

**URANIUM CORPORATION OF INDIA LIMITED**  
P.O: JADUGUDA MINES, JHARKHAND – 832102

**GLOBAL EXPRESSION OF INTEREST**

Uranium Corporation of India Limited (UCIL) is a Public Sector Undertaking Company under the administrative control of Department of Atomic Energy with Head Office at Jaduguda (Post), Dist: Singhbhum (East), Jharkhand – 832102 invites “Expression of Interest” from reputed manufacturer for “ION-EXCHANGE RESIN” required for our Jaduguda and Turamdih plants located near Jamshedpur, Dist: East Singhbhum, Jharkhand, India. Approximate yearly requirement is 100m<sup>3</sup> for both the plants.

Interested parties may visit our company’s website [www.ucil.gov.in](http://www.ucil.gov.in) for details duty condition, specification and other details.

**DY. GENERAL MANAGER (Purchase)**

## ION – EXCHANGE RESIN

### DUTY CONDITION:

Strongly Basic ammonical anion Exchange Resin is required for the selective absorption of Anionic Uranyl Sulphate complex from the clarified pregnant liquor obtained by Sulphuric Acid leaching of uranium ore in fixed bed ion exchange system for the purpose of purification and concentration. The adsorbed uranium complex must be subsequently eluted from the resin by split elution technique by acidic chloride eluent liquor (**0.12 N H<sub>2</sub>SO<sub>4</sub>, 35 g/l chloride & Hydrogen peroxide: 0.1 – 0.2 g/l**) at sufficiently high concentration and at about 45 degree centigrade temp for the production of Uranium Peroxide by direct precipitation.

Other details are as follows:

- 1) Flow rate during adsorption : 600 to 800 liters / minute
- 2) Height of resin bed per column : 1.981 m
- 3) Surface area in resin bed : 3.577 m<sup>2</sup>
- 4) Number of column during adsorption : two (2)
- 5) Flow of eluent liquor rate during elution : 265 to 285 l/min
- 6) Uranium in barren liquor (effluent of 2<sup>nd</sup> column) : < 1% of feed value at break point
- 7) Typical analysis of feed clarified pregnant liquor

Turbidity	:	2 to 3 ppm
pH	:	1.7 to 1.8
Emf	:	457 mV
U <sub>3</sub> O <sub>8</sub>	:	0.30 to 0.37 g/l
FE++	:	0.507 g/l
FE (T)	:	2.46 g/l
Sulphate	:	19.07 g/l
Chloride	:	1.26 g/l
Copper	:	0.007 g/l
Mo	:	0.00055 g/l
Ni	:	0.016 g/l
P <sub>2</sub> O <sub>5</sub>	:	0.345 g/l
Mn	:	1.1 to 1.38 g/l
SiO <sub>2</sub>	:	0.89 g/l
CaO	:	1.05 g/l
MgO	:	1.33 g/l
Al <sub>2</sub> O <sub>3</sub>	:	1.37 g/l
H <sub>2</sub> O <sub>2</sub>	:	Traces

8) Physical Characteristics:

a) Size Analysis

<u>Size (Tyler mesh)</u>	<u>% by weight</u>
+14	Nil
-14 +25	9.8
-25 +35	81.2
-35 +48	8
-48	1

Maximum portion of bead should be in between -25 +35 tyler mesh

b) Voids	40%
c) Water remain (gms. Water / gms. of dry resin)	0.6 to 0.9
d) pH range	1.5 to 2.0

9) Typical Chemical Characteristics of resin being used:

Total chloride capacity – M.Eq./Lit (Wet settled resin)	1440
Strong base capacity M.Eq./Lit. (W.S.R)	1437
Salt splitting capacity M.Eq./Lit. (W.S.R)	1157
Dry weight capacity M.Eq./gms. Dry resin	3.8
Uranium Capacity gms. $U_3O_8$ / Lit. (W.S.R)	68 or more

10) Other information:

- Periodicity of regeneration (cycles): after 25 cycles
- Limit of fines generation of less than 48 mesh size: maximum 8% between each regeneration.
- The requirement of regeneration after 2<sup>nd</sup> regeneration shall come after at least 25 cycles of operation.
- The resin after five (5) regenerations (each regeneration between 25 to 35 cycles) shall give a uranium loading capacity of min. 55 g/l of WSR at 600 liters / min flow.

N.B.

- One liter of sample must be supplied with the offer along with literature / leaflet containing detail physical and chemical properties.
- Resin giving higher loading capacity of uranyl sulphate ions than specified will have preference.