



## Material Safety Data Sheet

# Titanvene™

## Linear Low Density Polyethylene

### 1. PRODUCT AND COMPANY IDENTIFICATION

|                                   |  |   |
|-----------------------------------|--|---|
| <b>MSDS Code</b>                  | PE-002   |   |
| <b>Trade Name</b>                 | Titanvene™ LINEAR LOW DENSITY POLYETHYLENE   |   |
| <b>Manufacturer/Supplier</b>      | PT. TITAN Petrokimia Nusantara (PT. TITAN)   |   |
| <b>Address</b>                    | <b>Head Office :</b><br>Graha BIP, 4 <sup>th</sup> Floor<br>Jl. Jend. Gatot Subroto Kav.23<br>Jakarta 12930<br>INDONESIA | <b>Merak Works :</b><br>Jl. Raya Merak Km.116<br>Rawa Arum, Pulo Merak<br>Cilegon 42436,<br>Banten, INDONESIA |
| <b>Telephone Number</b>           | +62 21 5279070   | +62 254 571333  |
| <b>Facsimile Number</b>           | +62 21 5278729   | +62 254 572468  |
| <b>Emergency Telephone Number</b> | +62 254 571333 ext.1111  |   |

### 2. COMPOSITION / INFORMATION ON THE COMPONENTS

|                                   |  |
|-----------------------------------|--|
| <b>Product Trivial Name</b>       | Linear Low Density Polyethylene (LLDPE)  |
| <b>Product Formal Name</b>        | Ethene-butene-1 copolymer<br>Ethene-hexene-1 copolymer                           |
| <b>Product Chemical Family</b>    | Polyolefin   |
| <b>CAS Number</b>                 | Ethene-butene-1 copolymer : 25087-34-7<br>Ethene-hexene-1 copolymer : 25213-02-9 |
| <b>Information on Composition</b> | This Material Safety Data Sheet applies to products listed in Section 16         |

### 3. HAZARD IDENTIFICATION

|                                    |  |
|------------------------------------|--|
| <b>Main Hazard</b>                 | Not classified as hazardous  |
| <b>Health Effects – Eyes</b>       | Fine dust may cause irritation to the outer surface of the eye.<br>Fumes from the heated material may cause lacrimation and severe irritation.<br>Contact with hot material may cause thermal burns.                                   |
| <b>Health Effects – Skin</b>       | Material not normally an irritant, however, repeated or prolonged contact may cause some irritation.<br>Fumes from the heated material may be severely irritating and corrosive.<br>Contact with hot material may cause thermal burns. |
| <b>Health Effects – Ingestion</b>  | Inert material regarded as harmless by ingestion<br>(Ingestion is not considered a normal route of exposure).  |
| <b>Health Effects – Inhalation</b> | Dust may cause respiratory tract irritation. See sections 7 and 8.<br>If heated to more than 300°C, the product may form vapors or fumes, which could cause irritation of the respiratory tract, coughing and shortness of breath.     |



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#### 4. FIRST AID MEASURES

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| <b>First Aid – Eyes</b>         | Immediately flood the eyes with plenty of water for at least 15 minutes, holding the eye open. Obtain medical attention if soreness or redness persists.  |
| <b>First Aid – Skin</b>         | Wash skin thoroughly with soap and water, obtain medical attention if irritation persists. If burned by contact with hot material, flush skin immediately with large amounts of cold water. If possible, submerge area in cold water.<br>No attempt should be made to detach polymer adhering to the skin or to remove clothing attach with molten material. Thermal burns require immediate medical attention. |
| <b>First – Aid – Ingestion</b>  | In case of ingestion of large quantities, get medical attention.  |
| <b>First – Aid – Inhalation</b> | If affected by fumes from heated material, remove from source of exposure and move the affected person into fresh air. Obtain medical attention if the symptoms continue.   |

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#### 5. FIRE FIGHTING MEASURES

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| <b>Extinguishing Media</b>                    | Use water spray, foam, carbon dioxide (use for live electrical installation), or dry chemical (post hazard concern).   |
| <b>Unsuitable Extinguishing Media</b>         | Do not use direct water jets in the early stages of extinguishing a fire as this may help to spread the flames.  |
| <b>Special Hazards of Products</b>            | Do not use water extinguishers in close proximity to live electrical installations.<br>Hazardous combustion products may include carbon monoxide, small quantities of aldehydes, and may also produce molten polymer and black smoke. See Section 8. |
| <b>Protective Equipment for Fire Fighting</b> | Wear full protective clothing and self-contained breathing apparatus.  |

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#### 6. ACCIDENTAL RELEASE MEASURES

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| <b>Personal Precautions</b>      | Granules spilled on the floor can cause slipping. Avoid creating a dust cloud.   |
| <b>Environmental Precautions</b> | If the material has been released into a stream or a public sewer or other drainage system inform the appropriate authorities. |
| <b>Spillage</b>                  | Transfer into suitable containers for recovery or disposal.  |

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#### 7. HANDLING AND STORAGE

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| <b>Handling</b> | Safety glasses are recommended for handling pellets and also thermally resistant gloves for processing hot materials.<br>Avoid contact with heated or other molten products. Thermal burns are the most common injury caused while processing molten LLDPE. There is a risk of being splashed with molten materials, for example when purging or starting up an extruder or injection molding machine.<br>Do not inhale fumes or vapor from molten product. Use local exhaust ventilation over processing area. LLDPE materials, especially in powder form, can give rise to dust during handling.<br>LLDPE dust is a nuisance dust (see Section 8) and is classified as flammable. As a consequence, generation and accumulation of dust, for instance in cutting or granulating area, must be avoided.<br>Pneumatic conveying of powder and pellets can generate large static electrical charges. Electrical discharge in presence of air can cause an explosion. Earth all equipment. |
| <b>Storage</b>  | Store LLDPE materials on safe storage design.<br>Store at ambient temperature in a dry and ventilated area. Do not store near highly flammable material, and store away from sources of heat.<br>Keep away from direct sunlight (see also Section 8).<br>The main hazards are related to pallet stock slippage and forklift truck maneuvers, which can cause injury to personnel. It is recommended that adequate procedures covering storage and handling of pallets are established and maintained. These procedures must be kept up to date and regularly audited.<br>Pellet spills should be swept up immediately to prevent slipping.   |



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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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| <b>Occupational Exposure Standards</b> | Always consult the officially published Exposure Standard list when applying occupational exposure standards.<br>Nuisance dust TLV : 10mg/m <sup>3</sup> (ACGIH)<br>Limits for the hazardous decomposition products (see Section 10) :<br>Carbon monoxide : UK EH40 : OES 35mg/m <sup>3</sup> 8h TWA<br>Carbon dioxide : UK EH40 : OES 9150mg/m <sup>3</sup> 8h TWA<br>Acrolein : UK EH40 : OES 0.23mg/m <sup>3</sup> 8h TWA<br>UK EH40 : OES 0.70mg/m <sup>3</sup> 15 min TWA<br>Formaldehyde : UK EH40 : MEL 2.5mg/m <sup>3</sup> 8h TWA. A2 Carcinogen<br>Reference :<br>UK EH40, Occupational exposure Limits, Health and Safety Executive,<br>HSE Books. PO Box 1999, Sunbury, Suffolk CO10 6FS, UK<br>Phone +44 1787 881165, Fax +44 1787 313995<br>ACGIH Threshold Limit Values<br>Publications Department, ACGIH<br>1330 Kemper Meadow Drive, Cincinnati, OH 4520-1634, USA.<br>Phone +1 513 7422020, Fax +1 513 7423355 |
| <b>Engineering Control Measures</b>    | Use only in well ventilated area, minimum 6 air changes per hour.  |
| <b>Respiratory Protection</b>          | Product processing, heat sealing of LLDPE film, or operations involving the use of wires or blades heated above 300°C may produce dust, vapor or fumes. To minimize risk of overexposure to dust, vapor or fumes, it is recommended that a local exhaust system is placed above the equipment, and that the working area is properly ventilated.   |
| <b>Hand Protection</b>                 | Direct contact with LLDPE materials does not normally lead to skin irritation. However, unnecessary contact with the material should be avoided. Employees with a history of skin disease or allergy should receive medical clearance prior to employment involving direct contact with the material.  |
| <b>Eye Protection</b>                  | If there is risk of exposure to dust or splashing material, safety glasses should be worn.   |
| <b>Body Protection</b>                 | Standard work clothes and safety shoes.  |

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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| <b>Physical State</b>                         | Normally delivered as granules                                |
| <b>Color</b>                                  | White or translucent  |
| <b>Melting Point (°C)</b>                     | Melts between 122°C and 130°C                                 |
| <b>Flash Point (PMCC) (°C)</b>                | Above 300°C decomposition occurs and flash or fumes may occur |
| <b>Solubility in Water (kg/m<sup>3</sup>)</b> | Insoluble   |
| <b>Density (kg/m<sup>3</sup>)</b>             | 915 – 930 (ISO 1183)  |
| <b>Auto-flammability (°C)</b>                 | 350°C   |
| <b>Dust Explosion Data</b>                    | Minimum ignition temperature 400°C                            |
| <b>Softening Point (°C)</b>                   | 95°C – 120°C (VICAT)  |
| <b>Solubility in Other Solvent</b>            | Aromatics at elevated temperatures                            |

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## 10. STABILITY AND REACTIVITY

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| <b>Stability</b> | Stable, although heating above 300°C in air may produce carbon monoxide, hydrocarbon, aldehydes such as acrolein and formaldehyde and organic acids. Processing equipment should be provided with local exhaust ventilation. |
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## 11. TOXICOLOGICAL INFORMATION

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|---------------------------------------|---|
| <b>Acute Toxicity</b>                 | No evidence of acute toxicity reported.                               |
| <b>Skin Sensitization</b>             | No known reports of skin sensitization.                               |
| <b>Sub-acute/Sub-chronic Toxicity</b> | No reports of adverse long-term effects following repeated exposures. |



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## 12. ECOLOGICAL INFORMATION

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| <b>Mobility</b>                  | If released to water the product will float. |
| <b>Persistence/Degradability</b> | The material is not biodegradable.           |
| <b>Bio-accumulation</b>          | Product is not expected to bioaccumulate.    |
| <b>Ecotoxicity</b>               | The material is not toxic.                   |

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## 13. DISPOSAL

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|---------------------------|---|
| <b>Product Disposal</b>   | Recover or recycle if possible.<br>Otherwise, incinerate in appropriate incinerators with energy recovery, or dispose of in landfills in accordance with local regulations. |
| <b>Container Disposal</b> | Empty containers should be recovered for reuse or recycling or disposed of in landfills in accordance with local regulations.   |

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## 14. TRANSPORT INFORMATION

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|------------------------|----------------|
| <b>UN – Class</b>      | Not classified |
| <b>ADR/RID – Class</b> | Not classified |
| <b>IMDG – Class</b>    | Not classified |
| <b>IATA – Class</b>    | Not classified |

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## 15. REGULATORY INFORMATION

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| <b>Labeling Information</b>        |  |
| <b>R Phrases</b>                   | Not applicable   |
| <b>S Phrases</b>                   | Not applicable   |
| <b>EINECS Listing</b>              | Polymer, exempt from listing                                       |
| <b>EC Annex I Number</b>           | Not listed   |
| <b>EC Annex I Classification</b>   | Not classified according to EC Directives 67/548/EC and 1999/45/EC |
| <b>TSCA Listing</b>                | Yes  |
| <b>AICS/NICNAS Listing</b>         | Yes  |
| <b>DSL/NDSL (Canadian) Listing</b> | DSL listed   |

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## 16. OTHER INFORMATION

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|---------------------------|---|
| <b>MSDS Data Revision</b> | 01 July 2006  |
| <b>MSDS Distribution</b>  | The information in this document shall be made available to all who may handle Titanvene™ LINEAR LOW DENSITY POLYETHYLENE products  |
| <b>Notice</b>             | This material Safety Data Sheet is based upon data considered to be accurate as at the time of its preparation. Despite our efforts, it may not be up to date or applicable to the circumstances of any particular case. We are not responsible for any damage or injury resulting from abnormal use, from any failure to follow appropriate practices or from hazards inherent in the nature of the product. |

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