

## Norms and quality standards for vinyl records pressed in XDiSC.

### 1.

### Sound

Accepted audio formats:

- Format: WAV / AIFF
- Bit depth: 16 / 24 / 32 bits
- Sampling frequency: 44.1 / 48 / 88.2 / 96 / 176.4 / 192 kHz

(There is no need to send us the maximum possible resolution, 16-bit 44.1 kHz files are sufficient).

We prefer audio in one file for each side, taking into account the gaps between tracks.

If each track is a separate file, we need an appropriate description, for example: "A1 Intro" or "B5 Outro". Whatever the choice, the tracklist must include: sides, track order, track duration and start time.

Master audio must be prepared for vinyl (not CD, Spotify, Soundcloud, etc.). Improperly prepared audio will cause problems such as: saturation/overdrive, loss of treble, narrow stereo, low output.

Even if mastering is done outside of XDiSC, we will carefully check your production before cutting and prepare everything for optimal results.

The changes we introduce are aimed to ensure good cutting, plating and pressing. They involve optimisation of dynamics, surface noise and distortion, covering depth and cut level. While subtle EQ corrections aim to preserve high frequencies and reduce distortion from needle traction as the needle approaches the centre of the disc.

Disc space is limited, so the location of the tracks is important for the depth and volume of the cut. That's why it is important to position the tracks correctly so that the space created translates into the widest possible groove.

1. Turn off hard-working limiters and compressors.
2. Monophonisation below 200-300 Hz is a must, everything in the low frequencies must be in phase.
3. Overall phase correlation should vary from +0.5 to +1 (close to +1 during loud passages).
4. Filter out frequencies below 40 Hz and above 16 kHz.
5. Keep treble contained, especially sibilants.

### Why is my record not loud enough or deviates from the master sent?

In general there are 4 main reasons:

- **Phase correlation/mid-side ratio:** the out-of-phase signal provides vertical modulation instead of lateral modulation. This results in a bean pod-shaped groove instead of a snake-shaped groove (the needle will move up and down while it should be moving left and right). The easiest way to deal with this is to monophonise the low notes. The side information (side from mid-side coding) of the mid and high frequencies is also difficult to track and gets overdriven first. For example, a lead vocal (even a bright one) may remain un-overdriven if it is mono, but a stereo vocal (for example a choir) may already be overdriven due to a needle traction problem. A trumpet in mono can be read, but the same sample in stereo is less likely to be read in a clean manner. The stereo base should be 6-9 dB quieter than the mid-stage information to make the material needle-friendly.

- **High frequencies:** high frequencies are the easiest to overdrive. The de-esser should reduce much more strongly than in the digital medium. Vocals, trumpets, signals based on saw/square/triangle waveforms pose the greatest risk. Also bear in mind that the closer to the label- the greater the loss of high frequencies and the risk of distortion (midrange loss). We suggest placing the most aggressive/bright tracks at the beginning of the side and quieter/darker tracks towards the end.

- **Over-compressed material:** it is a real challenge for the cutting head to replicate transients cut from the ruler. Please bypass the hard-working limiters. More dynamics contained in the masters = more easily it is transferred to the emissive volume level. Brutally-limited masters need to be cut quieter to avoid damaging the head and leaving opportunities for traction for the needle. To maintain an even volume inside the master we strongly recommend its automation.

- **Side length:** if you do not have the above listed problems, check the table of suggested side lengths enclosed. Do not stick to 33.3 rpm by force. If it is possible - please, consider 45 rpm. Often clearer high frequencies are worth more than 1dB on the meter.

Lacquer	Length (min)			
	Format	Recommended	Safe	Possible (not recommended)
	12" 33	16	18	20
	12" 45	10	11	13
	10" 33	9	10	12
	10" 45	7	8	9
	7" 33	4	4:30	5
	7" 45	3	3:30	4

DMM	Length (min)			
	Format	Recommended	Safe	Possible (not recommended)
	12" 33	20	22	28
	12" 45	13	15	18
	10" 33	12	14	17
	10" 45	9	11	12
	7" 33	5	5:30	6
	7" 45	4	4:30	5

The aforementioned guidelines do not mean “meets/does not meet” requirements. Everything is proportional and relative. Let us know your preferences to cut off doubt and avoid re-cuts:

- **linear cut:** a cut focused on maintaining details from the master. Often associated with low output volume, which means a poorer signal-to-noise ratio.

- **standard cut:** a compromise between detail and loudness. The default and suggested solution - trust us.

- **loud cut:** cut as loud as possible. Expect narrow stereo, more severely limited treble, possible

reading saturation due to traction (especially near the label).

This is not a promise to achieve the indicated type. It is a guideline for sound engineers on which direction to take to meet customer expectations. That's why it is strongly recommended to order a Test Press before the final production run.

## **1. Test Press (TP)**

If you want to check before the production run how your master plays, we recommend the option of listening to test records before the production run is pressed, the so-called TP test press. You receive 5 test discs for approval. Once received and accepted, the pressing of the production takes place.

It allows you to listen to the master after cutting and to make any changes to the source material, as well as to lodge complaints related to the transmission of the source files to the LP or to the stamper made.

The complaint should include:

- a record of a portion of the LP or the whole LP, together with an indication of the occurrence at the time and place on the LP,
- a description of the problem and whether it occurs on all discs at the same place and time on the disc.

A production order without TP results in a cut according to the possibilities as well as the limitations in the source files submitted. There is then no test pressing and no possibility to check the cut before production and to have it accepted by the customer. The cut is based on the experience of the mastering studio based on the source material sent, and claims do not include cutting and transmission of the sound to the disc.

## **2. Aesthetic defects**

They are acceptable if they do not affect the sound. It is possible to remove them, at the request of the customer at a cost of 50% of the required undertakings.

## **2. Acceptable characteristics of a vinyl record**

### **2.1 Separation**

This is a visually and acoustically detectable defect of the separation of the pressing - silver dots are visible, they form clusters and chains.

A visual defect is acceptable, as long as it does not affect the sound.



## **2.2 Non-fill**

Occurs on the surface of the disc. The tracks of the disc are not entirely copied, missing material at the top edge of the groove - it is not always audible.

Non-fill is acceptable as long as it does not affect the sound.



## **3. Indentations on the surface**

On the surface of the disc small indentations may be visible which occur in the same place throughout the whole production run - this is due to the wear of the stamper and the pressing/production scratches.

Indentations on the surface are acceptable as long as they don't affect the sound.





#### **2.4 Indentations on the surface**

The disc shows an indentation on the surface. The defect is caused by the treatment of contaminated pressing material.

Scratches on the surface are acceptable as long as they don't affect the sound.



#### **2.5 Scratches caused during packaging and use of the disc**

The main cause is the choice of packaging and careless handling of the media. The greatest influence is the use of inner packaging, which can mechanically damage the discs.

Recommendation: Paper envelopes with anti-static foil, Japan Katta or PE/PCV foil envelopes and

printed inner envelopes on chalkboard paper are the most effective.

Lower protection for discs is provided by the standard white/black inner envelope without foil, which can cause hairlike scratches on the disc and in the grooves. They also release cellulose particles from their edges.

Printed cover and discobag don't protect the disc that well. They may cause small scratches to the disc due to paper residue peeling off the edges of the cover. However, this does not affect the sound quality.

The least suitable material is cardboard and art paper, which cause scratches on vinyl records. Also without affecting the sound quality.

## 6. Cold centre

Due to insufficient heating, the centre of the record is deformed and too thick or due to overcooling, the centre hole is too small.



An excessively protruding centre is unacceptable in any case.

## 2.7 Dirt and other residues

The disc contains a particle (polyvinyl chloride or paper) that forms a bulge on the surface of the disc. The defect is caused by the thermal treatment of the contaminated pressing material or paper.

Such defect is unacceptable in any case.

## 2.8 Discs are bent to one side - they look like a hat

This is caused by high internal tension during the maturation process or prolonged and improper storage. The distance is measured between the flat surface and the centre hole of the plate.

For special orders with only one label, e.g. picture disc shaped, the disc will always be warped.

\* The tolerance is max. 5 mm.

In the case of 7 inches diameter discs and vinyl effects using more than 1 colour (e.g. splatter, side/side, colour in colour, etc.) the disc may be warped due to the different characteristics of the colour mix.

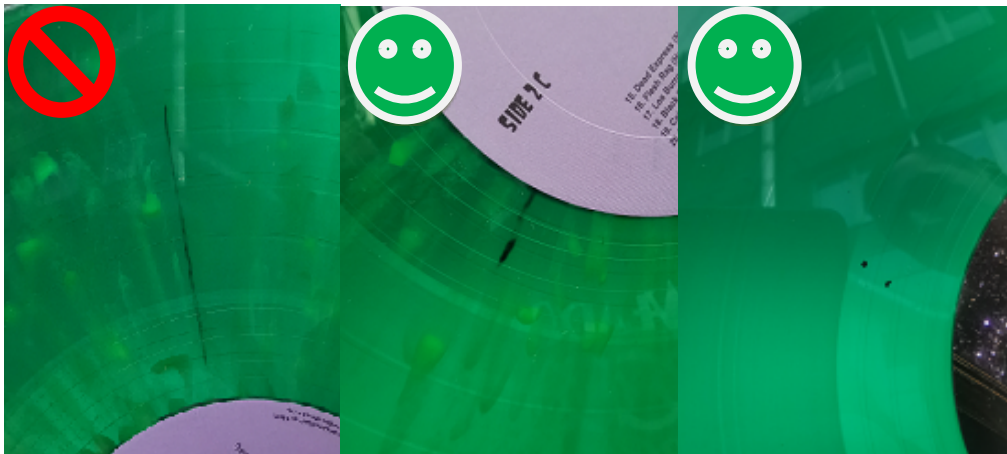
\* The tolerance is max. 3 mm.

For a single-colour disc, the tolerance is 1.5 mm.

## 2.9 Stains and streaks on the discs

The vinyl material (cake) may contain foreign components, most commonly black material. There are two types of stains - visible spot stains, mainly black, and streaks. This is acceptable, provided that:

- the streak does not exceed 2 cm,
- the stain does not exceed 2 mm in diameter.



## 2.10 Colour of vinyl

The colour of the vinyl does not correspond to the vinyl colour chart. Colour options:

- standard colour samples,
- special colours - colours mixed on request, which are subject to customer approval in each case.

There are special metallic single-colour discs in gold, bronze and silver. The composition of the pigment causes an uneven spread of colour, especially in the non-writing area, which results in coloured “waves” of a different colour shade on the vinyl disc. This effect does not affect the recording/sound quality and is not subject to complaint.



### 2.11 Bubbles

Bubbles on vinyl usually occur when covering the base compound, with other PVC granules (splatter), when sufficient plasticisation of the coated compound does not occur during pressing.



Such defect is unacceptable in any case.

## 3.

### Disc label

#### 3.1 Cutting of the label

The sheet of paper has been displaced during the cutting process. Acceptable tolerance is  $\pm 2$  mm.



### **3.2 Change of the colour of the label**

All labels undergo a drying process at high temperatures to remove excess moisture and prevent the labels from blistering during vinyl embossing. As a result of drying, it can happen that labels change colour. This effect is more pronounced with light colours and PMS (Pantone Matching System).





### 3.3 Wrong labels

The labels do not match the label preview. Different labels have been used or the labels of both sides have been swapped.

Such defect is unacceptable in any case.

### 4. Double label

The label is blown all over and doubled.

Such defect is unacceptable in any case.

### 5. Cracked label

Labels crack during pressing and part of the label is displaced.

This is acceptable if the crack does not impede the reading of the text.

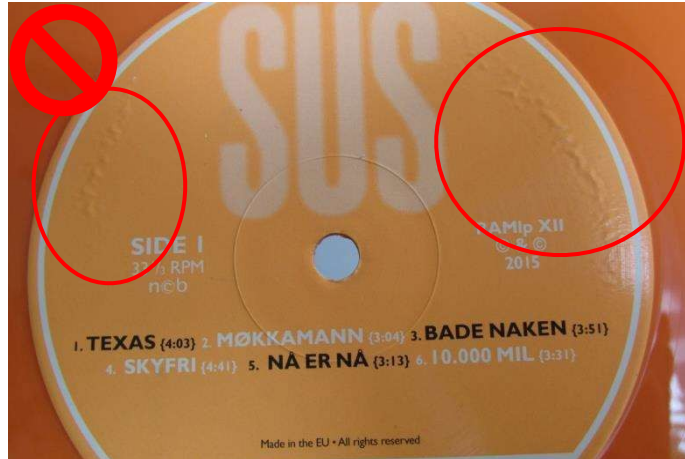




### 3.6 Bubbles on labels

An insufficiently dried label becomes plastic on the surface and sticks to the stamper. When the press is opened, the colour breaks or the paper layers split, resulting in bubbles.

Such defect is unacceptable in any case.



### 3.7 Torn label at the centre opening

The label is torn by the centre pin when it is inserted into the press.



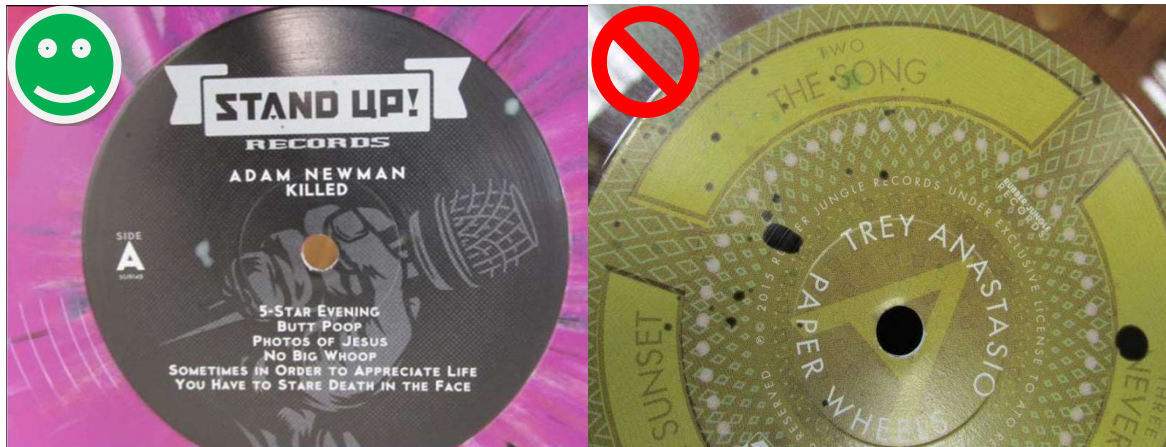
### 3.8 Damaged label at the edges

The tear along the edge of the label must not exceed 3 cm in circumference. The defect must not cause illegibility or missing text.



### 3.9 Stains on labels

They usually appear on labels when some material gets onto the label during the pressing process. They should only be rejected if the information content is damaged.

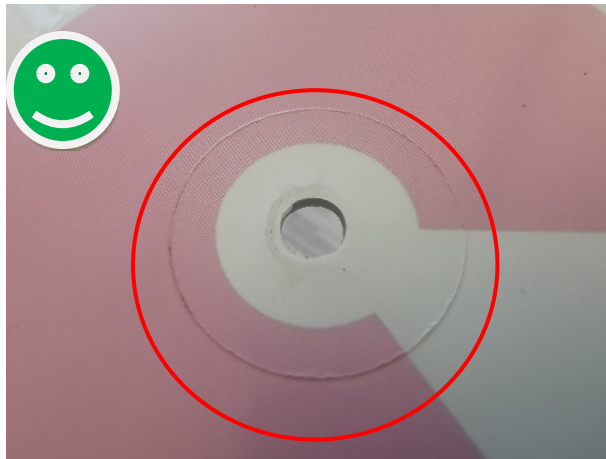


### 3.10 Scratches on labels

It is created when the disc is removed from the press. The total number of scratched labels must not exceed 10% of the print production.



**3.11 Label contamination - effect of storage - is acceptable.**



**3.12 Label defects do not lead to re-manufacturing of the discs.**

Such defects can only be resolved with a discount.

#### **4. 3. Colour effects on vinyl discs**

##### **4.1 Splatter**

Black and solid colours, used as a base colour, absorb splashes colours. As a result, splatters are less visible. Combining them with transparent splatter colours results in an almost imperceptible effect. For greater contrast, we recommend using transparent colours as a base. The number of splashes cannot be determined. Improper combinations are not subject to complaint.

This effect is not recommended for silent and instrumental productions. Numerous spots of colour mixtures may be audible. This is normal and acceptable for this effect. Sound artefacts resulting from this are not subject to complaint.



#### 4.2 Side A/ Side B

The most suitable combination is to use a covering colour in a contrasting colour. A dark covering colour, combined with a light transparent one, will be less visible. Recommended combinations of contrasting colours are white and black, white and red, blue and white. Unsuitable combinations where the effect will be less visible are, for example, black and red, red and orange, dark blue and black.





Side A

Side B

### 3. Colour in colour

The first colour is pressed into the second colour. When the small cake is covering and the large cake is transparent, the colours are sharply divided. It is recommended to use contrasting colours. Preferably a large cake of a transparent light colour and a small cake of a covering dark colour.

Attention: This does not work the other way round. When both masses are covering, the intersection is random and mixed, in which case it is more of an A/B side effect. If a covering ground is used, the effect will only be visible on the A side and there is no guarantee that it will also be visible on the B side.



### 4.4 Half and half

The colours are placed side by side. With many contrasting colours at the transition point there may be colour contamination from one half to the other.

The best combination is two covering colours or two transparent colours. This effect can cause small cracks to appear on the label or the label to wrinkle at the point of discolouration.



#### **4.5 Picture Disc/ PD**

The vinyl picture disc is covered with a film on both sides with embossed grooves. Two labels are used. If only one side of the PD is to be recorded, the other side must not have a smooth surface. PDs are only produced as heavy vinyl (180 g). PDs may have defects in the form of streaks (corrugated, wrinkled film). Wrinkled film occurs especially where there is no label between the film and the mass. If the legibility of the text is not affected or the graphics are not significantly distorted, this cannot be the subject of a complaint. In addition, as a result of a recording on non-standard material, this type of recording may show a deterioration of the acoustic properties, in particular increased noise and crackling. Deteriorated acoustic properties are not subject to complaint. Also, a disc with corrugation cannot be considered defective, as this effect is caused by interference between the grooves of the disc and the label printing grid, which is printed by offset printing with CMYK colour model, using standard grids (175 lpi).





#### 4.5.1 Disc with full-width photo or shaped pictures

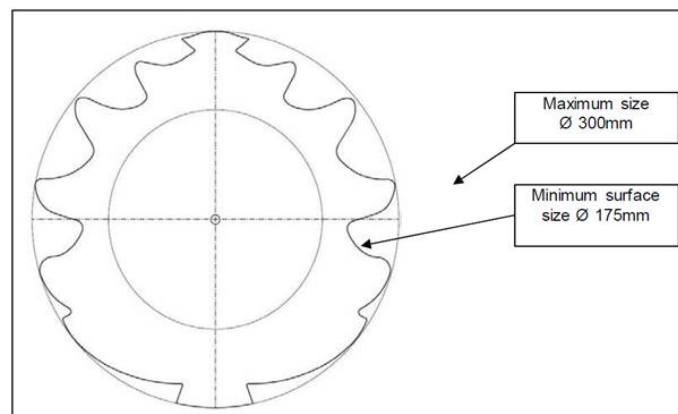
If they are to be oriented according to the customer's wishes, this must be specified in the order.

The shape of the inserted graphic is limited and they fit one on top of the other. The mutual offset tolerance of the labels is 5mm at the outer edge. The production will try to limit the offset, but does not guarantee its absence. If a transparent material is to be used, we recommend that the label graphics on the reverse side (in colour) match the surface of the opposite label.

We do not guarantee the exact appearance of the two images and there may be an offset of them in relation to each other. A special type of discs are those with a shape label on one side and a maximum diameter circular label on the other.

#### 4.6 Shape disc

The disc is cut out by milling. The customer, through the drawing, determines its shape and the minimum radius is 3 mm. When specifying the shape of the disc, it is necessary to base the disc on a 30 or 25 type (12" or 10"), leaving intact a minimum diameter of 175 mm with a central opening. The weight is 180 g only.



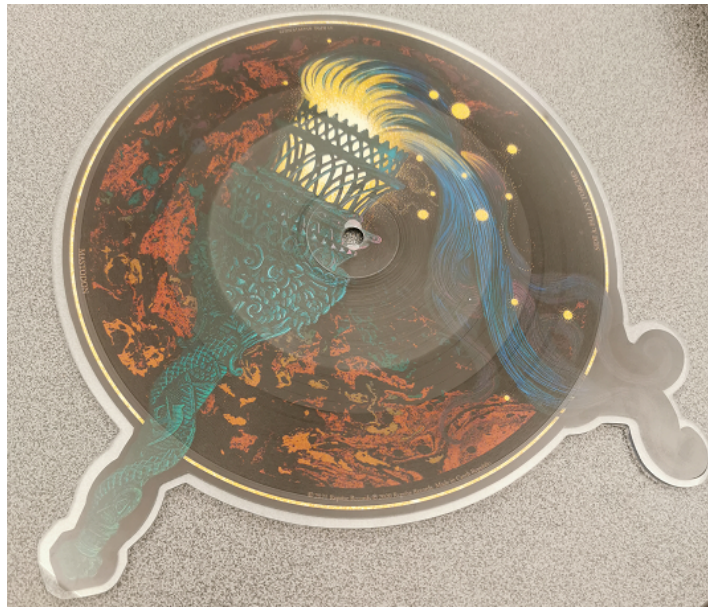
##### 4.6.1 Shape disc with shaped picture/image

For the variant with two identical non-circular labels, these must be 7-8 mm smaller than the required cut. The cut is regulated by the label on side A. Due to the label alignment tolerance, this means that the label on side B does not have to be centred relative to the cut. This asymmetry in the distance between the edge of the label and the edge of the board cannot be subject to complaint. For the variant with one shape label and one circle label, the shape label must be 2-3 mm smaller than the required bleed. The cut is modulated by the shape label.

These records are subject to all exceptions for the properties listed in the above section.

Note also that the limitations of the recording area result in proportionally shorter playback times. Acoustic artefacts such as noise and crackling also occur. Therefore, it is not recommended for classical music with long quiet passages.

The PD label must be at least 3 mm smaller than the required shape. One-sided PD can be pressed, but this leads to deformation of the disc. The shape of the label must not contain radii shorter than 3 mm and should not contain narrow areas that could cause the label to break. The curvature of double-sided label plates can be a maximum of 5mm. In the case of complex shapes, tests must be carried out on the label before series production is ordered.



#### **4.7 Other colour effects**

Other colour effects are considered special and require consultation with the pressing plant. Only after their authorisation can the production run be pressed.

What is not specified by a standard or norm in this document is subject to individual assessment by the Quality Control Department.