



BENEFITS OF ACIDULATION

- Eliminates need for large EQ tanks because coagulation is pH dependent, not contaminant loading dependent.
- Eliminates need for metal-based coagulants and reduces float sludge volume
- The acidic pH stops milk proteins from fermenting and releasing foul odors.
- The automated chemical process reduces need for operator intervention.

The ice cream production plant runs multiple products in a single day. Between each product run a CIP system is used to wash equipment of any number of organic ingredients from chocolate and caramel to fruit paste, nuts and more. The resulting wastewater contains high loads of TSS, FOG, and a wildly fluctuating pH.

FRC designed a wastewater treatment system based on the acidulation process. Rather than using traditional chemistry to coagulate and flocculate suspended solids, the wastewater is dosed with sulfuric acid to drop pH to below 4. This breaks any oil emulsions and allows for a polymer to agglomerate the solids. After removing solids caustic soda is used to neutralize the pH before discharge. This approach simplifies the chemical process and achieves discharge requirements.

FACILITY

Simcoe, Ontario Canada

DISCHARGE PARAMETERS

Flow : 1.44 MGD
TSS : 1500 mg/L
FOG : 250 mg/L
pH : 4 - 10

DISCHARGE REQ'S

TSS : 250 mg/L
FOG : 100 mg/L
pH : 6.5 - 8.5 mg/L

DAF SIZING CALCULATIONS

Hydraulic Surface Loading Rate

$$= \frac{\text{Feed Flow} + \text{Recycle Flow in gpm}}{\text{Effective Surface Area in sqft}}$$

$$= \frac{1000 + 160 \text{ gpm}}{x \text{ sqft}} = 1 \text{ gpm/sqft}$$

$$= 1160 \text{ sqft required}$$

Solids Loading Rate

$$= \frac{\text{Weight of TSS in Feed in lbs/hr}}{\text{Free Surface Area in sqft}}$$

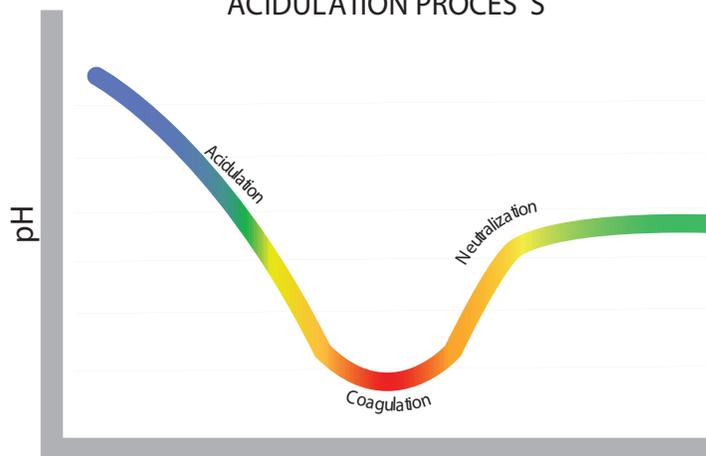
$$= \frac{750 \text{ lbs/hr}}{x \text{ sqft}} = 7.5 \text{ lbs/sqft/hr}$$

$$= 100 \text{ sqft required}$$

Ice Cream Production



ACIDULATION PROCES S



OTHER SIMILAR PROJECTS

Company	Location	Flow Rate	Company	Location	Flow Rate
Cayuga Milk	Auburn, NY	220 gpm	Leprino Foods	Fort Morgan, CO	430 gpm
Danish Creamery	Fresno, CA	660 gpm	Punjab Milk	Surrey, BC	220 gpm
Dean Foods	Hayward, CA	280 gpm	Saputo	Murray, KY	520 gpm
Dean Foods	Braselton, GA	330 gpm	Saputo	Newington, CT	330 gpm
Dean Foods	Burlington, NJ	130 gpm	Unilever	Rexdale, ON	1000 gpm

Since its founding in 1973, JWC Environmental has become a world leader in solids reduction and removal for the wastewater industry with its Muffin Monster grinders and Monster Separation Systems for screening, compaction and washing. JWC also solves challenging size reduction and processing problems in commercial and industrial applications through its Monster Industrial division. JWC Environmental is headquartered in Santa Ana, California, and has a global network of representatives, distributors and regional service centers to provide customer support. For more information, visit JWC Environmental at www.jwce.com.