

企业发展的优先战略

人才共赢

我们的使命

助力人类美好发展

我们的愿景

成为一家以数字化驱动、科技创新、人才共赢的功能化专业平台

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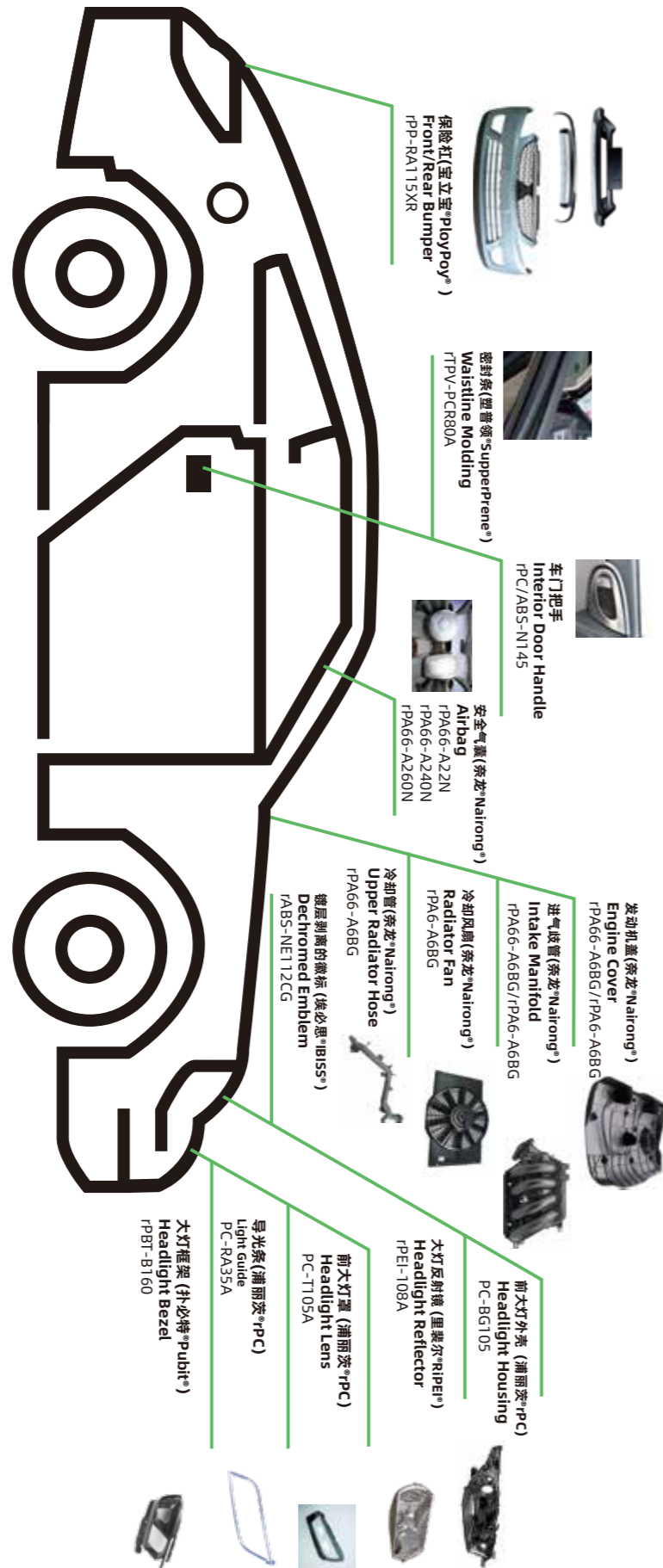
REAUTOLOOP INNOVATIONS



宁波坚锋新材料有限公司
NINGBO TOPCENTRAL NEW MATERIAL CO., LTD

汽车塑料回收的主要来源

ReAutoloop Innovations

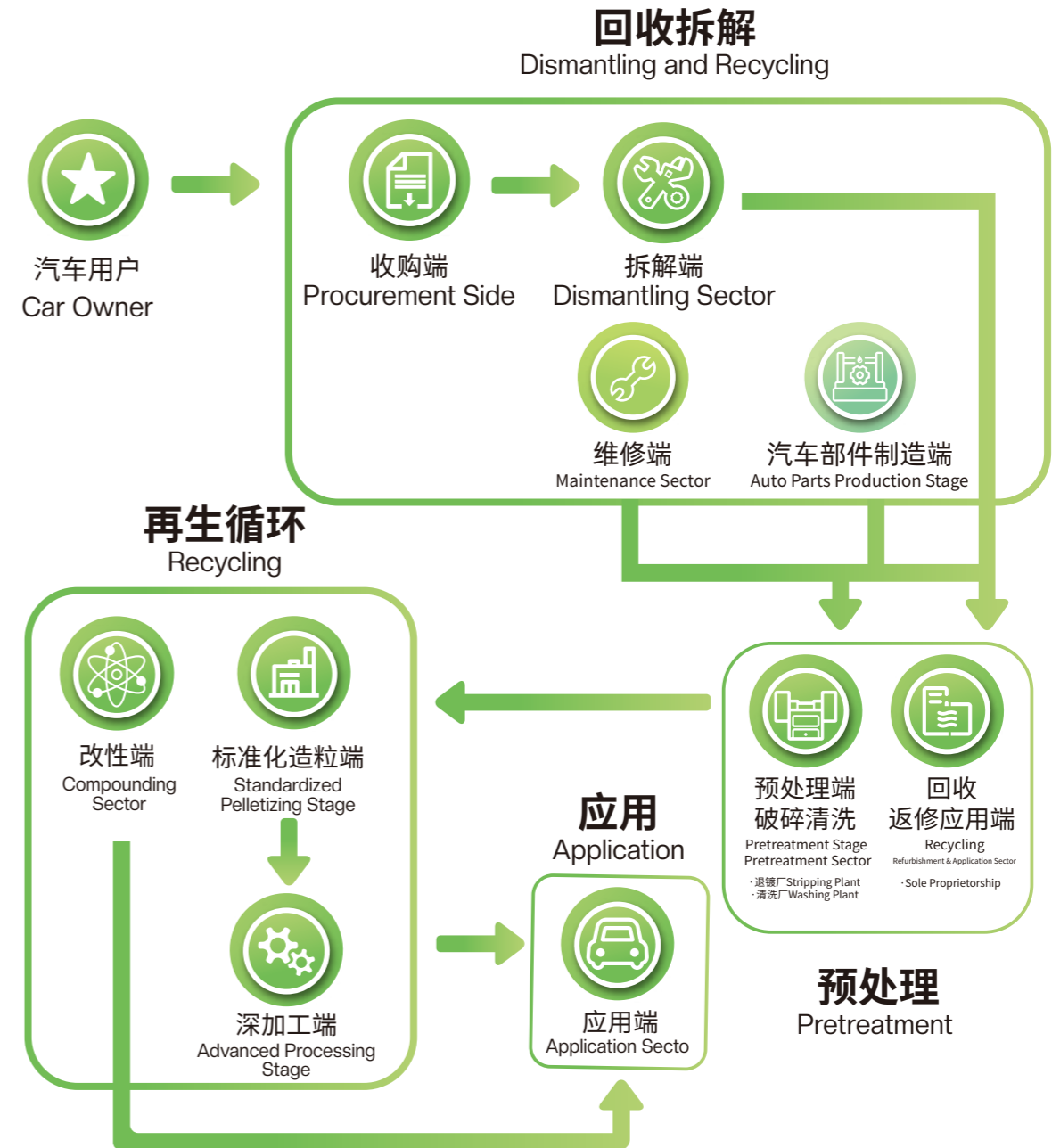


以消费后回收的汽车配件、以及非汽车来源的PCR材料为主要原料，开发ReAutoloop® 系列产品，针对客户需求进行产品定制化开发。依托大数据平台，对材料整个声明周期进行碳足迹追踪管理，同时与第三机构合作进行碳足迹核算，确保产品碳足迹真实性及可追溯性。

Developing the ReAutoloop® product series primarily from post-consumer recycled automotive parts and non-automotive PCR materials, with the capability for customized product development based on client needs. Leveraging a big data platform to track and manage the carbon footprint throughout the entire material lifecycle, while collaborating with third-party organizations for carbon footprint accounting to ensure the authenticity and traceability of the product's carbon footprint.

汽车塑料回收的主要路径

Main Pathways for Automotive Plastic Recycling



车用塑料回收主要来源于汽车拆解端、4S店等维修端以及汽车部件制造端。汽车部件制造端的来源主要为不合格品、胶头水口等，为PIR来源。

有部分品质良好的回收品会经过回收返修后进入二手市场重新利用，其余回收制件会进入下游的再生循环端。

车用塑料经过再生循环端加工为高性能标准化粒子后，进一步应用到下游的汽车、电子电器等领域。

The sources of automotive plastic recycling primarily include the vehicle dismantling sector, maintenance sectors such as 4S shops, and the automotive component manufacturing sector. Materials from the component manufacturing sector mainly consist of non-conforming products, sprues, and gates, which are classified as Post-Industrial Recycled (PIR) materials.

Some well-preserved recycled parts are reconditioned and enter the second-hand market for reuse. The remaining recycled components are directed downstream to the recycling and reprocessing sector.

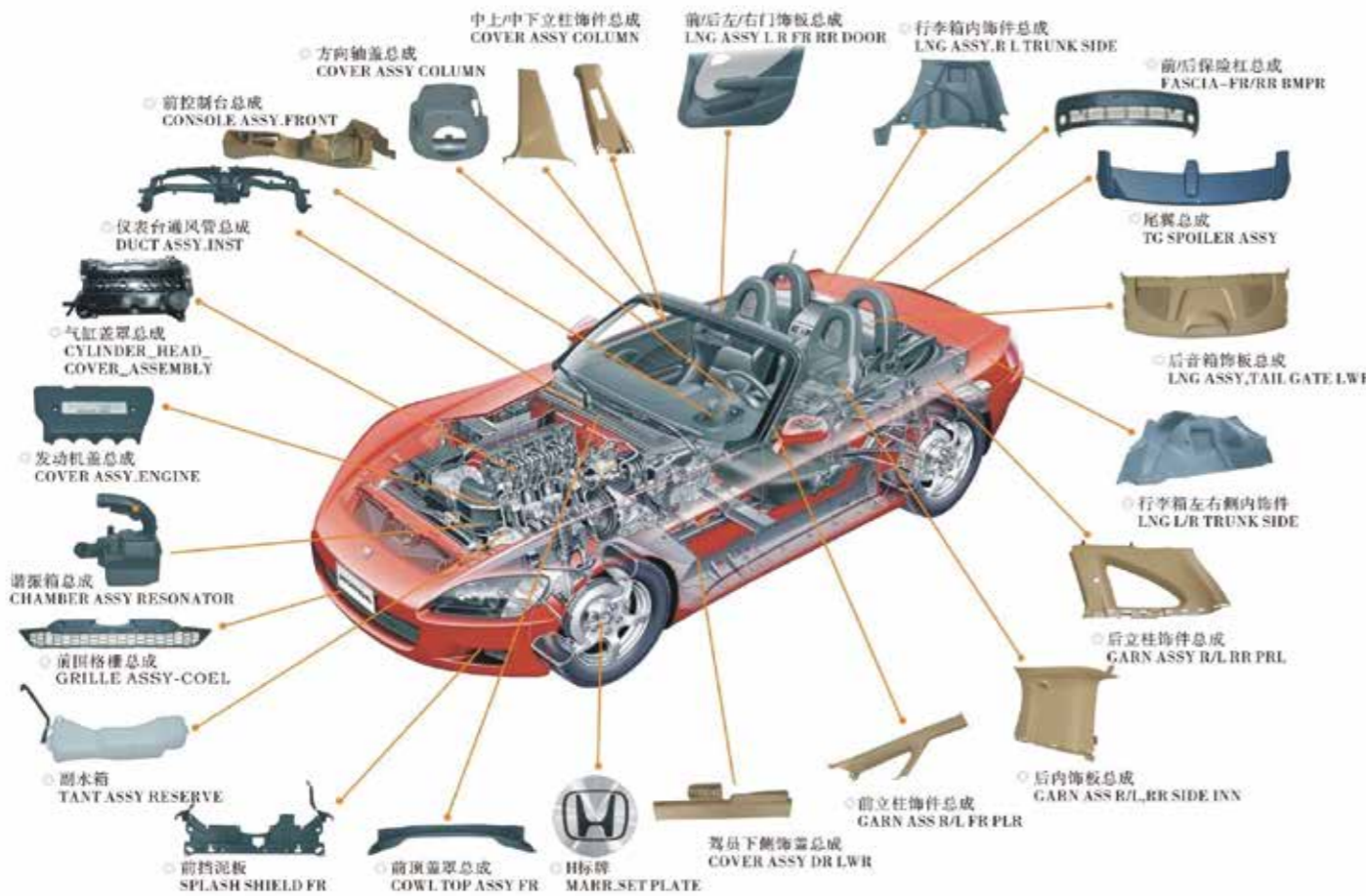
After being processed into high-performance standardized pellets by the recycling and reprocessing sector, these automotive plastics are further utilized in downstream industries such as automotive manufacturing and electronics.

汽车塑料典型制件

Typical Automotive Plastic Parts

汽车塑料典型制件材质

Materials For Typical Automotive Plastic Parts



A. 外饰件 Exterior trim parts

保险杠: 前后, 内衬
Bumpers: front and rear, inner liners

车身侧裙板: 四个车门
Body side skirt panels: door anti-rub strips, wheel arch trims

轮盖装饰件、门槛
Wheel trim parts, door sills

散热器格栅、牌照板
Radiator grilles, license plate panels

车灯、车窗
Vehicle lights, windows

B. 内饰件 Interior Trim Parts

仪表盘: 主体, 表皮, 手套箱, 附件
Instrument panel: main body, skin, glove box, accessories

副仪表盘: 主体, 侧板
Sub-instrument panel: main body, side panels

立柱: 前、后、中上、中下
Pillars: front, rear, upper center, lower center

门板: 主体、扶手、地图袋、喇叭罩
Door panels: main body, armrest, map pocket, speaker grille

桌椅部件: 护板、旋钮头枕导管
Seat components: guard plates, knob headrest guide tubes

C. 发动机周围件 Interior Trim Parts

前端组件: 风扇, 框架管
Front-end components: fans, frames

发动机罩盖
Engine hood

进气歧管
Air intake manifold

空调组件: 风机壳体, 通风管道
Air-conditioning components: blower housings, air ducts

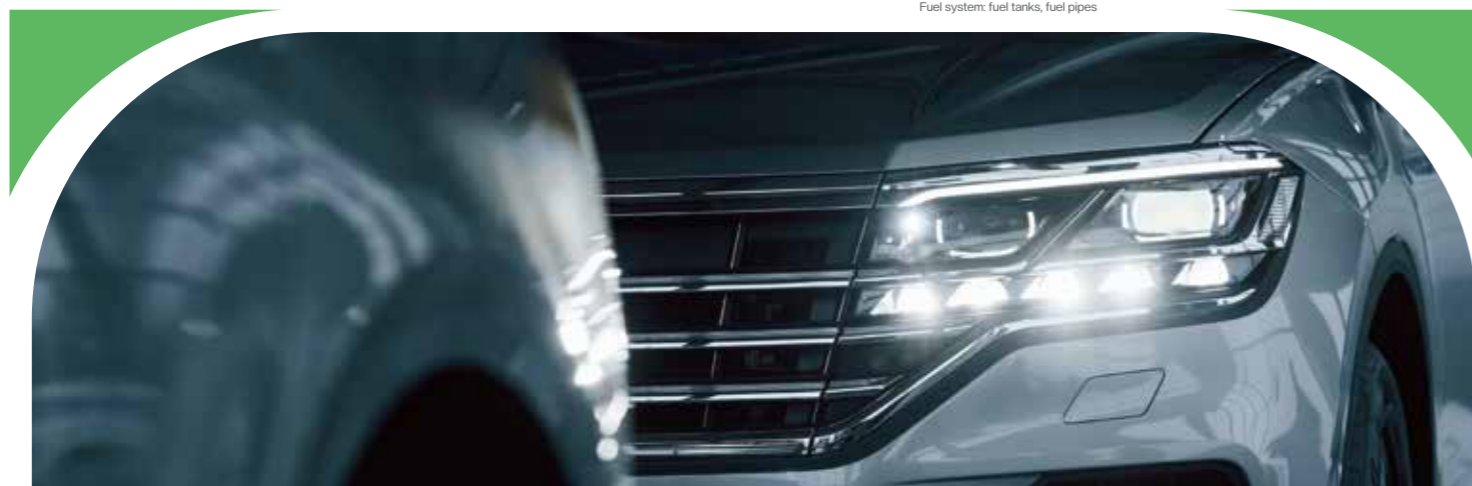
容器: 防冻液, 刹车液, 清洗液
Reservoirs: antifreeze, brake fluid, washer fluid

燃油系统: 油箱, 油管
Fuel system: fuel tanks, fuel pipes

D. 新能源系统 New Energy Systems

动力电池系统
Power battery systems

充电桩
Charging piles



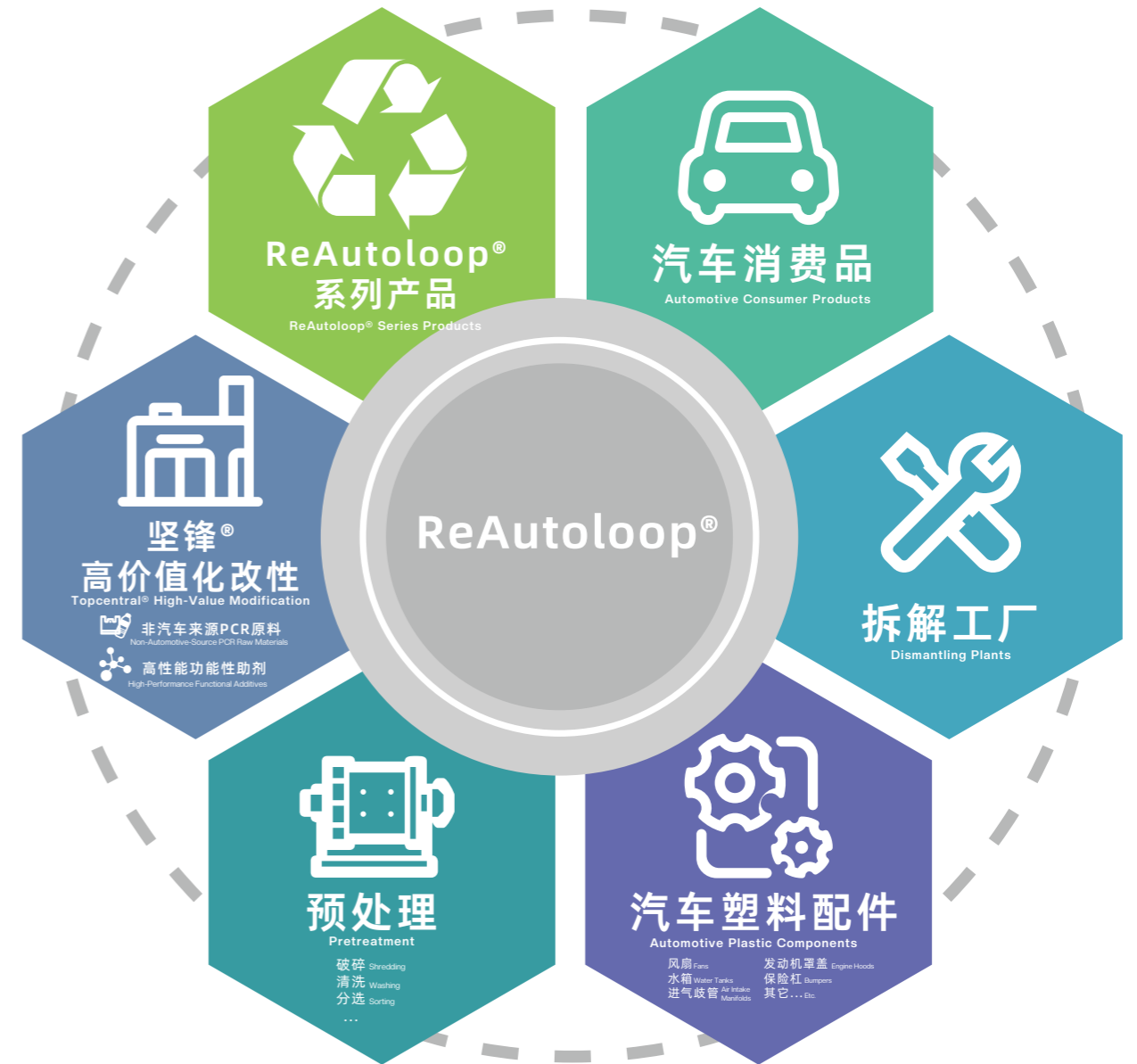
分类 Category	部件 Part	材料 Material	
外饰件 Exterior Parts	前大灯 Headlamp	前照灯、雾灯的透镜、外配光镜 Lenses and outer optical lenses for headlamps and fog lamps	TRANSPARENT PC
		壳体、后盖 Housing, rear cover	MODIFIED PP/BLACK PC
		饰圈、调节装置中的支架 Trim ring and brackets in the adjustment mechanism	PBT/PET PC
		反射镜 Reflector	BMC、PEI、PEEKPPS、LCP
	尾灯 Tail Lamp	后盖、饰板和线束导槽 Rear cover, trim panel and cable-clip guide slot	PP-T20
		灯罩 Lamp lens	RED / TRANSPARENT PMMA, PC
		壳体、饰板 Housing, trim panel	PC/ABS, ABS
		螺钉调节、支架 Screw adjuster, bracket	PA6/66+GF
	保险杠 Bumper	保险杠	PP+EPDM+T0~20
	牌照板 License plate panel	牌照板	PP+EPDM+T20, Electroplated ABS, PC/ABS
进气格栅 Air intake grille	进气格栅	PP+EPDM+T10, Electroplated ABS, PC/ABS	
后视镜 Rearview mirror	后视镜	PP+30GF, ASA, PA66+50GF, Painted ABS	
车窗 Windows	汽车后三角窗、后风挡玻璃窗、层叠式天窗和全景天窗 Rear quarter windows, rear windshield, louvered sunroofs, and panoramic sunroofs	PC	
内饰件 Interior Parts	仪表盘 Instrument Panel	硬质仪表盘 Rigid instrument panel 软质仪表盘(骨架+表皮) Soft instrument panel (substrate/frame + skin)	PP+EPDM+T15~25 PC/ABS, LFT-PP GF-SMA+PVC slush-molding powder, PVC/ABS sheet
	立柱 Pillar	立柱	PP/PE, PP+T20, PP+T25
	门板 Door panel	门板	PP+EPDM+T10~25 ABS
	安全气囊 Airbag	安全气囊	PA66
发动机周围件 Engine Compartment Parts	发动机罩盖 Engine cover	发动机罩盖	PA6+30%GF
	前端框架 Front-end frame	前端框架	LFT-PP
	散热风扇 Cooling fan	散热风扇	PA6+30%GF+M
	水箱组件 Radiator assembly	水箱组件	PA66+30%GF(Hydrolysis-resistant)
	风机壳体 Fan housing	风机壳体	PP+20%TALC
	容器 Container / Reservoir	容器	PP
动力电池系统 Power Battery System	通风管道 Ventilation duct	通风管道	HDPE (high-density polyethylene)
	动力电池支架 Ventilation Power battery bracket/duct	动力电池支架	Modified PPE, PPS, PC/ABS
	动力电池盖板 Power battery cover plate	动力电池盖板	Modified PPS, PA6, PA66
	动力电池箱体 Power battery enclosure	动力电池箱体	Modified PPS, 改性PP, PPO
	DC电机骨架 DC motor frame	DC电机骨架	Modified PBT, PPS, PA
	继电器外壳 Relay housing	继电器外壳	Modified PBT
	连接器 Connector	连接器	Modified PPS, PBT, PA66, PA
充电桩 Charging Station	充电桩壳体 Charging station housing	充电桩壳体	Flame-retardant PC, PC/ABS, PC/ASA
	电源模块外壳 Power module housing	电源模块外壳	Flame-retardant PA66
	插头、插座 Plug, socket	插头、插座	Flame-retardant PET, Flame-retardant PA66
	充电枪外壳 Plug, Charging gun housingsocket	充电枪外壳	Flame-retardant PC, PC/ABS, PC/ASA
	断路器 Circuit breaker	断路器	Flame-retardant PA6/PA66
	接触器 Contactor	接触器	Flame-retardant PA6/PA66

汽车塑料回收产业链蓝图

Blueprint of the Automotive Plastic Recycling Industry Chain

坚锋® 车用材料循环回收利用解决方案

Topcentral® Automotive Material Recycling and Circular Utilization Solutions

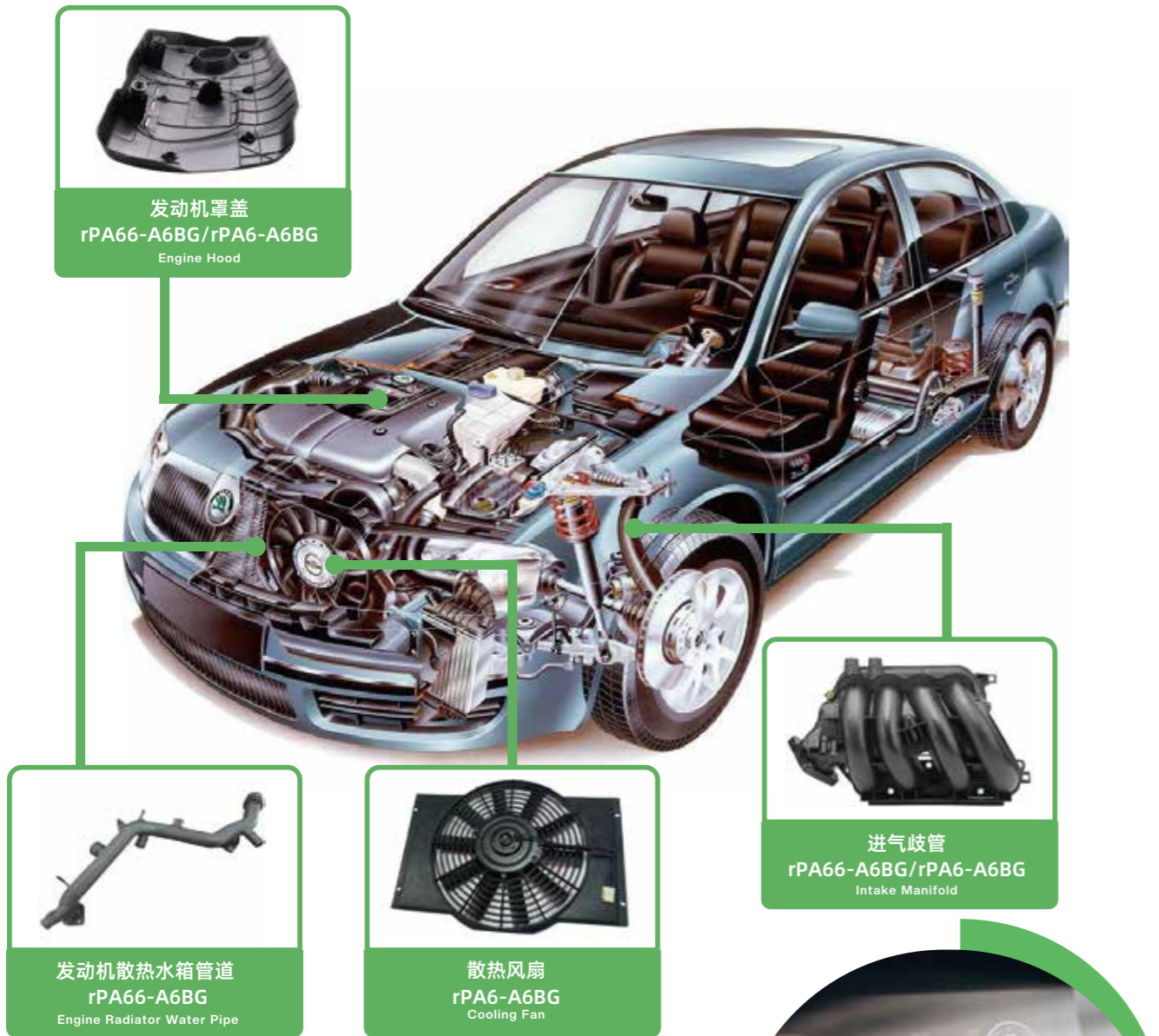


以消费后回收的汽车配件、以及非汽车来源的PCR材料为主要原料，开发ReAutoloop®系列产品，可针对客户需求进行产品定制化开发。依托大数据平台，对材料整个声明周期进行碳足迹追踪管理，同时与第三机构合作进行碳足迹核算，确保产品碳足迹真实性及可追溯性。

Using post-consumer recycled automotive components and PCR materials from non-automotive sources as the main raw materials, ReAutoloop® series products are developed and can be customized according to customer requirements. Supported by a big data platform, the carbon footprint of materials is tracked and managed throughout the entire lifecycle. At the same time, third-party institutions are engaged to carry out carbon footprint accounting, ensuring the authenticity and traceability of the product carbon footprint.

ReAutoloop® Engine Module
Material Recycling Solutions

ReAutoloop® 发动机模块材料回收解决方案



汽车发动机周边部件多为PA6玻纤增强材料或PA66玻纤增强材料。主机厂会根据发动机的实际工况，如耐温、机械强度等性能要求的不同而采用不同材质的材料。坚锋根据汽车发动机周边部件的材质种类、玻纤含量多少，开发有多个产品牌号，可满足客户的不同需求。

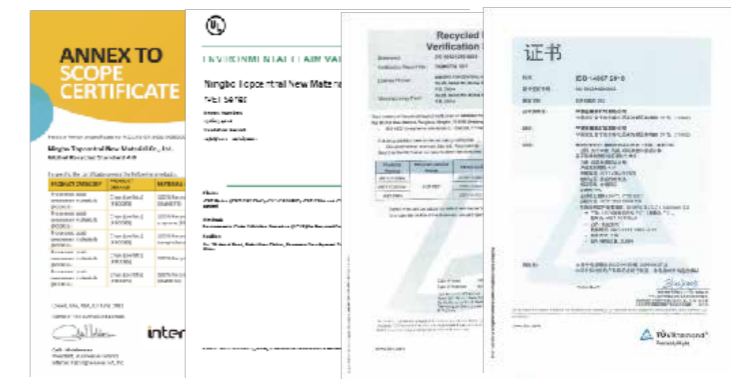
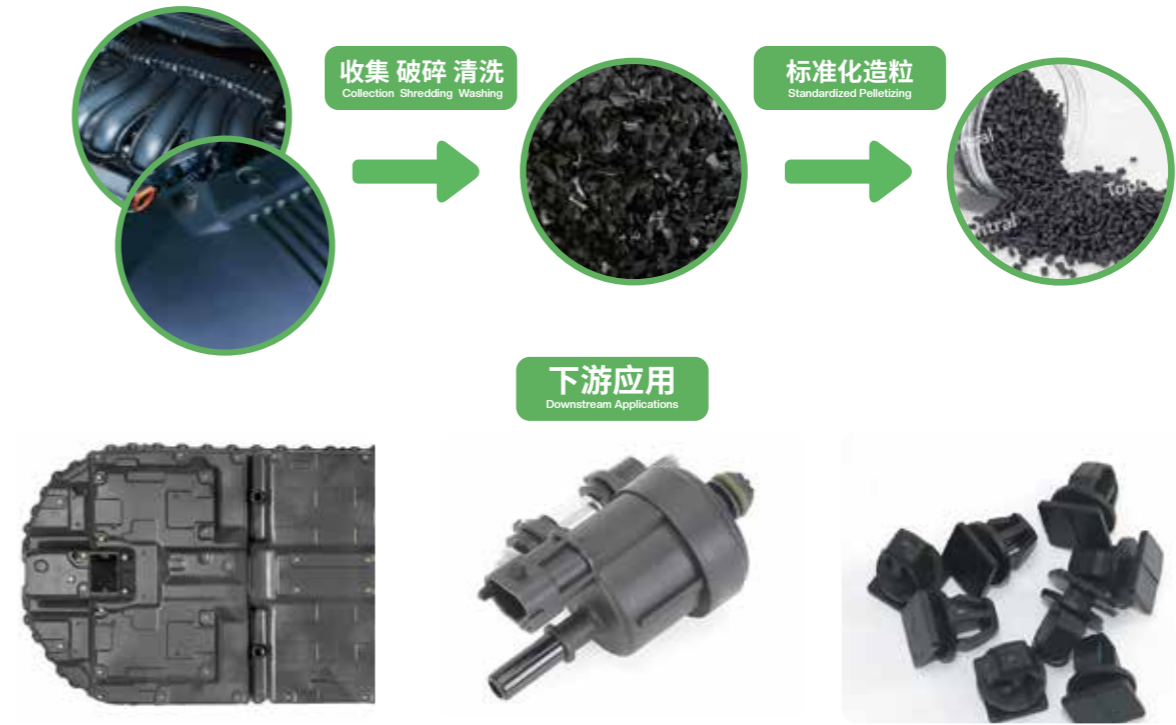
Automotive engine surrounding components are mostly made of glass fiber reinforced PA6 or glass fiber reinforced PA66 materials. OEMs select different material types according to the actual operating conditions of the engine, such as temperature resistance, mechanical strength, and other performance requirements. Based on the material type and glass fiber content of automotive engine surrounding components, Topcentral has developed multiple product grades to meet different customer needs.

ReAutoloop® 发动机模块材料回收解决方案 Nairong® 奈龙®

ReAutoloop® Engine Module Material
Recycling Solutions Nairong®

以汽车发动机周边部件如引擎盖、水箱、风扇、进气歧管等来源的原料制备而成，可用于电器外壳、汽车碳罐、连接器、卡扣等不同部件，满足客户不同需求。

Made from raw materials sourced from automotive engine surrounding components such as engine covers, water tanks, fans, and intake manifolds, the material can be used for various parts including electrical housings, automotive canisters, connectors, and clips, meeting different customer needs.



材料牌号 Material Grade	弯曲强度 Flexural Strength MPa	弯曲模量 Flexural Modulus MPa	冲击强度 Impact Strength KJ/m ²	特性 Features	颜色外观 Color	认证 Certifications	PCR含量 PCR Content	典型应用 Typical Applications
rPA6-A6BG	150	5000	7	30%GF Reinforced	Black	GRS/ISCC PLUS	100%	汽车 电子电器外壳 Automotive, Electrical & Electronic Housings
rPA66-A6BG	180	5000	7	30%GF Reinforced	Black	GRS/UL2809/ ISCC PLUS	100%	汽车 电子电器外壳 Automotive, Electrical & Electronic Housings

ReAutoloop® 车灯模块回收材料方案

ReAutoloop® Automotive
Lighting Module Recycling Material Solutions

汽车车灯由不同的部件不成，不同部件所用到的材质也不相同。坚锋® 对回收的车灯进行材质种类，如PC、PBT、PEI等，并针对这些材质开发有多个产品牌号，可满足客户的不同需求。

Automotive lighting systems consist of various components, each made from different materials. Topcentral® sorts and classifies recycled automotive lamps by material type, such as PC, PBT, and PEI, and has developed a range of product grades based on these materials to meet diverse customer requirements.



ReAutoloop®车灯模块回收材料方案 浦丽茨® & Pubit® 扑必特® & RIPEI® 里裴尔®

ReAutoloop® Automotive Lighting Module
Recycling Material Solutions 浦丽茨® & Pubit® & RIPEI®

不同等级的车灯组成也多种多样，坚锋针对车灯来源的产品开发有PC、PBT、PEI等系列产品，可满足客户的不同需求。

Automotive lamps of different grades feature a wide variety of structures and material compositions. Based on recycled materials sourced from automotive lamps, Topcentral has developed product series including PC, PBT, and PEI, which can meet diverse customer requirements.



材料牌号 Material Grade	熔指 MFR g/10min	缺口冲击强度 Notched Impact Strength J/m	认证 Certifications	外观 Appearance	特性 Features	PCR含量 PCR Content	典型应用 Typical Applications
PC-T105A	15-25	500	GRS ISCC PLUS	无色透明 Colorless Transparent	高环保性、黑点管控 高透明和良好流动性 High environmental performance black speck control, high transparency and good flowability	100%	新能源汽车充电枪 电源壳、插排等 EV charging guns, power housings power strips, etc.
PC-RA35A	30~40	400	GRS ISCC PLUS	无色透明 Colorless Transparent	高环保性、黑点管控 高透明和良好流动性 High environmental performance black speck control, high transparency and good flowability	100%	新能源汽车充电枪 电源壳、插排等 EV charging guns, power housings power strips, etc.
PC-RA20A	15~25	110	GRS ISCC PLUS	黑色 Black	高环保性 异物点管控、高光泽 High environmental performance, foreign particle control, high gloss	100%	新能源汽车充电枪 电源壳、插排等 EV charging guns, power housings power strips, etc.
rPBT-B150	30~70	/	GRS ISCC PLUS	黑色 Black	高环保性 良好的电学性能 High environmental performance excellent electrical properties	100%	汽车 电子电器外壳 Automotive parts electrical & electronic housings
rPEI-108A	15~25	50	GRS ISCC PLUS	琥珀色 Amber	高环保性 黑点管控、颜色管控 High environmental performance, black speck control, color control	100%	汽车 电子电器外壳 Automotive parts electrical & electronic housings

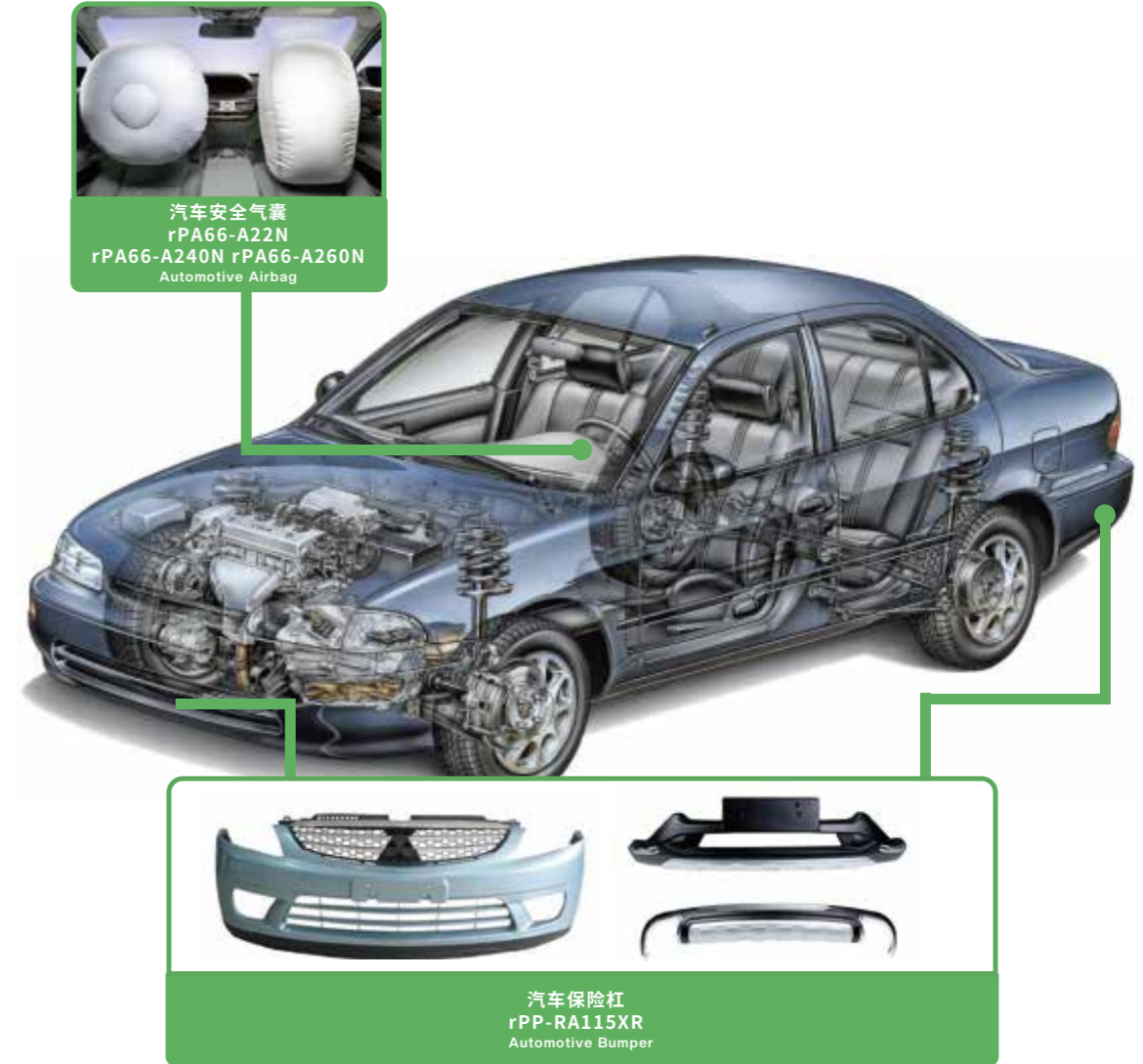
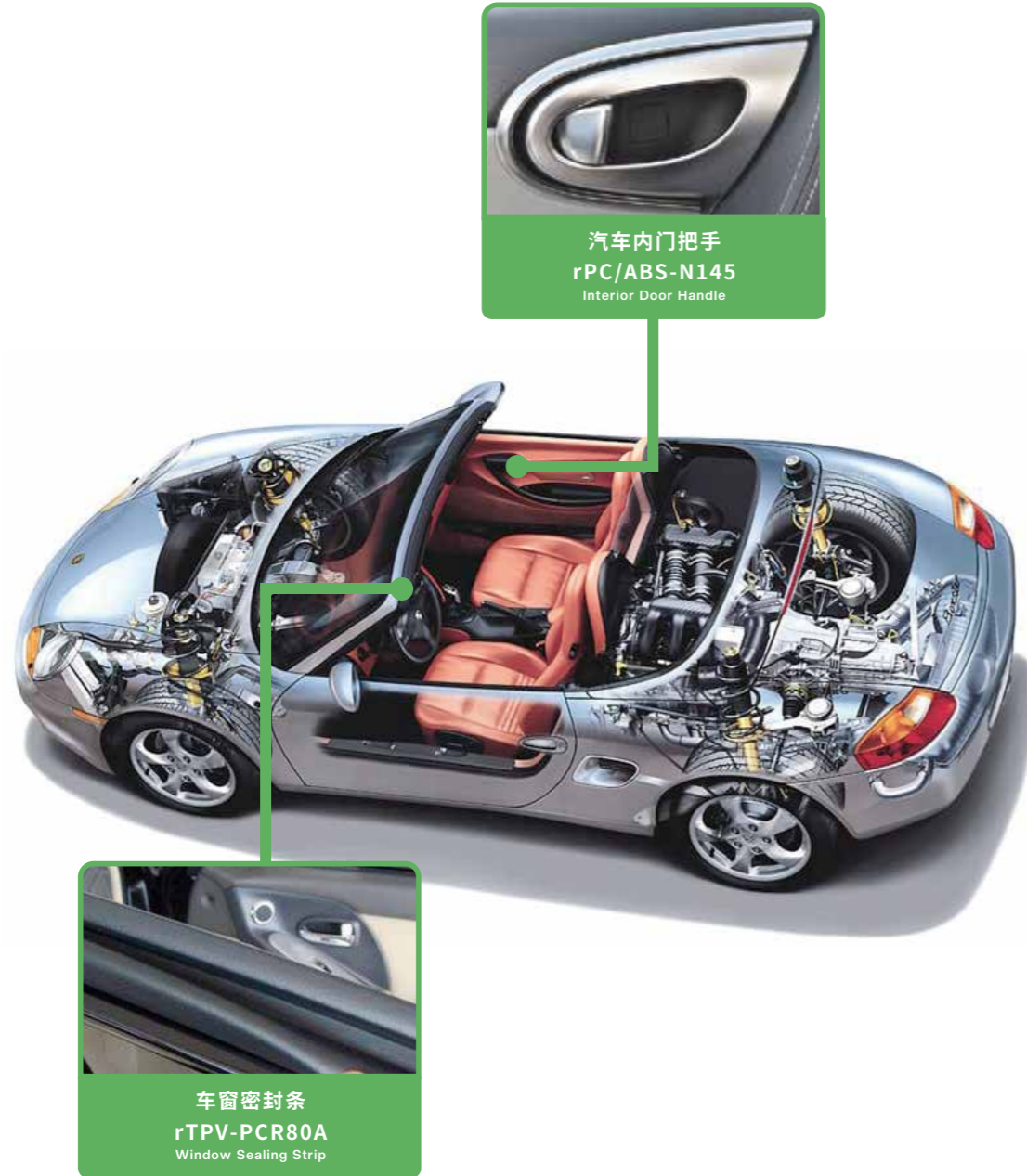
注:PC熔指测试条件为300°C, 1.2KG, PBT熔指测试条件为250°C, 2.16KG;PEI熔指测试条件为337°C, 6.7KG
Note: The melt flow index (MFI) test conditions are 300°C / 1.2 kg for PC, 250°C / 2.16 kg for PBT, and 337°C / 6.7 kg for PEI.

ReAutoloop® 内外饰模块回收材料方案
Topcircle® 陶塑® & SupperPrene® 塑普领®

ReAutoloop® Interior & Exterior Trim Material Recycling Solutions
Powered by Topcircle® & SupperPrene®

ReAutoloop® 保险杠等汽车安全模块回收材料方案
Nairong® 奈龙® & PloyPoy® 宝立宝®

ReAutoloop® Automotive Safety
Module (e.g., Bumpers) Material Recycling Solutions
Nairong® & PloyPoy®



材料牌号 Material Grade	熔指 MFR g/10min	缺口冲击强度 Notched Impact Strength J/m	拉伸强度 Tensile Strength MPa	认证 Certifications	外观 Appearance	特性 Features	PCR含量 PCR Content	典型应用 Typical Applications
rPC/ABS-N145	15~35	350	45	GRS ISCC PLUS	米黄色 (本色) Natural Color (Beige)	高环保性、黑点管控 颜色稳定和高抗冲击性 High environmental performance, black speck control, color stability, and high impact resistance	100%	电子电器 家电、汽车 Electrical & Electronic, Home Appliances & Automotive
rTPV-PCR80A	/	/	8	GRS ISCC PLUS	黑色 Black	高环保性 异物点管控 High environmental performance, foreign particle control	100%	汽车、建筑、改性 Automotive & Construction Modification

材料牌号 Material Grade	弯曲强度 Flexural Strength MPa	弯曲模量 Flexural Modulus MPa	冲击强度 Impact Strength KJ/m ²	认证 Certifications	外观 Appearance	特性 Features	PCR含量 PCR Content	典型应用 Typical Applications
rPA66-A22N	90	2000	5	GRS/UL2809 TUV/ISCC Plus	本色 Natural	中高粘纯PA66 Medium-High Viscosity Virgin PA66	100%	汽车 电子电器外壳 Automotive, Electrical & Electronic Housings
rPA66-A240N	90	2000	5	GRS/UL2809 TUV/ISCC Plus	本色 Natural	中低粘纯PA66 Medium-Low Viscosity Virgin PA66	100%	汽车、电子电器外壳 纺丝等 Automotive, Electrical & Electronic Housings, Fiber Spinning, etc.
rPA66-A260N	95	2000	5	GRS/UL2809 ISCC Plus	本色 Natural	高粘纯PA66 High Viscosity Virgin PA66	100%	汽车、电子电器外壳 纺丝等 Automotive, Electrical & Electronic Housings, Fiber Spinning, etc.
rPP-RA115XR	22	1000	15	GRS ISCC Plus	黑色 Black	保险杠回收 高冲击韧性 Recycled Bumper Material with High Impact Toughness	100%	汽车、日用品等 Automotive, Daily Consumer Products, etc.