Supplementary Materials:

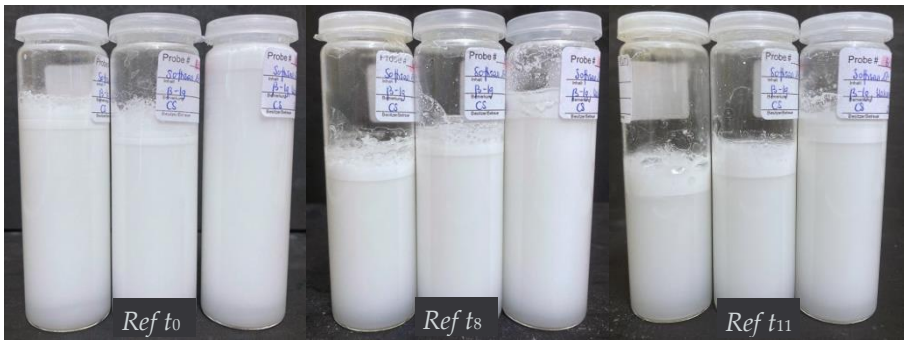

Figure S1: Images of the *Ref* samples cooled at a slow (0.01–0.1 K/min, left flask), moderate (0,5 K/min, middle flask) or fast (10 K/min, right flask) rate, taken at t_0, t_8 and t_{11}.

Figure S2: Images of the *Chol 0.05* (upper row) and *Chol 0.1* (lower row) samples cooled at a slow (0.01–0.1 K/min, left flask), moderate (0.5 K/min, middle flask) or fast (10 K/min, right flask) rate, taken at t_0, t_8 and t_{11}.

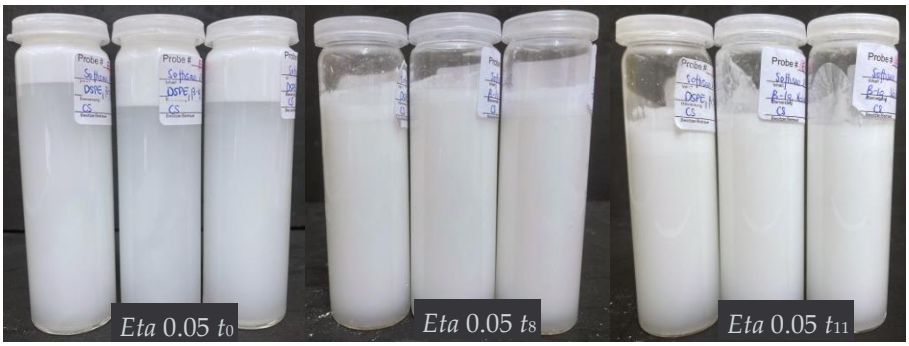

Figure S3: Images of the *Eta 0.05* (upper row) and *Eta 0.1* (lower row) samples cooled at a slow (0.01–0.1 K/min, left flask), moderate (0.5 K/min, middle flask) or fast (10 K/min, right flask) rate, taken at t_0, t_8 and t_{11}.

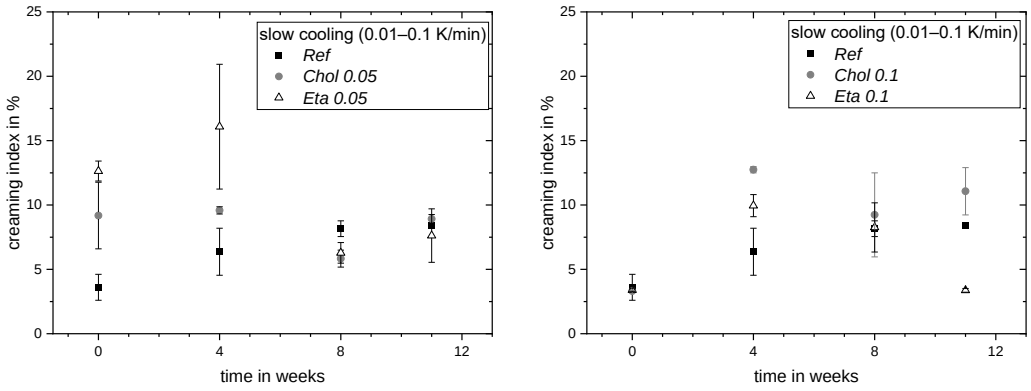

Figure S4: Creaming index (*CI*) of dispersions stabilized with β-lg (*Ref*), ß-lg + PC (*Chol*) and β-lg + PE (*Eta*) as a function of storage time: directly after preparation (t_0), after four weeks (t_4), after eight weeks (t_8) and after eleven weeks (t_{11}) of storage. PLs were used in concentrations of 0.05 wt% (*Chol 0.05* and *Eta 0.05* (a)) and 0.1 wt% (*Chol 0.1* and *Eta 0.1* (b)). Data of the samples cooled at a slow cooling rate are shown.

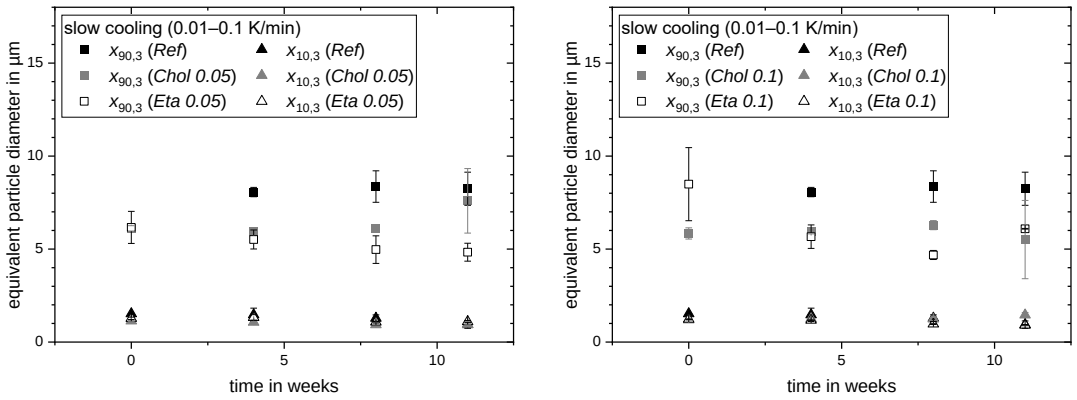

Figure S5: The 10 % and 90 % percentiles of the cumulative size distribution based on the particle volume. Data are shown for dispersions stabilized with ß-lg (*Ref*), β-lg + PC (*Chol*) and β-lg + DSPE (*Eta*) as a function of storage time: directly after preparation (t_0), after four weeks (t_4), after eight weeks (t_8) and after eleven weeks (t_{11}) of storage. PLs were used in concentrations of 0.05 wt% (*Chol 0.05* and *Eta 0.05* (a)) and 0.1 wt% (*Chol 0.1* and *Eta 0.1* (b)). Data of the samples cooled at a slow cooling rate are shown.

Table S1: The 90% percentile of the cumulative normalized undersize distribution of the *Ref* samples. Values are given as mean ± SEM, and values marked with matching letters are significantly different according to one-way ANOVA with p = 0.05 (N = 2, n = 3).

	Ref	
	slow (0.01–0.1 K/min)	fast (10 K/min)
t_0	13 ± 0.03^{abc}	8.0 ± 0.18^{e}
t_4	8.1 ± 0.25^{a}	8.5 ± 0.02^{f}
t_8	8.4 ± 0.85^{b}	11 ± 1.7^{ef}
t_{11}	8.2 ± 0.89^{c}	11.4 ± 1.47^{ef}

Table S2: The 90% percentile of the cumulative normalized undersize distribution of the *Chol 0.05* and *Chol 0.1* samples. Values are given as mean ± SEM, and values marked with matching letters are significantly different according to one-way ANOVA with p = 0.05 (N = 2, n = 3).

	Chol 0.05		*Chol 0.1*	
	slow (0.01–0.1 K/min)	fast (10 K/min)	slow (0.01–0.1 K/min)	fast (10 K/min)
t_0	6.1 ± 0.16	5.9 ± 0.12	5.8 ± 0.30	8.0 ± 0.39^{cd}
t_4	5.9 ± 0.028^{a}	6.0 ± 0.21	5.9 ± 0.12	6.6 ± 0.028^{c}
t_8	6.1 ± 0.18^{b}	6.1 ± 0.23	6.3 ± 0.24	7.6 ± 1.10^{e}
t_{11}	7.6 ± 1.7^{ab}	6.4 ± 0.31	5.5 ± 2.10	3.3 ± 0.01^{cde}

Table S3: The 90% percentile of the cumulative normalized undersize distribution of the *Eta 0.05* and *Eta 0.1* samples. Values are given as mean ± SEM, and values marked with matching letters are significantly different according to one-way ANOVA with p = 0.05 (N = 2, n = 3).

	Eta 0.05		*Eta 0.1*	
	slow (0.01–0.1 K/min)	fast (10 K/min)	slow (0.01–0.1 K/min)	fast (10 K/min)
t_0	6.2 ± 0.86	5.8 ± 0.16^{ab}	8.5 ± 2.0^{efg}	7.5 ± 1.8^{hi}
t_4	5.5 ± 0.51	5.6 ± 0.17^{cd}	5.7 ± 0.63^{e}	5.0 ± 0.58^{hj}
t_8	5.0 ± 0.74	4.8 ± 0.30^{ac}	4.7 ± 0.24^{f}	3.8 ± 0.52^{ik}
t_{11}	4.8 ± 0.48	4.9 ± 0.14^{bd}	6.1 ± 0.02^{g}	7.7 ± 1.2^{jk}

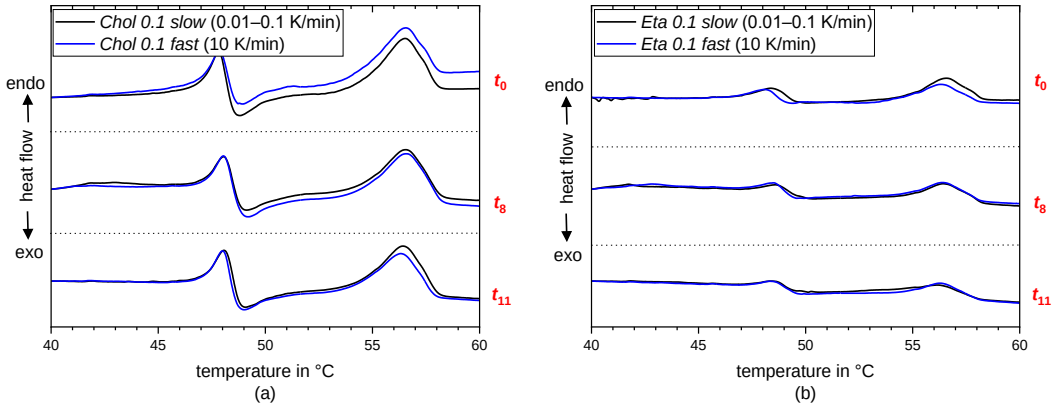

Figure S6: DSC melting thermograms of dispersions stabilized with β-lg + PC (*Chol 0.1* (a)) and β-lg + PE (*Eta 0.1* (b)) after slow (black lines) and fast (blue lines) crystallization directly after preparation (t_0), after eight weeks (t_8) and after eleven weeks (t_{11}) of storage. PLs were used in a concentration of 0.1 wt%.

Table S4: Peak melting and crystallization temperature of the endo- and exothermic peaks in the DSC curves of the *Ref* samples. Values are given as mean ± SEM (N = 2, n = 1). T_m = melting temperature, T_c = crystallization temperature, and T_m add. = melting temperature of the additional endotherm. * No endotherm in the second sample replicate.

		Ref				
		no. of endotherms	T_m add. endotherm in °C	T_m 1st endotherm in °C	T_m 2nd endotherm in °C	T_c exotherm in °C
slow (0.01–0.1 K/min)	t_0	2		47.6 ± 0.150	56.2 ± 0.255	48.7 ± 0.065
slow (0.01–0.1 K/min)	t_8	3	41.5 ± 0.380	48.0 ± 0.050	56.5 ± 0.600	49.0 ± 0.070
slow (0.01–0.1 K/min)	t_{11}	2		48.0 ± 0.010	56.5 ± 0.110	48.7 ± 0.075
fast (10 K/min)	t_0	2		47.7 ± 0.065	56.4 ± 0.210	48.6 ± 0.020
fast (10 K/min)	t_8	3	43.2*	48.0 ± 0.015	56.5 ± 0.000	49.0 ± 0.030
fast (10 K/min)	t_{11}	2		47.9 ± 0.020	56.3 ± 0.010	48.6 ± 0.020

Table S5: Peak melting and crystallization temperature of the endo- and exothermic peaks in the DSC curves of the *Chol 0.05* samples. Values are given as mean ± SEM (N = 2, n = 1). T_m = melting temperature, T_c = crystallization temperature, and T_m add. = melting temperature of the additional endotherm. * No endotherm in the second sample replicate.

		Chol 0.05				
		no. of endotherms	T_m add. endotherm in °C	T_m 1st endotherm in °C	T_m 2nd endotherm in °C	T_c exotherm in °C
slow (0.01–0.1 K/min)	t_0	2		47.7 ± 0.005	56.4 ± 0.050	48.7 ± 0.065
slow (0.01–0.1 K/min)	t_8	3	44.9*	48.1 ± 0.055	56.6 ± 0.005	49.1 ± 0.040
slow (0.01–0.1 K/min)	t_{11}	2		48.9 ± 0.060	56.3 ± 0.010	48.7 ± 0.070
fast (10 K/min)	t_0	2		47.6 ± 0.160	56.3 ± 0.175	48.6 ± 0.020
fast (10 K/min)	t_8	3	43.8 ± 1.180	48.0 ± 0.010	56.5 ± 0.015	49.0 ± 0.045
fast (10 K/min)	t_{11}	2		47.9 ± 0.040	56.2 ± 0.065	48.7 ± 0.180

Table S6: Peak melting and crystallization temperature of the endo- and exothermic peaks in the DSC curves of the *Chol 0.1* samples. Values are given as mean ± SEM (N = 2, n = 1). T_m = melting temperature, T_c = crystallization temperature, and T_m add. = melting temperature of the additional endotherm. * No endotherm in the second sample replicate.

		Chol 0.1				
		no. of endotherms	T_m add. endotherm in °C	T_m 1st endotherm in °C	T_m 2nd endotherm in °C	T_c exotherm in °C
slow (0.01–0.1 K/min)	t_0	2		47.6 ± 0.000	56.3 ± 0.030	48.6 ± 0.020
slow (0.01–0.1 K/min)	t_8	3	41.7*	48.1 ± 0.110	56.5 ± 0.150	49.0 ± 0.110
slow (0.01–0.1 K/min)	t_{11}	2		48.0 ± 0.030	56.4 ± 0.085	48.6 ± 0.020
fast (10 K/min)	t_0	2		47.6 ± 0.080	56.3 ± 0.080	48.6 ± 0.020
fast (10 K/min)	t_8	3	41.4 ± 0.375	48.0 ± 0.115	56.5 ± 0.155	49.1 ± 0.195
fast (10 K/min)	t_{11}	2		47.9 ± 0.025	56.2 ± 0.010	48.6 ± 0.020

Table S7: Peak melting and crystallization temperature of the endo- and exothermic peaks in the DSC curves of the *Eta 0.05* samples. Values are given as mean ± SEM (N = 2, n = 1). T_m = melting temperature, T_c = crystallization temperature, and T_m add. = melting temperature of the additional endotherm. * No endotherm in the second sample replicate.

		Eta 0.05				
		no. of endotherms	T_m add. endotherm in °C	T_m 1st endotherm in °C	T_m 2nd endotherm in °C	T_c exotherm in °C
slow (0.01–0.1 K/min)	t_0	2		48.2 ± 0.165	56.4 ± 0.155	49.5 ± 0.135
slow (0.01–0.1 K/min)	t_8	3	43.5 ± 0.240	48.6 ± 0.030	56.6 ± 0.030	50.0 ± 0.090
slow (0.01–0.1 K/min)	t_{11}	2		48.3 ± 0.005	56.3 ± 0.010	49.5 ± 0.135
fast (10 K/min)	t_0	2		48.2 ± 0.145	56.4 ± 0.025	49.3 ± 0.170
fast (10 K/min)	t_8	3	43.8 ± 1.020	48.5 ± 0.120	56.5 ± 0.015	49.7 ± 0.170
fast (10 K/min)	t_{11}	2		48.3 ± 0.135	56.4 ± 0.010	49.3 ± 0.170

Table S8: Peak melting and crystallization temperature of the endo- and exothermic peaks in the DSC curves of the *Eta 0.1* samples. Values are given as mean ± SEM (N = 2, n = 1). T_m = melting temperature, T_c = crystallization temperature, and T_m add. = melting temperature of the additional endotherm. * No endotherm in the second sample replicate.

		Eta 0.1				
		no. of endotherms	T_m add. endotherm in °C	T_m 1st endotherm in °C	T_m 2nd endotherm in °C	T_c exotherm in °C
slow (0.01–0.1 K/min)	t_0	2		48.3 ± 0.025	56.5 ± 0.075	49.7 ± 0.265
slow (0.01–0.1 K/min)	t_8	3	41.7*	48.6 ± 0.080	56.4 ± 0.080	50.3 ± 0.255
slow (0.01–0.1 K/min)	t_{11}	2		48.4 ± 0.165	56.0 ± 0.285	49.8 ± 0.265
fast (10 K/min)	t_0	2		48.1 ± 0.115	56.2 ± 0.110	49.2 ± 0.170
fast (10 K/min)	t_8	3	41.7 ± 1.085	48.5 ± 0.030	56.4 ± 0.085	49.7 ± 0.215
fast (10 K/min)	t_{11}	2		48.4 ± 0.150	56.3 ± 0.105	49.2 ± 0.170