About Ascend

Ascend Performance Materials is a global leader in the production of high-quality plastics, chemicals, and fibers. As the world’s largest fully integrated manufacturer of nylon 6,6 resin, our manufacturing processes are vertically integrated, ensuring the highest level of quality and economies of scale. Ascend’s specialty chemicals and blends of acids, amines and esters are used in a variety of applications and industries. We offer customized solutions through formulated products and superior technical support.

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  - Shanghai, 200001
  - China
  - +86 21 6340 3300

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**KEY CHARACTERISTICS**

- Readily biodegradable
- Completely water soluble
- Effective buffering agent
- Deflocculating properties
- Stable in acids and bases
- Stable over a wide temperature range
- Available in powder and solution forms

**Disclaimer of Warranty and Liability**

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- Completely water soluble
- Effective buffering agent
- Deflocculating properties
- Stable in acids and bases
- Stable over a wide temperature range
- Available in powder and solution forms

About FlexaTrac-NTA

FlexaTrac™-NTA is a chelating agent designed for the treatment of water-soluble metallic material. Its unique properties make it an ideal solution for industries requiring the removal of metal ions from water.

Key features include:
- Completely water soluble
- Effective buffering agent
- Deflocculating properties
- Stable in acids and bases
- Available in powder and solution forms

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Rev. 08/2017
**Nitrilotriacetic Acid, Trisodium Salt, Monohydrate**

**Nitrilotriacetic Acid, Trisodium Salt, 40% Solution**

CAS 18662-53-8 is for NTA monohydrate powder.

CAS 5064-31-3 is for the NTA 40% Solution.

**pH of Solution**

<table>
<thead>
<tr>
<th>pH</th>
<th>STP 60°C</th>
<th>STP 25°C</th>
<th>NTA 60°C</th>
<th>NTA 25°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>7.0</td>
<td>7.8</td>
<td>7.0</td>
<td>7.8</td>
</tr>
<tr>
<td>7</td>
<td>7.8</td>
<td>8.6</td>
<td>7.8</td>
<td>8.6</td>
</tr>
<tr>
<td>8</td>
<td>8.6</td>
<td>9.4</td>
<td>8.6</td>
<td>9.4</td>
</tr>
<tr>
<td>9</td>
<td>9.4</td>
<td>10.2</td>
<td>9.4</td>
<td>10.2</td>
</tr>
<tr>
<td>10</td>
<td>10.2</td>
<td>11.0</td>
<td>10.2</td>
<td>11.0</td>
</tr>
</tbody>
</table>

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>NTA Poudre*</th>
<th>NTA Solution**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular weight</td>
<td>275.1</td>
<td>275.1</td>
</tr>
<tr>
<td>Appearance</td>
<td>White, crystalline powder</td>
<td>Clear, colorless or pale yellow liquid</td>
</tr>
<tr>
<td>Assay, % N(CH2COONa)3 H2O</td>
<td>min 41.7-44.4</td>
<td>min 99</td>
</tr>
<tr>
<td>Through 250 mesh</td>
<td>max 30</td>
<td>N/A</td>
</tr>
<tr>
<td>Specific gravity (at 25°C)</td>
<td>1.280-1.305</td>
<td>N/A</td>
</tr>
<tr>
<td>pH, 1% solution at 25°C</td>
<td>10.5-11.7</td>
<td>10.5-11.5</td>
</tr>
<tr>
<td>Flash point, °F (Penray-Martill)</td>
<td>147</td>
<td>167</td>
</tr>
<tr>
<td>Total moisture, % at 200°C</td>
<td>max 3</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**TECHNICAL**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>pH 10-11 at 0.1M conc.</th>
<th>Effective binding Ca between pH</th>
<th>Dissolving Ca soap</th>
<th>Supports cleaning</th>
<th>Stain removal</th>
<th>Granular form available</th>
<th>Solubility in water</th>
<th>Buffering capacity (%)</th>
<th>Corrosion inhibition</th>
<th>Causing corrosion</th>
<th>Chlorate stability</th>
<th>Stability in Alkali</th>
<th>Stability at higher temperatures</th>
<th>Supporting disinfection by quats</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6.4</td>
<td>6-13</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>yes</td>
<td>very good</td>
<td>90</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
</tr>
</tbody>
</table>

**MISCELLANEOUS TECHNICAL**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Perceived environmental profile</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chemicals-normal effect</td>
</tr>
<tr>
<td></td>
<td>neutral</td>
</tr>
</tbody>
</table>

**Hard Surface Cleaning**

- Better performance at lower loads
- Excellent lubrication properties
- Provides riding action on the film of clearing baths

**Vehicle Wash**

- Effective over a wide range of soiling conditions
- Superior performance over other similar products
- Cleans without harming paints, inks or rubber

**INDUSTRIAL & INSTITUTIONAL DISH CLEANING**

- Cleans dishes in fewer cycles by sequestering hardness ions and capturing more residue
- Allows lower water contents, lower viscosity and greater ease of mixing and handling
- Brings a higher level of performance in liquid detergents
- In compatible with other common I&I detergent ingredients

**BONDING CAPACITY CHART**

FlexaTrac-NTA maintains its sequestration power at lower temperatures whereas sodium tripolyphosphate (STP) loses some of its power. When lower wash temperatures are used to save energy, FlexaTrac-NTA outperforms STP on a cost/performance basis.

**CALCIUM SEQUESTRATION AT VARIOUS TEMPERATURES**

FlexaTrac-NTA performance at lower temperatures whereas sodium tripolyphosphate (STP) loses some of its power.
FlexaTrac™-NTA is an effective, environmentally-friendly chelating agent used to reduce the negative effects of hardness ions in applications like dish washing, hard surface cleaning and sulfur scavenging in refineries.

Thirty percent more effective than other commonly-used chelating agents, NTA requires less material to meet the needs of most formulations.

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>NTA powder*</th>
<th>NTA solution**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular weight</td>
<td>275.1</td>
<td>275.1</td>
</tr>
<tr>
<td>Appearance</td>
<td>White, crystalline powder</td>
<td>Clear, colorless or pale yellow liquid</td>
</tr>
<tr>
<td>Assay, % N(CH₂COONa)₃·H₂O</td>
<td>99 min</td>
<td>41.7-44.4</td>
</tr>
<tr>
<td>Through 250 mesh</td>
<td>30 max</td>
<td>N/A</td>
</tr>
<tr>
<td>Specific gravity at 25°C / 15.5°C</td>
<td>1.280-1.305</td>
<td>N/A</td>
</tr>
<tr>
<td>pH, 1% solution at 25°C</td>
<td>10.5-11.7</td>
<td>10.5-11.5</td>
</tr>
<tr>
<td>Flash point, °F (Frayley-Martin cone)</td>
<td>275.1</td>
<td>N/A</td>
</tr>
<tr>
<td>Total moisture, % at 200°C</td>
<td>7 max</td>
<td>Approx. 58</td>
</tr>
</tbody>
</table>

**TECHNICAL**

- pHCa at pH 10-11 at 0.1M conc. 6.4 10.6 6.8 5.9 5.3
- Effective binding Ca between pH 6-13 9-12 9-12 4-12
- Dissolving Ca soap ++ +++ ++ 0 0
- Supports cleaning ++ ++ ++ ++ ++
- Stain removal ++ ++ ++ ++ ++
- Solubility in water very good very good very good very good poor
- Buffering capacity (Na salt) some some some some some
- Corrosion inhibition no no no no yes
- Causing corrosion no no no no no
- Chloride stability no no no no no
- Stability in Alkaline +++ +++ +++ +++ +++
- Stability at higher temperatures +++ +++ +++ +++ +++
- Supporting disinfection by quats ++ +++ ++ ++

**FlexaTrac-NTA - 25.375 x 11 NEW_Layout 1  8/23/17  2:27 PM  Page 2**
**FlexaTrac-NTA** is an effective, environmentally-friendly chelating agent used to reduce the negative effects of hardness ions in applications like dish washing, hard surface cleaning and sulfur scavenging in refineries. Thirty percent more effective than other commonly-used chelating agents, NTA requires less material to chelate the same amount. Ascend Performance Materials produces FlexaTrac-NTA in a powder and 40% solution to meet the needs of most formulations.

### CHARACTERISTICS
- **Molecular weight**: 275.1
- **Appearance**: White, crystalline powder, Clear, colorless or pale yellow liquid
- **Assay, % N(CH₂COONa)₃H₂O**: 99 min 41.7-44.4
- **Through 200 mesh**: 30 max N/A
- **Decomposition temperature (°C)**: 340 N/A
- **Specific gravity at 25°C / 15.5°C**: 1.280-1.305 N/A
- **pH, 1% solution at 25°C**: 10.5-11.7 10.5-11.5
- **Flash point, °F (Pensky-Martin)**: 275.1 N/A
- **Total moisture, % at 200°C**: 7 max Approx. 58

### TECHNICAL
- **pKCa at pH 10-11 at 0.1M conc.**: 6.4 10.6 6.8 5.9 5.3
- **Effective binding Ca between pH**: 6-13 9-12 9-12 4-12
- **Dissolving Ca soap**: ++ +++ ++ 0 0
- **Supports cleaning**: ++ ++ ++ ++ ++
- **Stain removal**: ++ ++ ++ ++
- **Granular form available**: yes yes hygroscopic hygroscopic yes
- **Solubility in water**: very good very good very good very good 12% max
- **Solubility in NaOH (10%)**: good good good very good poor
- **Buffering capacity (Na salt)**: some some some some some
- **Corrosion inhibition**: no no no no yes
- **Causing corrosion**: no no no no no
- **Chlorine stability**: no no no no no
- **Stability in Alkali**: +++ +++ ++ ++ +++
- **Stability at higher temperatures**: +++ ++ ++ ++ ++
- **Supporting disinfection by quats**: ++ ++ ++ ++ ++

### MISCELLANEOUS TECHNICAL
- **Energy**
  - Prevents and removes scale formation
  - Removes hydrogen sulfide to sweeten gas
  - Used in corrosion inhibition packages in emulsification and emulsion breaking
- **Hard Surface Cleaning**
  - Better performance at lower loads
  - Excellent buffering capacity and building action
- **Vehicle Wash**
  - Effective over a wide range of soiling conditions
  - Superior performance over other vehicle wash chelating agents
  - Cleans without harming painted, metal or rubber
- **Buffing capacity (Na salt)**
  - some some some some some

### SAFETY
- **Perceived environmental profile**: neutral negative neutral negative neutral

### INDUSTRIAL & INSTITUTIONAL DISH CLEANING
- **Cleans dishes in fewer cycles by sequestering hardness ions and capturing more residue.**
- **Allows lower wash temperatures, lower viscosity and greater ease of mixing and handling.**
- **Brings a higher level of performance in liquid detergents.**
- **Is compatible with other common I&I detergent ingredients.**

---

[Image of FlexaTrac-NTA with characteristics and performance data]

**BINDING CAPACITY CHART**

**CALCUL SEQUESTRATION AT VARIOUS TEMPERATURES**
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