

Polymer Add (Thailand) Co.,Ltd.

Office - 106, Chalarempriakiat, Lor 9, Soi 22, Yak 5, Nongbon, Prawet, Bangkok, Thailand 10250

Factory - 188/3, Moo 8, Tambon Bangpu Mai, Amphoe Muang Samut Prakan, Samutprakan, Thailand 10280

Mobile - Thai : 0804531391, English: 0839415475, E-mail – contact@polymeradd.co.th



TECHNICAL DATA SHEET

ANTIOXIDANT 1010

PRODUCT CLASSIFICATION

Item	Description
Product Name	Antioxidant 1010
Chemical Name	Pentaerythritol tetrakis[3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate]
CAS Number	6683-19-8
EC Number	229-722-6
Molecular Formula	$C_{73}H_{108}O_{12}$
Molecular Weight	1,177.66 g/mol
Chemical Class	Sterically hindered phenolic primary antioxidant
Synonyms	AO 1010; Tetrakis[methylene-3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate]methane

PRODUCT DESCRIPTION

Antioxidant 1010 is a high-molecular-weight, sterically hindered phenolic primary antioxidant. It protects polymers and other organic materials against thermo-oxidative degradation during processing and long-term service.

Its high molecular weight provides low volatility, good polymer compatibility and resistance to extraction. It can be used alone or together with secondary antioxidants such as phosphites, phosphonites and thioesters.

PRODUCT SPECIFICATIONS

The following limits and test methods are taken directly from the enclosed Certificate of Analysis. Batch-specific test results have intentionally been excluded.

Property	Specification	Test Method
Appearance	White powder or granule	Visual inspection
Melting Point	110.0-125.0°C	MPI
Volatilising Matter	Maximum 0.50%	Weight loss at 105°C
Clarity of Solution	Clear solution	Visual
Colour of Solution at 425 nm	Minimum 96.0%	UV-VIS
Colour of Solution at 500 nm	Minimum 98.0%	UV-VIS
Ash	Maximum 0.10%	HG/T 3713-2019
Assay	Minimum 94.0%	HPLC
Assay of Effective Components	Minimum 98.0%	HPLC
Tin Content	Maximum $2 \times 10^{-4}\%$	ICP-AES; HG/T 3713-2019

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TYPICAL PHYSICAL PROPERTIES

The following values are general technical reference values and are not product specifications.

Property	Typical Value
Physical Form	Solid powder or granule
Colour	White
Odour	Odourless or nearly odourless
Melting Range	110-125°C
Flash Point	Approximately 297°C
Density at 20°C	Approximately 1.15 g/mL
Bulk Density	Approximately 530-630 g/L
Vapour Pressure at 20°C	Approximately 7×10^{-10} Pa
Water Solubility	Practically insoluble
Solubility	Soluble in acetone, chloroform, ethyl acetate, methylene chloride and aromatic solvents

FUNCTION AND PERFORMANCE

Antioxidant 1010 acts as a primary antioxidant by reacting with free radicals formed during thermal oxidation. This interrupts the oxidative degradation cycle and helps preserve the polymer's molecular structure and physical properties.

Principal benefits include:

- Long-term thermal and oxidative stability
- Low volatility at polymer-processing temperatures
- Good compatibility with a broad range of polymers
- High resistance to extraction
- Low tendency to cause discolouration
- Protection of mechanical and physical properties
- Synergistic performance with phosphite antioxidants such as AO168
- Suitable for polymer systems subjected to repeated heat processing

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USES AND APPLICATIONS

Industry or Polymer	Commercial Application
Polyethylene	Long-term thermal stabilisation of LDPE, LLDPE and HDPE
Polypropylene	Processing and long-term heat stabilisation
EVA and Olefin Copolymers	Protection against thermo-oxidative degradation
Polyamides	Long-term thermal stabilisation during processing and service
Polyesters	Processing and end-use oxidative stability
Polyurethanes	Protection of polyurethane materials against oxidation
PVC	Stabilisation in suitable rigid and flexible PVC formulations
ABS and Styrenic Polymers	Protection against heat ageing and oxidative degradation
Elastomers and Rubber	Stabilisation of IIR, SBS, SEBS, EPM, EPDM and other synthetic rubbers

TYPICAL DOSAGE GUIDANCE

Application	Typical Starting Range
Polyolefins	0.05-0.40%
Hot-Melt Adhesives	0.20-1.00%
Synthetic Tackifier Resins	0.10-0.50%
Coating Systems	0.20-1.00%

These ranges are general formulation guidance. The optimum dosage should be established through application trials based on the polymer, processing temperature, heat history, required service life and use of other stabilisers.

HANDLING AND STORAGE

Store in the original, tightly closed packaging in a cool, dry and well-ventilated area. Protect from excessive heat, direct sunlight, moisture and contamination.

Avoid generating or accumulating airborne dust. Use suitable dust extraction and personal protective equipment during handling.

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PACKAGING

Standard commercial packaging is normally 20 kg or 25 kg net bags or cartons, depending on the supplier and agreed commercial terms.

REGULATORY INFORMATION

Regulatory compliance depends on the manufacturer, manufacturing location, purity, intended polymer, addition level, end-use application and destination market.

Compliance with REACH, K-REACH, TSCA, EU food-contact regulations or other regional requirements must be supported by current manufacturer-specific declarations.

This TDS does not constitute a food-contact declaration, regulatory certificate or statement of compliance.

DISCLAIMER

The information provided in this Technical Data Sheet is based on the enclosed Certificate of Analysis and generally available technical information. Batch-specific test results are reported separately in the applicable Certificate of Analysis.

The stated product specifications do not constitute a guarantee for a particular application. Users must determine the product's suitability through their own testing under the intended processing and end-use conditions.

Month of Creation: September 2026

Month of Review: September 2028