Clay Stabilization

A unique portfolio with a competitive solution: Ascend's FlexaTram™-DAM, Hexasalts™ and FlexaTram™-BHM stabilize clay better than choline chloride (ChCl) and potassium chloride (KCl)

FlexaTram™ DAM / HDA

- Hexamethylenediamine offers more permanent stabilization
- Useable in water- and oil-based systems
- Inhibits clay hydration and expansion
- Capable of restoring permeability in formations that have previously been damaged by selling

Hexasalt™

- Performance and cost advantage to competitive products (ChCl/ KCl)
- Semi-permanent stabilization
- Sold in 25% concentrations, dilutable to 12.5%

FlexaTram™ BHM

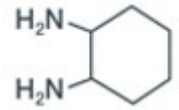
- Multifunctional, long chain amine (C12)
- Effective in wide pH range (1-8)
- Multiple grades to meet customer formulation requirements

ASCEND PERFORMANCE MATERIALS

Our Chemistries

FlexaTram™ DAM

1,2- Diaminocyclohexane



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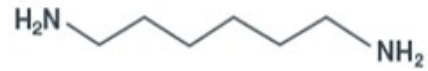
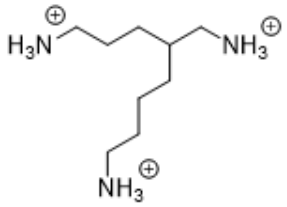
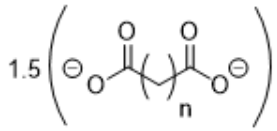
Hexamethylenediamine



Hexasalt™

Triaminononane Salt

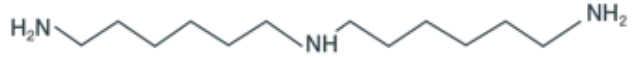




n = 2, 3, 4

FlexaTram™ BHM

Bis(hexamethylene)triamine



FlexaTram™ DAM

Diaminocyclohexane (DCH) & Hexamethylenediamine (HDA)

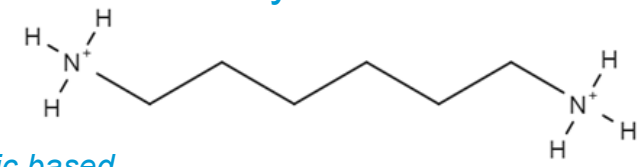
Grade	Assay *(HMD%)*	Assay *(DCH)*	Water *(wt%)*
FlexaTram™ DAM-800	>95	<5	<5

FlexaTram™ HDA

Hexamethylenediamine (HDA)

Grade	Assay *(HMD%)*	Assay *(HMI)*	Water *(wt%)*
FlexaTram™ HDA-980	>98	<1	<2

Hexamethylenediamine Salt



Formic based

Offers more permanent stabilization

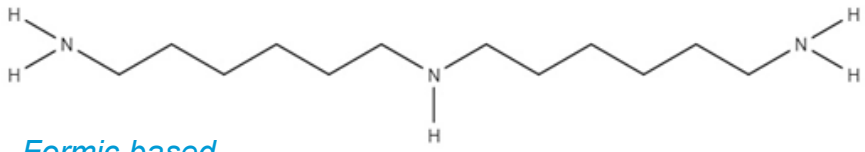
- Useable in water- and oil-based systems
- Inhibits clay hydration and expansion
- Capable of restoring permeability in formations that previously have been damaged

FlexaTram™ BHM

Bis(hexamethylene)triamine

Grade	Assay *(BHM%)*	Nickel *(ppm)*	Water *(wt%)*
FlexaTram™ BHM-120	+45	<1500	<5
FlexaTram™ BHM-123	+45	<1500	<3
FlexaTram™ BHM-121	+45	<1500	<1
FlexaTram™ BHM-150	+45	<600	<5
FlexaTram™ BHM-151	+45	<600	<1

Bis(hexamethylene)triamine Salt



Formic based

Multifunctional long-chain amine (C12)

- Effective in wide pH range (1-8)
- Multiple grades to meet customer formulation requirements

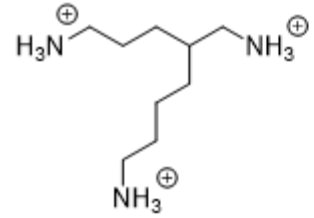
Hexasalt™ H

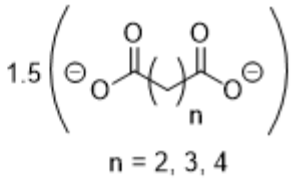
Triaminononane Salt

Grade	Assay	pH	Solubility in water *(wt%)*
Hexasalt™-H-125	25%	4-6.5	1431

Triaminononane Salt

Trifunctional primary amines





Sold in salt form