

BYGGVARUDEKLARATION BVD 3

enligt Kretsloppsrådets riktlinjer maj 2007

1 Grunddata

Produktidentifikation		Dokument-ID 2019031
Varunamn Spolanordning NGL-Duospol	Artikel-nr/ID-begrepp NGL 700-769	Varugrupp WC-tillbehör
☐ Ny deklaration ☒ Ändrad deklaration	Vid ändrad deklaration	
	Är varan förändrad?	Ändringen avser: materialförändring
	☐ Nej ☒ Ja	Ändrad vara identifieras genom
Upprättad/ändrad den 2019-03-01		Kontrollerad utan ändring den 2019-09-03
Övriga upplysningar: RSK 788 70 70		

2 Leverantörsuppgifter

Företagsnamn NGL Teknik i Linköping AB		Organisationsnr/DUNS-nr 556558-9610	
Adress Vimarka Södergård 585 92 Linköping		Kontaktperson Jacob Norling	
		Telefon 013-377971	
Webbplats: www.nglteknik.se		E-post J.Norling@nglteknik.se	
Har företaget miljöledningssystem?		☒ Ja	☐ Nej
Företaget är certifierat enligt	☒ ISO 9000 ☒ ISO 14000	☒ Annat	Om "annat", specificera: FR2000
Övriga upplysningar:			

3 Varuinformation

Land för sluttillverkning Sverige		Om land ej kan anges, ange orsak	
Användningsområde Sanitetsutrymmen, wc-stolar			
Finns säkerhetsdatablad för varan?		☐ Ej relevant	☐ Ja ☒ Nej
Ange enligt kemikalieinspektionens regelverk:	Klassificering Märkning	☒ Ej relevant	
Är varan registrerad i BASTA?		☐ Ja	☒ Nej
Är varan miljömärkt?			
Finns miljödeklaration typ III för varan?			
Övriga upplysningar: Produkten är bedömd i SundaHus Miljödata			

4 Innehåll

(För att lägga till ny grön rad, tabba dig fram från sista gröna radens vita kommentarsruta eller kopiera en rad med tomma textrutor och klistra in den. Se vidare i anvisningarna.)

Varan består vid leverans av följande delar/komponenter och med angivna kemiska sammansättning:					
Ingående material/ Komponenter	Ingående ämnen	Vikt % alt g	EG-nr/ CAS-nr (alt legering)	Klassifi- cering	Kommentar
	PA 66	11,70%	32131-17-2	Ej märk.plikt	Se bilaga 22
	PP KHT20	38,10%		Ej märk.plikt	Se bilaga 8
	TDS-Dryflex	8,00%		Ej märk.plikt	Se bilaga 20
Formocon	POM sampolymer	19,30%	66455-31-0	Ej märk.plikt	Se bilaga 18

Uppgifter i grönmarkerade fält är krav enligt Kretsloppsrådets riktlinjer.

	PP	3,70%	9003-07-0	Ej märk.plikt	Se bilaga 21
Dragstänger	Rostfritt stål	19,20%	12597-68-1	Ej märk.plikt	
Övriga upplysningar: Produkten är fri från nanopartiklar					

Om varans kemiska sammansättning är annan efter inbyggnad än vid leverans, anges innehållet i den färdiga inbyggda varan här. Om innehållet är oförändrat lämnas inga uppgifter i nedanstående tabell.					
Ingående material / Komponenter	Ingående ämnen	Vikt % alt g	EG-nr/ CAS-nr (alt legering)	Klassifi-cering	Kommentar
Övriga upplysningar:					

5 Produktionsskedet

Resursutnyttjande och miljöpåverkan under produktion av varan redovisas på ett av följande sätt:					
☐ 1) Inflöden (råvaror, insatsvaror, energi mm) för den registrerade varan till tillverkningsenheten , och utflöden (emissioner och restprodukter) därifrån, d v s från ”grind till grind”.					
☐ 2) Samtliga inflöden och utflöden från utvinning av råvaror till färdig produkt d v s ”vagga till grind”.					
☐ 3) Annan avgränsning. Ange vad:					
Redovisningen avser enhet av varan	☐ Redovisad vara	☐ Varans varugrupp	☐ Varans tillverkningsenhet		
Ange råvaror och insatsvaror som använts vid tillverkning av varan			☐ Ej relevant		
Råvara/insatsvara	Mängd och enhet	Kommentar			
Ange återvunna material som använts vid tillverkning av varan			☐ Ej relevant		
Materials lag	Mängd och enhet	Kommentar			
Ange energi som använts vid tillverkning av varan eller dess delar			☐ Ej relevant		
Energis lag	Mängd och enhet	Kommentar			
Ange transporter som använts vid tillverkning av varan eller dess delar			☐ Ej relevant		
Transports lag	Andel %	Kommentar			
Ange emissioner till luft, vatten eller mark från tillverkning av varan eller dess delar			☐ Ej relevant		
Emissionss lag	Mängd och enhet	Kommentar			
Ange restprodukter från tillverkning av varan eller dess delar					☐ Ej relevant
Restprodukt	Avfallskod	Mängd	Andel som återvinns Materialåter- vinns %	Energiåter- vinns %	Kommentar

Uppgifter i grönmarkerade fält är krav enligt Kretsloppsrådets riktlinjer.

Finns datanoggrannheten för tillverkningsdata beskriven?	☐ Ja	☐ Nej	Om "ja", specificera:
Övriga upplysningar:			

6 Distribution av färdig vara

Tillämpar leverantören retursystem för lastbärare av varan?	☐ Ej relevant	☐ Ja	☐ Nej
Tillämpar leverantören system med flergångsemballage för varan?	☐ Ej relevant	☐ Ja	☐ Nej
Återtar leverantören emballage för varan?	☐ Ej relevant	☐ Ja	☐ Nej
Är leverantören ansluten till REPA?	☐ Ej relevant	☐ Ja	☐ Nej
Övriga upplysningar:			

7 Byggskedet

Ställer varan särskilda krav vid lagring?	☐ Ej relevant	☐ Ja	☒ Nej	Om "ja", specificera:
Ställer varan särskilda krav på omgivande byggvaror?	☐ Ej relevant	☐ Ja	☒ Nej	Om "ja", specificera:
Övriga upplysningar:				

8 Bruksskedet

Ställer varan krav på insatsvaror för drift och underhåll?	☐ Ja	☒ Nej	Om "ja", specificera:			
Ställer varan krav på energitillförsel för drift?	☐ Ja	☒ Nej	Om "ja", specificera:			
Uppskattad teknisk livslängd för varan anges enligt ett av alternativen a) eller b) nedan:						
a) Referenslivslängden uppskattas vara cirka	☐ 5 år	☐ 10 år	☐ 15 år	☒ 25 år	☐ >50 år	Kommentar Testad av SP, Sveriges Tekniska Forskningsinstitut
b) Referenslivslängden uppskattas vara i intervallet år						
Övriga upplysningar:						

9 Rivning

Är varan förberedd för demontering (isärtagning)?	☐ Ej relevant	☐ Ja	☐ Nej	Om "ja", specificera:
Kräver varan särskilda åtgärder för skydd av hälsa och miljö vid rivning/demontering?	☐ Ej relevant	☐ Ja	☒ Nej	Om "ja", specificera:
Övriga upplysningar:				

10 Avfallshantering

Är återanvändning möjlig för hela eller delar av varan?	☐ Ej relevant	☒ Ja	☐ Nej	Om "ja", specificera: Nyproduktion
Är materialåtervinning möjlig för hela eller delar av varan?	☐ Ej relevant	☒ Ja	☐ Nej	Om "ja", specificera: Nyproduktion
Är energiåtervinning möjlig för hela eller delar av varan?	☐ Ej relevant	☒ Ja	☐ Nej	Om "ja", specificera: Förbränning
Har leverantören restriktioner och rekommendationer för återanvändning, material- eller energiåtervinning eller deponering?	☐ Ej relevant	☐ Ja	☒ Nej	Om "ja", specificera:
Ange avfallskod för den levererade varan 170203 / 200140				
Är den levererade varan klassad som farligt avfall?				☐ Ja ☒ Nej
Om varans kemiska sammansättning är annan efter inbygggnad än vid leverans, och den färdiga inbyggda varan därmed får en annan avfallskod anges den här. Om den är oförändrad utelämnas nedanstående uppgifter.				

Uppgifter i grönmarkerade fält är krav enligt Kretsloppsrådets riktlinjer.

Ange avfallskod för den inbyggda varan		
Är den inbyggda varan klassad som farligt avfall?	☐ Ja	☐ Nej
Övriga upplysningar:		

11 Innemiljö

(För att lägga till ny grön rad, tabba dig fram från sista gröna radens kommentarsruta eller kopiera en rad med tomma textrutor och klistra in den. Se vidare i anvisningarna.)

Varan avger vid avsedd användning följande emissioner:			☒ Varan avger inga emissioner	
Typ av emission	Mängd [$\mu\text{g}/\text{m}^2\text{h}$] alt [$\text{mg}/\text{m}^3\text{h}$]		Mätmetod	Kommentar
	4 veckor	26 veckor		
Kan varan ge upphov till eget buller?			☐ Ej relevant	☐ Ja ☐ Nej
Värde	Enhet		Mätmetod:	
Kan varan ge upphov till elektriska fält?			☐ Ej relevant	☐ Ja ☐ Nej
Värde	Enhet		Mätmetod	
Kan varan ge upphov till magnetiska fält?			☐ Ej relevant	☐ Ja ☐ Nej
Värde	Enhet		Mätmetod	
Övriga upplysningar:				

Hänvisningar

Bilagor

- 8 – PP KHT20 – Specifikation
- 18 - Formocon - Specifikation
- 20 – TDS-Dryflex - Specifikation
- 21 - Ofylld PP-Hostalen PP - Specifikation
- 22 - PA66 - Specifikation

Uppgifter i grönmarkerade fält är krav enligt Kretsloppsrådets riktlinjer.

Percom KHT20

Polypropylene Homopolymer
Perrite

PROSPECTOR®
www.ulprospector.com

Technical Data

Product Description

Percom KHT20 is a Polypropylene Homopolymer (PP Homopolymer) material filled with 20% talc. It is available in Africa & Middle East, Asia Pacific, Europe, Latin America, or North America.

Important attributes of Percom KHT20 are:

- Flame Rated
- RoHS Compliant
- Homopolymer

Typical application of Percom KHT20: Automotive

General

Material Status	• Commercial: Active
Literature ¹	• Technical Datasheet (English)
Search for UL Yellow Card	• Perrite • Percom
Availability	• Africa & Middle East • Asia Pacific • Europe • Latin America • North America
Filler / Reinforcement	• Talc, 20% Filler by Weight
Features	• Homopolymer
Uses	• Automotive Interior Parts
RoHS Compliance	• RoHS Compliant

Physical	Nominal Value Unit	Test Method
Density	1.05 g/cm ³	ISO 1183
Melt Mass-Flow Rate (MFR) (230°C/2.16 kg)	9.0 g/10 min	ISO 1133
Molding Shrinkage	1.0 to 1.5 %	
Mechanical	Nominal Value Unit	Test Method
Tensile Stress (Yield)	30.0 MPa	ISO 527-2
Flexural Modulus	3000 MPa	ISO 178
Impact	Nominal Value Unit	Test Method
Notched Izod Impact Strength (23°C)	3.0 kJ/m ²	ISO 180/1A
Hardness	Nominal Value Unit	
Shore Hardness (Shore D)	65	
Thermal	Nominal Value Unit	Test Method
Heat Deflection Temperature		
0.45 MPa, Unannealed	120 °C	ISO 75-2/B
1.8 MPa, Unannealed	85.0 °C	ISO 75-2/A
Flammability	Nominal Value Unit	Test Method
Flame Rating	HB	UL 94

Notes

¹ These links provide you with access to supplier literature. We work hard to keep them up to date; however you may find the most current literature from the supplier.

² Typical properties: these are not to be construed as specifications.



Percom KHT20
Polypropylene Homopolymer
Perrite

PROSPECTOR®
www.ulprospector.com

Where to Buy

Supplier

Perrite

Warrington, Cheshire United Kingdom

Telephone: +44-1925-810608

Web: <http://www.jgp-perrite.co.uk/>

Distributor

Please contact the supplier to find a distributor for Percom KHT20



台 塑 鋼® FORMOCON®

物性一覽表

品 別			FM025	FM090	FM130	FM270	FM350	FM450	
試 驗 項 目	單位	方法							
MI值	g/10min	D1238	2.5	9	13	27	35	45	
比 重		D792	1.41	1.41	1.41	1.41	1.41	1.41	
硬 度	M刻度	D785	78	80	80	80	80	80	
ROCKWELL	R刻度	--	--	115	--	--	--	--	
抗折強度	kgf/cm ²	D790	950	950	950	950	950	950	
抗折彈性係數			26000	26000	26000	26000	26000	26000	
拉伸強度	降伏點	Kgf/cm ²	D638	610	620	620	620	620	
延伸率	斷裂點	%		75	60	55	45	40	35
壓縮強度	1%變形	kgf/cm ²	D695	320	320	320	320	320	320
	10%變形			1100	1100	1100	1100	1100	1100
衝擊強度	凹側23℃ 50%RH	kgf/cm ²	D256	7.6	6.5	6	5.4	5.1	4.5
吸水率	23℃水中 24小時浸泡	%	D570	0.22	0.22	0.22	0.22	0.22	0.22
耐熱性 (UL94)		UL94	HB	HB	HB	HB	HB	HB	
成型收縮率 (3mm ¹ ,4in圓盤)	%		1.8-2.2	1.8-2.2	1.8-2.2	1.8-2.2	1.8-2.2	1.8-2.2	
熱變形溫度 18.6kgf/cm ²	℃	D648	110	110	110-	110	110	110	
熱變形溫度 4.6kgf/cm ²	℃	D648	158	158	158	158	158	158	
線膨脹係數	Cm/cm ¹ Cx10 ⁻⁵	D696	8.45	8.45	8.45	8.45	8.45	8.45	
熔 點	℃	DSC	165	165	165	165	165	165	
VICAT軟化點	℃	D1525	162	162	162	162	162	162	
體積電阻係數23℃50% RH	Ω .cm	D257	1x10 ¹⁴	1x10 ¹⁴	1x10 ¹⁴	1x10 ¹⁴	1x10 ¹⁴	1x10 ¹⁴	
表面電阻係數23℃50%RH	Ω	D257	1x10 ¹⁶	1x10 ¹⁶	1x10 ¹⁶	1x10 ¹⁶	1x10 ¹⁶	1x10 ¹⁶	
介電常數	50HZ	ISO	3.8	3.8	3.8	3.8	3.8	3.9	
	1KHZ	IEC250	3.8	3.8	3.8	3.8	3.8	3.8	
	1MHZ		3.8	3.8	3.8	3.8	3.8	3.8	
絕緣強度(2mm)	KV/mm	D149	24	24	24	24	24	24	

※ 表中數據照上列試驗方法側得之參考值，僅供客戶選擇適當品類之用

品別、用途一覽表

品別	特性	用途
FM025	高黏度，低模垢，押出厚斷面射出	素材押出、其他押出品
FM090	標準流動性，低模垢	扣具按扣，管件及五金，齒輪，電子零件，汽車零件，家庭電器，軸承，其他射出零件
FM130	中流動性，低模垢加工性優異	扣具按扣，拉鍊，管件及五金，齒輪，軸承，電子零件，汽車零件，家庭電器，其他射出零件
FM270 FM350	高流動性，低模垢加工性優異	按扣，拉鍊，齒輪，電子零件，汽車零件，家庭電器，其他小型機器零件
FM450	超高流動性，低模垢	按扣，拉鍊，齒輪，電子零件，汽車零件，家庭電器，其他小型機器零件

PRINCIPLE PHYSICAL PROPERTIES OF ACETAL COPOLYMER

Grade			FM025	FM090	FM130	FM270	FM350	FM450
Property	Unit	ASTM						
MI Value	g/10min	D1238	2.5	9	13	27	35	45
Specific Gravity		D792	1.41	1.41	1.41	1.41	1.41	1.41
Rockwell Hardness	MScale	D785	78	80	80	80	80	80
ROCKWELL	RScale	--	--	115	--	--	--	--
Flexural Strength	kgf/cm ²	D790	950	950	950	950	950	950
Flexural Modulus	kgf/cm ²		26000	26000	26000	26000	26000	26000
Tensile Strength at yield point	Kgf/cm ²	D638	610	620	620	620	620	620
Tensile Elongation at break point	%		75	60	55	45	40	35
Compressive 1%Deformation	kgf/cm2	D695	320	320	320	320	320	320
Stress 10% Deformation			1100	1100	1100	1100	1100	1100
Izod Impact V-notched23°C	kgf/cm ²	D256	7.6	6.5	6	5.4	5.1	4.5
Strength 50%RH								
Water 23°C	%	D570	0.22	0.22	0.22	0.22	0.22	0.22
Absorption (69%) RH								
Flammability (UL94)		UL94	HB	HB	HB	HB	HB	HB
Mold Shrinkage (3mmt, 4in disk)	%		1.8-2.2	1.8-2.2	1.8-2.2	1.8-2.2	1.8-2.2	1.8-2.2
Heat Deflection 18.6kgf/cm ²	°C	D648	110	110	110-	110	110	110
Temperature 4.6kgf/cm ²	°C	D648	158	158	158	158	158	158
Linear Expansion Factor	Cm/cm°Cx10 ⁻⁵	D696	8.45	8.45	8.45	8.45	8.45	8.45
Melting Point	°C	DSC	165	165	165	165	165	165
Vicat Softing Temp.	°C	D1525	162	162	162	162	162	162
Volume Resistivity23°C50% RH	Ω.cm	D257	1x10 ¹⁴	1x10 ¹⁴	1x10 ¹⁴	1x10 ¹⁴	1x10 ¹⁴	1x10 ¹⁴
Surface Resistivity 23°C50% RH	Ω	D257	1x10 ¹⁶	1x10 ¹⁶	1x10 ¹⁶	1x10 ¹⁶	1x10 ¹⁶	1x10 ¹⁶
Dielectric Constant	50HZ	ISO	3.8	3.8	3.8	3.8	3.8	3.9
	1KHZ	IEC250	3.8	3.8	3.8	3.8	3.8	3.8
	1MHZ		3.8	3.8	3.8	3.8	3.8	3.8
Dielectric Breakdown Strength (2mm)	KV/mm	D149	24	24	24	24	24	24

NOTE:Above data are shown for reference only.

FEATURE AND APPLICATIONS OF GRADES

Grade	Feature	Application
FM025	High-viscosity Extrusion, Minimal mold	Extruded rods and sheets, Other extrusion parts
FM090	Standard-flow Minimal mold	Buttons and press-in fasteners, Plumbing and hardware, Gears, Electronic arts, Automotive parts, Household appliances, Bearing, Other injection parts
FM130	Medium-flow Minimal mold	Buttons and press-in fasteners, Zippers, Plumbing and hardware, Gears, Bearing, Electronic parts, Automotive parts, Household appliances, Other injection parts
FM270	High-flow	Press-in fasteners, Zippers, Gears, Electronic parts,
FM350	Minimal mold	Automotive parts, Household appliances, Other small mechanical parts
FM450	Superhigh-flow	Press-in fasteners, Zippers, Gears, Electronic parts, Automotive parts, Household appliances, Other small mechanical parts.

Producentintyg avseende UniFloat

Vi som leverantör garanterar att det inte finns några flamskyddsmedel eller andra stabilisatorer i Percom KHT20.

Vi garanterar även att Formocon FM 090 Natur inte innehåller några flamskyddsmedel eller andra stabilisatorer.

Loftahammar 2018-05-21



Bertil Andersson

Dryflex DW 60A001N L

General

Description	Thermoplastic Elastomer, TPS-SEBS
Colour	Natural
Form	Free flowing pellets
Recycling	100% recyclable

Special Features

TPE for drinking water applications approved according to german W270 and KTW guidelines for cold (23 °C) and warm water (60 °C).

Typical Properties

Property	Units	Typical Value	Test Method
Hardness	Shore A	60	ISO 868 ¹
Density	g/cm ³	0.89	ISO 2781
Tensile Strength	MPa	17.3	ISO 37 Type 2 ²
Stress at 100% Strain	MPa	1.5	ISO 37 Type 2 ²
Stress at 300% Strain	MPa	2.5	ISO 37 Type 2 ²
Elongation at Break	%	> 800	ISO 37 Type 2 ²
Tear Strength	N/mm	34.5	ISO 34-1 Method C ²
Compression Set 23°C / 72h	%	23	ISO 815-1 Type B

¹ After 15 seconds

² Across the flow direction

Processing

The product should be stored in a dry and cool place in the manufacturer's original packaging. The material can be processed using standard thermoplastic processing methods. Additional processing information is available in our Processing Guides which can be downloaded from our website www.hexpolTPE.com →

Processing temperatures (°C)	Injection Moulding	Extrusion
Cylinder	180 - 210	160 - 190
Mould	15 - 60	
Predrying	Under normal conditions not necessary.	

Typical values are advisory and do not absolve customers from carrying out their own full-scale tests to determine the suitability of the material for the intended applications. Dryflex grades have an expected shelf life of minimum 12 months after shipment date. The product should be stored in a dry and cool place in the manufacturer's original packaging. Figures are indicative and may vary depending on the specific grade selected and the production site. HEXPOL TPE makes no representations, guarantees, or warranties of any kind with respect to the information contained in this document about its accuracy, suitability for particular applications, or the results obtained or obtainable using the information. Dryflex® is a registered trademark, property of the HEXPOL Group of companies.

Hygiene-Institut des Ruhrgebiets

Institut für Umwelthygiene und Toxikologie

Direktor: Prof. Dr. rer. nat. L. Dunemann

Träger: Verein zur Bekämpfung der Volkskrankheiten im Ruhrkohlengebiet e.V.



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Reference-No.: K-281324-17-Ko/st
Contact person: Dr. Andreas Koch
Redraft: K-272993-16-Ko

Gelsenkirchen, 17.02.2017

TEST CERTIFICATE according to the TPE-Transition Recommendation

Product: Dryflex DW (W)A001(X) (Y) L
W: would be two numbers for the shore hardness (available in 50-90 Shore A); X: would be one letter for colour; Y: Can be four numbers for a colour code Colouring: Nature, White Pigment 1, Black Pigment 1 and 2, Red Pigment 1 and 2, Yellow Pigment 1, 2 and 3, Blue Pigment 1 and 2, Green Pigment 1, Pink Pigment 1 and combinations of all

Test specimen: Plates made of TPS-SEBS: 50 Shore A with Yellow Pigment 2; 55 Shore A with Yellow Pigment 3; 90 Shore A with Black Pigment 1

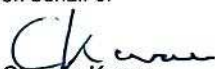
The test specimen meet the requirements according to the test report no.: K-272993-16-Ko and K-273006-16-Ko (colour fastness test) dated 13.07.2016 for the following applications and temperatures, as far as technically suited:

Applications:	cold water (23°C)	warm water (60°C)	hot water (85°C)
Pipes with DN < 80 mm (domestic distribution)	---	---	---
Pipes of diameter 80 mm ≤ DN < 300 mm (supply pipes)	---	---	---
Pipes of diameter DN ≥ 300 mm (main pipes)	---	---	---
Fittings for pipes with DN < 80 mm	passed	passed	---
Fittings for pipes with 80 mm ≤ DN < 300 mm	passed	passed	---
Fittings for pipes with DN ≥ 300 mm	passed	passed	---
Sealings for pipes with DN < 80 mm	passed	passed	---
Sealings for pipes with 80 mm ≤ DN < 300 mm	passed	passed	---
Sealings for pipes with DN ≥ 300 mm	passed	passed	---
Tanks in domestic installations including repair systems	---	---	---
Tanks other than in domestic installations including repair systems	---	---	---

If pipes, sealings or fittings and ancillaries do not differ in their material composition and process of manufacture, testing of the smallest diameter of the product range is sufficient.

This test certificate is valid beginning with the date of issue and is ending by 13.07.2021 as far as there are no changes in the formula. After this time it can be extended for further 5 years if demanded.

The Director of the Hygiene-Institute
on behalf of


Claudia Karau

Food Chemist
substitutional Head of the Dept. for
water hygienic material testing



The assessment was based on the assumption that the used starting substances and monomers used to manufacture the product may completely known and no other substances are present in the product. The validity of this document expires in case of modifications in the composition of the product or the processing conditions. The results and evaluations refer to the groups of test items. This document may not be published without our written permission only complete and unchanged or duplicated.

Träger: Verein zur Bekämpfung der Volkskrankheiten im Ruhrkohlengebiet e.V., Vereinsregister: VR 519 Amtsgericht Gelsenkirchen, USt-ID: DE125018356
Vorstand: Prof. Dr. Werner Schlake (Vors.), Prof. Dr. Jürgen Kretschmann, Dr. Emanuel Grün, Volker Vohmann, Prof. Dr. Lothar Dunemann (geschäftsf. Vorstand)

Hygiene-Institut des Ruhrgebiets

Institut für Umwelthygiene und Toxikologie

Direktor: Prof. Dr. rer. nat. L. Dunemann

Träger: Verein zur Bekämpfung der Volkskrankheiten im Ruhrkohlengebiet e.V.



Hygiene-Institut · Postfach 10 12 55 · 45812 Gelsenkirchen

HEXPOL TPE GmbH
Max-Planck-Straße 3
96215 Lichtenfels

Visitors/ postal address:
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Switchboard	(0049209) 9242-0
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Fax	(0049209) 9242-222
E-Mail	c.schell@hyg.de
Internet	www.hyg.de

Reference:	W-281532e-17-SI/Ni
Before:	W-273995e-16-SI/Krü
Contact person:	Mrs. Dr. Ch. Schell

Gelsenkirchen, 22.02.2017

TEST CERTIFICATE

(Transcription of test certificate W-273995e-16-SI/Krü)

Enhancement of Microbial Growth on Materials to Come into Contact with Drinking water
Test pursuant to DVGW Technical Standard W 270, November 2007

Client: HEXPOL TPE GmbH
Max-Planck-Straße 3
96215 Lichtenfels

Test material: **Dryflex DW (W)A001(X) (Y) L**

Test method: Material test

The material **Dryflex DW (W)A001(X) (Y) L**, tested in the versions:

- **Dryflex DW 50 Shore A - Natur** (test report **W-273995e-16-SI/Krü** of 02.08.2016)
- **Dryflex DW 60 Shore A - Natur** (test report **W-273996e-16-SI/Krü** of 02.08.2016)
- **Dryflex DW 90 Shore A - Natur** (test report **W-273997e-16-SI/Krü** of 02.08.2016)

is conform to the requirements for the use in the area of drinking water systems pursuant to DVGW Technical Standard W 270. Details regarding testing procedure and test results are itemized in the corresponding test reports.

This test certificate also covers the range of materials (Shore grades) between **50 Shore A** and **90 Shore A** (all in material colour).

The material **Dryflex DW (W)A001(X) (Y) L**, tested in the versions:

- **Dryflex DW 50 Shore A with Black Pigment 1** (test report **W-273998e-16-SI/Krü** of 02.08.2016)
- **Dryflex DW 60 Shore A with Black Pigment 1** (test report **W-273999e-16-SI/Krü** of 02.08.2016)
- **Dryflex DW 90 Shore A with Black Pigment 1** (test report **W-274000e-16-SI/Krü** of 02.08.2016)

The test results and assessments refer exclusively to the examined test specimens and all applicable statutory regulations. The validity of the document expires in case of modifications in the composition of the material or the processing conditions. This present document may only be published and reproduced unabridged and unaltered.

This document is no DVGW certification.

Träger: Verein zur Bekämpfung der Volkskrankheiten im Ruhrkohlengebiet e.V., Vereinsregister: **VR 519** Amtsgericht Gelsenkirchen, USt-ID: **DE125018356**
Vorstand: Prof. Dr. Werner Schlake (Vors.), Prof. Dr. Jürgen Kretschmann, Dr. Emanuel Grün, Volker Vohmann, Prof. Dr. Lothar Dunemann (geschäftsführ. Vorstand)

- **Dryflex DW 50 Shore A with Yellow Pigment 3** (test report **W-274001e-16-SI/Krü** of 02.08.2016)
- **Dryflex DW 55 Shore A with Yellow Pigment 3** (test report **W-274002e-16-SI/Krü** of 02.08.2016)
- **Dryflex DW 90 Shore A with Yellow Pigment 3** (test report **W-274003e-16-SI/Krü** of 02.08.2016)
- **Dryflex DW 50 Shore A with Pink Pigment 1** (test report **W-274004e-16-SI/Krü** of 02.08.2016)
- **Dryflex DW 70 Shore A with Pink Pigment 1** (test report **W-274005e-16-SI/Krü** of 02.08.2016)
- **Dryflex DW 90 Shore A with Pink Pigment 1** (test report **W-274006e-16-SI/Krü** of 02.08.2016)

is conform to the requirements for the use in the area of drinking water systems pursuant to DVGW Technical Standard W 270. Details regarding testing procedure and test results are itemized in the corresponding test reports.

The test certificate also covers the range of materials (Shore grades) between **50 Shore A** and **90 Shore A** (all in the respective material colour).

This test certificate covers in addition all further colour varieties of the basic materials which were disclosed to the test institute as there are:

- White Pigment 1
- Black Pigment 2
- Red Pigment 1
- Red Pigment 2
- Yellow Pigment 1
- Yellow Pigment 2
- Blue Pigment 1
- Blue Pigment 2
- Green Pigment 1

as well as their mixtures provided that the overall amount added to the basic material does not exceed the maximum level tested as described before.

In detail it concerns the compounds:

Dryflex DW (W)A001 (X) (Y) L

W: Would be two numbers for the Shore hardness (available in 50 – 90 Shore A)

X: Would be one letter for colour

Y: Can be four numbers for a colour code

Colouring: Nature, White Pigment 1, Black Pigment 1 and 2, Red Pigment 1 and 2, Yellow Pigment 1, 2 and 3, Blue Pigment 1 and 2, Green Pigment 1, Pink Pigment 1 and combinations of all.

This test certificate is valid from the date of issue and, given that the conditions and requirements remain unaltered, expires on **02.08.2021**. Upon request of the client, the validity may be extended up to another 5 year term provided that the specifications of Technical Standard W 270 are met.

The Director of the Institute

p.p.

Dr. Ch. Schell
Head of Laboratory
Department of Water Hygiene and Environmental Microbiology



Technical Data Sheet

Hostalen PP EPD60R

Polypropylene, Impact Copolymer

Product Description

Hostalen PP EPD60R is a natural polypropylene block copolymer with good toughness and impact strength even at low temperature for extrusion and injection molding applications. Hostalen PP EPD60R is UL-listed: All colors / UL94-HB / min. thickness 1.5 and 3 mm UL- File: QMFZ2.E31765. For further details about the suitable applications for this material please contact LyondellBasell.

Regulatory Status

For regulatory compliance information, see Hostalen PP EPD60R [Product Stewardship Bulletin \(PSB\)](#) and [Safety Data Sheet \(SDS\)](#).

This grade is not intended for medical and pharmaceutical applications.

Status	Commercial: Active
Availability	Africa-Middle East; Asia-Pacific; Australia and New Zealand; Europe
Application	Industrial; Soil & Waste Pipe
Market	Industrial, Building & Construction; Pipe
Processing Method	Pipe

Typical Properties	Nominal Value	Units	Test Method
Physical			
Melt Flow Rate			
(230 °C/2.16 kg)	0.4	g/10 min	ISO 1133-1
(230 °C/5.0 kg)	1.6	g/10 min	ISO 1133-1
Density	0.90	g/cm ³	ISO 1183-1
Mechanical			
Tensile Modulus, (23 °C)	1100	MPa	ISO 527-1, -2
Tensile Stress at Yield	26	MPa	ISO 527-1, -2
Tensile Strain at Yield, (23 °C)	15	%	ISO 527-1, -2
Impact			
Charpy Impact Strength - Notched			
(23 °C)	54	kJ/m ²	ISO 179
(0 °C)	18	kJ/m ²	ISO 179
(-30 °C)	3.5	kJ/m ²	ISO 179
Hardness			
Shore Hardness, (Shore D)	60		ISO 868
Thermal			
Vicat Softening Temperature, (A50)	151	°C	ISO 306

Notes

These are typical property values not to be construed as specification limits.

Further Information**Health and Safety:**

The resin is manufactured to the highest standards, but special requirements apply to certain applications such as food end-use contact and direct medical use. For specific information on regulatory compliance contact your local representative.

Workers should be protected from the possibility of skin or eye contact with molten polymer. Safety glasses are suggested as a minimal precaution to prevent mechanical or thermal injury to the eyes.

Molten polymer may be degraded if it is exposed to air during any of the processing and off-line operations. The products of degradation may have an unpleasant odor. In higher concentrations they may cause irritation of the mucus membranes. Fabrication areas should be ventilated to carry away fumes or vapours. Legislation on the control of emissions and pollution prevention should be observed.

The resin will burn when supplied with excess heat and oxygen. It should be handled and stored away from contact with direct flames and/or ignition sources. While burning, the resin contributes high heat and may generate a dense black smoke.

Recycled resins may have previously been used as packaging for, or may have otherwise been in contact with, hazardous goods. Converters are responsible for taking all necessary precautions to ensure that recycled resins are safe for continued use.

For further information about safety in handling and processing please refer to the Safety Data Sheet.

Conveying:

Conveying equipment should be designed to prevent production and accumulation of fines and dust particles that are contained in polymer resins. These particles can under certain conditions pose an explosion hazard. Conveying systems should be grounded, equipped with adequate filters and regularly inspected for leaks.

Storage:

The resin is packed in 25 kg bags, octabins or bulk containers protecting it from contamination. If it is stored under certain conditions, i. e. if there are large fluctuations in ambient temperature and the atmospheric humidity is high, moisture may condense inside the packaging. Under these circumstances, it is recommended to dry the resin before use. Unfavorable storage conditions may also intensify the resin's slight characteristic odor.

Resin should be protected from direct sunlight, temperatures above 40°C and high atmospheric humidity during storage. Higher storage temperatures may reduce the storage time.

The information submitted is based on our current knowledge and experience. In view of the many factors that may affect processing and application, these data do not relieve processors of the responsibility of carrying out their own tests and experiments; neither do they imply any legally binding assurance of certain properties or of suitability for a specific purpose. This information does not remove the obligation of the customer to inspect the material on arrival and notify us of any faults immediately. It is the responsibility of those to whom we supply our products to ensure that any proprietary rights and existing laws and legislation are observed.

Company Information

For further information regarding the LyondellBasell company, please visit <http://www.lyb.com/>.

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Disclaimer

Before using a product sold by a company of the LyondellBasell family of companies, users should make their own independent determination that the product is suitable for the intended use and can be used safely and legally.

SELLER MAKES NO WARRANTY; EXPRESS OR IMPLIED (INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY WARRANTY) OTHER THAN AS SEPARATELY AGREED TO BY THE PARTIES IN A CONTRACT.

Users should review the applicable Safety Data Sheet before handling the product.

This product(s) may not be used in the manufacture of any of the following, without prior written approval by Seller for each specific product and application:

- (i) U.S. FDA Class I or II Medical Devices; Health Canada Class I, II or III Medical Devices; European Union Class I or II Medical Devices;
- (ii) film, overwrap and/or product packaging that is considered a part or component of one of the aforementioned medical devices;
- (iii) packaging in direct contact with a pharmaceutical active ingredient and/or dosage form that is intended for inhalation, injection, intravenous, nasal, ophthalmic (eye), digestive, or topical (skin) administration;
- (iv) tobacco related products and applications, electronic cigarettes and similar devices.
- (v) safety components in automotive applications, for example: air bags, air bag unit housings and covers, seat belt mechanisms, brake systems, pedals and pedal supports, steering systems.

The product(s) may not be used in:

- (i) U.S. FDA Class III Medical Devices; Health Canada Class IV Medical Devices; European Class III Medical Devices;
- (ii) applications involving permanent implantation into the body;
- (iii) life-sustaining medical applications.

All references to U.S. FDA, Health Canada, and European Union regulations include another country's equivalent regulatory classification.

In addition to the above, LyondellBasell may further prohibit or restrict the use of its products in certain applications. For further information, please contact a LyondellBasell representative.

Trademarks

Adflex, Adstif, Adsyl, Akoafloor, Akoalit, Alastian, Alathon, Alkylate, Amazing Chemistry, Aquamarine, Aquathene, Avant, Catalloy, Clyrell, CRP, Crystex, Dexflex, Duopac, Duoprime, Explore & Experiment, Filmex, Flexathene, Fueling the power to win, Glacido, Hifax, Hiflex, Histif, Hostacom, Hostalen, Hyperzone, Ideal, Indure, Integrate, Koattro, LIPP, Lucalen, Luflexen, Lupolen, Luposim, Lupostress, Lupotech, Metocene, Microthene, Moplen, MPDIOL, Nerolex, Nexprene, Petrothene, Plexar, Polymeg, Pristene, Prodflex, Pro-fax, Punctilious, Purell, Refax, SAA100, SAA101, Sequel, Softell, Spherilene, Spheripol, Spherizone, Starflex, Stretchene, Superflex, TBAC, Tebol, T-Hydro, Toppyl, Trans4m, Tufflo, Ultrathene, Vacido and Valtec are trademarks owned and/or used by the LyondellBasell family of companies.

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LATAMID 66

Polyamide 66 (PA66).

Unfilled.

PHYSICAL PROPERTIES	STANDARD	VALUE MEASURE UNITS
Density	ISO 1183	1.14 g/cm ³
Linear shrinkage at moulding		
Longitudinal (2.0mm/60MPa)	ISO 294-4	1.20 ÷ 1.50 %
Transversal (2.0mm/60MPa)	ISO 294-4	1.25 ÷ 1.55 %
Dimensional stability	---	75
Moisture absorption (in air)		
after 24hrs	ISO 62-4	0.30 %
MECHANICAL PROPERTIES	STANDARD	VALUE MEASURE UNITS
CHARPY impact strength		
Unnotched, at +23°C	ISO 179-1eU	NB
Unnotched, at -20°C	ISO 179-1eU	NB
Unnotched, at -40°C	ISO 179-1eU	NB
Notched, at +23°C	ISO 179-1eA	4.0 kJ/m ²
Notched, at -20°C	ISO 179-1eA	3.0 kJ/m ²
Notched, at -40°C	ISO 179-1eA	3.0 kJ/m ²
Tensile elongation		
At yield (5 mm/min), 23°C	ISO 527 (1)	4.0 %
At yield (5 mm/min), 60°C	ISO 527 (1)	-
At yield (5 mm/min), 90°C	ISO 527 (1)	-
At yield (5 mm/min), 120°C	ISO 527 (1)	-
At yield (5 mm/min), 150°C	ISO 527 (1)	-
At break (5 mm/min), 23°C	ISO 527 (1)	30.0 %
At break (5 mm/min), 60°C	ISO 527 (1)	>100.0
At break (5 mm/min), 90°C	ISO 527 (1)	>100.0
At break (5 mm/min), 120°C	ISO 527 (1)	>100.0
At break (5 mm/min), 150°C	ISO 527 (1)	>100.0
Tensile strength		
At yield (5 mm/min), 23°C	ISO 527 (1)	90 MPa
At yield (5 mm/min), 60°C	ISO 527 (1)	-
At yield (5 mm/min), 90°C	ISO 527 (1)	-
At yield (5 mm/min), 120°C	ISO 527 (1)	-
At yield (5 mm/min), 150°C	ISO 527 (1)	-
At break (5 mm/min), 23°C	ISO 527 (1)	95 MPa
At break (5 mm/min), 60°C	ISO 527 (1)	NB
At break (5 mm/min), 90°C	ISO 527 (1)	NB
At break (5 mm/min), 120°C	ISO 527 (1)	NB
At break (5 mm/min), 150°C	ISO 527 (1)	NB
Elastic modulus		
Tensile (speed 1 mm/min), at 23°C	ISO 527 (1)	3100 MPa
Tensile (speed 1 mm/min), at 60°C	ISO 527 (1)	1900 MPa
Tensile (speed 1 mm/min), at 90°C	ISO 527 (1)	650 MPa
Tensile (speed 1 mm/min), at 120°C	ISO 527 (1)	500 MPa
Tensile (speed 1 mm/min), at 150°C	ISO 527 (1)	350 MPa

LATAMID 66

Polyamide 66 (PA66).

Unfilled.

THERMAL PROPERTIES	STANDARD	VALUE MEASURE UNITS
Coefficient of linear thermal expansion (CLTE)		
+30°C to +100°C (longitudinal)	ISO 11359-2	140 µm/(m·°C)
VICAT - Softening point		
50 N (heating rate 50°C/h)	ISO 306	240 °C
HDT - Heat Deflection Temperature		
0.45 MN/m ²	ISO 75	220 °C
1.81 MN/m ²	ISO 75	75 °C
C.U.T. - Continuous Use Temperature		
Long period (20,000h)	ASTM E1641/E1877	90 °C
FLAMMABILITY	STANDARD	VALUE MEASURE UNITS
Flammability rating		
0.75 mm thickness	UL 94	V-2
ELECTRICAL PROPERTIES	STANDARD	VALUE MEASURE UNITS
Electrical resistivity		
Surface	ASTM D 257	1E12 ohm

LATAMID 66

Polyamide 66 (PA66).

Unfilled.

MATERIAL - STORAGE

Sealed, undamaged packages has to be kept in dry storage facilities, providing they are also able to protect them from weather and accidental damage.

HANDLING AND SAFETY

Detailed information about a safe treatment of the material are indicated in the "Material Safety Data Sheet" (MSDS) furnished with the first material supply. The MSDS may be also sent again in case of loss.

PREDRYING CONDITIONS

At least 3 hours at $90 \div 100^{\circ}\text{C}$

These are the suggested conditions to reduce the moisture content to adequate levels. Temperature and drying time can be reduced by using vacuum ovens. Particularly wet material may need a longer drying time.

ACTUAL MELT TEMPERATURE

$260 \div 290^{\circ}\text{C}$

The injection moulding machine settings needed to obtain the suggested melt temperature will depend greatly on shot size and machine capacity, as well as other moulding parameters such as: injection speed, screw RPM, back pressure, etc. On small machines, running short cycles, it is possible to use higher melt temperatures to improve plastification, fluidity and surface appearance, paying attention to any indication of material degradation.

MOULD TEMPERATURE

$70 \div 90^{\circ}\text{C}$

The mould temperature suggested above is the actual tool steel temperature. This can be significantly different from the tool settings, due to the cooling system efficiency and the accuracy of the temperature control on the tool.

INJECTION SPEED

Medium

The advisable injection speed greatly depends on cavity geometry and injection moulding machine size. The use of high injection speed can improve the surface appearance, but it can also cause outgassing and burn marks due to overheating through shear stress.

REGRIND USAGE

The use of regrind is possible, but should be assessed on the basis of the project, moulding parameters, and type of grinding used. The effect of using regrind on material properties must be evaluated by the customer on its specific project and process. High percentages of regrind may cause a reduction in viscosity, reducing mechanical properties, first resilience. According to UL guideline, up to 25% of regrind is permitted, without affecting the ratings of the yellow card. However, LATI suggests that no more of 15% of regrind is used.

HOT RUNNER MOULDS

Hot runner moulds may be used when a very tight temperature control is assured.

LATAMID 66

Polyamide 66 (PA66).

Unfilled.

TO AVOID

In order to prevent any material degradation, over-dimensioned machines should be avoided.

NOTES

Versions of product mentioned herein are suitable for applications in contact with foodstuff or for potable water transportation, or for toy manufacturing. However, manufactured parts have to be verified according to the specific directives. The products mentioned herein are not suitable for applications in the pharmaceutical, medical or dental sector.

APPROVALS

USA (UL): Product versions approved according UL recommendations are available.

CONTACTS

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<http://www.lati.com>

<http://lambda.lati.it>

Values shown are based on testing of injection moulded laboratory test specimens, conditioned according to the standard and represent data that fall within the standard range of properties for non-coloured material, if not otherwise specified. As they may be subject to variations, these values do not represent a sufficient basis for any part design and are not intended for use in establishing values for specification purposes. Properties of moulded parts can be influenced by a wide range of factors including, but not limited to, colorants, part design, processing conditions, post-treatment conditions, environmental conditions and usage of regrind during the moulding process. If data are explicitly indicated as provisional, range of properties has to be considered wider. This information and technical assistance are provided as a convenience for informational purposes only and are subject to change without notice. The customer shall always ensure that the latest release of technical information is at his own disposal. Lati S.p.A. extends no warranties or guarantee, including a warranty of merchantability of whatever use is made of the product, and make no representations as to the accuracy, suitability, reliability, completeness and sufficiency of the information provided, and assume no responsibility regarding the consequences of its use or for any printing errors. It is the customer's responsibility to inspect and test our products in order to determine to his own satisfaction whether they are suitable for his intended uses and applications or used in conjunction with third-party materials. This application-specific analysis shall at least include preliminary testing to determine the suitability for the customer's particular purpose from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by us as the manner in which the customer uses and the purpose to which utilises our products are beyond our control. Lati S.p.A. does not accept and hereby disclaims liability for any damages whatsoever in connection with the use of or reliance on this information. No one is authorised to make any warranties, issue any immunities or assume any liabilities on behalf of Lati S.p.A. except in a writing signed by a specifically authorised Lati S.p.A. executive. Unless otherwise agreed in writing, the exclusive remedy for all claims is replacement of the product or refund of the purchase price at Lati's option, and in no event shall Lati S.p.A. be liable for special, consequential, incidental, punitive or exemplary damages. No information herein can be considered as a suggestion to use any product in conflict with intellectual property rights. Lati S.p.A. disclaims any liability that may be claimed for infringement or alleged infringement of patents. Unless specifically stated in writing, the products mentioned herein are not suitable for applications in the pharmaceutical, medical or dental sector, in contact with foodstuff or for potable water transportation. For any other issues Lati S.p.A. Conditions of Sales apply.