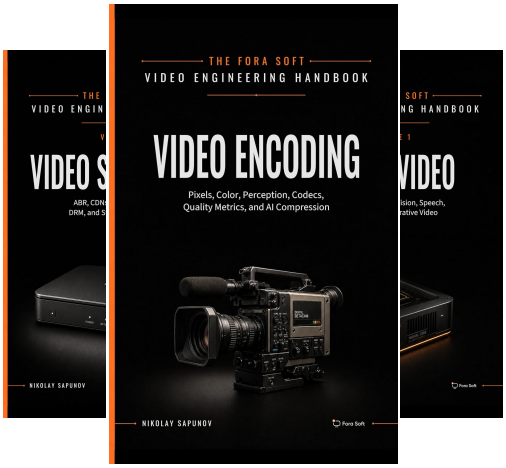
The Compression-Artifact Field Guide

Every common video artifact — what it looks like, where it is born, which metric catches it, and the fix.

Artifact	Looks like	Born from	Metric that catches it / blind spot	The fix
Blocking (macroblocking)	Visible square tiles on a grid	Coarse DCT quantization at low bitrate	PSNR / SSIM / VMAF detect it well	More bits; better preset; deblocking filter
Ringing	Ripples hugging sharp, high-contrast edges	High-frequency coefficients truncated (Gibbs)	Caught weakly — small in pixels, visible to the eye	More bits; lighter pre-sharpening; denoise
Mosquito noise	Shimmering dots around edges, moving frame to frame	Frame-to-frame variation of ringing	Per-frame metrics miss the motion; needs a temporal check	Denoise before encode; more bits on edges
Blur / detail loss	Texture and fine detail turn to mush	High frequencies quantized away; downscaling	SSIM / VMAF detect it; hard to tell from intentional softness	Raise bitrate; check the scaling chain
Banding (contouring)	Stripes across a smooth sky or fade	Too few code values; low bit depth	Blind spot — PSNR/SSIM/VMAF miss it; use CAMBI	10-bit; dithering; debanding filter
Color bleeding	Colour leaks past its sharp edge	Coarse chroma quantization; 4:2:0 subsampling	Weak — luma-focused metrics under-weight chroma	Higher chroma quality; 4:2:2 for critical work
Judder / stutter	Motion lurches on a pan, or jumps	3:2 pulldown / telecine; dropped or late frames	Blind spot — per-frame metrics cannot see timing	Match the frame rate; fix delivery cadence
Freezing / tiling	Picture freezes, or smears into blocks	Rebuffering; lost network packets	Out of scope for picture metrics; use QoE telemetry	Stabilise delivery; tune the player / ABR

Honest rule

PSNR, SSIM and VMAF are blind to banding and to every temporal artifact. Add CAMBI for banding and a temporal check for judder, then confirm hard frames by eye.



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This field guide names eight compression artifacts, where each is born, which metric catches it and the fix. Our seven-volume handbook covers video quality end to end; start with Volume 1 for codecs and quality metrics, then Volume 3 for players and QoE monitoring, and Volume 6 for AI-based quality tools.

WHAT YOU WILL FIND INSIDE

- Codecs, quantization and quality metrics (Vol. 1)
- Bit depth and banding (Vol. 1)
- QoE monitoring and player stalls (Vol. 3)
- AI models for video analysis (Vol. 6)

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