High-pressure, high-temperature (HPHT) annealing can significantly change the colour of natural and synthetic diamonds. This is a consequence of the stochastic changes of the point defects present in the diamond. This purpose of this article is to discuss the physical mechanisms causing the stochastic changes and the consequences on the temporal and temperature-dependent colour changes of diamond. When brown type Ia diamonds are HPHT annealed, H3 and H4 defects can be created and can strongly influence the colour of a diamond. It is shown in this paper that H3 and H4 defects can be created and destroyed and the H4 defect is less stable than the H3 defect. This latter process has significant consequences on the resulting colour of HPHT annealed brown type IaB diamonds.

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