Hirschfelds Ltd 1875 "D" Colour Diamonds

'White' diamonds are not truly colourless, but occur in various subtle tints of yellow, brown and grey, ranging from the rarest diamond without any trace of colour to the more common off-colour examples. One can construct a scale of colour quality using letters of the alphabet to designate the colour grades. 'D' is applied to describe the rarest "colour"

'D' colours are different!

Several diamond text books and gem courses insist that diamonds in the 'top' three colours; D E and F, are absolutely colourless and diamond graders can only differentiate them through the degree of apparent transparency seen within the stone. This is not the case. Under standardised viewing conditions, there is a degree of colour apparent in all colour grades. Diamond graders utilise a set of diamond master stones to compare colour and decide the grade of a loose diamond. Each of the master stones represents the colour at the junction between two colour grades. Hence the first master stone in the set will be at the border between D and E colour grades. This master stone possesses a very faint hint of colour that experienced diamond graders can readily distinguish. Diamonds having less colour than this master stone will be graded 'D colour'.

Various D colour diamonds will have fewer colours than other diamonds of the same grade. So there exists a subtle range of colour within the D grade, as there is within any other colour grade. This variation of colour within a colour grade becomes wider in each colour grade as one progresses down the colour scale to the off-colours. So diamonds graded D colour may seem similar to most in the gem and jewellery industry, but they can be gemmologically quite different.

Diamond Types The gemmological characteristics of these different D colour diamonds.

To understand how diamonds of the same colour grade can be different, one needs to look at diamond types. Diamonds can be divided into two broad groups gemmologists call 'Type I' and 'Type II' diamonds. It is not possible to distinguish the types using a jeweller's lens - laboratory techniques, such as infra-red spectroscopy, are required. Diamond is made up of carbon. The carbon atoms bond together in a tight strong pattern. In 1959 it was established that the majority (over 99%) of natural diamonds contain sub-microscopic nitrogen as an impurity within this carbon pattern. The nitrogen atoms replace some of the carbon atoms within the structure. Such diamonds are termed 'Type I'. Those diamonds which do not contain readily detectable nitrogen as an impurity are named 'Type II.'

Type I Type I diamonds can be classified further into two subgroups; Type Ia and Type Ib diamonds.

Type Ia diamonds, believed to be more than 98% of all natural diamonds, contain nitrogen grouped as pairs of atoms ('A-aggregate'); a group of three atoms ('N3 centre'); or a group of four atoms ('B-aggregate'). The A and B aggregates do not absorb visible light so do not affect the colour of the diamond, whereas the N3 centres do absorb visible light in the blue end of the spectrum thus giving rise to the pale yellow colour so often seen in diamonds. In general, the greater the concentration of N3 centres, the more intense the yellow colour.

Type Ia diamonds can be further subdivided into three subgroups:

Type IaA - in these diamonds, nitrogen is present in the main as A aggregates and they tend not to be fluorescent.

Type IaB - in these diamonds, nitrogen is present as predominately B aggregates and these gem can exhibit strong to very strong fluorescence.

Type IaAB - in these diamonds, nitrogen is present in the A and B aggregate forms as well as in N3 centres. The N3 centres cause a notable absorption in
the visible region of the spectrum causing pale to intense yellow colours in diamond. These gems may exhibit faint to medium fluorescence.

Type Ib diamonds (less than 0.1% of all natural diamonds) contain nitrogen as single atoms within the diamond structure. These nitrogen atoms absorb light
in the blue end of the visible spectrum often giving rise to an intense yellow colour (the true Canary diamonds).

Fluorescence The bluish hint of colour occasionally shown by many 'colourless' diamonds derives from their fluorescence. If a diamond fluoresces blue under UV light and this glow is strong or very strong in intensity, the diamond will take on a bluish tint in light rich in UV wavelengths, such as bright daylight. Any yellow body colour the diamond possesses will be masked by its blue fluorescent glow, so the diamond will appear less yellow (a 'better' colour) in sunlight.

This fluorescent effect usually is not considered desirable. D colour diamonds may be fluorescent or not. The A aggregates present in diamond quenches fluorescence so Type IaA diamonds do not fluoresce whereas Type IaB tend to fluoresce strongly.

Type II

Type II diamonds contain nitrogen in such low quantities that its presence is difficult to detect with standard infrared spectroscopy. As with Type I, Type II diamonds can be subdivided.

Type IIa diamonds are often absolutely colourless and exhibit an extreme transparency. A number of large historical diamonds, such as the Cullinan and the Koh-i-Noor diamonds, are of type IIa.

Those Type II diamonds which conduct electricity due to boron being present as an impurity are termed **Type IIb**. Most diamonds of this type are blue in colour.

The above ring to the left is D Colour, Internally Flawless, Type IIa.27.90 carats

Sotheby's Hong Kong sale of a **118.28-carat, D flawless, type IIa oval-shaped diamond** that sold for $30.6 million (HKD 238,680,000) or about $260,000 per carat. Sotheby's stated that the diamond **achieved a record price**.

Sotheby's diamonds said that two phone bidders competed for the extraordinary diamond until one finally dropped out, according to the Associated Press. The diamond held excellent symmetry and excellent polish and was, according to Sotheby's jewelry experts, the largest oval-shaped, D, flawless or internally flawless diamond ever graded by the Gemmological Institute of America (GIA). The diamond was cut from a 299-carat rough stone found in 2011 from a mine in Southern Africa. It took several months for the stone to be cut to perfection and it was expected to sell for $28 million to $35 million

Golconda.

Before the discovery of the South African diamond deposits in the late 1860s and early 1870s there was a grading scale in use describing diamond quality.
Better quality diamonds were considered to only come from India so the name Golconda was used for the finest quality of diamonds. Golconda was a fortified town in the Deccan region of India through which for centuries all Indian diamonds, mined further east in the Kollor area, were marketed. Less impressive diamonds were considered to derive from Brazil, where deposits were discovered in the 1720s. Some Brazilian place names, such as Begagem, Canavieras, Diamantinas and Bahias, denoting the areas of mining, were used as names for less impressive quality grades. So the word Golconda was established early on to describe quality diamonds. This term is still occasionally heard to describe highly transparent diamonds without any yellow body colour, or with a bluish tint. Today the wordis abused and used to increase the marketability of some Type IIa diamonds of the finest colour, including D colours, in much the same way as 'Kashmir' and 'Burma' and 'Colombia' origin names are used to increase the value of coloured stones, that may or may not be of the finest quality these place names suggest.

'Blue-White'

In the past, a phrase traditionally used to describe colourless diamonds was 'Blue-white'. This term originally described diamonds that possessed an extraordinary weak blue suffusion and were of the highest degree of rarity. However with time, the phrase became applied erroneously to describe many diamonds that fluoresce blue under UV light. If colourless or near-colourless diamonds fluoresce in sunlight, the faint bluish milkiness mixed with and masked the 'white' of the diamond, hence 'blue-white'. But while colour grading many thousands of diamonds, the laboratory diamond grader occasionally comes across a 'D colour, non-fluorescent diamond that does indeed have an almost imperceptible hint of blue. One does not know the cause of this colour. These 'true' blue-white diamonds are extremely rare

HPHT treated diamonds

The high-pressure, high-temperature (HPHT) process by which light brown type IIa diamonds can be decolourised to improve their colour grades. D colour grades can be accomplished. To identify conclusively such treated diamonds remains a challenge to laboratory gemmologists.

Summary

D-colour diamonds, rare in nature and difficult for the lay person to distinguish from other top colourless diamond grades, may fall into one of he following groups;
Type IaA - may have very faint hint of colour with no fluorescence
Type IaAB - may have very faint hint of colour, with faint to medium blue fluorescence
Type IaB - may have very faint hint of colour, with strong to very strong blue fluorescence
Type I Ia - may be absolutely colourless without any fluorescence.
Type I Ia - may be a decolourised brown HPHT treated diamond.
Type I Ia - may be a gem quality synthetic diamond
'True Blue-White' - very faint suffusion of blue, without fluorescence - may not be confined to one diamond type.
Every diamond is unique in appearance and quality. This is true within the limits of the D colour grade: D colour diamonds can be gemmologically different.
To test, identify and grade diamonds effectively, an understanding of diamond types and fluorescence is essential.

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