Oxoflex® DPA Pastilles

Manufacturer: Sovereign Chemical Company
Classification: Diphenylamine antioxidant and anti-flex agent
Chemical Name: 90% 4,4'-dicumyldiphenylamine and 10% 4-cumyldiphenylamine

<table>
<thead>
<tr>
<th>Specification Properties</th>
<th>Value</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetone Insolubles, %</td>
<td>0.1 maximum</td>
<td>SCC-110</td>
</tr>
<tr>
<td>Ash Content, %</td>
<td>0.1 maximum</td>
<td>SCC-111</td>
</tr>
<tr>
<td>Heat Loss @70°C, %</td>
<td>0.5 maximum</td>
<td>SCC-109</td>
</tr>
<tr>
<td>Melting Point, ºC</td>
<td>85-95</td>
<td>SCC-108</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Typical Properties</th>
<th>Value</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form</td>
<td>Light-violet to gray-violet pastilles</td>
<td>Visual</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.14</td>
<td>Typical</td>
</tr>
</tbody>
</table>

APPLICATIONS

Uses: Especially suited for use in tires, belts, hoses, cables and mechanical rubber goods. Also as a stabilizer for plastics, lubricants and oils.

Protection: An alkylated diphenylamine that is a very effective antioxidant that provides long term protection. It also provides protection against flex cracking, metal ion degradation and heat aging. It is a weak antiozonant in neoprene rubber.

Polymers: All synthetic and natural rubbers. Especially good in polyisoprene, natural rubber, neoprene, and nitrile rubbers.

Synergism: Synergistic with phenolic antioxidants, phosphite antioxidants, p-phenylenediamines, MMBI and microcrystalline/paraffin waxes.

Staining: Non-staining and only very slightly dis-coloring in sunlight. Non-staining and non-discoloring upon heat aging.

Cure Effect: Non-activating on the cure.

Recommended Dosage:

As an Anti-Flex Agent: 1.0-2.0 phr
As an Antioxidant: 1.0-2.5 phr in a carbon-black filled compound
0.5-1.5 phr in a non-black compound with phenolic antioxidant (1-1.5 phr)
1.0-3.5 phr in CR
For Heat Resistance: 1.0-4.0 phr in combination with MMBI
As a Metal Antidegradant: 1.0-2.0 phr
As a Polymer Stabilizer: In polyamides 0.10-1.00 % weight
In polyolefins 0.05-0.5 weight
In oils 0.10-1.0 % weight
> FDA REGULATIONS
Adhesive component, indirect food additive 21 CFR 175.105(C)(5)
Antioxidant and/or stabilizer for polymers 21 CFR 178.2010(b)
Food contact surface component 21 CFR 177.1590(b)
Resinous and polymeric coating 21 CFR 175.300(b)(3)

> PACKAGING AND STORAGE
Packaging: 25 kg (55.1 lb.) bags.
Shelf Life: 2 years from date of manufacture if stored as indicated below.
Storage: Store in unopened original packaging in a cool dry place away from foodstuffs, oxidants and acids.
Specification Date: July 16, 2001 (Supersedes November 30, 1999)