This paper is about caramel processing, including both batch and continuous methods. First, let’s discuss making the caramel premix using a typical formula (there are numerous formulas and ingredients that can be used). From there, we will discuss the mixing of these ingredients, and then cover the various cooking processes to include lab batch, production batch and automatic cookers. Finally, we will cover two methods of cooling the cooked caramel and briefly discuss several forming processes.

Figure 1 is a picture of a lab-sized batch caramel cooker, which is a copper kettle, typically heated on a gas-fired burner.

Figure 2 shows a typical premix kettle. For optimal accuracy, the weigh vessel can be placed on weigh cells and also loss-in-weight feeders can be used. The weigh vessel is the tank at the top of the unit. All connections to this unit are flexible so that there is no interference with the weigh cells.

Figure 3 illustrates a typical formula. The liquids are usually added first and solids last. Intermediate mix times are usually used, with a final mix time that lasts 10 to 15 minutes. The fats need to be completely melted, as well as the emulsifiers. Note that the formula contains sodium bicarbonate to adjust the pH of the mix. It is important that the pH is approximately 6.5. If the premix is too acid, then the milk protein, when heated, will coagulate and cause the final caramel to be grainy.

One of the problem areas encountered involves the proper melting of the ingredients. Ingredients that need to be melted, such as fats and emulsifiers, must be heated above their melting point. A good rule of thumb is 10°F above the melting point. If the ingredients are not melted to the proper temperature, then they will affect the final texture. Solid emulsifiers, such as mono- and diglycerides, must also be melted completely. A good process involves mixing the emulsifier with a portion of the melted fat and then storing the blend at the temperature of the melted fat. As an example, melt mono- and diglycerides with a 140°F melt-