

## Constructing a colour-difference acceptability scale

de B.Laborie<sup>1,2</sup>, F.Viénot<sup>2</sup>, S.Langlois<sup>1</sup>

<sup>1</sup> Renault, Direction de la Recherche, 1 Ave du Golf, 78288, Guyancourt Cedex, France

<sup>2</sup> Centre de Recherche sur la Conservation des Collections, MNHN-CNRS-MCC, Paris, France

Email: baptiste.laborie@renault.com

The evaluation of colour-difference tolerances is a major issue in industry.

Whereas the CIELAB colorimetric system has introduced perceptible dimensions – hue and chroma – to express perceived colour differences, the CIE94 and subsequent formulas are proposed to express colour-difference tolerances.

Weighting functions  $S$  and parametric factors  $k$  may be chosen by the user to reflect changes in viewing condition and the acceptability judgements of the consumers.

In practice, these factors are often empirically derived after the responses of a panel of observers.

Little is known on how colour tolerances are related to just noticeable colour differences. Unlike colour discrimination which involves retinal mechanisms, colour difference acceptability judgements might involve post retinal mechanisms and cognitive processes.

We have planned an experiment where the size (10, 10°), the eccentricity (foveal up to 45°) and the background (uniform or variegated) of the stimuli are varied in order to investigate their effect on colour-difference tolerances. Observers are asked to rate the level of colour-difference acceptability on a psychometric scale.

Results are being collected on the colour-difference acceptability around a white colour centre.

Trends in the colour scales will be analysed along the  $a^*$  and the  $b^*$  dimensions of the CIELAB colour space.

The usefulness of modifying the parametric factors  $k$  according to eccentricity will be discussed.