



The
WALT DISNEY
Company

Disney Digital Supply Chain
ProRes Creation Nuances
V1.0

Revision History

Version/Date	Changes	Author
v0.1 DRAFT - 2023-06-01	• Initial draft • Notations for major systems (Clipster, Transkoder, Resolve) • Metadata, range, color space, tags • Added Cortex	
V1.0 - 2023-08-16	• Published as v1.0	

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Introduction

Numerous workflow nuances exist in deliverable workflows in mastering software. This document addresses known items regarding ProRes wrapped in Quicktime which may affect accurate file creation and delivery to [Disney specifications](#). Information within will be updated as software releases address items or change to demonstrate new ones.

It is the responsibility of a production or vendor to ensure they are referencing the most recent specifications prior to delivery.

ProRes Creation Nuances

Quicktime MOV using the ProRes family of codecs has several nuances in creation across the main mastering systems used in post-production and distribution. The following sections include notes, techniques, and in many cases specific settings to best match [Disney mastering specifications](#). Please contact your Disney representatives with any questions.

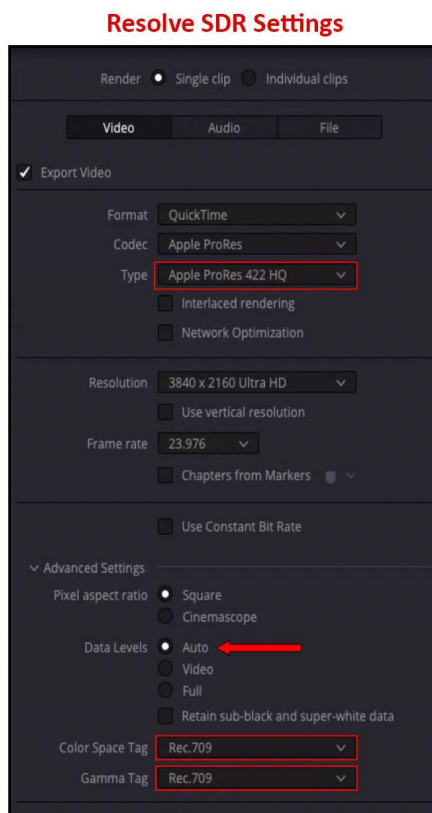
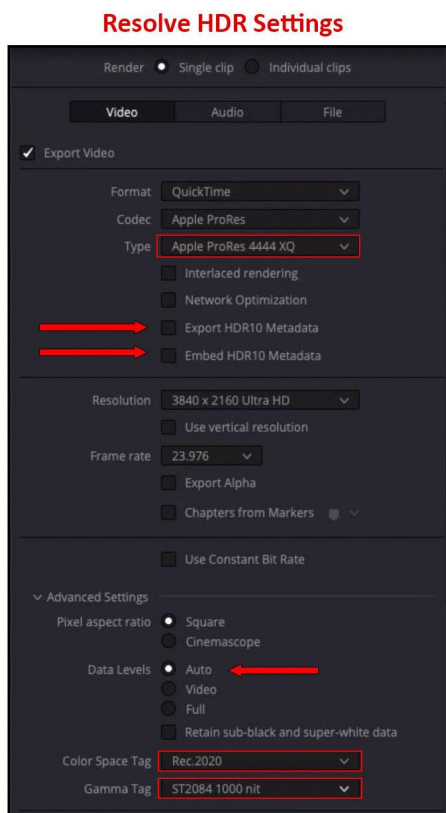
HDR Metadata

Disney prefers HDR ProRes files *not* include embedded HDR metadata. Any HDR metadata present in files otherwise created to Disney spec will be ignored in favor of sidecar Dolby Vision and HDR10 metadata. HDR10 metadata may, however, be included in select servicing workflows to match partner requirements.

HDR Metadata in Resolve

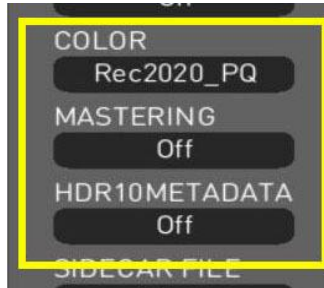
HDR - Follow red highlights in example below. HDR metadata export / embed should be unchecked, Data Levels set to Auto, Color Space set to Rec. 2020 and Gamma to ST.2084 1000 nit.

SDR - Follow red highlights in example below. Data Levels set to Auto, Color Space and Gamma set to Rec. 709.



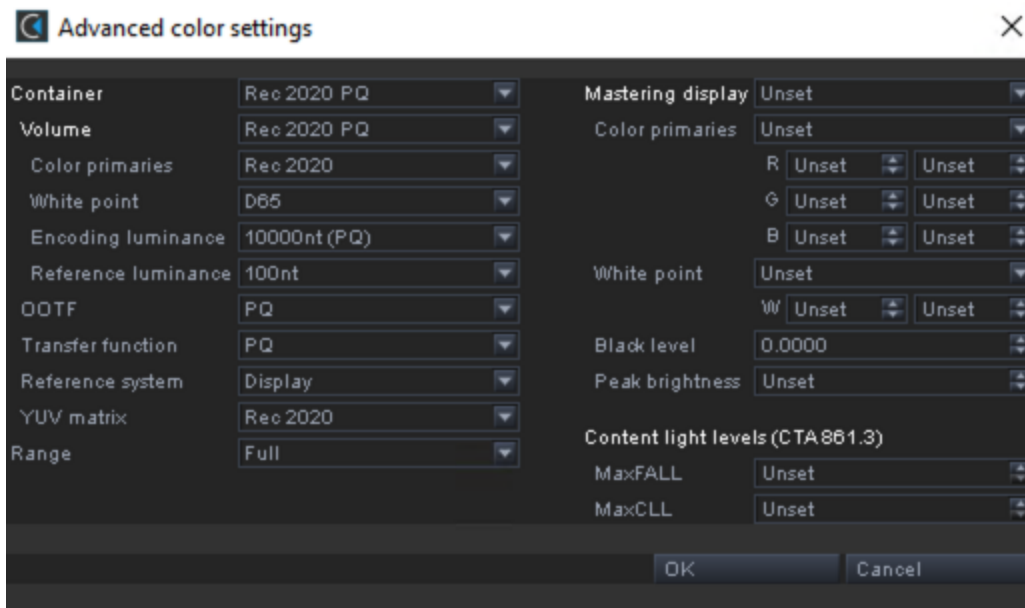
HDR Metadata in Transcoder

Mastering Display settings and content light level settings should be disabled or “Off”. These should also be disabled in Disney presets.



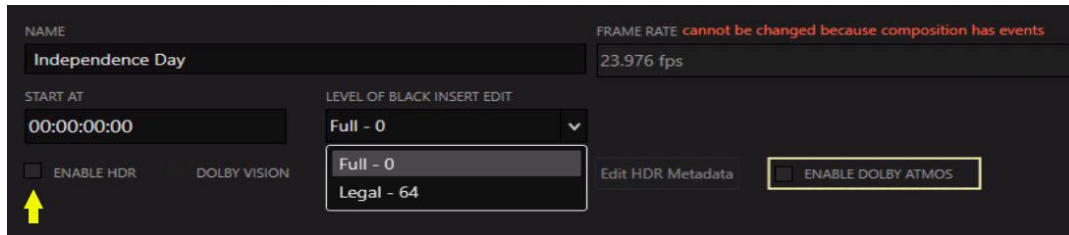
HDR Metadata in Clipster

Clipster allows a user to enable embedded metadata in both the *Timeline* and *Finalize* windows under the *Advanced Color* tab. The Mastering Display should be disabled or “Unset” by default, as well as in user presets created for Disney mastering deliverables. Populating these fields will embed the metadata in the .mov.



HDR Metadata in Cortex

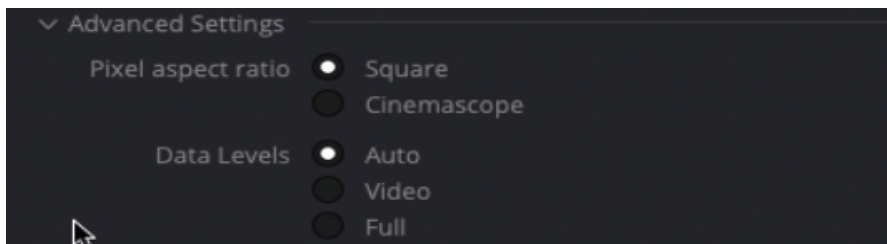
When transcoding from a composition in Cortex, make sure ENABLE HDR is deselected to ensure that HDR metadata will not be embedded in the output file.



Range Settings

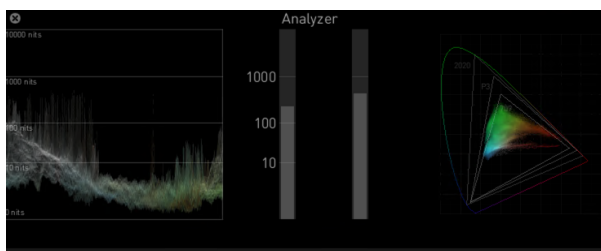
Range in Resolve

Most commonly, ProRes exports should be set to “Auto” in Resolve. Choosing “Full” or even “Video” can sometimes break things depending on your color pipeline. This applies to both XQ for HDR and HQ for SDR in Disney spec.

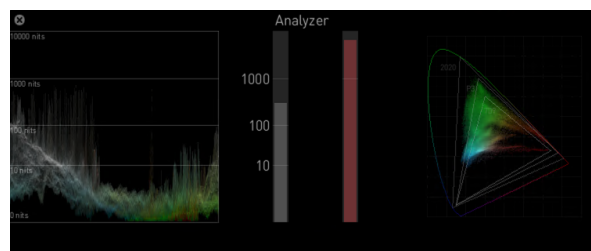


The following example, using the Analyzer from Transkoder, demonstrates a ProRes file encoded as Rec2020 PQ. When set to Auto, the file retains proper color levels. When set to Full, Resolve attempts to “stretch” the color outside the expected levels, causing an excursion.

Set to Auto:



Set to Full:



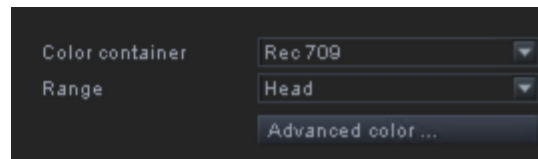
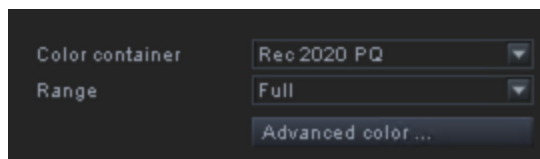
Range in Transcoder

In Transcoder's Delivery page, the range flag for HDR Rec2020 PQ and SDR Rec709 should be set to "None".

HDR Range Flag	SDR Range Flag
	

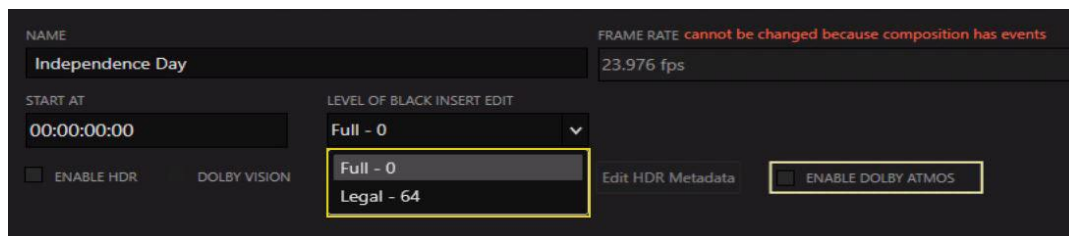
Range in Clipster

Depending on which Clipster release version is in use, the system may default "Head" for ProRes files. In Clipster terminology, "Head" is synonymous with "narrow," "legal," or "video" range. To meet Disney spec, ProRes XQ should be set to "Full" and HQ should follow the default "Head".



Range in Cortex

When rendering from a composition in Cortex, choose "Full - 0" or "Legal - 64" based on the color range of your source.



Color Space and Gamma Tags

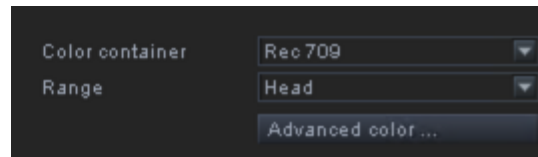
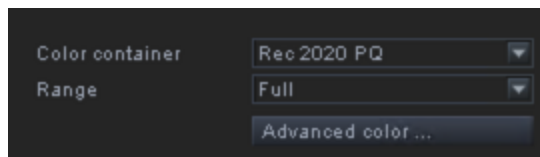
Color Tags / NCLC Atoms

Excerpt from Disney mastering specs:

Color Tags / NCLC Atoms	SDR	Atom	HDR	Atom
Color Primaries	BT.709	1	BT.2020	9
Transfer Characteristics	BT.709	1	ST 2084 or PQ	16
Matrix Coefficients	BT.709	1	BT.2020	9

Clipster

Clipster will automatically set these tags when color space is chosen in the *Finalize* window. Transfer Characteristics are selected in the same pulldown as color space and default to proper values. Custom settings may be made under the *Advanced Color* tab if necessary.



Transcoder

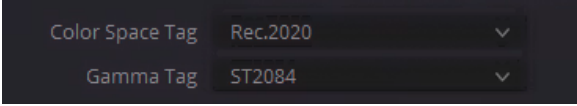
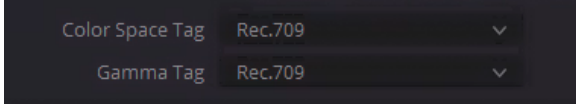
HDR - Color should be set to Rec.2020 PQ with Mastering and HDR10 Metadata set to "Off".

SDR - Color should be set to Rec.709 Legacy with Mastering and HDR10 Metadata set to "Off".

HDR Color Container	SDR Color Container
A screenshot of the HDR Color Container settings panel. It shows 'COLOR' set to 'Rec2020_PQ', 'MASTERING' set to 'Off', and 'HDR10METADATA' set to 'Off'. A yellow box highlights the 'COLOR' and 'MASTERING' sections.	A screenshot of the SDR Color Container settings panel. It shows 'COLOR' set to 'Rec709Legacy', 'MASTERING' set to 'Off', and 'HDR10METADATA' set to 'Off'. A yellow box highlights the 'COLOR' and 'MASTERING' sections.

Resolve

Color Space and Gamma tags should be assigned to ensure the proper tags are written, especially in a complex finishing workflow (like ACES). Using “Same as Project” may inadvertently apply “unknown” or other tags out of spec.

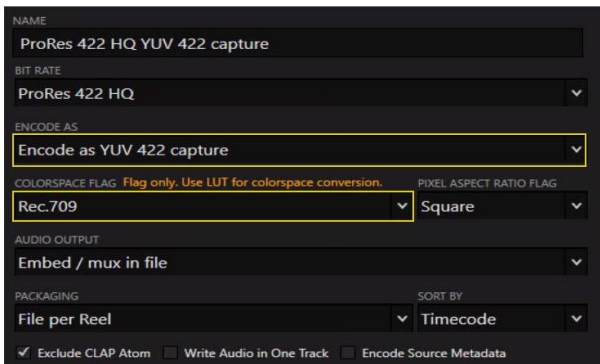
Disney HDR spec requires Rec2020 color space with ST 2084 (PQ)	The standard Rec.709 setting applies the gamma/transform tag “1” and is currently preferred in Disney spec.
	

WARNING: Resolve’s “Rec.709-A” gamma tag setting applies the gamma/transform tag “2” (or “unknown”) which is used in some delivery applications but *not* in current Disney spec

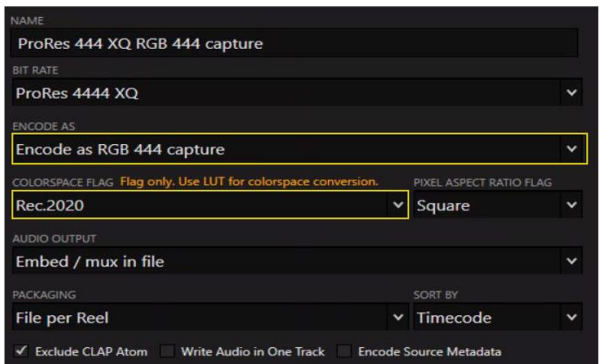
Cortex

When rendering a ProRes, Cortex requires that you make an “encode as” selection based on the range of your source. Below are examples of “encode as” settings for a legal range source and a full range source.

Legal range source:



Full range source:

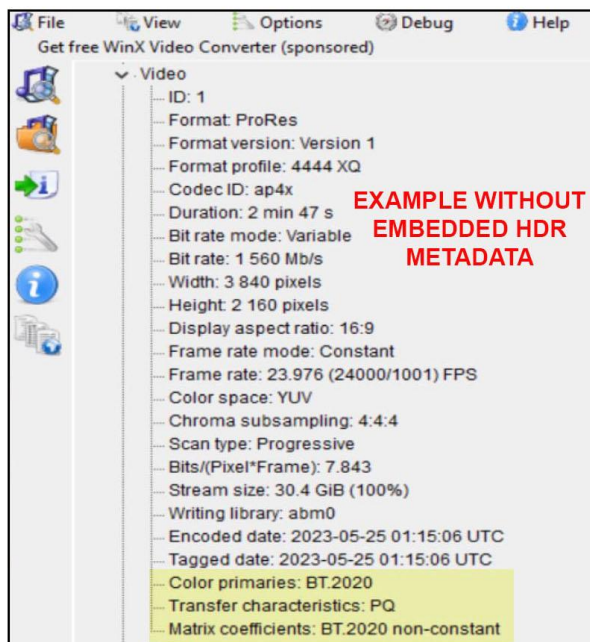


Examples in Media Info

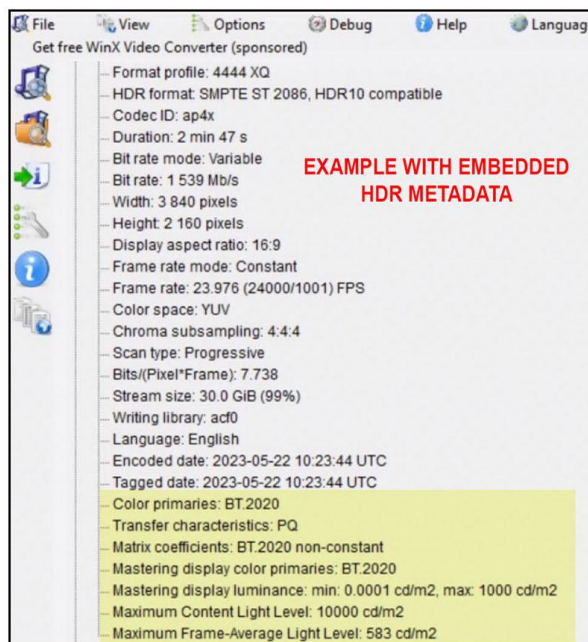
In the examples below, you can see the differences in Quicktime .mov files exported with correct and incorrect color settings.

HDR

CORRECT: MediaInfo indicates that HDR metadata *is NOT* embedded in the Quicktime .mov

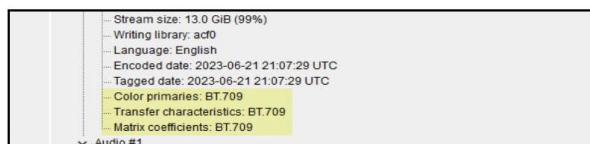


INCORRECT: MediaInfo indicates that HDR metadata *is* embedded in the Quicktime .mov



SDR

CORRECT: MediaInfo displays Color Primaries, Transfer Characteristics and Matrix Coefficients.



INCORRECT: MediaInfo displays only Color Primaries and Matrix Coefficients. Transfer Characteristics are absent.

