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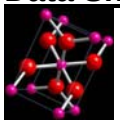
MILLERS & PROCESSORS OF BASE MINERALS

AFRICAN PEGMATITE

Data Sheet



Product: Maddox Granular Manganese Catalyst
Standard Grade: Removal of Aluminium, Iron, Manganese & Arsenic, Hydrogen Sulphide, Reactive Silica

PRODUCT KEY FEATURES:

- **CHEM FREE REMOVAL FOR ABOVE SALTS**

* Iron Removal over wide pH-range
* Effective removal of hydrogen sulfide in addition to iron and/or manganese
* No harmful effects from a chlorine feed
* Low attrition loss for long bed life

Characteristics	**Maddox Granules**
Colour	Black
Dry Bulk Density	1850kg/m^3
Effective size in mm (approx)	D10 0.25mm 0.7mm 1.3mm 3.3mm
Uniformity coefficient…….D60 / D10	1.6
Mesh sizes in mm	0.3 – 0.6mm, 0.6 – 1.6mm, 1.2 – 2.4mm, 3 - 5mm
Attrition loss per year in %	3 – 5%
Raw water pH	5.2 – 9.6
Bed depth	300 - 800mm depending on water characteristics
Freeboard in %	35 – 50
Service flow rate in cubes/hour sq metre	12 – 15 (18 – 24 intermittent flow possible)
Backwash flow rate in cubes/hour sq metre	30 – 50 (30 – 50 cubes/hour depending on media configuration)
Maximum temperature raw water in ºC	36ºC
Maximum parts limit in ppm	Fe^{+3} / Mn^{+3}: tested to 100mgs/litre 98% efficiency
Relative Density (S.G)	4.12 (4.12 gms / cubic centimeter)
Removal Oxidizing Capacity	20 gms/litre Fe^{+++} per litre of Maddox or 1.85kgs.
Break through point	95% efficiency
Ionic Equation:	$2\ Fe^{++} + MnO_2 + 2H_2O \rightarrow 2\ Fe^{+++} + Mn^{++} + 4(OH) –$ $Mn^{++} + MnO_2 + 2H_2O \rightarrow 2\ Mn^{+++} + 4\ (OH) –$ Formation of Hydroxl Ion the pH will increase. Additions of Alkalising agents will largely become unnecessary. Stripping of CO_2 and H_2S will also increase pH.

MADDOX CATALYST:

Is formulated from Manganese ore and activated in special proprietary furnace which is capable of removing iron, manganese, aluminum salts, tannins, chlorides and hydrogen sulfide from water through oxidation and filtration. Soluble iron, manganese etc. are oxidized and precipitated by contact with higher oxides of manganese on the maddox granules. The hydrogen sulfide is eliminated by oxidation to sulfate and an insoluble precipitate. Precipitates are then filtered and removed by backwashing. When the oxidizing capacity power of the Maddox bed is exhausted, the bed can be regenerated if required with a weak potassium permangnate ($KMnO_4$) solution thus restoring the oxidizing capacity of the bed. Potassium permanganate, in 1.75 – 3.5% solution, to regenerate Maddox bed. It is advisable to regenerate the bed for at least 1 hour after which to vigorously backwash for a few minutes until the permanganate colour is removed, when it is placed in service and before oxidation capacity is totally exhausted. New research has revealed that Maddox can continuously be regenerated with the use of low and medium intensity U/V Lamps a minimum generation of 3gms of oxygen and 2gms of ozone per hour, wattage dependant on water volumes. Some installations just use air scour. Notes: It is important that the Maddox media has suitable under-bedding and attention must be paid to the configuration of media bed depths and area.

ISO 9001 SABS