



Rubber surface enhancement products

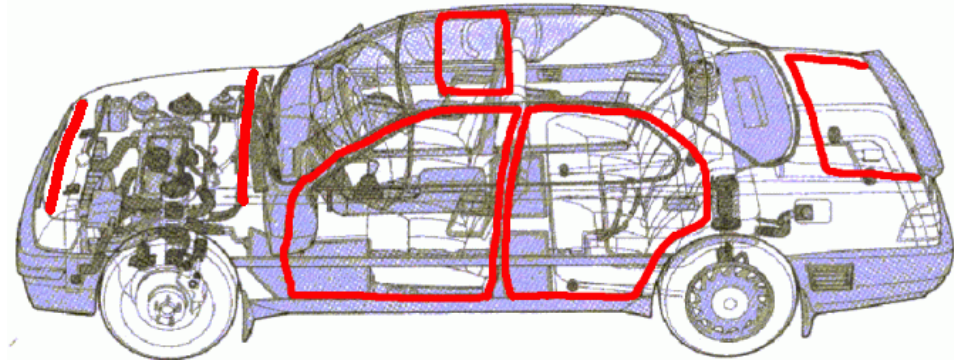
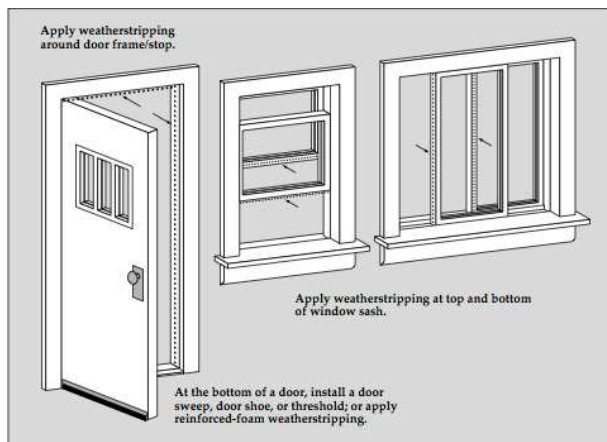
- Sealing
- Protection
- Flocking
- Easy positioning

LORD
Ask Us How™

Markets: Automotive - Construction – Vehicles – Marine

Application: Weatherstripping

- **Weatherstripping:** Process of sealing openings such as doors, windows, and trunks from the elements.
- Weatherstripping consists in preventing rain and water from entering a closed space
- It is accomplished this by either returning or rerouting water.
- A secondary goal is to keep interior air in.
- It saves energy on heating and air conditioning.



Markets: Automotive - Construction – Vehicles – Marine

Application: Weatherstripping

- **Commonly used weatherstripping materials**

- **Automotive - Transportation**

- EPDM Rubber.
 - TPE: Thermoplastic elastomer - A mix of plastic and rubber.
 - TPO: Thermoplastic Olefin - Polymer/filler blend.
 - Silicone (essentially in sun roofs to better resist heat exposure).
 - Material may be sponge like or dense elastomers

- **Construction**

- EPDM cellular rubber
 - Natural rubber
 - Vinyl
 - Felt
 - Poly foams

Markets: Automotive specific

Application: Weatherstripping

- **Weatherstripping in automobiles may have specific requirements linked to transportation conditions.**

- It must function when the vehicle is parked and at full speed
- It must be flexible to accommodate motion vibrations and relative motions
- It must endure extreme temperatures of hot and cold
- It must withstand long periods of sun exposure
- It must resist automotive liquids such as oil, gasoline, and windshield washer fluid.
- It must ensure that no noise or squeaks are produced

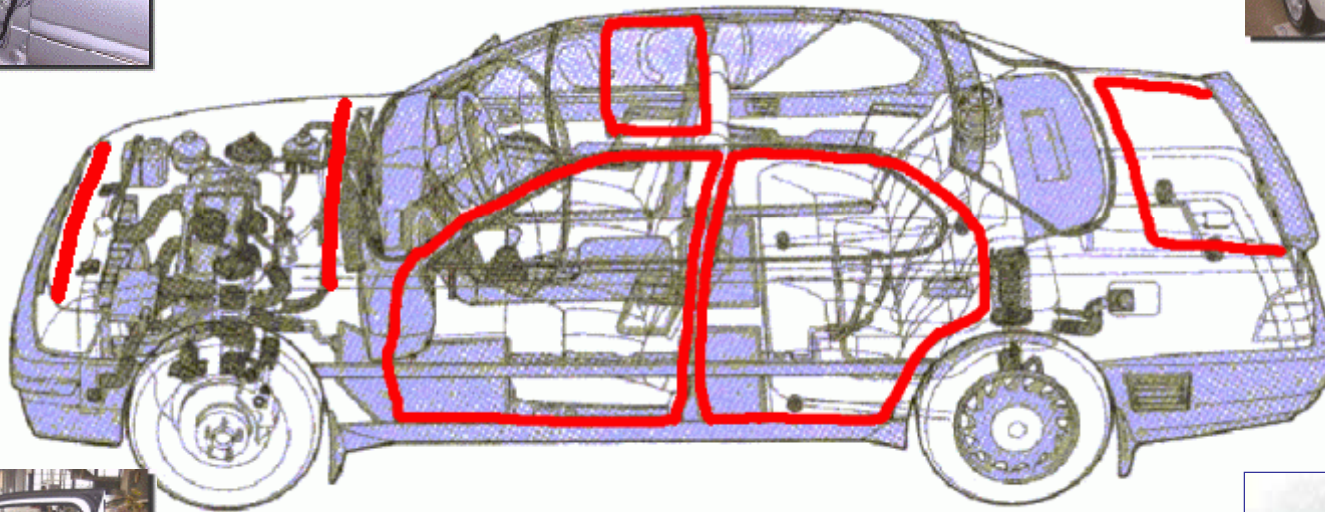
- **Standard four-door vehicle weatherstripping**

- The doors require around 6 meters of weatherstripping material
- The windows require around 3 meters of weatherstripping material
- Trunks also require large amounts.

Markets: Automotive specific



Application: Weatherstripping



Markets: Automotive - Construction – Vehicles – Marine

Application: Weatherstripping

- **Efficiency of weatherstrips can be significantly increased by Lord products.**

- Enhanced sealing properties
- Enhanced chemical resistance – Environment or cleaning
- Enhanced UV resistance
- Enhanced appearance
- Decreased static coefficient of friction.
- Noise reduction
- Ice release

- **Lord products – Flocksil – Parflock – Cuvertin – Sipirol – will allow**

- To flock the weatherstripping material
- To coat the weatherstripping material



Markets: Automotive - Construction – Vehicles – Marine

Application: Weatherstrips - **Flocking**

Lord Flocking systems and solutions

- Select your flocking adhesive based on
 - Substrate to be flocked
 - Expected mechanical and environmental performances
 - Application process
- Select your catalyst (optional)
- Select your primer (optional)



Markets: Automotive - Construction – Vehicles – Marine

Application: Weatherstrips - **Flocking**

Lord Flocking adhesives: PU Adhesives for Elastomeres Flocksil® - Parflock®

- 1 component solvent based flocking adhesives
- Based on humidity curing PU-polymers
- Available in different solvents
- Available with different activation times
- Available in different application temperatures
- Online or offline application
- Application on non polar surfaces.

Markets: Automotive - Construction – Vehicles – Marine

Application: Weather strips - **Flocking**

Lord Flocksil – When premium performance matters

Premium range - Flocksil ® selection matrix							
Flocksil	1501	1503	1503D	1505	1506T	1506	1512
Color	brown	black	black	transparent	black	black	brown
Solvent	MIBK Ethylacetate	Xylene	Xylene	Xylene	Toluene	Xylene	Xylene
Curing Time @ 180°C	10 min	1,5 min	1,5 min	2,5 min	1 min	3 min	3 min
Adhesion	+++	+++	++++	+++	++++	+++	+++
Abrasion	+++	+++	++++	+++	++++	+++	+++
Humidity	+++	+++	++++	+++	++++	+++	+++
Main substrate	EPDM	EPDM	EPDM	EPDM TPE	EPDM TPE	EPDM TPE	EPDM
Application method	Online Brush / Spray	Online Brush / Spray	Online Brush / Spray	Online Brush / spray	Online Brush / Spray	Online Brush / Spray	Offline Brush
Remark	Activ T 160°C	Activ T 160°C	Activ T 160°C	Colored flock Non yellowing Activ T 130°C	Colored flock Non yellowing Activ T 130°C	Colored flock Non yellowing Activ T 130°C	Activ T 160°C

Markets: Automotive - Construction – Vehicles – Marine

 **Application:** Weather strips – **Flocking**

Lord Parflock: The economical range

- More prone to yellowing than Flocksil
- More sensitive to substrate elongation than Flocksil
- Less thixotrop than Flocksil
- Limited performances

Economical range - Parflock ® selection matrix			
Parflock	P11	P11 B	P11 E
Color	green brown	green brown	green brown
Solvent	Xylene	Xylene	Xylene
Curing Time @ 180°C	5 min	2,5 min	1 min
Adhesion	+++	+++	+++
Abrasion	+++	+++	+++
Humidity	+++	+++	+++
Main substrate	EPDM	EPDM	EPDM
Application method	Online	Online	Online

Markets: Automotive - Construction – Vehicles – Marine

Application: Weatherstrips - **Flocking**

Lord Flocking catalysts Cuvertin ®

- Available with different acceleration capabilities
- Small quantity required: 1% to 2%
- Tin free
- Can reduce activation time from 25% to 75%
- Allow process optimization

Markets: Automotive - Construction – Vehicles – Marine

Application: Weather strips - **Flocking**

Cuvertin catalyst: Flocksil and Parflock accelerators

Cuvertin ® catalyst selection matrix			
Cuvertin	K4	K8	K18
Solvent	Xylene	Xylene	Xylene
Accelerating effect	+	++	+++
Pot life	@1%, 7h	@1%, 2h	@1%, 2h
Remark	Xn classified	Xn classified	Xn classified

Markets: Automotive - Construction – Vehicles – Marine

Application: Weatherstrips - **Flocking**

Lord Flocking primer Cuvertin ® Sipiol ®

- Available in solvent base or water base
- Different activation temperature
- Suitable to improve the adhesion of Flocksil and Sipiol
- Suitable to bond TPE to glass with an additional primer

Markets: Automotive - Construction – Vehicles – Marine



Application: Weather strips - **Flocking**

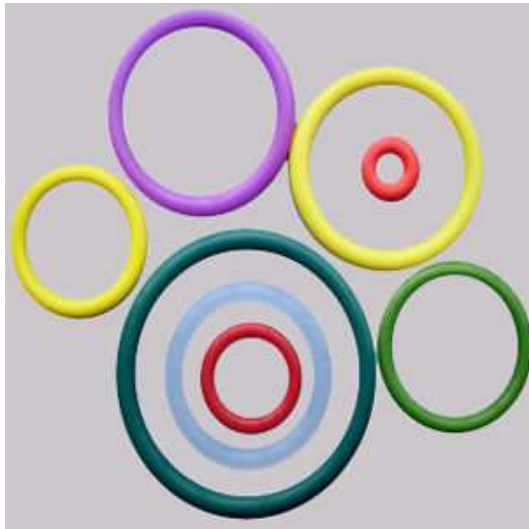
Cuvertin ® and Sipiol ® primers selection matrix				
Cuvertin	X8536	X8568	Sipiol	WP 8555
Solvent	Xylene	Xylene	Solvent	Water
Activation temperature	RT	RT	Activation temperature	130°C
Main substrate	Rubber TPE	Rubber TPE	Main substrate	Rubber TPE injection
Application method	Brush spray	Brush spray	Application method	Brush spray
Remark	Other priming application can be envisaged – See special application	Other priming application can be envisaged – See special application	Remark	Other priming application can be envisaged – See special application

Markets: Automotive - Construction – Industry

Application: Weather strips – O rings – **Coating**

Sipiol ® : Coating for Elastomeres

- 1 component coatings and 2 component coatings
- Water based solution



Markets: Automotive - Construction – Industry



Application: Weather Strips – O-Rings **Coating**

SIPIOL® WL 2015 - 22 PFE

Nomenclature

WL - **W**asserbasis **L**ack
- water borne coating

1 - **O**ne component System
2 - **T**wo component System

0 - black
1 - black
6 - translucent

0 – unblocking at 160°C
1 – unblocking at 160°C
2 – unblocking at 130°C

0 – smooth surface
5 – structured surface (60µm)
6 – structured surface. (30µm)

22, 23, ...
Successor of 21 – improved version

P – **P**rimers included

FE – **F**or **E**xtrusion (online)
(no thickener included)

Markets: Automotive - Construction – Industry

Application: Weather strips – O ring - **Coating**

Sipiol® : Coatings for Elastomeres

- All 1K products are solvent free and not harmful.
- All 1K products unblock at 130°C with a curing time of 15 min, each 10°C higher Temperature reduces the curing time to the half.
- No delaminating after corner molding.
- All coatings can be re-painted with themselves!
- Depending from substrate we find a $\Delta E < 1,5$ after 1600 h Florida and Kalahari test
- All 2K products have a pot life of 12 h @20°C
- **Sipiol WP 8555 water borne primer for Sipiol**



Sipiol ® Selection Matrix					
Sipiol WL	1120- 21	1120-23	2010-23	1620-21*	1300*
Color	Black	Black	Black	Transparent	Black
Particule size	No particules	No particules	No particules	No particules	No particules
1K / 2K	1K	1K	2K	1K	1K
Squeak	+++	++++	+++	+++	++++
Abrasion	++	+++	+++	+++	++
Environnement	$\Delta E < 2$	$\Delta E < 2$	$\Delta E < 2$	$\Delta E < 2$	$\Delta E < 2$
Slip μ	0,3	0,3	0,26	0,3	0,4
Main application	Primary door seals, trunk seals, O-Rings	Primary door seals, trunk seals, O-Rings	Primary door seals, trunk seals, O-Rings	Primary door seals, trunk seals, O-Rings	Primary door seals, trunk seals
Remark				Can be colored for colored gaskets or o rings	Improved water repellency

*First production lot available latest end of Nov.



Sipiol ® Selection Matrix

Sipiol WL	1025- 21	2015-22P	1625-21	1026-21
Color	Black	Black	Transparent	Black
Particule size	60µm	60µm	60µm	30µm
1K / 2K	1K	2K	1K	1K
Squeak	++++	++++	++++	++++
Abrasion	+++	+++	+++	+++
Environnement	$\Delta E < 2$	$\Delta E < 2$	$\Delta E < 2$	$\Delta E < 2$
Slip μ	0,16	0,16	0,16	0,16
Main application	Sec. door seals, Convertibles	Sec. door seals, Convertibles	Sec. door seals, Convertibles	Sec. door seals, Convertibles
Remark	Can be colored for colored gaskets			



Market Overview

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Sipiol® / Flocksil® Performance

- Sipiol coatings are compliant with OEM coating specifications, for example:
 - Daimler: DBL 5578
 - BMW: PR 231
 - GM: GMW14147, GMW14168, GMW14169 and GMW14170
 - VW: 501 29
- Flocksil adhesives are compliant with OEM flock specifications, for example:
 - Daimler: DBL 5575
 - BMW: PR 231
 - VW: PV 3366
- Test results are dependent on the coating & substrate system
 - The weather-strip manufacturer's substrate is required for this testing



Where do you find our slip coats and flock adhesives? For example:

- VW Tiguan, Touran, Sipirol WL 1120-21
- VW Eos, Passat coupé, Sipirol WL 2015-22P
- BMW 1 er and 3 er coupé, convertible 5 er limousine and station wagon: Sipirol WL 2015-22P
- BMW Mini and Clubman: Sipirol[®] WL 2015-22P Daimler GLK, E-Class, C-Class coupé and convertible: Sipirol WL 1025-21 and 1625-24 (transparent version)
- Peugeot, Citroen: Sipirol WL 1120-21
- Seat, Skoda: Sipirol WL 1120-21
- Flocksil, Parflock Daimler, VW, BMW, Audi, Porsche, GM-Opel



- Time for discussion and questions
- Thank for your attention!