



FlexaTram™ - DAM

FORMULATED AMINES

FlexaTram™-DAM

The FlexaTram family of multifunctional amines is tailored to a variety of end use applications. Ascend's vertically-integrated production and large scale allow a reliable supply of these products around the globe.

FlexaTram-DAM is a unique family of products based on:

- formulated blends of cycloaliphatic amines (DACH)
- formulated blends of hexamethylenediamine (HMD)



Physical Data	FlexaTram-DAM-120	FlexaTram-DAM-200	FlexaTram-DAM-700
Purity (Amines %)	>90	>90	>90
Form	liquid	liquid	liquid
Color	slightly yellow	slightly yellow	slightly yellow
Amine Value Range, mg KOH/g	700-900	750-950	600-800
Amine Hydrogen Equivalent Weight (AHEW) (±3)	27	27	26-28
Freeze Point Range, °C	14-15	9-11	>14
Viscosity, cp (±5)	6.5 (@ 25°C)	6.0 (@ 45°C)	7.0-9.0 (@ 45°C)
Purity as (DAM%)	n/a	40 min	n/a

Key attributes

- Multifunctional
- Low viscosity
- Economical compared to other amine alternatives
- High amine value
- Cycloaliphatic amines content for enhanced performance

Grades	FlexaTram-DAM-120	FlexaTram-DAM-200	FlexaTram-DAM-700
Type	General purpose	High cycloaliphatic amine	High hexamethylene diamine content
Purpose	For drilling, stimulation, production and other applications in oil and gas	High performance in epoxy floor coating/composite and highly selective sour gas applications for oil and gas	High performance oil and gas applications, including upstream, adhesives and emulsifiers



Oil and Gas	FlexaTram-DAM-120	FlexaTram-DAM-200	FlexaTram-DAM-700
H ₂ S & CO ₂ Scavenging			
Scale/Corrosion Inhibitors			
Clay Stabilizer & Drilling Mud			
Chelating Agent			
Lubricant & Surfactant			



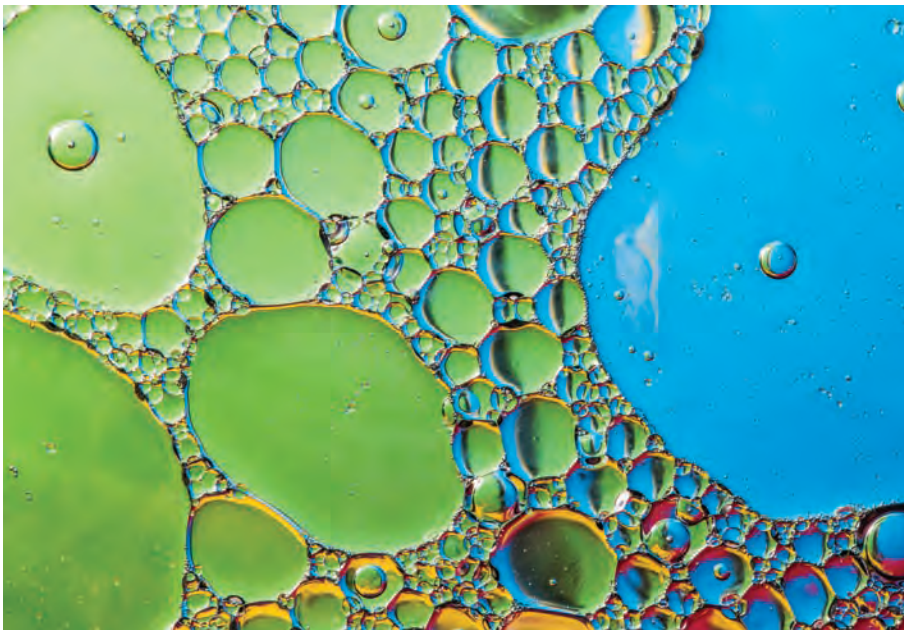
Coatings	FlexaTram-DAM-120	FlexaTram-DAM-200	FlexaTram-DAM-700
Epoxy Curing Agent			
Urethane Curing Agent/Catalyst			
Polyamide Resin Adhesive			



Composites	FlexaTram-DAM-120	FlexaTram-DAM-200	FlexaTram-DAM-700
Wind Turbine			
Sporting Goods			
Automotive Parts			

Intermediates	FlexaTram-DAM-120	FlexaTram-DAM-200	FlexaTram-DAM-700
Herbicide			
Pharmacy			

Other Applications	FlexaTram-DAM-120	FlexaTram-DAM-200	FlexaTram-DAM-700
Water Treatment			
Detergents			
Textiles			



Emulsions

FlexaTram-DAM is used to produce wide range of ethoxylated amines and ethoxylated fatty amines with various amounts of ethylene oxide. These amines are used for emulsification, surface tension, solubility and cationic strength characteristics in oil and gas and most industrial and institutional cleaning applications.



Epoxy Coatings

FlexaTram-DAM is used as epoxy curing agent for composites & civil engineering applications such as flooring & paving to provide high chemical and temperature resistance with superior mechanical performance. Composite applications include processes such as filament winding, infusion, RTM and hand lay-up.



Water Treatment

FlexaTram-DAM can be used as a chelating agent in several applications:

- Oilfield - iron chelation
- Oilfield - acid gas absorption
- Textiles - dye treatment
- Water Treatment - boiler water additive
- Metal working fluids - ferrous chelation for corrosion protection
- Detergents - drying cleaning applications



Clay Stabilizers and Drilling Mud

FlexaTram-DAM can be used as shale hydration inhibitors and clay stabilizers in water-based drilling fluids and fracking fluids. FlexaTram-DAM is modified to form quaternary ammonium salt, which is then used to improve the inhibitive properties and high temperature resistance of shale inhibitors.

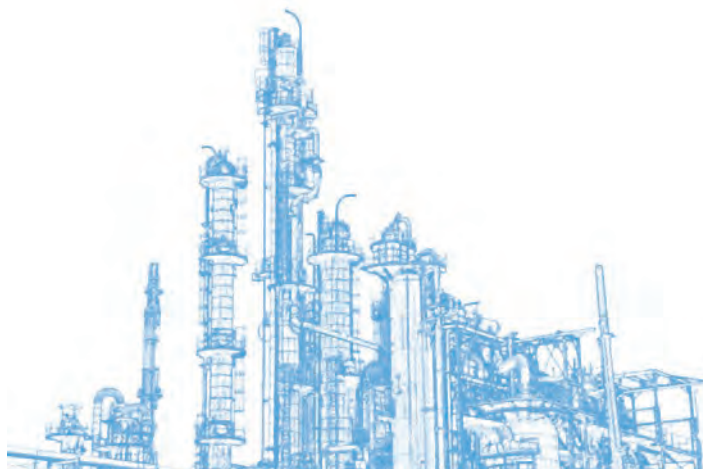
- FlexaTram-DAM exhibits superior water inhibitive properties when compared to other products such as KCl and choline chloride. Unlike other amines, the cycloaliphatic amine content in FlexaTram-DAM can provide high temperature resistance.
- FlexaTram-DAM's hydrophobic and chemical nature intercalate into clay at a drilling site. The product is especially effective in montmorillonite clay (bentonite and smectite) with monolayer orientation.
- The quaternary ions in FlexaTram-DAM neutralize the negatively charged clay surface after absorption while the chemical's hydrophobic properties prevent ingress of water.



Corrosion Inhibitor (CI)

FlexaTram-DAM can be used in oil well drilling, completion, production and water flood systems.

- VPCI and FFCI based on FlexaTram-DAM are commonly used in oil production as oil-soluble filming inhibitors.
- FlexaTram-DAM is dispersible in light brines and fresh water. The product is effective against (H_2S , CO_2) organic acids and small amounts of oxygen. FlexaTram-DAM is normally formulated with other additives such as nonionic surfactants and alcohols.



About Ascend

Headquartered in Houston, Texas, Ascend Performance Materials is one of the world's largest fully-integrated producers of nylon 6,6 resin. As the world's only large-scale converter of acrylonitrile to adiponitrile, Ascend is uniquely positioned for the production of dozens of amines, acids, esters and intermediates used in a variety of end applications. Our integrated manufacturing processes allow us to produce a wide range of specialty chemicals. Ascend's specialty chemicals are used in hundreds of brand-name adhesives, coatings, cleansers and detergents. Ascend manufactures chemicals at its facilities in Texas, Alabama and Florida.

For more information on our specialty chemicals visit us at www.ascendmaterials.com/specialtychemicals

inspiring everyday