk	Nobelisk Detonator	300 (spread)	3 Nobelisk + 2 Smokeless Powder
Nuke Nobelisk	Nobelisk Detonator	500	5 Nobelisk + 3 Encased Uranium Cell
Pulse Nobelisk	Nobelisk Detonator	10 (pushes)	3 Nobelisk + 3 Crystal Oscillator
Gas Nobelisk	Nobelisk Detonator	0 (poison cloud)	3 Nobelisk + 3 Biomass

Jetpack Fuel Consumption

Table 77: Jetpack Fuel Usage

Fuel Type	Flight Time (Full Tank)	Refill Method
Fuel	~25 seconds continuous	Packaged Fuel in inventory
Turbofuel	~40 seconds continuous	Packaged Turbofuel in inventory
Biofuel	~15 seconds continuous	Packaged Liquid Biofuel

Equipment Loadout Recommendation: Late-game exploration: Hazmat Suit + Jetpack + Blade Runners + Gas Mask (in inventory for swapping). Combat: Rifle Mk.2 with Homing Ammo + Nobelisk Detonator with Cluster Nobelisks. Building: Jetpack + Blade Runners + Object Scanner.

39. Exploration and Scanner

The Object Scanner is an essential tool for finding resources and points of interest.

Scanner Modes

Table 78: Object Scanner Modes

Mode	Unlock	Use
Iron Ore	Default	Locate iron nodes
Copper Ore	Default	Locate copper nodes
Coal	Default	Locate coal nodes
Limestone	Default	Locate limestone nodes
Caterium Ore	MAM (Caterium)	Locate caterium nodes
Raw Quartz	MAM (Quartz)	Locate quartz nodes
Sulfur	MAM (Sulfur)	Locate sulfur nodes
Crash Sites	Scan Hard Drive	Find alternate recipe locations
Power Slugs	MAM (Power)	Find Power Slugs
Creature Locations	Various	Track specific fauna

40. Foundations and Building Pieces

Table 79: Foundation Types

Type	Materials	Use
Foundation (all sizes)	6 Concrete	Base building, alignment
Ramp (all sizes)	4 Concrete	Inclines, vehicle access
Wall (basic)	4 Concrete + 2 Iron Plate	Building enclosures
Windowed Wall	4 Concrete + 2 Iron Plate + 2 Glass	Viewing factory interior
Doorway	4 Concrete + 2 Iron Plate	Player access
Gate	6 Concrete + 4 Iron Plate	Vehicle access through walls
Roof	4 Concrete + 2 Iron Plate	Building tops
Pillar	3 Concrete + 2 Iron Plate	Structural support
Stairs	4 Concrete + 2 Iron Plate	Multi-level access
Frame Foundation	6 Concrete + 2 Iron Rod	AWESOME Shop variant
Glass Foundation	6 Concrete + 4 Silica	See-through floors

Part XVII: World Geography Deep Dive

41. Detailed Biome Analysis

Each biome in Satisfactory offers unique challenges and rewards. This section provides granular detail on resource counts, creature density, and building suitability for every major region.

Grassy Fields (Northern Starting Area)

The most forgiving biome. Rolling green hills dotted with trees and the occasional hog. Iron and copper nodes are plentiful, and limestone is everywhere. Coal is accessible to the east. Water is abundant. This is the recommended starting area for new players.

Table 80: Grassy Fields Resource Count

Resource	Node Count (approx)	Pure Nodes	Notable Features
Iron Ore	15+	2	Large cluster northwest of HUB spawn
Copper Ore	8+	1	South of spawn, near cliffs
Limestone	20+	3	Everywhere
Coal	3	0	Eastern edge, near desert border
Caterium	0	0	Nearest in Northern Forest
Water	Lakes + ocean	N/A	Multiple lakes, easy access

Rocky Desert (Eastern Starting Area)

Open sandstone terrain with excellent visibility and coal proximity. The flat desert floor is ideal for factory building. Alpha hogs patrol the dunes, making early combat more challenging. The best choice for experienced players who want to rush coal power.

Table 81: Rocky Desert Resource Count

Resource	Node Count (approx)	Pure Nodes	Notable Features
Iron Ore	12+	2	Western plateau edge
Copper Ore	6+	1	Southern canyon

Limestone	15+	2	Canyon walls
Coal	8+	2	Very close to spawn
Sulfur	2	0	Northeastern corner
Crude Oil	3	1	Eastern edge

Northern Forest (Western Starting Area)

Dense coniferous forest with rolling hills. Resource diversity is the highest here -- Caterium and Raw Quartz are within walking distance. The terrain is challenging for building, requiring significant tree clearing and foundation work. Ideal for players who prioritize MAM research.

Table 82: Northern Forest Resource Count

Resource	Node Count (approx)	Pure Nodes	Notable Features
Iron Ore	10+	1	Southern clearing
Copper Ore	8+	1	Central forest
Limestone	12+	2	Scattered
Coal	4	0	Eastern edge
Caterium	2	1	Northwest hill
Raw Quartz	2	0	Eastern cliff edge
Crude Oil	4	1	Western coast

Dune Desert (Southern Starting Area)

Vast open desert with the largest flat building areas in the game. Resource diversity is excellent but coal is far away and water is limited. The most dangerous starting area due to frequent alpha hog and stinger spawns. Best for experienced builders planning massive factories.

Table 83: Dune Desert Resource Count

Resource	Node Count (approx)	Pure Nodes	Notable Features
Iron Ore	15+	3	Massive western field
Copper Ore	10+	2	Central dunes
Limestone	8	1	Scarce

Coal	4	1	Far northeast
Caterium	4	1	Southern dunes
Raw Quartz	3	1	Eastern edge
Crude Oil	6	2	Northern coast
Sulfur	3	1	Western canyon
SAM Ore	4	1	Scattered dunes

Red Jungle (Bauxite Region)

Dense crimson vegetation with towering trees and aggressive fauna. The primary source of Bauxite for aluminum production. Spitters and stingers are common. Terrain is extremely uneven, requiring massive foundation work for any serious building.

Table 84: Red Jungle Resource Count

Resource	Node Count (approx)	Pure Nodes	Notable Features
Bauxite	8+	2	Only major source
Coal	5	1	Southern edge
Nitrogen Gas	4 wells	N/A	Requires pressurizer
Water	Waterfalls	N/A	Plentiful

The Swamp (Uranium Region)

The most dangerous biome. Dark, foggy wetlands filled with elite stingers and web-shooting arachnids. Uranium nodes are heavily guarded and emit radiation. Building here requires Hazmat Suit and substantial combat preparation. The atmosphere is oppressive and visibility is poor.

Table 85: Swamp Resource Count

Resource	Node Count (approx)	Pure Nodes	Notable Features
Uranium	3	1	Heavily guarded
Sulfur	4	1	Accessible areas
Coal	3	0	Eastern edge
Water	Everywhere	N/A	Swamp water is accessible

Swamp Survival Tips: Bring full ammo (200+ Rifle rounds), 10+ Medicinal Inhalers, and a Gas Mask. Approach uranium nodes from high ground when possible. Build a forward base on the swamp edge before attempting uranium extraction. Stingers can drop from trees -- check above you constantly.

42. Geyser Locations

There are 16 geothermal geysers on the map. Each provides free power with no fuel input. Geyser output varies from 150 MW to 400 MW.

Table 86: Geothermal Geyser Locations

Region	Geyser Count	Output Range	Accessibility
Red Bamboo Fields	3	200-400 MW	Medium (hostile)
Dune Desert	2	150-300 MW	Easy
Red Jungle	2	200-350 MW	Hard (terrain)
Northern Forest	2	150-250 MW	Easy
Rocky Desert	2	150-250 MW	Easy
Grassy Fields	1	150 MW	Very Easy
Titan Forest	2	200-300 MW	Medium
Western Coast	1	200 MW	Easy
Lava Lakes	1	400 MW	Very Hard

Total potential geothermal power: **3,200 - 6,400 MW** depending on geyser strength. This is roughly equivalent to 25-50 Coal Power Plants, completely free.

43. Crash Site Distribution

Crash Sites are the sole source of Hard Drives. There are approximately 120+ sites scattered across the map.

Table 87: Crash Sites by Region

Region	Crash Sites	Difficulty	Notable Drops
Grassy Fields	8	Easy	Early alternates

Rocky Desert	10	Easy-Medium	Steel alternates
Northern Forest	12	Medium	Oil alternates
Dune Desert	15	Medium	Late-game alternates
Red Bamboo Fields	10	Medium-Hard	Oil/Fuel alternates
Red Jungle	12	Hard	Aluminum alternates
Swamp	8	Very Hard	Nuclear alternates
Titan Forest	10	Hard	Advanced alternates
Abyssal Cliffs	8	Hard (fall risk)	Various
Lava Lakes	5	Very Hard	Endgame alternates
Spider Coast / Others	22+	Mixed	Various

Hard Drive Hunting Route: Start with the 8 sites in Grassy Fields and 10 in Rocky Desert (18 easy drives). Then clear Northern Forest (12 more = 30). With 30 alternates you'll have most of the game-changing recipes. Only venture into Swamp and Lava Lakes for completionism.

Part XVIII: Multiplayer and Community

44. Multiplayer Guide

Satisfactory supports up to 4 players in online co-op. The host's save file contains the entire world, and guests connect via Steam or Epic Games Store friends lists.

Multiplayer Mechanics

Table 88: Multiplayer Features

Feature	Behavior
Progression	Shared (all players benefit from milestones)
Inventory	Individual per player
Buildings	Shared (anyone can build/dismantle)
Death	Individual respawn at HUB, crate dropped
Research	MAM research is shared
Map Discovery	Combined (all explored areas visible to all)
Chat	Text chat with L key
Voice	Third-party (Discord, Steam) recommended

Host Requirements

Table 89: Multiplayer Hosting Specs

Players	Recommended Upload	CPU Impact	Ram Impact
2 players	5 Mbps	+20%	+2 GB
3 players	8 Mbps	+35%	+4 GB
4 players	10 Mbps	+50%	+6 GB

Multiplayer Role Ideas

Table 90: Suggested Team Roles

Role	Responsibilities	Early Priority
Builder	Factory layout, foundations, aesthetics	Concrete production, foundations
Explorer	Hard Drive hunting, slug collection, mapping	Weapon upgrades, healing items
Engineer	Power grid, ratios, optimization	Coal power, power poles
Logistics	Train networks, belts, vehicle routes	Vehicles, belt unlocks

Multiplayer Tips

- **Dismantle protection:** There is no undo. Communicate before dismantling shared structures.
- **Resource sharing:** Set up a communal storage area near the HUB for shared parts.
- **Division of labor:** Assign players to different biomes or production lines to avoid conflicts.
- **Performance:** Large multiplayer factories impact the host most. Consider spreading production across multiple outposts.
- **AFK handling:** Idle players still consume food/water (if mods installed). In vanilla, they just stand there.

45. Save Management and Backup

Table 91: Save File Locations

Platform	Save Location
Steam	%LOCALAPPDATA%\FactoryGame\Saved\SaveGames\
Epic	%LOCALAPPDATA%\FactoryGame\Saved\SaveGames\[EpicID]\

Save Best Practices

- Manual save before major dismantling or exploration (F5 quicksave also works)
- Keep multiple save slots -- rotate through 5-10 saves
- Backup save folder to cloud storage periodically
- Save file size grows with factory complexity (expect 50-200 MB for late game)

- Session-based auto-save every 5 minutes

46. Modding and Tools

While Satisfactory does not have official mod support in the base game, the community has created powerful external tools and mod frameworks.

Popular Community Tools

Table 92: Third-Party Tools and Mods

Tool/Mod	Type	Function
Satisfactory Calculator	Website	Interactive map, production planner, save editor
Satisfactory Tools	Website	Recipe calculator and optimizer
FICSIT Networks	Mod	In-game computer programming with Lua
Area Actions	Mod	Mass building/dismantling tools
Smart!	Mod	Efficient building shortcuts
Refined Power	Mod	Additional power generation options
Moar Factory	Mod	Additional building pieces and decorations
Linear Motion	Mod	Elevators and moving platforms

Mod Disclaimer: Mods are third-party modifications not officially supported by Coffee Stain Studios. Use at your own risk. Always backup saves before installing mods. Multiplayer requires all players to have the same mods installed.

47. Community Resources

Table 93: Official and Community Links

Resource	URL/Location	Purpose
Official Website	satisfactorygame.com	News, purchase links
Steam Community	steamcommunity.com/app/526870	Guides, discussions
Reddit (r/Satisfactory)	reddit.com/r/Satisfactory	Community, screenshots, help
Discord (Official)	discord.gg/satisfactory	Real-time chat, developer updates

Satisfactory Wiki	satisfactory.wiki.gg	Comprehensive game information
YouTube Tutorials	Various creators	Visual guides and inspiration

Part XIX: Aesthetic Building and Blueprints

48. Factory Aesthetics Guide

Functional factories are efficient. Beautiful factories are satisfying. This section covers techniques for creating visually impressive facilities that are still fully operational.

Color Coding System

The AWESOME Shop sells color cartridges for factory customization. A consistent color scheme makes your factory readable and visually striking.

Table 94: Recommended Color Coding Scheme

Building Type	Primary Color	Secondary Color
Power Buildings	Yellow (#FFD700)	Black
Smelters/Foundries	Orange (#FF6600)	Dark Gray
Constructors	Blue (#0080FF)	White
Assemblers	Green (#00AA00)	White
Manufacturers	Purple (#8000FF)	Silver
Refineries	Red (#CC0000)	Black
Storage	White (#FFFFFF)	Any
Logistics (Belts)	Gray (#808080)	Black

Lighting Design

Table 95: Lighting Types and Uses

Light Type	Power	Best Use
Street Light	2 MW	Walkways, roads
Flood Light	5 MW	Large area illumination
Industrial Light	3 MW	Production line highlight
Wall Light	1 MW	Accent lighting, corridors

Power Pole Light

0 MW (included)

Ambient factory glow

Architectural Patterns

The Cathedral: Build a massive central hall with a glass roof, suspending hypertubes and elevated walkways. Production lines run along the floor in color-coded rows. Power lines are hidden in walls. Storage containers are arranged in a grid along the perimeter.

The Tower: Vertical integration. Each floor is a different production tier. Glass exterior walls show the factory in operation. Elevators (conveyor lifts) run through the central core. The roof hosts power generation and a landing pad for drones.

The Campus: Spread production across multiple small buildings connected by walkways and covered belts. Each building has a dedicated function. Landscaped areas between buildings with Lizard Doggos and decorative elements.

The Industrial District: Brutalist aesthetic. Raw concrete and steel. Massive smokestacks (cosmetic). Everything oversized. Power lines visible as part of the design. Conveyor spaghetti is embraced as industrial realism.

49. Foundation Building Techniques

Alignment Best Practices

- **Always start with foundations:** Never place production buildings directly on terrain. Foundations provide perfect alignment for everything.
- **Use grid snapping:** Enable snap-to-grid for consistent spacing. Default grid is 8m for foundations.
- **Plan for expansion:** Leave 2-3 foundation widths between production lines for future belts.
- **Elevation standards:** Pick standard heights (e.g., every 4m or 8m) for different production tiers.
- **Wall foundations:** Build walls first, then place buildings against them for perfect alignment.

Vertical Building

Table 96: Vertical Spacing Reference

Element	Height	Notes
Foundation thickness	1m	Flat surface

Single wall height	4m	Standard wall piece
Building height (Constructor)	5m	Fits under 2 walls
Building height (Assembler)	7m	Fits under 2 walls
Building height (Manufacturer)	10m	Fits under 3 walls
Conveyor lift (1 floor)	4m	Standard vertical transport
Hypertube (ceiling mounted)	Variable	Hang from ceiling supports

50. Road and Vehicle Networks

Building dedicated roads for vehicles improves reliability dramatically.

Road Construction Standards

Table 97: Vehicle Road Specifications

Road Type	Width	Materials (per 8m)	Use
Single Lane	4m (half foundation)	1 Foundation	Tractor routes
Dual Lane	8m (1 foundation)	1 Foundation + walls	Truck routes
Highway	16m (2 foundations)	2 Foundations + barriers	Main arteries
Elevated Highway	16m + supports	2 Foundations + pillars	Crossing factory areas

Vehicle Station Design

- Place station on flat ground with 20m clearance in front and behind
- Provide a turnaround loop or bidirectional track access
- Connect load/unload belts before programming vehicle route
- Use separate platforms for loading vs. unloading
- Add fuel delivery to every station for automated refueling

Aesthetic Factory Showcase: Some of the most impressive community factories combine the Campus and Cathedral styles -- multiple themed buildings connected through a central glass atrium. Search "Satisfactory megabase" on Reddit and YouTube for endless inspiration. Remember: the factory must grow, but it should also look good doing it.

Part XX: Endgame and Mastery

51. Tier 9: Quantum Technology

Tier 9 represents the ultimate frontier of Satisfactory technology. These recipes and buildings are among the most complex in the game, requiring extensive supply chains from every previous tier.

Ficsonium Production Chain

Ficsonium is the ultimate solution for nuclear waste management and the key ingredient for the final Space Elevator deliveries.

Table 98: Ficsonium Production Steps

Step	Building	Input	Output
1. Waste Collection	Storage	Plutonium Waste	Stored waste
2. Ficsonium Processing	Particle Accelerator	1 Plutonium Waste + 1 Nitrogen Gas	1 Ficsonium
3. Ficsonium Fuel Rod	Manufacturer	Ficsonium + EM Control Rods + Steel Beams	Ficsonium Fuel Rod
4. Final Delivery	Space Elevator	Ficsonium-based parts	Project Assembly completion

Superposition Oscillator Chain

Table 99: Superposition Oscillator Production

Component	Source	Complexity
Dark Matter Crystal	Particle Accelerator (specific recipe)	Requires Dark Matter Residue
Crystal Oscillator	Manufacturer (Quartz + Cable + RIP)	Mid-tier complexity
Supercomputer	Manufacturer	High-tier
Superposition Oscillator	Manufacturer	Combines all three above

Nuclear Pasta Production

Table 100: Nuclear Pasta Requirements

Ingredient	Quantity	Source
Copper Powder	200	Converter (Copper Ingot processing)
Pressure Conversion Cube	1	Assembler (Fused Modular Frame + Radio Control Unit)
Production Time	120 seconds	Particle Accelerator
Output	1 Nuclear Pasta	Space Elevator Phase 7

52. Complete Project Assembly Roadmap

A phase-by-phase breakdown of everything needed to complete the game.

Phase 1: Foundation (Tiers 0-4)

Table 101: Phase 1 Requirements

Deliverable	Quantity	Key Production Line
Smart Plating	50	RIP + Rotor assembler line
Timeline	~2-4 hours	Rush HUB upgrades to Tier 4
Prerequisites	--	Basic iron and copper automation

Phase 2: Expansion (Tiers 5-6)

Table 102: Phase 2 Requirements

Deliverable	Quantity	Key Production Line
Versatile Framework	500	Modular Frame + Steel Beam assembler
Timeline	~5-10 hours	Requires steel and oil infrastructure
Prerequisites	Phase 1	Steel production, oil refinery setup

Phase 3: Industrial Scale (Tiers 7-8)

Table 103: Phase 3 Requirements

Deliverable	Quantity	Key Production Line
Automated Wiring	100,000	Stator + Cable mass production
Timeline	~15-30 hours	Massive volume requirement
Prerequisites	Phase 2	Aluminum, computers, manufacturers

Phase 3 is the Wall: 100,000 Automated Wiring is the largest single delivery in the game. A dedicated factory producing 1,000/min will still take nearly 2 hours of real-time delivery. Build a massive Stator + Cable production line. This is where many players pause and optimize everything else.

Phase 4-6: Advanced Manufacturing

Table 104: Phases 4-6 Requirements

Phase	Deliverable	Quantity	Complexity
Phase 4	Modular Engine	5,000	High (Motors + Plastic)
Phase 5	Adaptive Control Unit	5,000	Very High (Computers + Heavy Frames)
Phase 6	Magnetic Field Generator	5,000	Extreme (Superposition Oscillators)

Phase 7: Final Delivery

Table 105: Phase 7 Requirements

Deliverable	Quantity	Components Required
Assembly Director System	10,000	Radio Control Unit + Supercomputer + Cooling System + Ficsonium
Total Build Time	~40-80 hours	Depending on factory optimization

53. Post-Game Challenges

After completing the Space Elevator deliveries, many players set personal goals to extend their playtime.

Common Endgame Challenges

Table 106: Self-Imposed Challenges

Challenge	Description	Difficulty
100,000 MW Grid	Generate 100 gigawatts of power	Extreme
100% Efficiency	Every production line perfectly balanced	Very Hard
No Overclocking	Complete game without power shards on buildings	Hard
Pure Node Exhaustion	Fully utilize every pure resource node	Extreme
Global Train Network	Connect every biome by train	Hard
Slug Master	Collect every Power Slug on the map	Very Hard
Recipe Complete	Unlock every alternate recipe	Hard
Shop Complete	Purchase every AWESOME Shop item	Very Hard
Max Coupons	Earn 1,000+ AWESOME Coupons	Extreme
Visual Masterpiece	Build a factory featured by the community	Variable

54. Legacy and Screenshots

Satisfactory has one of the most screenshot-worthy communities in gaming. The combination of industrial aesthetics and alien landscapes creates stunning vistas.

Photo Mode Controls

Table 107: Photo Mode Features

Control	Function
V	Toggle Photo Mode
WASD	Move camera
Mouse	Pan and tilt
Scroll	Zoom
Space/Shift	Raise/lower camera
Focal Length	Adjust depth of field
Aperture	Blur amount

Filter	Color grading presets
Hide UI	Clean screenshot

Screenshot Locations

Table 108: Best Photo Spots

Location	Time of Day	Subject
The Falls (central waterfall)	Sunset	Waterfall with factory in background
Red Jungle canopy	Dawn	Crimson vegetation with fog
Dune Desert (highest dune)	Night	Stars over sand
From atop Space Elevator	Any	Entire factory visible below
Train bridge crossing	Sunrise	Train mid-transit
Nuclear plant (safe distance)	Night	Glowing cooling towers
Swamp edge (with gas mask)	Foggy morning	Eerie atmosphere

The Final Lesson: Satisfactory is a game about growth. There is no failure state, no time limit, and no penalty for inefficiency. Every belt placed, every building positioned, and every power pole connected is progress. The factory is never complete -- it simply evolves. Enjoy the journey from humble iron rods to quantum computers. The view from the Space Elevator is worth every hour.

Part XXI: Complete Resource Atlas

55. Resource Node Master List

This section provides a comprehensive breakdown of every resource node type, their locations by biome, and strategic notes for extraction planning.

Iron Ore Node Distribution

Table 109: Iron Ore Nodes by Biome

Biome	Impure	Normal	Pure	Total Nodes	Max Mk.3 Output
Grassy Fields	4	6	2	12	3,840/min
Rocky Desert	3	5	2	10	3,360/min
Northern Forest	2	5	1	8	2,160/min
Dune Desert	5	7	3	15	5,520/min
Red Bamboo Fields	1	2	0	3	480/min
Eastern Dunes	3	4	1	8	2,400/min
Titan Forest	1	1	0	2	240/min
Spider Coast	2	3	1	6	2,160/min
TOTAL	21	33	10	64	20,160/min

Copper Ore Node Distribution

Table 110: Copper Ore Nodes by Biome

Biome	Impure	Normal	Pure	Total Nodes	Max Mk.3 Output
Grassy Fields	2	4	1	7	1,680/min
Rocky Desert	1	3	1	5	1,440/min
Northern Forest	2	4	1	7	1,680/min
Dune Desert	3	4	2	9	3,120/min

Red Jungle	0	2	0	2	240/min
Spider Coast	1	2	1	4	1,200/min
TOTAL	9	19	6	34	9,360/min

Coal Node Distribution

Table 111: Coal Nodes by Biome

Biome	Impure	Normal	Pure	Total Nodes	Max Mk.3 Output
Rocky Desert	2	4	1	7	2,160/min
Grassy Fields	1	2	0	3	360/min
Northern Forest	0	2	0	2	240/min
Dune Desert	1	2	1	4	1,200/min
Red Bamboo Fields	2	4	1	7	2,160/min
Red Jungle	1	2	1	4	1,200/min
Swamp	0	2	0	2	240/min
Eastern Dunes	2	3	1	6	1,680/min
Spider Coast	1	2	0	3	360/min
TOTAL	10	23	5	38	9,600/min

Late-Game Resource Distribution

Table 112: Oil, Bauxite, Uranium, and Nitrogen Gas

Resource	Total Nodes	Normal Output	Pure Output	Max Mk.3 Output	Biomes
Crude Oil (wells)	30+	120-240 m3/min	480 m3/min	~12,000 m3/min	Coastal regions
Bauxite	12	60-120/min	240/min	~1,920/min	Red Jungle, Dune Desert
Uranium	3	60/min	120/min	360/min	Swamp, isolated
Nitrogen Gas (wells)	12	120 m3/min	480 m3/min	~3,000 m3/min	Red Jungle, Crater

Sulfur	8	60-120/min	240/min	~1,440/min	Red Bamboo, Swamp
Caterium	8	60-120/min	240/min	~1,440/min	Dune Desert, Northern Forest
Raw Quartz	8	60-120/min	240/min	~1,440/min	Dune Desert, Red Bamboo

56. Water Source Guide

Water is required for power generation, concrete production, and many refining recipes. Understanding water availability is critical for factory placement.

Table 113: Water Source Types

Source	Extractor Placement	Output Rate	Reliability
Lakes	Shoreline	120 m ³ /min (Mk.1)	Excellent
Ocean	Coastline	120 m ³ /min (Mk.1)	Excellent
Rivers	Bank	120 m ³ /min (Mk.1)	Good (check depth)
Waterfalls	Pool below	120 m ³ /min (Mk.1)	Excellent
Underground	Exposed water	120 m ³ /min (Mk.1)	Good

A single Water Extractor produces 120 m³/min at 100% clock speed. A Coal Power Plant consumes 45 m³/min, meaning one extractor can supply 2.6 coal plants. Nuclear plants consume 240 m³/min, requiring 2 extractors per reactor.

57. Raw Resource Processing Chains

Complete input-to-output chains showing exactly how much raw ore is needed for endgame components.

Iron Ore to Reinforced Iron Plate

Table 114: Iron Processing Chain

Stage	Building	Input	Output
1. Smelting	Smelter	1 Iron Ore	1 Iron Ingot
2. Plates	Constructor	3 Iron Ingots	2 Iron Plates
3. Rods	Constructor	1 Iron Ingot	1 Iron Rod
4. Screws	Constructor	1 Iron Rod	4 Screws

5. RIP Assembler 6 Iron Plates + 12 Screws 1 Reinforced Iron Plate

Total: 13 Iron Ore → 1 Reinforced Iron Plate (with default recipes)

Oil to Plastic to Computer

Table 115: Oil Processing Chain

Stage	Building	Input	Output
1. Oil Extractor	Oil Extractor	Crude Oil node	120-480 m3/min
2. Refinery	Refinery	3 Crude Oil	2 Plastic + 1 Heavy Oil Residue
3. Sheets	Constructor	2 Copper Ingots	1 Copper Sheet
4. Circuit Board	Assembler	2 Copper Sheets + 4 Plastic	1 Circuit Board
5. Computer	Manufacturer	10 Circuit Boards + 8 Plastic + 20 Screws	1 Computer
Total: ~45 Crude Oil + Copper + Iron → 1 Computer (per minute at 100%)			

Bauxite to Aluminum Casing to Battery

Table 116: Aluminum Processing Chain

Stage	Building	Input	Output
1. Mine Bauxite	Miner	Bauxite node	60-480/min
2. Refine	Refinery	6 Bauxite + 5 Water	4 Aluminum Ingots + 5 Silica
3. Sheets	Assembler	3 Aluminum Ingots + 1 Copper Sheet	3 Alclad Aluminum Sheets
4. Casings	Constructor	3 Alclad Sheets	2 Aluminum Casings
5. Batteries	Blender	6 Acid + 7 Alclad + 8 Plastic + 12 Wire	4 Batteries

58. Total Map Resource Summary

Table 117: Global Resource Potential

Resource	Total Map Output (Mk.3)	Theoretical Max (250% OC)
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Iron Ore	20,160/min	50,400/min
Copper Ore	9,360/min	23,400/min
Limestone	25,000+/min	62,500+/min
Coal	9,600/min	24,000/min
Crude Oil	~12,000 m3/min	~30,000 m3/min
Caterium	1,440/min	3,600/min
Raw Quartz	1,440/min	3,600/min
Sulfur	1,440/min	3,600/min
Bauxite	1,920/min	4,800/min
Uranium	360/min	900/min
Nitrogen Gas	~3,000 m3/min	~7,500 m3/min

Map Limits: No resource node in Satisfactory is infinite. Every node has a finite extraction rate based on its purity and miner tier. However, the total map resources are so vast that practically no player has ever fully exhausted a resource type. The theoretical maximum throughput of the entire map is staggering -- enough to produce millions of any component per hour.

Part XXII: Troubleshooting and Advanced Tips

59. Common Factory Problems

Every pioneer encounters production issues. This troubleshooting guide covers the most frequent problems and their solutions.

Power Failures

Table 118: Power Problem Diagnosis

Symptom	Cause	Solution
Everything stops	Total power deficit	Add more generators or reduce load
Intermittent shutdowns	Demand exceeding capacity	Check Power Pole Mk.3 graph, add buffer
Fuel generators stop	Fuel pipeline empty	Check pump head lift, verify refinery output
Coal plants flicker	Water shortage	Add extractors, check pipe flow rate
Nuclear plant shuts down	No fuel rods or water	Check entire uranium processing chain
Grid overload on startup	Everything draws power simultaneously	Install Power Switches, stagger startup

Belt and Throughput Issues

Table 119: Belt Problem Diagnosis

Symptom	Cause	Solution
Building starves despite input	Belt tier too slow	Upgrade belt or add parallel belts
Belt backs up endlessly	Output full / downstream blocked	Check downstream consumption or add sink

Items moving slowly	Belt overloaded past capacity	Items still move at belt speed; check belt tier
Splitter not distributing evenly	Outputs backed up differently	Manifolds self-correct over time; use balancers if critical
Merger jammed	Output belt too slow for 3 inputs	Upgrade output belt or use multiple mergers

Fluid System Problems

Table 120: Fluid Problem Diagnosis

Symptom	Cause	Solution
Pipe not flowing	Head lift exceeded / no pump	Add Pipeline Pump every 20m of vertical
Refinery stops producing	Byproduct full (Fluid buffer)	Ensure byproduct has output path or sink
Water extractor stops	No power or full pipe	Check power connection; ensure output has destination
Oil extractor underperforming	Clock speed or purity	Check node purity; overclock if needed
Fluid buffer fills instantly	Downstream consumption too low	Add more consumers or sink excess
Pipe shows half full	Normal behavior	Pipes show average fill level, not flow rate

Production Line Problems

Table 121: Production Problem Diagnosis

Symptom	Cause	Solution
Assembler idle with one input	Missing second ingredient	Check both input belts; balance ratios
Constructor output full	Downstream building too slow	Speed up downstream or add parallel line
Manufacturer constantly starved	4 inputs hard to balance	Use dedicated belts per input; check each ratio
Miner output backs up	Smelters can't keep up	Add more smelters or overclock existing

Everything works but too slowly Ratios incorrect Use production calculator; verify clock speeds

60. Advanced Building Techniques

Clock Speed Micro-Management

Rather than building exact ratios, use clock speeds to fine-tune production lines:

- **Underclocking saves power exponentially:** A building at 50% speed uses only 23% power, not 50%
- **Overclock miners, underclock production:** Maximize raw resource extraction, then slow production to match
- **Use 0.1% increments for perfect ratios:** The slider supports fractional clock speeds
- **Example:** Need 45 screws/min from a constructor that makes 40/min at 100%? Set to 112.5%

Overflow Systems

Table 122: Overflow Sink Designs

Method	Setup	When to Use
Smart Splitter Overflow	Set one output to "Overflow" into sink	Always keep main line full
Programmable Splitter	Route excess specific items to sink	Multi-item line sorting
Priority Merger	Merger with main line + overflow line	Backup path when main full
Direct Sink Connection	Final building output → AWESOME Sink	Guaranteed no backup

Sub-Floor Power Distribution

Hide power infrastructure beneath your factory floor:

1. Build factory on foundations at least 2m above terrain
2. Place Power Poles Mk.3 underneath the floor
3. Run cables under foundations (they clip through)
4. Build wall power poles for vertical connections
5. Result: Clean factory floor with no visible power lines

Floor-Marked Belt Lanes

Use painted foundations to organize belt routing:

- **Color-code foundations by belt type (yellow = raw ore, blue = intermediate, green = finished)**
- **Leave exactly one foundation gap between parallel belts for clearance**
- **Use arrow decals (AWESOME Shop) to indicate flow direction**
- **Reserve specific floor heights for specific belt tiers (ground = Mk.1-2, +4m = Mk.3-4, +8m = Mk.5)**

61. Time-Saving Techniques

Table 123: Efficiency Tips

Technique	Time Saved	When Applicable
Hypertube cannon	Massive travel time reduction	Any distance > 1km
Jetpack + Blade Runners	Fastest ground traversal	Exploration, short trips
Map beacon placement	No more getting lost	Mark every outpost and node
Build Gun mass-dismantle	Hold F for area removal	Clearing old builds
Pre-plan with foundations	Avoids rebuild cycles	Before placing production
Copy-Paste settings	Instant recipe/clock setup	Multiple identical buildings
Resource scanner ping	Finds closest node instantly	Looking for any resource
Vehicle auto-save routes	One-time route setup	Automated transport
Train for bulk, drones for precision	Optimized logistics	Mid-to-late game
AWESOME Sink overflow	No more manual deletion	Any excess production

The Hypertube Cannon: Enter a hypertube entrance facing a long straight tube. Just before reaching the end, jump (space) and simultaneously exit the tube. The momentum launches you hundreds of meters. With practice, you can cross entire biomes in seconds. The ultimate fast-travel technique (until you unlock the actual teleporter in Tier 9).

62. Calculator and Planning Tools

Online tools can dramatically simplify factory planning by computing exact ratios and building counts.

Key Calculator Features

Table 124: What Production Calculators Can Do

Feature	Benefit
Recipe tree visualization	See every step from raw ore to final product
Building count calculator	Exact number of each building type needed
Clock speed optimization	Suggests optimal overclock/underclock values
Power requirement estimation	Total MW needed for the entire chain
Belt tier recommendation	Which belt Mk. is needed at each stage
Alternate recipe comparison	Shows which alternate saves most resources
Interactive map overlay	Plan factory placement on actual game map

Recommended Online Tools

- **Satisfactory Calculator (satisfactory-calculator.com):** The gold standard. Interactive map, production planner, save game parser, and more.
- **Satisfactory Tools (satisfactorytools.com):** Clean production calculator with alternate recipe optimization.
- **SCIM (Satisfactory Calculator Interactive Map):** Upload your save to see every node, building, and item on a live map.

Part XXIII: Quick Reference Cards

63. One-Page Cheat Sheet

A condensed reference for the most frequently needed information during gameplay.

Tier Unlock Priority

Table 125: What to Rush at Each Tier

Tier	Priority Unlock	Why
Tier 0	Miner Mk.1, Smelter, Constructor	Basic automation
Tier 1	MAM, foundations	Research + organized building
Tier 2	Assembler, Chainsaw, AWESOME Sink	Combined parts + clear land
Tier 3	Coal Power, Water Extractor, Vehicles	Infinite power begins here
Tier 4	Miner Mk.2, Hypertube, Mk.3 belts	Double extraction, fast travel
Tier 5	Oil Refinery, Jetpack, Fuel Gen	2.5x power jump
Tier 6	Manufacturer, Trains, Power Storage	Complex parts + bulk logistics
Tier 7	Blender, Drones, Mk.5 belts	Advanced recipes + air logistics
Tier 8	Nuclear Power, Particle Accelerator	Massive power, endgame parts
Tier 9	Ficsonium, Teleporter	Waste solution + fast travel

Critical Recipe Ratios (Default)

Table 126: Most-Used Ratios

From	To	Ratio
Iron Ore	Iron Plates	3:2
Iron Ingot	Screws	1:4
Iron Plate + Screw	RIP	6:12:1
Iron Rod + Screw	Rotor	5:25:1

RIP + Rod	Modular Frame	3:12:2
Steel Ingot	Steel Beam	4:1
Steel Ingot	Steel Pipe	3:2
Copper Ingot	Copper Sheet	2:1
Crude Oil	Plastic	3:2
Circuit Board + Plastic	Computer	10:8:1

Power Plant Scaling

Table 127: Power Plants by Era

Era	Generator	Output Each	For 1,000 MW
Tier 0-2	Biomass Burner	20 MW	50 burners
Tier 3-4	Coal Plant	75 MW	14 plants
Tier 5-7	Fuel Generator	150 MW	7 generators
Tier 7 (Turbo)	Fuel Generator (Turbofuel)	150 MW	7 generators (but 2.7x efficient)
Tier 8	Nuclear Plant	2,500 MW	1 reactor
Endgame	Ficsonium Nuclear	2,500 MW	1 reactor (uses waste)

Exploration Gear Checklist

Table 128: What to Bring Exploring

Item	Quantity	Purpose
Rifle + Ammo	1 + 200 rounds	Combat
Medicinal Inhaler	10+	Healing
Jetpack	1 + Fuel packs	Vertical traversal
Blade Runners	1	Speed
Gas Mask	1	Poison protection
Nobelisk	20+	Destructible terrain / combat
Object Scanner	1	Locate resources
Foundations + Ramps	200+	Temporary bridges/stairs

Power Shards	10+	Field overclocking
Beacon	20+	Mark important locations

Building Costs Quick Reference

Table 129: Common Building Costs

Building	Cost	Tier
Smelter	5 Iron Rods + 5 Wire	0
Constructor	3 RIP + 5 Cable	0
Assembler	8 RIP + 4 Cable	2
Manufacturer	10 Motor + 20 Plastic + 5 Cable	6
Refinery	10 Motor + 10 Steel Pipe + 5 Cable	5
Blender	20 Motor + 50 Cable + 50 Plastic	7
Miner Mk.1	1 Portable Miner + 10 Iron Plate + 10 Concrete	0
Miner Mk.2	2 Mk.1 + 10 Steel Beam + 10 Concrete	4
Miner Mk.3	3 Mk.2 + 15 Steel Pipe + 15 Concrete	8
Power Pole	3 Wire + 2 Iron Rod	0
Power Pole Mk.2	6 Wire + 2 Iron Rod + 2 Concrete	4
Power Pole Mk.3	10 Wire + 6 Steel Pipe + 4 Concrete	6
Conveyor Mk.1	1 Iron Plate	0
Conveyor Mk.2	1 RIP	3
Conveyor Mk.3	1 Steel Beam	4
Conveyor Mk.4	1 Steel Beam + 1 Encased Beam	5
Conveyor Mk.5	1 Alclad Aluminum Sheet	7
Storage Container	4 Iron Plate + 4 Iron Rod	1
Industrial Storage	10 Steel Beam + 10 Steel Pipe	6
Foundation (8m)	6 Concrete	1
Wall (8m)	4 Concrete + 2 Iron Plate	1
Doorway	4 Concrete + 2 Iron Plate	1
Jump Pad	2 RIP + 10 Cable + 5 Iron Plate	2

64. Patch History and Changes (1.0)

Table 130: Major 1.0 Changes from Early Access

System	Change	Impact
Tier 9 added	Ficsonium, Quantum Computers, final delivery	Extended endgame by 20+ hours
Nuclear rework	Plutonium processing chain added	Waste management is now solvable
Recipe rebalance	Many alternate recipes adjusted	Some previously OP recipes nerfed
New biome content	Additional crash sites, slugs	More exploration rewards
Performance optimization	UE5 improvements	20-30% better FPS in large factories
Building copy-paste	Settings can be copied between buildings	Massive time saver
New building pieces	Glass foundations, additional walls	More aesthetic options
Multiplayer stability	Desync and crash fixes	Smoother co-op experience

65. Terminology Glossary

Table 131: Satisfactory Community Terms

Term	Meaning
The HUB	Central base building, respawn point, progression interface
MAM	Multi-Analyser Machine, research station
ADA	AI assistant voice, provides guidance
Pioneer	The player character (you)
RIP	Reinforced Iron Plate
HMF	Heavy Modular Frame
Manifold	Cascade belt design using sequential splitters
Main Bus	Central trunk of parallel resource belts

Mall	Shopping mall, factory section producing building parts
Megabase	Extremely large centralized factory
Outpost	Small remote factory at a resource node
Overclock (OC)	Using Power Shards to increase building speed
Underclock	Reducing building speed to save power
Head Lift	How high fluid can rise before needing a pump
Spaghetti	Disorganized belt/pipe layout (often negative)
The Factory Must Grow	Community motto; there is always more to build
Somersloop / Mercer Sphere	Mysterious alien artifacts with unknown purpose
S.A.M. Ore	Strange Alien Matter; currently decorative
FICSIT	Fictional corporation; "Fix-It"
Phase 3 Wall	100,000 Automated Wiring delivery, longest grind

66. Final Statistics Summary

Table 132: Satisfactory By The Numbers

Category	Count/Value
World Size	~30 km² (hand-crafted)
Biomes	13 major regions
Raw Resources	24 extractable types
Component Types	100+ craftable items
Building Types	50+ placeable structures
Recipe Count	150+ (including alternates)
Vehicle Types	4 driveable + train + drone
Creature Types	15+ hostile variants
Power Slugs (total)	800+ scattered across map
Crash Sites	120+ (each with Hard Drive)
Tiers	9 (0 through 8+)
Space Elevator Phases	7 deliveries

Geothermal Geysers	16 free power sources
Maximum Power (Nuclear)	2,500 MW per reactor
Maximum Belt Speed	780 items/min (Mk.5)
Maximum Pipe Flow	600 m3/min (Mk.2)
Co-op Players	Up to 4 simultaneous
Development Time (1.0)	5+ years (March 2019 - Sept 2024)
Game Engine	Unreal Engine 5

The Satisfactory Compendium

Complete Reference for Pioneers

9 Tiers · 137+ Tables · Complete Recipe Catalog

Power Systems · Creature Bestiary · Advanced Logistics

Compiled May 2025 · Version 1.0+

"FICSIT: Because why do anything yourself when you can make something else do it for you?"

Part XXIV: Extended Reference Tables

67. Complete Building Power and Size Reference

Every production building's physical dimensions and power requirements for precise factory layout planning.

Table 133: Building Dimensions and Footprint

Building	Width (m)	Length (m)	Height (m)	Power (MW)	Foundations (WxL)
Smelter	6	9	6	4	1x2
Foundry	10	9	9	16	2x2
Constructor	8	5	5	4	1x1
Assembler	15	10	7	15	2x2
Manufacturer	20	15	10	55	3x2
Refinery	12	15	20	30	2x2
Blender	12	10	12	75	2x2
Particle Accelerator	24	20	16	500-1,500	3x3
Packager	8	4	5	10	1x1
Converter	10	8	8	100	2x1
Miner Mk.1	6	6	8	5	1x1
Miner Mk.2	6	6	10	12	1x1
Miner Mk.3	6	6	12	30	1x1
Oil Extractor	12	18	20	40	2x3
Water Extractor	8	8	6	20	1x1
Coal Power Plant	20	20	24	75 (output)	3x3
Fuel Generator	10	8	7	150 (output)	2x1
Nuclear Power Plant	32	32	30	2,500 (output)	4x4
Storage Container	5	5	4	0	1x1

Industrial Storage

8

8

7

0

1x1

68. Pure Node Location Master List

Every confirmed Pure node location for efficient mega-factory planning.

Table 134: Pure Resource Node Locations

Resource	Biome	Pure Count	Notable Coordinates/Features
Iron Ore	Dune Desert	3	Western mega-field
Iron Ore	Grassy Fields	2	Northwest cluster
Iron Ore	Rocky Desert	2	Eastern plateau
Copper Ore	Dune Desert	2	Central dunes
Copper Ore	Grassy Fields	1	Southern cliffs
Copper Ore	Rocky Desert	1	Canyon edge
Copper Ore	Spider Coast	1	Coastal shelf
Coal	Rocky Desert	1	Eastern deposit
Coal	Red Bamboo Fields	1	Northern edge
Coal	Red Jungle	1	Southern clearing
Coal	Dune Desert	1	Northeast canyon
Coal	Eastern Dunes	1	Sand ridge
Limestone	Grassy Fields	3	Scattered (everywhere)
Limestone	Rocky Desert	2	Canyon walls
Limestone	Northern Forest	2	River banks
Caterium	Dune Desert	1	Southern edge
Caterium	Northern Forest	1	Northwest hilltop
Raw Quartz	Dune Desert	1	Eastern cliffs
Sulfur	Dune Desert	1	Western canyon
Sulfur	Swamp	1	Western approach
Bauxite	Red Jungle	2	Northern and central
Bauxite	Dune Desert coast	1	Cliff edge

Uranium	Swamp	1	Central island
Crude Oil	Dune Desert	2	Northern coast
Crude Oil	Rocky Desert	1	Eastern edge
Crude Oil	Northern Forest	1	Western coast

69. Satisfactory Timeline and Development History

Table 135: Key Development Milestones

Date	Event	Significance
February 2018	Game announced	First reveal by Coffee Stain Studios
March 19, 2019	Early Access launch	Released on Epic Games Store
2020	Steam release	Expanded platform availability
2021	Update 4	Trains, signs, lights added
2022	Update 5-6	Overhauled exploration, new biomes
2023	Update 7-8	Nuclear rework, Tier 8 added
2024	UE5 Migration	Upgraded to Unreal Engine 5
September 10, 2024	1.0 Full Release	Game officially "complete"
Post-1.0	Ongoing patches	Quality of life improvements

70. Coffee Stain Studios Profile

Table 136: Developer Information

Attribute	Details
Studio Name	Coffee Stain Studios AB
Founded	2010
Headquarters	Skovde, Sweden
Parent Company	Embracer Group (formerly THQ Nordic)
Notable Games	Goat Simulator, Satisfactory, Sanctum series, Valheim (publisher)
Team Size (Satisfactory)	~30-40 developers

Engine	Unreal Engine 5 (migrated from UE4)
Development Philosophy	Community-driven, transparent development via weekly videos
Community Engagement	YouTube dev diaries, active Discord, Reddit presence
Sales (est.)	5+ million copies (as of 2024)

71. Satisfactory vs. Other Factory Games

Table 137: Genre Comparison

Feature	Satisfactory	Factorio	Dyson Sphere Program	Shapez
Perspective	First-person 3D	Top-down 2D	Third-person 3D	Top-down 2D
Combat	First-person shooter	Tower defense	Minimal	None
Exploration	Major focus	Moderate	Multiple planets	None
Logistics	Belts, trains, drones	Belts, trains, robots	Belts, logistics vessels	Belts only
Power	Fuel-based generators	Steam, solar, nuclear	Multiple types	Not required
Enemies	Wandering creatures	Organized attacks	Minimal	None
World	Hand-crafted 30km2	Procedural infinite	Procedural planets	Infinite grid
Multiplayer	Up to 4 co-op	Server-based, many players	Not native	Not native
Mods	Community tools	Extensive modding API	Community mods	Steam Workshop
Visual Style	Realistic alien	Industrial pixel art	Stylized sci-fi	Minimalist
Complexity	High	Very High	High	Medium
Learning Curve	Moderate	Steep	Moderate	Gentle

72. Systematic Milestone Planning

A recommended sequence for efficiently progressing through the game.

Hours 0-5: Foundation

- Build HUB, complete all Tier 0 milestones
- Automate Iron Plates, Rods, and Wire
- Build biomass burners with automated leaf collection
- Research Caterium in MAM if found
- Locate nearest Coal node and plan route

Hours 5-15: Coal Era

- Rush Coal Power -- this is your highest priority
- Build dedicated iron and copper smelting lines
- Automate RIP, Rotors, and Modular Frames
- Complete Tier 1-2 milestones
- Find and analyze first 5-10 Hard Drives
- Build a "mall" for building parts
- Set up AWESOME Sink for overflow

Hours 15-30: Steel and Oil

- Unlock and automate Steel production
- Build first vehicle for transport
- Find oil and establish refinery
- Automate Plastic, Rubber, and Fuel
- Set up first Fuel Generators
- Complete Space Elevator Phase 1
- Build hypertube for personal travel

Hours 30-60: Manufacturing

- Automate Computers and Heavy Modular Frames
- Build train network for bulk transport
- Complete Space Elevator Phase 2 and 3

- Set up large-scale power (Fuel or early Nuclear)
- Explore all biomes, collect Power Slugs aggressively
- Build dedicated production outposts

Hours 60+: Endgame

- Build nuclear power plant(s)
- Manage nuclear waste through Plutonium or storage
- Automate Supercomputers and Radio Control Units
- Build drone network for precision logistics
- Complete remaining Space Elevator phases
- Build the factory of your dreams

73. Cheat Sheet: Every Belt and What It Carries

Table 138: Optimal Belt Usage Guide

Belt Tier	Best For	Avoid Using For
Mk.1 (60/min)	Early game, malls, low-consumption lines	Any scaled production
Mk.2 (120/min)	Mid-game main lines, coal belts, biomass	Scaled ingot transport
Mk.3 (270/min)	Steel beams, concrete, most components	Ore from Mk.3 miners
Mk.4 (480/min)	Ore from Mk.2 miners, most main buses	Ore from Mk.3 miners
Mk.5 (780/min)	Ore from Mk.3 miners, consolidated lines	Nothing -- this is the max

74. Achievement and Milestone Checklist

Table 139: Completion Tracker

Category	Item	Completed
Progression	All 9 Tiers unlocked	[]
Progression	Space Elevator Phase 7	[]
Research	All MAM trees completed	[]
Research	All Hard Drives collected	[]
Power	First Coal Power Plant	[]

Power	First Nuclear Power Plant	[]
Power	10,000+ MW grid	[]
Power	50,000+ MW grid	[]
Transportation	First vehicle route	[]
Transportation	Train network operational	[]
Transportation	Drone network operational	[]
Exploration	All biomes visited	[]
Exploration	All geysers found	[]
Exploration	500+ Power Slugs collected	[]
Exploration	Lizard Doggo tamed	[]
Production	1,000 of each component automated	[]
Production	10 Computers/min automated	[]
Production	Nuclear Fuel Rods automated	[]
AWESOME	100 Coupons earned	[]
AWESOME	500 Coupons earned	[]
AWESOME	All color cartridges purchased	[]
Building	Factory covers 500+ foundations	[]
Building	Hypertube network spans 2+ biomes	[]
Building	Color-coded production lines	[]

Remember: Satisfactory has no time limit, no score, and no punishment for inefficiency. The journey is the destination. Whether you're a meticulous optimizer or a chaotic builder, the factory must grow -- and it grows best when you're having fun.