APPLICATION GUIDE

How to formulate with TintBlue.

Six representative applications. Each one shows the matrix, the inclusion rate, the process notes, and the things that go wrong. Treat as a starting point, your formula will move from here.

APPLICATION 01

RTD beverages & functional waters

REFERENCE FORMULA · PER 1 L

Water	ad 1000 g
Erythritol	40.0 g
Citric acid · target pH 4.5	1.6 g
Sodium citrate · buffer	0.8 g
Electrolyte blend	2.4 g
Natural flavor	0.5 g
TintBlue E18	**1.2 g · 0.12%**

PREDICTED RETENTION

85%

12 mo · ambient

PROCESS

01 Hydrate erythritol and electrolytes in cold water (10°C).

02 Disperse TintBlue in 50 mL cold water separately. No clumps.

03 Add acidified phase (citric + sodium citrate). Confirm pH 4.5.

04 Combine. Mix at low shear, 5 min.

05 Pasteurize 72°C, 15 s. Cool below 30°C inside 90 s.

06 Fill cold. Reseal headspace if oxygen sensitive.

THINGS THAT GO WRONG

00 **pH drift below 4.0**: visible color shift to green within days. Add buffer.

01 **Pre heating before dispersion**: protein denaturation, loss of color. Always disperse cold.

02 **Sustained > 80°C**: UHT or hot-fill above 85°C will cost you 20 to 30%. Use HTST instead.

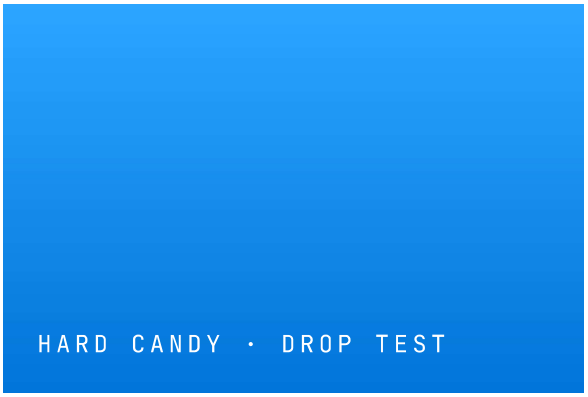
03 **Clear PET, ambient light**: opaque or UV blocking pack for 6+ month shelf.

APPLICATION 02

Hard candy & coatings

REFERENCE FORMULA · 100 G BATCH

Isomalt	85.0 g
Water (for syrup)	15.0 g
Citric acid · post add	0.5 g
Natural flavor	0.3 g
TintBlue E18 post cook slurry	**0.20 g · 0.20%**



HUE NOTES

Deep blue at this inclusion. Drops to teal at 0.10%. Reduce inclusion 30% for pastel/baby blue confectionery.

PROCESS

01 Cook isomalt and water to 165°C. Hold 30 seconds.

02 Cool to 110°C (critical). Do not add TintBlue above 120°C.

03 Pre disperse TintBlue in 2 mL water at room temp. It will result in a slurry.

04 Add citric acid, flavor, slurry. Stir 30 s.

05 Deposit into molds. Cool to room temp.

THINGS THAT GO WRONG

00 **Adding above 120°C**: burnt off in seconds. Always cool first.

01 **Direct addition of powder**: speckling visible in clear isomalt. Pre slurry.

02 **Dry storage > 60% RH**: hygroscopic candy will weep. Pack with desiccant.

APPLICATION 03

Gummies & soft chews

REFERENCE FORMULA · PECTIN GUMMY · 1 KG BATCH

Sucrose	450 g
Glucose syrup DE42	350 g
Water	180 g
Pectin (low methoxy)	15 g
Citric acid · target pH 3.8	6 g
Sodium citrate	4 g
Natural flavor	3 g
TintBlue E18 slurry pre deposit	**2.5 g · 0.25%**

AT-RISK CONDITION

pH 3.8 sits at the low edge of TintBlue's stable range. Buffer with sodium citrate. Hold pasteurization tight.

PROCESS

01 Hydrate pectin in cold water with sodium citrate. Bloom 30 min.

02 Cook sucrose + glucose syrup to 108°C. Achieve 76° Brix.

03 Cool to 90°C. Add pectin solution. Stir.

04 Pre slurry TintBlue in 10 mL water at room temp.

05 Add citric, flavor, TintBlue slurry. Mix 60 seconds with low shear.

06 Deposit at 78°C into starch or silicone molds. Cure 24 h.

THINGS THAT GO WRONG

00 **pH below 3.5**: color drops within weeks. Adjust acid/buffer ratio.

01 **Long hold at 90°C**: pre deposit hold > 20 min loses color. Deposit faster.

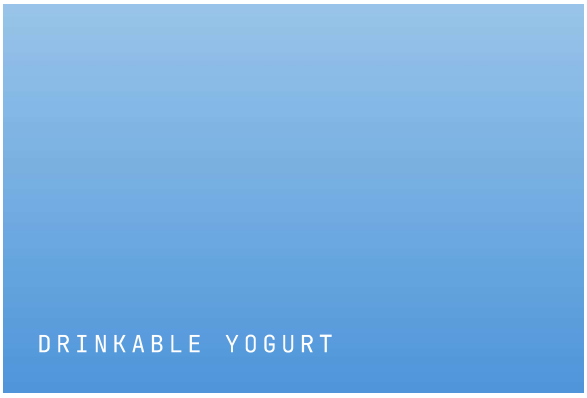
02 **Inversion of sucrose**: high acid + heat = sticky gummies. Pre-buffer.

APPLICATION 04

Dairy & dairy alternatives

REFERENCE FORMULA · DRINKING YOGURT · 1 L

Skim milk (or oat base)	880 g
Skim milk powder	25 g
Sucrose	60 g
Stabilizer (pectin/HMC)	3 g
Yogurt culture · pH end 4.4	1 g
Natural flavor	0.8 g
TintBlue E18 post ferment	**1.0 g · 0.10%**



WHY POST FERMENT

Color the base before fermentation and the active cultures will drop pH below your stability floor. Add after cool down to 8°C.

PROCESS

01 Standardize milk base, blend powder + stabilizer + sugar.

02 Pasteurize 90°C, 30 min. Cool to 43°C.

03 Inoculate culture. Ferment to pH 4.4 (5 to 6 h).

04 Cool to 8°C. Stop fermentation.

05 Pre slurry TintBlue in 20 mL chilled product. Inject in line.

06 Pack and chill to ≤ 4°C immediately.

THINGS THAT GO WRONG

00 **Pre fermentation addition**: pH falls to 4.0 during culture; color suffers.

01 **UHT processing**: not recommended. Use HTST + post add.

02 **Oat / soy base > pH 7**: TintBlue holds, but flavor can shift teal. Test palette.

APPLICATION 05

Ice cream & frozen formats

REFERENCE FORMULA · VANILLA BLUE ICE CREAM · 1 L

Cream (35% fat)	350 g
Whole milk	450 g
Sucrose	130 g
Dextrose	20 g
Stabilizer/emulsifier	5 g
Vanilla flavor	1.5 g
TintBlue E18 post pasteurization	**0.8 g · 0.08%**

HUE NOTES

Dairy base lightens the perceived hue significantly. For Caribbean-blue target, push to 0.15%. For pastel, hold at 0.08%.

PROCESS

01 Blend dry ingredients into milk + cream at 40°C.

02 Homogenize 14 + 4 MPa, 65°C.

03 Pasteurize 83°C, 25 s. Cool to 4°C.

04 Age mix 4 to 24 h at ≤ 4°C.

05 Pre slurry TintBlue in 15 mL chilled mix. Inject in line before freezer.

06 Freeze to draw-out −5°C. Harden at −20°C.

THINGS THAT GO WRONG

00 **Pre pasteurization addition**: partial loss above 80°C, 10 to 15% color hit.

01 **Over-aeration / 100%+ overrun**: air-foam hue washes out 30%. Adjust target.

02 **Repeated freeze thaw**: crystalline damage to phycocyanin. Maintain cold chain.

APPLICATION 06

Baked goods & dry mixes

REFERENCE FORMULA · ROYAL ICING · 100 G

Powdered sugar	85 g
Pasteurized egg whites	12 g
Lemon juice · for pH 4.5	2 g
Natural flavor	0.3 g
TintBlue E18	**0.15 g · 0.15%**

DRY MIX NOTE

For dry retail mix and bake products, pre blend TintBlue with 1 part sugar (1:50 dilution) for uniform distribution. Use opaque retail pack.

PROCESS · ICING

01 Beat egg whites + lemon juice to stiff peaks.

02 Gradually add powdered sugar. Beat 8 min.

03 Pre disperse TintBlue in 1 mL water. Stir into icing.

04 Use within 4 h. Cover surface to prevent crusting.

THINGS THAT GO WRONG

00 **Direct addition into baking dough**: 180°C+ oven temps degrade actively. Use surface decoration only.

01 **Speckled icing**: dispersion failure. Always slurry first.

02 **Dry mix > 12 mo shelf claim**: moisture barrier required. Use foil laminate sachets.

NEED HELP FORMULATING?

Send us a brief. We'll send a sample and a starting formula.

Every application above is a starting point. Your matrix, sweetener system, processing equipment, and target hue will move the inclusion rate by 30 to 60%. We co-develop with launch partners; tell us the application and we'll bring the matrix calibration.

COMMERCIAL

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