

Case Study

INDION® 790 & INDION® 860 S for Gelatin Industry - 1

Introduction

Gelatin is used in cosmetics, metal refining, paper, plastics, toiletries, food and pharmaceutical products. It is a mixture of fats, proteins, minerals, enzymes and carbohydrates in the form of lactose. It is prepared by hydrolysis of collagen. The resulting solution contains high molecular weight protein and a considerable amount of mineral content or ash.

Ion Exchange (I) Ltd., conducted a study at a production facility which had 33 years of experience in manufacturing products like Gelatin, Ossein, Di Calcium Phosphate, Bone meal etc. Their product didn't meet customer specification and application requirement.

Challenge:

High ash content resulting in colourless/ pale yellow powder or granules after drying and product could not meet the requirements of the end users.

Solution:

Gelatin was passed through Ion Exchange columns containing INDION 790 & INDION 860 S.

A two bed approach is used with Strong Acid Cation (SAC) and either a Weak Base Anion (WBA) or a type II Strong Base Anion (SBA-II) resin.

Ion exchange (IX) resins removes mineral content and ensures that the product meets customer specifications and application requirements.

Results:

Detail of Gelatin deashing plant:

Parameter	INDION 790	INDION 860 S
Resin qty, liters	1750	2300
Regeneration level, kg/m ³	85	70
Service flow, m ³ /h	10 - 13	10 - 13
Design OBR, m ³	120	120

Parameter	Before Treatment	After Treatment
Ash Content, w/w	1 to 3 %	0.2 %
Conductivity, μ S/cm	500 to 5000	<100

Pre-treatment

a) SAC resins INDION 790

Rinse with approx 20 BV of water and exhaust with 2 BV of 4% NaOH or 10% NaCl solution followed by rinse, regenerate with 2 BV of HCl or H₂SO₄ followed by rinse.

Repeat the above steps one more time followed by regeneration and rinse

b) WBA resins

Exhaust the resin with 2 BV of 4% HCl or H₂SO₄.

Rinse. Regenerate with 2 BV of NaOH. Rinse.

Repeat the above steps one more time.