Cold storage of peaches allows to prolong shelf life and regulate their commerce, but its post-harvest quality may be affected if not done properly. The objective of this study was to investigate the physico-chemical changes as well as the enzyme activity of polyphenol oxidase (PPO) during refrigerated storage of ‘Esmeralda’ peaches. The fruits were stored at 1 °C for 10, 20 and 30 days and left for 3 days at 25 °C. In each period the following analysis were performed: color (CIE L*a*b*), pH, total soluble solids (TSS), titratable acidity (TA), weight loss (WL) and PPO activity. After analysis of variance, means were compared by the Least Significant Difference (LSD) test (P < 0.05). TSS did not differ significantly among fruits stored at different periods, with higher values at 30 days, being 3.91. TA and WL did not differ statistically between samples of 10 and 20 days of storage. At 30 days, TA presented the lowest value (0.69 % citric acid), whereas WL was higher (16.09%). PPO activity showed no statistical difference in these periods, but there was a tendency to increase with longer storage. It can be concluded that ‘Esmeralda’ peaches stored for 30 days have still quality for consumption.