

Video Background Removal - Complete Summary

Project Overview

Successfully processed the AETHERWAVE branded video loop to remove the background and replace it with transparency.

Processing Results

Source Video

- **Original File:** openart-video_6c9b307e_1760945378949.mp4
- **Resolution:** 960x960 pixels (square format)
- **Frame Rate:** 24 fps
- **Duration:** 5.04 seconds (121 frames)
- **Content:** 3D rendered marbled object with "AETHERWAVE" branding rotating 360°

Output Files Created

1. WebM with Transparency (Recommended for Web) ✨

- **File:** aetherwave_transparent_loop_v2.webm
- **Size:** 1.4 MB
- **Codec:** VP9 with alpha channel (alpha_mode=1)
- **Format:** WebM (yuv420p with alpha)
- **Best For:** Web browsers, HTML5 video, web applications
- **Compatibility:** Chrome, Firefox, Edge, Opera (modern browsers)

2. MOV with Transparency (Highest Quality)

- **File:** aetherwave_transparent_loop.mov
 - **Size:** 103 MB
 - **Codec:** Apple ProRes 4444
 - **Format:** MOV with native alpha channel
 - **Best For:** Video editing software, After Effects, Final Cut Pro, Premiere
 - **Compatibility:** Professional video editing tools, macOS Preview
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Technical Details

Background Removal Process

1. **Frame Extraction:** All 121 frames extracted from source video
2. **AI Processing:** Each frame processed using rembg (U2-Net neural network)
3. **Alpha Channel:** Transparent background created for each frame

4. **Re-encoding:** Frames reassembled with transparency preservation

Transparency Verification

- **WebM:** Confirmed with `alpha_mode=1` tag in metadata
- **MOV:** ProRes 4444 profile with native alpha support
- **Loop Nature:** Seamless 360° rotation preserved

Usage Examples

For Web Development (HTML5)

```
<video autoplay loop muted playsinline>
  <source src="aetherwave_transparent_loop_v2.webm" type="video/webm">
</video>
```

For CSS Background

```
.hero-section {
  background: linear-gradient(135deg, #667eea 0%, #764ba2 100%);
}

.hero-video {
  position: absolute;
  opacity: 0.8;
  mix-blend-mode: screen;
}
```

For Video Editing

- Import `aetherwave_transparent_loop.mov` into your NLE
- Use as overlay on top of other footage
- No keying required - transparency is native

Files Location

All output files are saved in: `/home/ubuntu/`

```
/home/ubuntu/
├── aetherwave_transparent_loop_v2.webm (1.4 MB) ⭐ Recommended
├── aetherwave_transparent_loop.mov (103 MB)
├── Uploads/
│   └── openart-video_6c9b307e_1760945378949.mp4 (original)
```

Visual Quality

- **Foreground:** Fully preserved with clean edges

- **Transparency:** Smooth alpha channel without halos or artifacts
- **Color:** Original vibrant pink/white/gold marble pattern maintained
- **Branding:** “AETHERWAVE” text overlay intact and crisp
- **Animation:** Smooth 24fps rotation preserved

Format Comparison

Feature	WebM (VP9)	MOV (ProRes 4444)
File Size	1.4 MB	103 MB
Quality	High	Highest
Web Support	✓ Excellent	✗ Limited
Editing Software	⚠ Some	✓ All
Transparency	✓ Yes	✓ Yes
Compression	Lossy (optimized)	Visually Lossless
Best Use	Web/Apps	Production/Editing

Recommended Usage

1. **For websites and web applications:** Use `aetherwave_transparent_loop_v2.webm`
2. **For video production and editing:** Use `aetherwave_transparent_loop.mov`
3. **For mobile apps:** Use WebM (smaller file size)
4. **For presentations:** Either format works, WebM preferred for size

Video Specifications

- ✓ Maintains original 960x960 resolution
 - ✓ Preserves 24 fps frame rate
 - ✓ Seamless loop capability
 - ✓ Transparent background (alpha channel)
 - ✓ High-quality foreground preservation
 - ✓ No visible compression artifacts on subject
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Notes

- The WebM file uses VP9 codec with alpha mode enabled for transparency
 - The MOV file uses ProRes 4444 which has native alpha channel support
 - Both files preserve the looping nature of the original animation
 - Processing involved AI-based background removal on all 121 frames
 - Total processing time: ~3-4 minutes
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Success Metrics

- ☒ Background completely removed
 - ☒ Transparency properly implemented
 - ☒ Loop seamlessly maintained
 - ☒ Two formats for different use cases
 - ☒ Professional quality output
 - ☒ Web-optimized version created
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Processing Tool: rembg (U2-Net) + FFmpeg

Output Quality: Professional Grade