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Technical Data

VANOX[®] NDBC Antioxidant/Antiozonant

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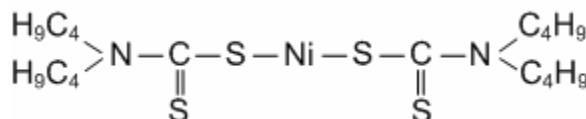
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VANOX[®] NDBC Antioxidant/Antiozonant

An antidegradant which can provide heat, light or ozone resistance for selected synthetic rubbers.

Typical Properties

Chemical Composition: Active ingredient – Nickel dibutyldithiocarbamate



Use:

VANOX NDBC is a nonvolatile, nonstaining antiozonant for many synthetic rubbers including SBR, NBR, CR and IIR. **VANOX NDBC** also acts as an antioxidant in CR, ECO and HYPALON[®] by enhancing heat resistance. For non-black vulcanizates, **VANOX NDBC** can reduce sunlight discoloration, although its green color inhibits its use in pastel shades. **VANOX NDBC** should not be used in natural rubber since it impairs its aging properties.

Physical Properties:

Physical State	Powder
Color	Dark green
Odor	None
Density	1.26 Mg/m ³
Discoloration	None
Storage Stability	Good
Melting Point	86°C minimum
Flash Point	263°C

Application:

SBR and NBR:

VANOX NDBC at 1.0 to 2.0 phr provides resistance to the effects of ozone without migratory staining or discoloration. **VANOX NDBC**'s flash point of 263° C makes it less volatile than the p-phenylene diamine (PPD) type antiozonants, and it therefore provides continued protection even after the most severe heat aging conditions.

Because **VANOX NDBC** is less migratory than the PPDs, it may not match them in initial protection, or in some accelerated (high ozone concentration) tests. Nevertheless, it can be exceptionally effective in long term service. **VANOX NDBC** will not affect the scorch or cure characteristics of these polymers as do the PPDs. **VANOX NDBC** has no antioxidant activity in these polymers and it should therefore always be used in combination with a suitable antioxidant.

CR, ECO and IIR

VANOX NDBC at 1.0 to 3.0 phr will provide ozone resistance in NEOPRENE, epichlorohydrin and the high unsaturation grades of butyl. The nonvolatility of **VANOX NDBC** can be particularly advantageous in these polymers. Up to 4 phr of **VANOX NDBC** can be used in NEOPRENE to provide heat resistance above 100°C. **VANOX NDBC** may have a slight retarding effect on the cure of NEOPRENE, and will detract from the aging properties of NEOPRENE below 100°C, so it should be used in combination with a quality antioxidant such as AGERITE® STALITE® S.

HYPALON

VANOX NDBC is used as a heat stabilizer for metal oxide-cured HYPALON stocks. From 1.0 to 3.0 phr can be used, with heat resistance at all aging temperatures improving in proportion to dosage. Higher levels will have a tendency to bloom and may adversely affect processing safety. However, scorch can be controlled when **VANOX NDBC** is used in combination with **VANOX MBM**.

Colored Stocks

0.1 to 0.5 phr of **VANOX NDBC** can be used to minimize sunlight discoloration in mineral-filled compounds. **VANOX NDBC** will impart a greenish tint due to its inherent color, which may necessitate a color or shade adjustment to maintain tonal quality. Depending on the formulation, it may not be possible to use **VANOX NDBC** to make a white compound.

Natural Rubber

VANOX NDBC impairs the aging properties of natural rubber vulcanizates, and is therefore not recommended for use in natural rubber stocks or in other elastomers which might come in contact with natural rubber.

Advantages:

- Heat stabilizer for HYPALON.
- Light stabilizer for colored stocks.
- Disperses readily in dry elastomers.
- Antiozonant for synthetic rubbers with:
 - a. outstanding permanence;
 - b. little or no effect on cure;
 - c. nonstaining and
 - d. non-discoloring properties.

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