

# TREION™ TSFT™ HCR

## Softening Resin for Industrial Water Once-Recycled and Highly-Regenerated

### DESCRIPTION

TREION™ TSFT™ HCR is a high-capacity Cation Exchange Resin with excellent kinetics and good physical, chemical and thermal stability. TREION™ TSFT™ HCR is a highly-regenerated ready-to-use Softening Resin designed for industrial water applications.

TREION™ TSFT™ HCR is originally virgin DOWEX™ HCR-S/S Cation Exchange Resin that had been used only once, specifically, exhausted only once. Subsequently, it was highly-regenerated by Treitel Chemical Engineering for the production of Softened water.

### PROPERTIES

Physical form _____	White to amber translucent spherical beads
Matrix _____	Styrene-DVB gel
Functional group _____	Sulfonic acid
Ionic form as shipped _____	Na <sup>+</sup> form
Total exchange capacity _____	≥ 1.9 eq/L
Bead size distribution range _____	300 – 1200 µm: 90 % min < 300 µm: 1 % max
Moisture retention capacity _____	48 – 52 %
Whole uncracked beads _____	90 – 100 %
Total swelling _____	Ca <sup>++</sup> → Na <sup>+</sup> : 5 %
Particle density _____	1.3 g/mL
Shipping weight _____	800 g/L
Packaging _____	50 L Drums

### SUGGESTED OPERATING CONDITIONS

Maximum operating temperature _____	120°C
Bed depth _____	800 mm, min
Service Flow rate _____	5 – 50* BV/h
Regenerant _____	NaCl
Level (g/L) _____	60 – 250
Concentration (%) _____	10
Flow rate (BV/h) _____	2 – 8
Minimum contact time _____	30 minutes
Slow rinse _____	2 BV at regeneration flow rate
Fast rinse _____	2 – 4 BV at service flow rate

\* 1 BV (Bed Volume) = 1 m<sup>3</sup> solution per m<sup>3</sup> resin

## LIMITS OF USE

TREION™ TSFT™ HCR is suitable for industrial water applications. For all specific applications, it is recommended that all potential users seek advice from Treitel Chemical Engineering in order to determine the best resin choice and optimum operating conditions.

## HYDRAULIC CHARACTERISTICS

Figure 1 shows the bed expansion of TREION™ TSFT™ HCR, as a function of backwash flow rate and water temperature. Figure 2 shows the pressure drop data for TREION™ TSFT™ HCR, as a function of service flow rate and water temperature. Pressure drop data is valid at the start of the service run with clear water and a correctly classified bed.

Fig. 1: Bed Expansion

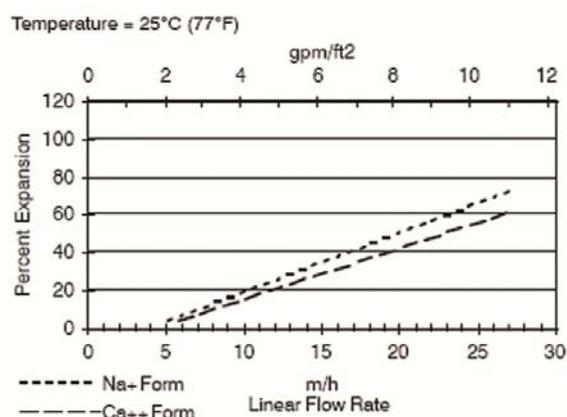
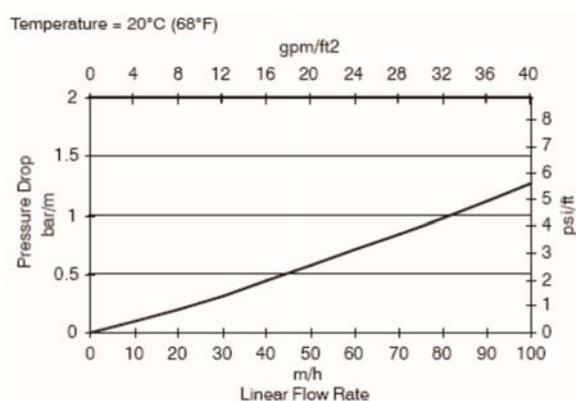


Fig. 2: Pressure drop



## QUALITY ASSURANCE

A Certificate of Compliance is available for every batch of TREION™ TSFT™ HCR.

## TRADEMARKS

TREION™ and TSFT™ are Trademarks of Treitel Chemical Engineering Ltd., Israel.

DOWEX™ is a Trademark of DuPont de Nemours Inc., U.S.A.

### CAUTION

Ion exchange resins, as produced, contain by-products resulting from the manufacturing process. The user must determine the extent to which organic by-products must be removed for any particular use and establish techniques to assure that the appropriate level of purity is achieved for that use. The user must ensure compliance with all prudent safety standards and regulatory requirements governing the application.

Except where specifically otherwise stated, Treitel Chemical Engineering does not recommend ion exchange resins, as supplied, as being suitable or appropriately pure for any particular use. Consult Treitel Chemical Engineering representative for further information.

Acidic and basic regenerant solutions are corrosive and should be handled in a manner that will prevent eye and skin contact. Nitric acid and other strong oxidising agents can cause explosive type reactions when mixed with Ion Exchange resins. Proper design of process equipment to prevent rapid build-up of pressure is necessary if use of an oxidising agent such as nitric acid is contemplated. Before using strong oxidising agents in contact with Ion Exchange Resins, consult sources knowledgeable in the handling of these materials.

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