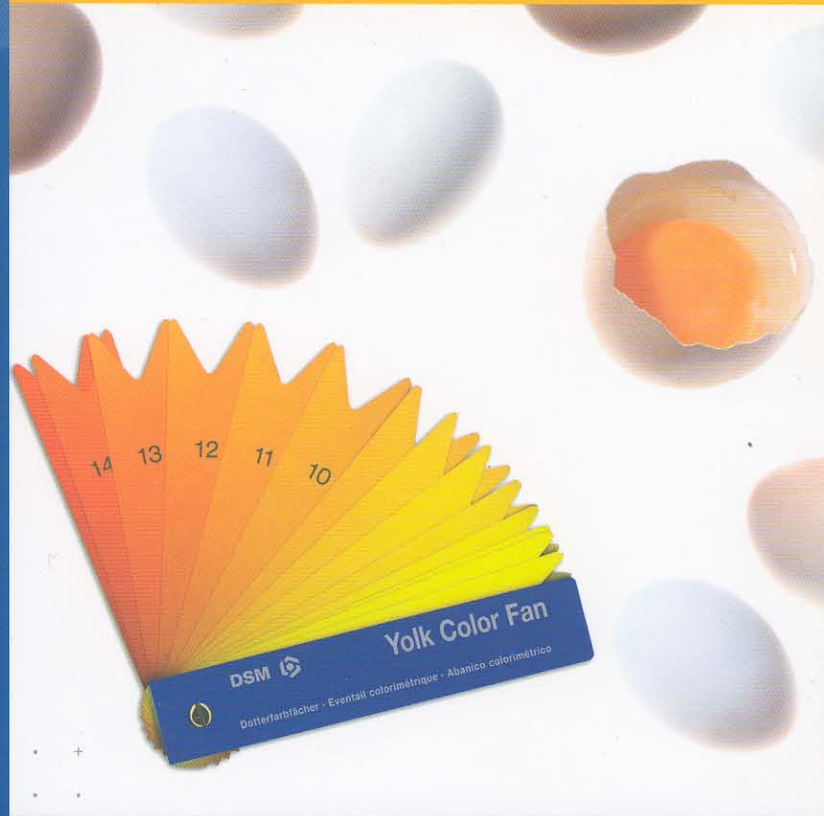


# The DSM Yolk Colour Fan

the quality standard for the egg industry

a **DSM**Service





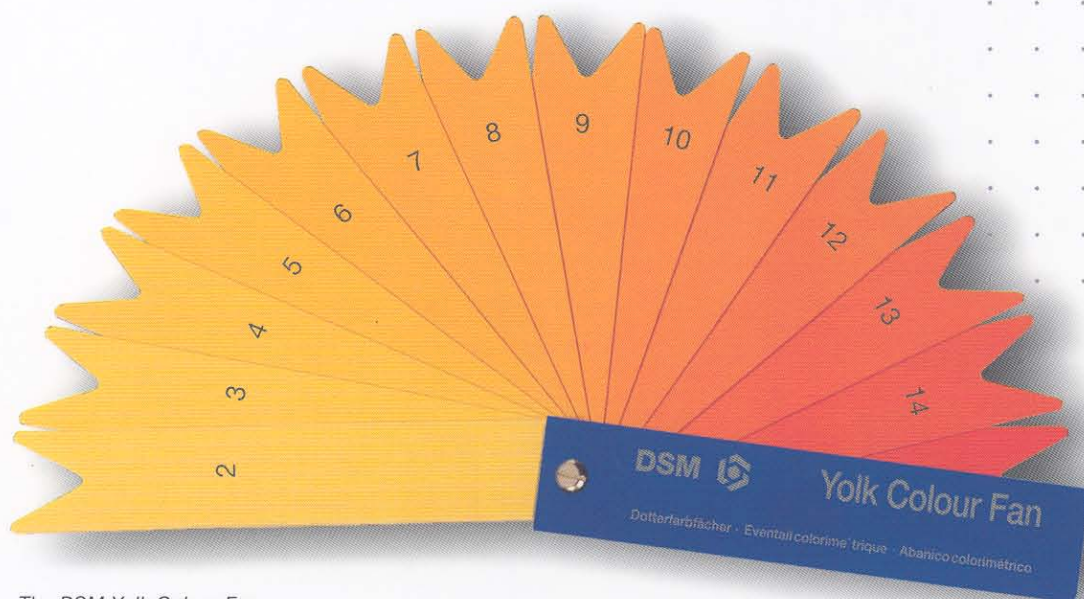
## ***From Roche Vitamins to DSM Nutritional Products***

On 1st October 2003, **Roche Vitamins** became **DSM Nutritional Products**, a new company but with the same commitment to the business. As DSM Nutritional Products, we remain fully focussed on developing and providing innovative proposals for the benefit of our customers and the environment.

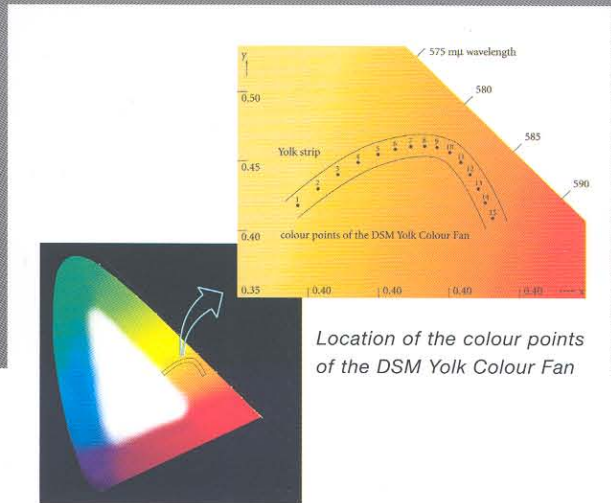
Our **Roche Yolk Colour Fan (RYCF)** was first launched in 1969 and since that time, this practical tool has been widely accepted in the Food Chain as the Industry quality standard for objectively assessing egg yolk colour. As part of the ongoing process to update our services to

reflect our new company identity, the RYCF will be replaced by our new **DSM Yolk Colour Fan (DSM-YCF)**. In practical terms, this change will have no influence on how the fan is used as the format (number and colour of fan the blades) in the new DSM-YCF remains identical to that of the current RYCF it replaces.

The need for an accurate measurement of yolk colour is answered with the DSM Yolk Colour Fan. Each blade of the fan contains a colour that has been measured objectively and can thus be reproduced in the yolk itself. By using the DSM-YCF to define the desired yolk colour and feeding the required amounts of CAROPHYLL® to the birds, the target yolk colour can not only be achieved but also reproduced consistently.



*The DSM Yolk Colour Fan*



The colour triangle of the CIE\* chromaticity diagram  
 \* Commission Internationale de l'Éclairage

## ***DSM Yolk Colour Fan: The reliable measurement of reproducible colour***

The colour of each blade of the Fan was selected after examining a large number of eggs collected at random from hens in several countries, each country representing different consumer requirements. All hens had been fed standard commercial rations; the sources of pigments in these rations varied in both amount and grade. Thus the colour of the yolks in the eggs produced and subsequently evaluated ranged from light green-yellow through golden yellow to reddish-orange.

These colours were then objectively defined by measuring reflected light at several wavelengths. The corresponding **tristimulus values (X, Y, Z) of the CIE (1931) calorimetric system** were then calculated. These values completely characterise each colour. After converting the tristimulus values into a two-dimensional system of chromatic coordinates (x, y), the resulting colour triangle contains all colours of the same brightness. A point inside this triangle represents each colour of the DSM Yolk Colour Fan. The basis for the DSM-YCF, then, is the objective measurement of representative yolk colours and the determination of their position in the CIE colour triangle. The colours of the yolks tested fall within a sharply defined area of the colour triangle. This area is termed the "yolk strip." It begins at pale yellow, passes into the deeper yellow region with an increasing degree of saturation, and then bends into the orange zone.

Fifteen points of colour were selected along the "yolk strip" to be included in the current DSM-YCF. The human eye can easily differentiate each of these colours, and they cover the entire range of the strip from pale yellow to orange-red. Each of the fifteen colours has been fixed by colour points and by their co-ordinates in the yolk strip of the colour triangle. Thus measured, defined, and fixed, these colours can be consistently reproduced.

**The DSM Yolk Colour Fan provides a simple means of measuring and evaluating yolk colour. During measurement and evaluation, however, the following guidelines should be followed to ensure accuracy in determining colour:**

- 1. The same observer should conduct the evaluations in any experimental series; that observer should be pretested for colour perception.**
- 2. Conduct the evaluation against a white, grey, or black background in order to eliminate the effect of adjacent colours.**
- 3. Conduct the evaluation in diffused daylight; direct light may cause reflection from the glossy surface of the yolk, particularly if strong artificial illumination is used.**
- 4. Hold the blades of the fan immediately above the yolk, then view the blade and yolk vertically from above in order to determine matching colours.**



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