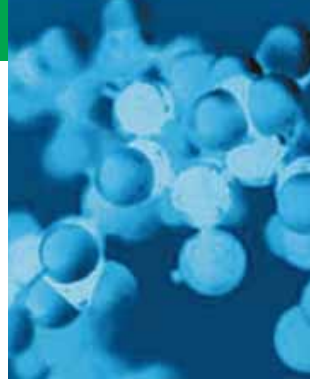
Case Study
Ciba® ZETAG 8000 Series

Inverse Emulsions Featuring FS Technology



The Ciba® ZETAG 8000 Series of cationic Inverse Emulsion flocculants are based upon chemistry involving linear and highly branched/cross-linked (FS technology) polymer molecules. The products have been designed for a variety of municipal and industrial wastewaters and sludges and have been proven especially effective for conditioning such substrates for solid/liquid separation processes such as sedimentation, thickening and dewatering.

THE PRODUCTS

The four lead products in the Ciba® ZETAG 8000 Series of Inverse Emulsions are:

Ciba® ZETAG 8848FS - ***high cationic charge cross-linked flocculant***

Ciba® ZETAG 8818 - ***high cationic charge linear flocculant***

Ciba® ZETAG 8846FS - ***medium/high cationic charge cross-linked flocculant***

Ciba® ZETAG 8816 - ***medium/high cationic charge linear flocculant***

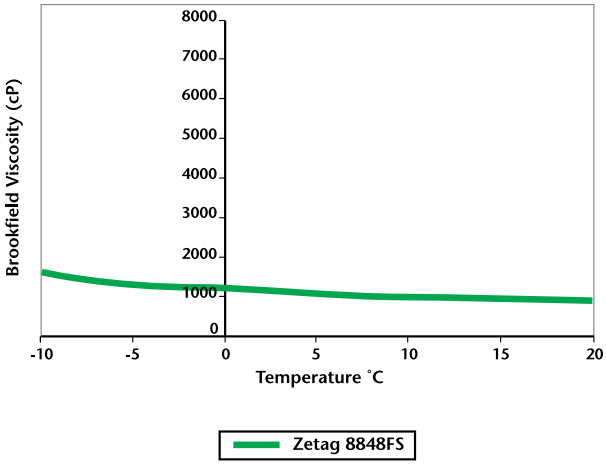
BENEFITS

The major benefits from using the Ciba® ZETAG 8000 series of Inverse Emulsion flocculants include:

- Linear grades offer required technical performance at cost-effective dose levels
- FS grades relative to linear grades offer a broader effective dose range, with flocculation being less dose critical
- FS grades offer improved technical performance in critical plant processes, for example, higher sludge cake dry solids giving benefits for:

  lower incineration fuel costs
  lower thermal drying process costs
  reduction in transport and disposal costs
  higher plant process throughputs
- High stability of product in storage
- Products retain excellent flow characteristics at low temperature (see graph below)
- Exhibit no detriment to performance in freeze/thaw tests
- Reduced foaming in dewatering process filtrates/centrates and flocculant make-up systems

Viscosity Profile of Inverse Emulsions

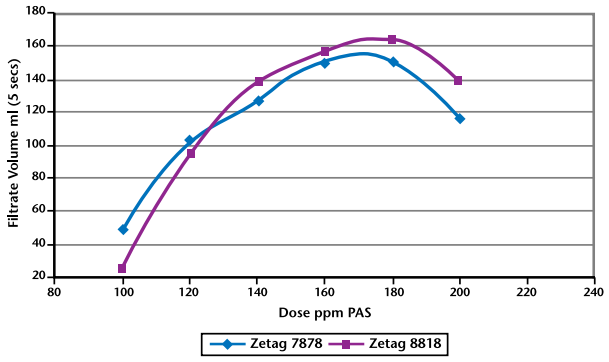


PERFORMANCE

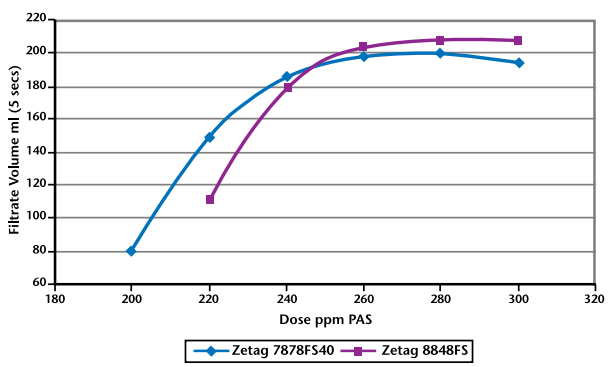
The graphical representation below shows the typical performance of the Inverse Emulsion grades versus their Liquid Dispersion (LDP) counterparts.

The data shows that Ciba® ZETAG 8000 Inverse Emulsion flocculants perform to the same degree technically as their Liquid Dispersion equivalents at optimum plant dose levels.

Linear LDP vs Linear Inverse Emulsion



FS LDP vs FS Inverse Emulsion



Case Studies
Ciba® ZETAG 8000 Series
Cationic Inverse Emulsion Flocculants

Case Study 1

Process Type: Belt press
Sludge Type: Digested primary/activated

Product	Dose (kg/tds PAS)	Cake (% DS)	Centrate/ Filtrate (ppm SS)
ZETAG 8818	10	20.7	84
ZETAG 7878	10	20.1	50

PAS = Product As Supplied

Case Study 2

Process Type: Belt thickener
Sludge Type: Primary/activated

Product	Dose (kg/tds PAS)	Cake (% DS)	Centrate/ Filtrate (ppm SS)
ZETAG 8848FS	5.9	5.9	20
ZETAG 7878FS40	5.8	6.0	20

PAS = Product As Supplied

Case Study 3

Process Type: Centrifuge
Sludge Type: Aerobic

Product	Dose (kg/tds PAS)	Cake (% DS)	Centrate/ Filtrate (ppm SS)
ZETAG 8848FS	22.3	21.5	444
ZETAG 7878FS40	22.4	22.3	302

PAS = Product As Supplied

Case Study 4

Process Type: Centrifuge
Sludge Type: Digested primary/activated

Product	Dose (kg/tds PAS)	Cake (% DS)	Centrate/ Filtrate (ppm SS)
ZETAG 8846FS	23.2	20.3	1026
ZETAG 7875FS40	23.5	19.8	7115
ZETAG 8846FS	25.9	20.8	722
ZETAG 7875FS40	26.0	21.3	614

PAS = Product As Supplied

Case Study 5

Process Type: Centrifuge
Sludge Type: Digested primary/activated

Product	Dose (kg/tds PAS)	Cake (% DS)	Centrate/ Filtrate (ppm SS)
ZETAG 8848FS	21.2	28.5	<500
ZETAG 7878FS40	20.0	28.0	<500

PAS = Product As Supplied

Case Study 6

Process Type: Centrifuge
Sludge Type: Digested primary/activated

Product	Dose (kg/tds PAS)	Cake (% DS)	Centrate/ Filtrate (ppm SS)
ZETAG 8816	18.7	20.9	333
ZETAG 7897	18.7	20.8	533

PAS = Product As Supplied

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