SDPPL Logo

SDPPL - SD Polymer Pvt Ltd

TECHNICAL DATA SHEET

PP-UV (UV Stabilized Polypropylene)

Empowering Plastics Through Technology

Weather Resistance • Long-Term Durability • Color Stability

45+ Years of Excellence in Polymer Compounding

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Product Overview

SDPPL’s PP-UV (UV Stabilized Polypropylene) compounds are specially formulated for outdoor applications requiring long-term weathering resistance and color stability. Advanced UV stabilizer packages protect against degradation from sunlight exposure, ensuring extended service life in demanding outdoor environments.

Product Family: PP Compounds
Grade Series: SDPP-UV Series
Applications: Automotive exterior, outdoor furniture, agricultural equipment, construction
Certifications: ISO 9001:2015, IATF 16949:2016, ISO 14001:2015

Key Features & Benefits

Feature	Benefit
Excellent UV Resistance	Extended outdoor service life (3-10 years depending on grade)
Long-Term Color Stability	Maintains appearance over time with minimal fading
Weathering Resistance	Withstands rain, humidity, temperature cycling
Retained Mechanical Properties	Maintains strength and impact resistance after aging
Flexible Stabilization Levels	Grades available for various exposure conditions
Cost-Effective	Optimal balance of performance and economics for outdoor use

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Product Grades & Specifications

Standard UV Stabilized Grades

Property	Test Method	Unit	PP-UV1000	PP-UV2000	PP-UV3000
UV Stabilization Level	Internal	-	Standard	Enhanced	Premium
Expected Outdoor Life*	Internal	Years	3-5	5-7	7-10+
Tensile Strength	ISO 527	MPa	28-32	28-32	28-32
Tensile Modulus	ISO 527	MPa	1400-1600	1400-1600	1400-1600
Flexural Modulus	ISO 178	MPa	1300-1500	1300-1500	1300-1500
Impact Strength (Notched Izod, 23°C)	ISO 180	kJ/m^2	3.5-4.5	3.5-4.5	3.5-4.5
Heat Deflection Temperature (0.45 MPa)	ISO 75	°C	95-100	95-100	95-100
Melt Flow Index (230°C, 2.16 kg)	ISO 1133	g/10 min	20-30	18-28	18-28
Density	ISO 1183	g/cm^3	0.90-0.91	0.90-0.91	0.90-0.91

*Based on moderate climate conditions; actual service life depends on exposure intensity, geographic location, and part design

UV Stabilized Talc Filled Grades

Property	Test Method	Unit	PP-UV-TF20	PP-UV-TF30
Talc Content	Internal	%	20	30
UV Stabilization Level	Internal	-	Enhanced	Enhanced
Expected Outdoor Life*	Internal	Years	5-7	5-7
Tensile Strength	ISO 527	MPa	30-34	32-36
Flexural Modulus	ISO 178	MPa	2800-3200	3500-3900
Impact Strength (Notched Izod, 23°C)	ISO 180	kJ/m^2	3.0-4.0	2.5-3.5
Heat Deflection Temperature (0.45 MPa)	ISO 75	°C	110-115	115-120
Melt Flow Index (230°C, 2.16 kg)	ISO 1133	g/10 min	22-32	18-28
Density	ISO 1183	g/cm^3	1.05-1.08	1.10-1.13

UV Stabilized Impact Modified Grades

Property	Test Method	Unit	PP-UV-IM1000	PP-UV-IM2000
UV Stabilization Level	Internal	-	Standard	Enhanced
Expected Outdoor Life*	Internal	Years	3-5	5-7
Tensile Strength	ISO 527	MPa	18-22	18-22
Flexural Modulus	ISO 178	MPa	800-1000	800-1000
Impact Strength (Notched Izod, 23°C)	ISO 180	kJ/m^2	12-16	12-16
Impact Strength (Notched Izod, -20°C)	ISO 180	kJ/m^2	6-9	6-9
Heat Deflection Temperature (0.45 MPa)	ISO 75	°C	80-90	80-90
Melt Flow Index (230°C, 2.16 kg)	ISO 1133	g/10 min	15-25	15-25
Density	ISO 1183	g/cm^3	0.89-0.91	0.89-0.91

UV Stabilization Technology

Stabilizer Systems:

- **HALS (Hindered Amine Light Stabilizers):** Primary protection mechanism, scavenges free radicals
- **UV Absorbers:** Absorb harmful UV radiation before it can damage polymer chains
- **Antioxidants:** Prevent thermal oxidation during processing and service life
- **Synergistic Packages:** Optimized combinations for maximum protection

Performance Testing:

- Accelerated weathering per ISO 4892-2 (Xenon arc) and ISO 4892-3 (Fluorescent UV)

- Outdoor exposure testing in various climates (Florida, Arizona, India)
- Color change measurement per ISO 105-A02 (Grey scale)
- Gloss retention measurement per ISO 2813
- Mechanical property retention after aging

Typical Applications

Automotive Exterior:

- Exterior trims and moldings
- Bumpers and fenders
- Grilles and air intakes
- Wheel covers and hubcaps
- Mirror housings
- Roof racks and cargo systems

Agricultural Equipment:

- Tractor components and body panels
- Irrigation system components
- Greenhouse structural parts
- Agricultural machinery housings

Outdoor Furniture:

- Garden furniture (chairs, tables)
- Outdoor storage boxes
- Planters and garden accessories
- Playground equipment components

Construction & Building:

- Exterior cladding and facades
- Window profiles and frames
- Drainage systems

- Outdoor electrical enclosures
- Roofing accessories

Industrial & Marine:

- Outdoor equipment housings
- Marine components
- Transportation containers
- Outdoor signage and displays

Processing Guidelines

Injection Molding Parameters

Parameter	Recommended Range	Notes
Drying	Not required*	*If moisture > 0.1%, dry at 80°C for 2 hours
Barrel Temperature - Rear	200-210°C	Gradual temperature increase
Barrel Temperature - Middle	210-220°C	Maintain uniform melt
Barrel Temperature - Front	220-230°C	Optimize flow
Nozzle Temperature	220-230°C	Prevent premature solidification
Mold Temperature	30-50°C	Higher temp improves surface finish
Injection Pressure	60-110 MPa	Adjust based on part geometry
Holding Pressure	40-70% of injection	Optimize for dimensional stability
Back Pressure	5-15 MPa	Ensure melt homogeneity
Screw Speed	50-150 rpm	Avoid excessive shear

Processing Recommendations

- **Purging:** Use virgin PP or commercial purging compound when switching grades
- **Regrind:** Up to 20-25% regrind can be incorporated; UV stabilizers remain effective
- **Colorants:** Use UV-stable masterbatches; some pigments may affect UV resistance
    - Light colors (white, beige) generally provide better UV resistance
    - Dark colors (black, dark gray) with carbon black offer excellent UV protection
    - Bright colors may fade faster; consult technical team for color-specific recommendations
- **Mold Design:** Standard PP mold design principles apply
- **Cycle Time:** Comparable to standard PP grades
- **Temperature Control:** Avoid overheating which can degrade UV stabilizers

Special Considerations for Outdoor Applications

- **Part Design:** Avoid sharp corners and stress concentrators that can initiate cracking
- **Wall Thickness:** Maintain uniform wall thickness to prevent differential weathering
- **Surface Finish:** Smooth surfaces generally weather better than heavily textured surfaces
- **Color Selection:** Lighter colors typically show less fading than bright colors
- **Assembly:** Use UV-resistant adhesives and fasteners for outdoor assemblies

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Quality Control & Testing

Incoming Material Inspection:

- Visual inspection for contamination and color consistency
- Melt flow index verification
- Moisture content check

Process Monitoring:

- Real-time temperature and pressure monitoring
- Cycle time tracking
- Dimensional checks on production parts
- Surface quality inspection

Property Testing:

- Mechanical properties per ISO standards (tensile, flexural, impact)
- Thermal properties (HDT, Vicat softening point)
- Rheological properties (MFI, viscosity)
- Accelerated weathering tests (Xenon arc, QUV)
- Color measurement and tracking
- Gloss measurement

Weathering Performance Validation:

- Accelerated weathering per ISO 4892-2 (Xenon arc)
- Natural outdoor exposure in multiple climates
- Mechanical property retention after aging
- Color change measurement (ΔE)
- Gloss retention measurement

Certifications:

- ISO 9001:2015 Quality Management System
- IATF 16949:2016 Automotive Quality Management
- ISO 14001:2015 Environmental Management
- RoHS & REACH Compliance

Packaging & Storage

Standard Packaging:

- 25 kg polyethylene bags
- 1000 kg (1 MT) big bags / super sacks
- Bulk delivery in tankers (for high-volume customers)

Storage Conditions:

- Store in dry, cool, well-ventilated area
- Keep away from direct sunlight and heat sources (UV stabilizers are stable in storage)
- Temperature: 5-35°C
- Relative Humidity: < 70%
- Shelf Life: 12 months from manufacturing date under proper storage conditions
- Keep bags sealed until use to prevent moisture absorption

Handling:

- Use appropriate material handling equipment
- Avoid dropping or damaging bags
- Follow FIFO (First In, First Out) inventory management

Safety & Environmental Information

Health & Safety:

- PP-UV compounds are thermoplastic materials with low toxicity
- UV stabilizers used are approved for outdoor applications
- Use standard industrial hygiene practices
- Avoid inhalation of dust during handling
- Ensure adequate ventilation during processing

Personal Protective Equipment:

- Safety glasses or face shield
- Dust mask (if dust is generated during handling)
- Heat-resistant gloves (during processing)

- Protective clothing as appropriate

Fire Hazard:

- Combustible material - avoid open flames and ignition sources
- Fire Extinguishing: Water spray, foam, dry chemical, or CO_2
- Decomposition products may include carbon monoxide and carbon dioxide

Environmental:

- Material is recyclable - collect and reprocess production scrap
- UV stabilizers do not leach or migrate under normal use conditions
- Dispose of waste according to local environmental regulations
- No hazardous substances under normal use conditions
- RoHS and REACH compliant
- UV stabilizers used are environmentally safe and approved for outdoor use

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Technical Support & Custom Solutions

SDPPL offers comprehensive technical support for PP-UV applications:

Services Available:

- Grade selection assistance based on application requirements and exposure conditions
- UV stabilization level recommendation based on geographic location and expected service life
- Processing optimization and troubleshooting support
- Custom compound development for specific performance needs
- Color matching with UV-stable pigments
- Accelerated weathering testing and outdoor exposure programs
- Part design consultation for outdoor applications
- On-site technical support and training
- Failure analysis and quality issue resolution

Custom Formulations: We can develop custom PP-UV grades with:

- Specific UV stabilization levels for target service life
- Combined properties (UV + talc, UV + glass fiber, UV + impact modification)
- Special color requirements with UV-stable pigments
- Flame retardant variants
- Conductive or anti-static grades
- Food contact approved formulations (for outdoor food service applications)
- Enhanced chemical resistance for specific environments
- Low warpage formulations

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