BOYD

TRUSTED INNOVATION

ELASTOMERS • 弹性材料

BOYD - WORLDWIDE ENGINEERED MATERIALS - SINCE 1928

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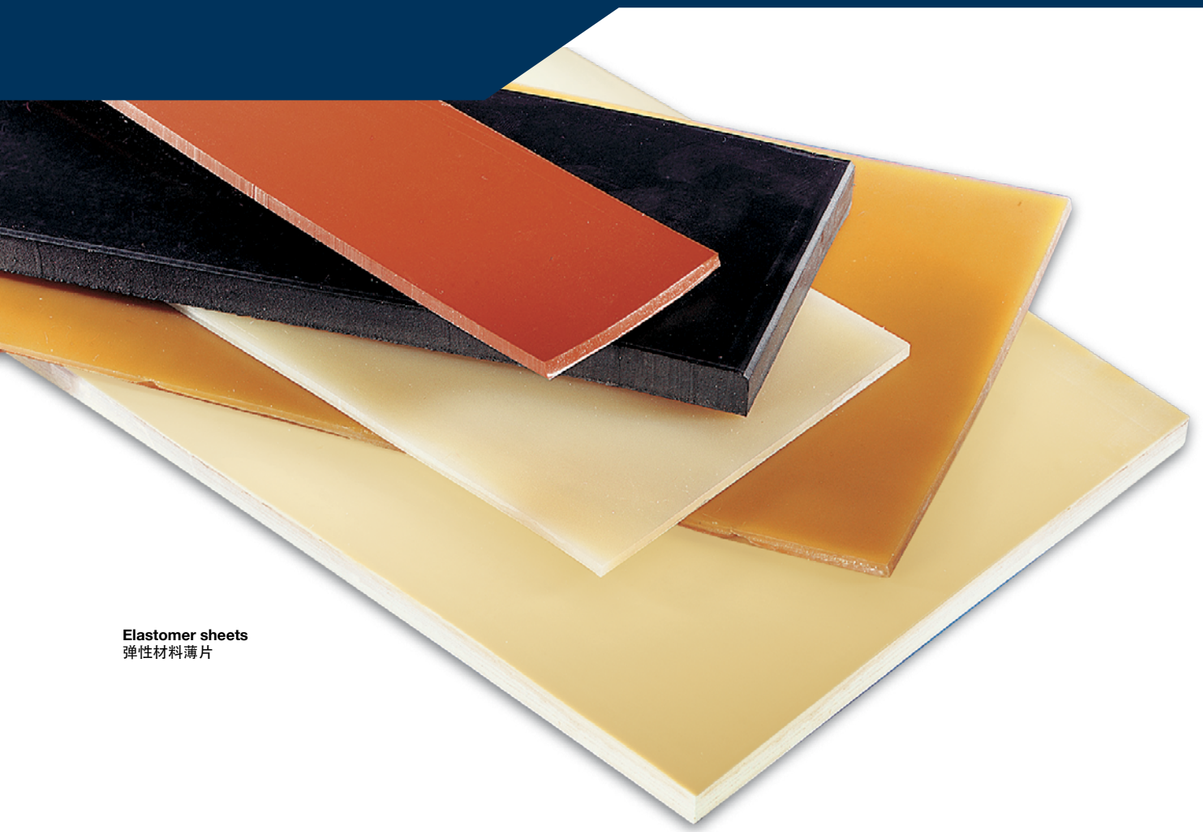
BOYD NIVELLES

Located in the heart of Europe, close to Brussels, **BOYD** is a Belgian company that has been designing, manufacturing and marketing high-tech parts since 1946. Recognised as a leader on the European market in the **elastomers**, **cellular rubbers** and **expanded plastics** sector, in recent years **BOYD** has expanded its range of materials to include **composites** and **thermoplastics**. Today, this expansion of the range allows **BOYD** to cover all **polymer-based materials** (elastomers, cellular rubbers and expanded plastics, and thermoplastics) as well as **composite materials** with thermosetting and thermoplastic matrices. Clearly, **BOYD** wants to offer its customers as large a portfolio of high-tech products as possible, covering a range of applications that is as diverse as possible.

BOYD NIVELLES 公司

BOYD Nivelles 地处欧洲核心，毗邻布鲁塞尔，是一家专业从事高科技部件设计、生产及销售的比利时公司， 其悠久的历史可一直追溯至 1946 年。作为弹性材料、海绵橡胶及泡沫塑料行业的欧洲市场领军企业，**BOYD** 在近些年内还大大拓宽了自身的合成及热塑材料系列产品。如今，这一系列拓展更令 **BOYD** 的产品涵盖了所有以聚合物为基础的材料 （弹性材料、海绵橡胶、泡沫塑料及热塑材料），并一举将全部热固及热塑性基质合成材料纳入麾下。很显然，**BOYD** 的愿景就是为客户提供覆盖多样化应用范围的全方位高科技产品系列。



Elastomer sheets
弹性材料薄片

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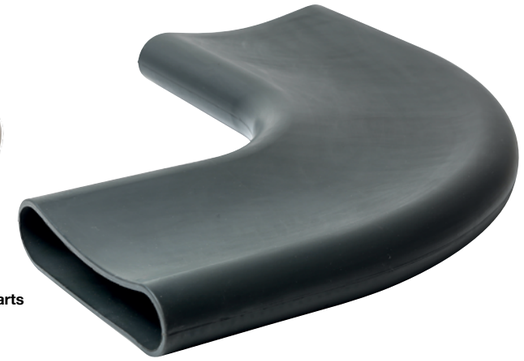

Moulded silicone parts
硅酮模塑部件

ELASTOMERS

BOYD'S OLDEST PRODUCT RANGE

The range of elastomer products (also known more commonly as '**rubbers**') was the first range of products developed by **BOYD** when it was established in 1946. Today, this range still represents a major part of the company's commercial activity. With over 65 years' experience in elastomers, our materials science engineers continue to develop products with ever greater mechanical, thermal and physico-chemical performances. These are intended not only for traditional industrial applications, but also for advanced technology sectors such as **the rail, aeronautical, nuclear, energy and medical industries**. Thanks to our partnerships with several European industrial and university laboratories, our materials are accredited under several international standards, such as:

- Fire/smoke standards for railways and buildings (EN-45-545, NF F-16-101, DIN 5510, UL94, NBN EN 13501-2, etc.).
- FAR, NFL, ASTM, BOMBARDIER SMP800 standards for the aeronautical and space industries.
- Food standards (e.g. FDA: Food and Drug Administration).
- Standards for drinking water (e.g. ACS), etc.

弹性材料

BOYD 最资深的产品系列

弹性材料产品系列 (更普遍的叫法是 "橡胶") 是 **BOYD** 在 1946 年创立时开发的第一款系列产品。时至今日，该系列仍在公司的营业额中占据着十分重要的地位。**BOYD** 在弹性材料领域拥有着逾 65 年的深厚经验，如今，我们的材料科学工程师仍在不懈开发大批机械、热效及物理化学性能更为卓越的弹性材料。这些产品不仅可用于传统工业应用领域，更可满足铁路、航空、核能、能源及医疗等尖端科技行业的各项需求。在多所欧洲工业实验室及大学实验室合作伙伴的助力之下，我们的材料业已获得了众多国际标准的认证认可，如:

- 铁路及建筑消防-排烟标准 (EN-45-545、NF F-16-101、DIN 5510、UL94、NBN EN 13501-2、…)
- 航空航天标准 FAR、NFL、ASTM、BOMBARDIER SMP800
- 食品标准 (如 FDA: 食品药品监督管理局)
- 饮用水标准 (如 ACS)

Moulded rubber parts
橡胶模塑部件

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THE GRUB ELASTOMER RANGE

BOYD offers its customers a complete range of elastomers that can easily be identified by their product reference, which starts with the letters **GRUB**. Our range includes all the elastomers most frequently used in industry. These can be divided into three categories according to the following criteria (Table 1):

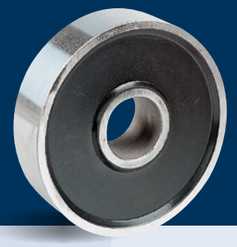
STANDARD ABBREVIATIONS[1]	COMMON NAME
NON-HYDROCARBON-RESISTANT ELASTOMERS:	
• NR	Natural rubber
• SBR	SBR rubber
• IIR	Butyl
• EPDM	EPDM rubber
HYDROCARBON-RESISTANT ELASTOMERS:	
• NBR	Nitrile
• CO, ECO	Epichlorohydrin
• CR	Neoprene
• CSM	Hypalon
• CM	CM
• AU	Polyurethane
SPECIAL HIGH-END ELASTOMERS:	
• VMQ	Silicone
• FVMQ	Fluorosilicone
• FKM	Fluoroelastomers (Viton)[2]
• FFKM	Perfluoroelastomers[2]

[1] Elastomers' standard abbreviations based on the international standards ISO R1629 and ASTM D1418.
[2] The FKM and FFKM elastomers generally exhibit excellent resistance to hydrocarbons.

Extruded rubber profiles with metal insert ▲
带金属插件的橡胶型材

GRUB 弹性材料系列

BOYD 可为客户提供一整套完备的弹性材料系列产品，其参考号均以 **GRUB** 字母开始，非常易于识别U而且，该系列产品还涵盖了工业领域内各种最为常用的弹性材料U此系列可根据以下标准分为三大类 (表 1):



标准缩写[1]	通用名
不可耐受碳氢化合物的弹性材料:	
• NR	(天然橡胶)
• SBR	(苯乙烯-丁二烯橡胶)
• IIR	(丁基)
• EPDM	(乙烯-丙烯橡胶)
可耐受碳氢化合物的弹性材料:	
• NBR	(腈)
• CO, ECO	(环氧氯丙烷)
• CR	(氯丁橡胶)
• CSM	Hypalon
• CM	(海珀龙)
• AU	(聚氨酯)
高端特殊弹性材料:	
• VMQ	(硅)
• FVMQ	Fluorosilicone
• FKM	(氟化弹性材料： 氟橡胶)[2]
• FFKM	Perfluoroelastomers[2]

[1] 以 ISO R1629 及 ASTM D1418 国际标准为基础的弹性材料标准缩写U
[2] 总体来讲, FKM 及 FFKM 对碳氢化合物的耐受性能非常卓越U

GRUB

GRUB

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THE ELASTOMERS IN THE GRUB RANGE ARE USED IN PARTICULAR FOR THE FOLLOWING INDUSTRIAL APPLICATIONS:

- Air and water sealing
- Vibration damping
- Electrical insulation
- Thermal insulation
- Acoustic/phonic insulation
- Anti-shock protection
- Fire and smoke resistance (GRAIL range)
- Abrasion resistance
- Anti-slip protection…

… AND PROCESSED INTO FINISHED PRODUCTS IN VARIOUS FORMS:

- Sealing profiles
- Expansion joints
- Flat die-cut seals
- Frames with vulcanised, welded or cold-glued corners
- Bellows
- Anti-vibration stops
- Any part moulded by injection or transfer, with or without metallic insert, etc.

GRUB 弹性材料系列可尤其用于满足以下工业应用领域的需求:

- 密封防水、防气
- 震动缓冲
- 隔电
- 隔热
- 隔音
- 防震保护
- 耐火、耐烟 (GRAIL 系列)
- 耐磨
- 防滑保护…

…并可加工成以下多种式样的成品:

- 密封型材
- 膨胀接头
- 切割扁平接头
- 带有硫化、焊接或冷式胶合角度的框架
- 风箱
- 防震挡块
- 带有或不带金属嵌入物的各种喷注或传输模塑部件…

Moulded rubber parts
橡胶模塑部件

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ISO 9001

QUALITY CONTROL AND ISO 9001 CERTIFICATION

Over the years, **BOYD** has equipped itself with human and material resources that guarantee systematic and strict quality control after each production run. Our internal quality control laboratory (QCL) allows us to carry out visual and dimensional checks quickly, as well as those of certain basic mechanical properties such as shore hardness, tensile strength and resistance to compression. For more detailed analyses, **BOYD** works in partnership with several industrial and university laboratories in Europe. Since 2008, **ISO 9001 certification** has been successfully renewed each year.

BOYD requires most of its suppliers to certify their products in accordance with the two European **REACH** and **RoHS** directives on the use of hazardous substances.

CERTIFICATION ISO 9001 BQA

REACH COMPLIANT

RoHS

BQA_QMS_C_2007342

质量控制与 ISO 9001 认证

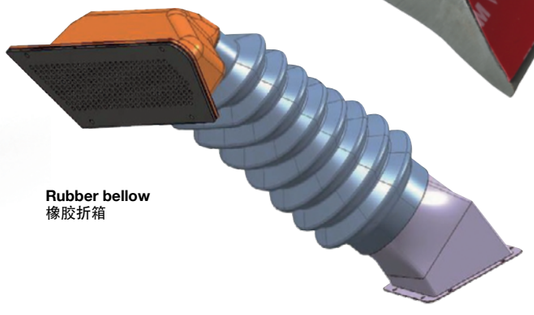
多年以来，**BOYD** 始终在使用最为先进的人力及物力方法，确保对每个生产环节进行严格而系统的质量控制以我们的内部质量控制实验室 (QCL)，可帮助操作者快速完成尺寸目测控制及诸如肖氏硬度、抗拉强度及抗压强度等某些基础机械性能的测试以对于那些更为尖端的分析，**BOYD** 则会与欧洲的多所工业实 验室及大学实验室合作完成以

自 2008 年以来，**BOYD** 每年都会成功通过 **ISO 9001** 认证年审以

BOYD 对大部分供应商的要求是，其产品必须在危险品使用方面获得 **REACH** 及 **RoHS** 欧洲两大法令的认证以

Polyurethane part
聚氨部件

Profiles with pressure-sensitive adhesive backing
粘性型材



Rubber bellow
橡胶折箱

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MANUFACTURE

ULTRA-MODERN MACHINERY

Thanks to a policy of continuous investment in its machinery and industrial buildings for many years, **BOYD** is equipped with numerical control (NC) machines that are among the best-performing on the market and capable of meeting the most stringent customer requirements. All parts manufactured by **BOYD** meet the quality criteria (dimensional tolerance, surface condition, etc.) required by the principal international standards as well as the customer's specifications.

Elastomers are processed into semi-finished or finished products using several manufacturing methods, chiefly **cutting (e.g. stamping), moulding and extrusion**.

THE RESULTING PRODUCTS ARE AVAILABLE IN THE FORM OF:

- Cutted parts
- Moulded parts
- Extruded profiles

Other processing methods such as **vulcanisation, laminating, overmoulding, vulcanisation of corners for frames, etc**. are regularly used in our workshops to manufacture more complex parts.

生产制造

超级现代的设备园区

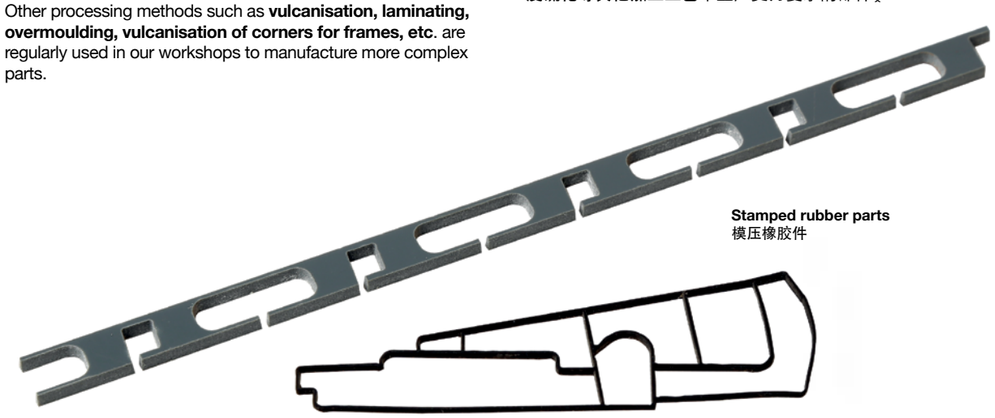
多年以来，在面向设备园区及工业厂房的持续投资政策助力之下，**BOYD** 现已拥有了市场上最为先进的数控设备 (CN)，并可满足客户最为严苛的各种要求以**BOYD** 生产的所有部件均严格符合主要国际标准及客户产品规格要求的质量标准 (尺寸公差、表面状态……)以

在经过切割 (如冲压)，模塑及压制成型等多个主要生产工艺之后，弹性材料即可被加工为半成品或成品以

且产品有以下几种方式可供选择:

- 切割橡胶件
- 模塑部件
- 挤压型材

此外，我们的工厂也会经常运用粘合、络合、**复制模型及框架角度硫化等其他加工工艺**来生产更为复杂的部件以



Stamped rubber parts
模压橡胶件

AN EXPERIENCED ENGINEERING FIRM

BOYD makes an engineering office available to its customers that is experienced in the design of any new component. Our engineers use advanced software to design any new technical part, such as **Catia, Rhinoceros, Mastercam, Autocad, etc.** With solid experience in materials engineering and staff who are highly qualified in the chemistry and physics of materials, **BOYD** undertakes to find an optimal solution to your specific technical needs.

A HIGH-END COMMERCIAL DEPARTMENT

Commercially, **BOYD** is known for its very short production lead times, the responsiveness of its after-sales service and a highly competitive price/quality ratio. These assets, among others, make it **one of the market leaders in elastomer processing.**

经验丰富的工程办公室

BOYD 拥有经验丰富的工程办公室，能够在各类新部件的设计及构思方面为客户提供卓越服务以我们的工程师将运用先进软件**(如 Catia、Rhinoceros、Mastercam、Autocad)** 设计任何全新技术部件以而且，**BOYD** 在材料工程领域经验深厚并拥有大批材料化学及物理学科方面的高端人才，定可为您找到满足您具体技术需求的最佳解决方案以

卓越非凡的商务部门

从商务角度来看，**BOYD** 具备生产周期超短、售后服务反应迅速以及性价比极具竞争力等诸多突出优势以这些制胜关键与其他强势点一起，**成就了 BOYD 在弹性材料加工市场上的领军者地位**以

TABLE 1 - ELASTOMERS: The GRUB Product Range [1,2]

MATERIAL PROPERTIES		STANDARD ABBREVIATIONS[3]	COMMON NAME	CHEMICAL NAME	CLASSIFICATION ACCORDING TO ASTM D-2000 (SE J200)	TEMPERATURE (°C)	HARDNESS (SHORE A)	COLOURS[4]	# POLYESTER PLYS[5]	GENERAL MECHANICAL PROPERTIES	GENERAL PHYSICAL PROPERTIES	GENERAL CHEMICAL PROPERTIES	END-PRODUCT TYPE
ELASTOMER TYPES	GENERAL PURPOSE NON OIL-RESISTANT	NR	Natural rubber	Polyisoprene	AA	-40°C to +80°C	± 30-90	black, beige, blond	-	Excellent tensile strength, ultimate elongation, resilience, and abrasion resistance.	Flexible at low T° (-40°C). Good electrical insulation properties. Poor resistance to ozone.	Poor resistance to hydrocarbons, gasoline and petroleum oils.	Extruded profiles, strips, gaskets, moulded parts
		SBR	SBR rubber	Butadiene-styrene copolymer	AA	-45°C to +100°C	± 40-90	black	0,1,2	Excellent tensile strength, ultimate elongation, resilience and abrasion resistance.	Moderate to poor resistance to ozone and weather.	Poor resistance to hydrocarbons, gasoline and petroleum oils.	
		IIR	Butyl rubber	Isobutene-isoprene	AA	-40°C to +110°C	± 40 - 70	black	-	Excellent tear resistance and ultimate elongation. Good abrasion resistance.	Low gaz permeability. Ozone- and weather-resistant.	Poor resistance to hydrocarbons, gasoline and petroleum oils.	
		EPDM	EPDM rubber	Ethylene-propylene-diene terpolymer	CA	-45°C to +130°C	± 40 - 90	black, white[6]	-	Good tensile strength and tear resistance. Excellent flexibility at low T°.	Ozone-, weather- and UV-resistant. Wide operational T° range from -45°C to +130°C.	Poor resistance to hydrocarbons, gasoline and petroleum oils.	
	GENERAL PURPOSE OIL-RESISTANT	NBR	Nitrile rubber	Nitrile-butadiene rubber	BF, BG, BK, CH	-35°C to +110°C	± 40-90	black, white[7]	0,1,2,3	Excellent tensile strength and good tear resistance.	Fair to poor resistance to weather and ozone (except for PVC blends).	Excellent resistance to petroleum oils, hydrocarbons, alkalis and solvents.	Extruded profiles, strips, gaskets, moulded parts
		CO, ECO	Epichlorohydrin rubber	Epichlorohydrin rubber	CH	-35°C to +130°C	± 40-90	black	-	Good tensile strength and tear resistance.	Similar to Nitrile but with good ozone and weather resistance.	Excellent resistance to petroleum oils, hydrocarbons, alkalis and solvents.	
		CR	neoprene	Polychloroprene	BC, BE	-35°C to +130°C	± 40-90	black	0,1,2	Excellent tensile strength and ultimate elongation. Good tear resistance.	Good ozone- and weather-resistance.	Good to moderate resistance to hydrocarbons, gasoline and petroleum oils.	
		CSM	Hypalon	Chlorosulfonated polyethylene	CE	-35°C to +130°C	± 40-90	black	-	Good tear and abrasion resistance.	Better ozone, UV and weather resistance than most EPDMs.	Excellent resistance to acids and alkali. Good oil-resistance and fair gasoline-resistance.	
		CM	CM	Chlorinated polyethylene	BC, BE, CE	-35°C to +120°C	± 60-90	black	-	Good tear and abrasion resistance.	Better ozone, UV and weather resistance than most EPDMs.	Excellent resistance to acids and alkali. Good oil-resistance and fair gasoline-resistance.	
		AU	Urethane	Polyurethane rubber	BG	-40°C to +80°C	± 60-90	black	-	Excellent abrasion resistance, tensile and tear stength and load bearing capabilities.	Typical operational T° range between -40°C and + 80°C. Excellent ozone- and weather-resistance.	Good resistance to petroleum oils, gasoline and hydrocarbons.	
	SPECIALITY ELASTOMERS	VMQ	Silicone	Methyl-vinyl silicone	GE	-70°C to +200°C	± 40-80	white[8], grey, black, red	-	High ultimate elongation, low tensile strength.	Resistance to extreme T° (-70°C to +200°C). Excellent ozone-, UV- and weather-resistance.	Excellent resistance to acids and gases. High water-repellency and non-adhesiveness.	Extruded profiles, strips, gaskets, moulded parts
		FVMQ	Fluorosilicone	Fluorosilicone	GE	-70°C to +200°C	±40-80	white[8], grey, black, red	-	High ultimate elongation, low tensile strength.	Resistance to extreme T° (-70°C to +200°C). Excellent ozone-, UV- and weather-resistance.	Excellent resistance to acids and gases. High water-repellency and non-adhesiveness.	
		FKM	Fluoroelastomer (Viton)	Fluoroelastomer	HK	-30°C to +200°C	±55-90	black	-	Good mechanical properties including low compression set and high tear and tensile strength.	High thermal resistance from -30°C to +200°C. Ozone- and weather resistant.	The best elastomer in terms of chemical resistance (acids, alkali, oils, hydrocarbons…).	
		FFKM	Perfluoroelastomer	Perfluoroelastomer	FFKM	-30°C to +250°C	±65-90	black	-	Good mechanical properties including low compression set and high tear and tensile strength.	High thermal resistance from -30°C to +250°C. Ozone- and weather resistant.	The best elastomer in terms of chemical resistance (acids, alkali, oils, hydrocarbons…).	

1 **TO OBTAIN THE TECHNICAL DATA SHEET FOR ANY OF THE ABOVE PRODUCTS, CONTACT US AT WWW.GRANDOGROUP.COM OR AT INFO-NIVELLES@BOYDCORP.COM**

2 The data given in the above table are general informations on the elastomers most frequently-used in industry, and may not represent the complete elastomer product portfolio offered by **BOYD** nor all the elastomers available on the market.

3 Standard abbreviations according to the international Standards ISO R1629 and ASTM D1418.

4 All colours may not be available for all products.

5 Polyester or polyamide plys available upon request for specific references.

6 White EPDM for FDA-certified applications.

7 White NBR for FDA- and ACS-certified applications.

8 Silicone also available in white translucent and transparent for FDA-approved applications.

TABLE 2 - SPECIAL APPLICATIONS OF ELASTOMERS: The GRUB Ranges for Anti-abrasion and Flooring/Matting [1]

	APPLICATIONS[2,3]	ELASTOMER TYPE	HARDNESS (SHORE A)	COLOURS	ROLL THICKNESS (mm)	ROLL LENGTH (m)
SPECIAL APPLICATIONS — RUBBER FLOORING AND MATTING[2]	Anti-slip protection, protection, decoration	SBR/NR	± 65-70	black, white, grey, blue, green, orange	3 , 5	10, 20
	Electrical insulation	SBR/NR	± 75	light grey	3 , 5	10, 20
	Flame-retardant and low smoke toxicity	SBR/NR	± 80-90	black, dark grey	3 , 5	10, 20
	Hydrocarbon-resistant	SBR/NR	± 70	black, white	3 , 5	10, 20
	Abrasion-resistant	SBR/NR	± 65-70	black	3 , 5, 12	6, 10, 20
	Design, functionnality, ergonomy	SBR/NR	± 55-80	black	upon request	upon request

	APPLICATIONS[3]	ELASTOMER TYPE	HARDNESS (SHORE A)	COLOURS	SPECIFIC VOLUME (g/cm³)	[4] ABRASION RESISTANCE (mm³)
ABRASION-RESISTANT RUBBER[1]	Severe abrasion	NR	± 70	black	1.12	≤ 100 mm³ (load: 1 daN)
	Severe abrasion	PARA	± 35	red	0.95	≤ 60 mm³ (load: 5 N)
	Severe abrasion	PARA	± 40	yellow	1.05	≤ 100 mm³ (load: 5 N)
	Moderate abrasion	NR	± 60	black	1.14	≤ 130 mm³ (load: 1 daN)
	Moderate abrasion	NR	± 65	black	1.15	≤ 100 mm³ (load: 1 daN)
	Specific abrasion	CR	± 65	black	1.47	≤ 200 mm³ (load: 1 daN)
	Specific abrasion	NBR	± 70	black	1.19	≤ 120 mm³ (load: 1 daN)
	Specific abrasion	NR	± 40	white	1.15	≤ 180 mm³ (load: 5 N)
	Specific abrasion	IIR	± 60	black	1.1	≤ 450 mm³ (load: 1 daN)

1 **TO OBTAIN THE TECHNICAL DATA SHEET FOR ANY OF THE ABOVE PRODUCTS, CONTACT US AT WWW.GRANDOGROUP.COM OR AT INFO-NIVELLES@BOYDCORP.COM**

2 Profile types: fine ribbed, medium ribbed, broad ribbed, studded profile, checker... All reverse sides with cloth impression.

3 End-products are available as rolls, sheets or custom-made cutted parts.

4 According to the following international norms for rubber abrasion resistance: DIN 53 516 and NFT 46 012.

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表 1: 弹性体 - GRUB 产品系列[1,2]

材料特性		标准缩写[3]	普通名称	化学名称	根据 ASTM D-2000 (SE J200) 分类	温度 (°C)	硬度 (邵尔 A)	颜色[4]	# 聚合物聚赖氨酸[5]	一般机械性能	一般物理性能	一般化学性能	最终产品类型
弹性体类型	通用非耐油	NR	天然橡胶	聚异戊二烯	AA	-40°C 至 +80°C	± 30-90	黑色、米色、金色	-	优异的拉伸强度、极限伸长率、弹性和耐磨损性U	在低温时具有优异的柔韧性 (-40°C)U良好的电绝缘性能U 耐臭氧性差U	耐烃、汽油和石油原油性差U	挤压型材、条状、垫圈、模塑件
		SBR	SBR 橡胶	丁二烯-苯乙烯共聚物	AA	-45°C 至 +100°C	± 40-90	黑色	0,1,2	优异的拉伸强度、极限伸长率、弹性和耐磨损性U	中度至较差的耐臭氧性和耐气候性U	耐烃、汽油和石油原油性差U	
		IIR	丁基橡胶	异丁烯-异戊二烯	AA	-40°C 至 +110°C	± 40 - 70	黑色	-	优异的抗撕裂性和极限伸长率U良好的耐磨性U	低气体渗透性U耐臭氧性和耐气候性U	耐烃、汽油和石油原油性差U	
		EPDM	EPDM 橡胶	乙烯-丙烯-二烯三元共聚物	CA	-45°C 至 +130°C	± 40 - 90	黑色, 白色[6]	-	良好的抗张强度和抗撕裂性U在低温时具有优异的柔韧性U	耐臭氧性、气候性和紫外线U具有广泛的操作温度范围： -45°C 至 +130°CU	耐烃、汽油和石油原油性差U	
	通用耐油	NBR	丁腈橡胶	丁腈橡胶	BF, BG, BK, CH	-35°C 至 +110°C	± 40-90	黑色, 白色[7]	0,1,2,3	优异的抗张强度和良好的抗撕裂性U	适度至较差的耐臭氧性和耐气候性 (除聚氯乙烯混合物以外)U	优异的耐石油原油、烃、碱和溶剂性U	挤压型材、条状、垫圈、模塑件
		CO, ECO	氯醚橡胶	氯醚橡胶	CH	-35°C 至 +130°C	± 40-90	黑色	-	良好的抗张强度和抗撕裂性U	类似丁腈橡胶, 但具有良好的耐臭氧性和耐气候性U	优异的耐石油原油、烃、碱和溶剂性U	
		CR	氯丁橡胶	氯丁橡胶	BC, BE	-35°C 至 +130°C	± 40-90	黑色	0,1,2	优异的抗拉强度和极限伸长率U良好的抗撕裂性U	良好的耐臭氧性和耐气候性U	良好至中度的耐烃、汽油和石油原油性U	
		CSM	氯磺化聚乙烯橡胶	氯磺化聚乙烯橡胶	CE	-35°C 至 +130°C	± 40-90	黑色	-	良好的抗撕裂性和耐磨性U	比大多数 EPDM 更好的耐臭氧性、紫外线和气候性U	优异的耐酸性和耐碱性U良好的耐油性和适度的耐汽油性U	
		CM	CM	氯化聚乙烯橡胶	BC, BE, CE	-35°C 至 +120°C	± 60-90	黑色	-	良好的抗撕裂性和耐磨性U	比大多数 EPDM 更好的耐臭氧性、紫外线和气候性U	优异的耐酸性和耐碱性U良好的耐油性和适度的耐汽油性U	
		AU	氨基甲酸乙酯	聚氨酯橡胶	BG	-40°C 至 +80°C	± 60-90	黑色	-	优良的耐磨性、拉伸强度、撕裂强度和承载能力U	典型的操作温度范围：-40°C 至 +80°CU优异的耐臭氧性和耐气候性U	良好的耐矿物油、汽油和烃性U	
	特种弹性体	VMQ	硅橡胶	甲基乙烯基硅橡胶	GE	-70°C 至 +200°C	± 40-80	白色[8]、灰色、黑色、红色	-	极限伸长率高, 拉伸强度低U	耐极端温度 (-70°C 至 +200°C)U优异的耐臭氧性、紫外线和气候性U	优异的耐酸性和耐气体性U高防水性和非粘合性U	挤压型材、条状、垫圈、模塑件
		FVMQ	氟硅氧烷	氟硅氧烷	GE	-70°C 至 +200°C	±40-80	白色[8]、灰色、黑色、红色	-	极限伸长率高, 拉伸强度低U	耐极端温度 (-70°C 至 +200°C)U优异的耐臭氧性、紫外线和气候性U	优异的耐酸性和耐气体性U高防水性和非粘合性U	
		FKM	氟橡胶 (氟橡胶)	氟橡胶	HK	-30°C 至 +200°C	±55-90	黑色	-	良好的机械性能, 包括低压缩永久变形和高撕裂强度和拉伸强度U	高耐热性：-30°C 至 +200°CU耐臭氧性和耐气候性U	耐化学性方面 (酸、碱、油、烃…)的最佳弹性性U	
		FFKM	全氟橡胶	全氟橡胶	FFKM	-30°C 至 +250°C	±65-90	黑色	-	良好的机械性能, 包括低压缩永久变形和高撕裂强度和拉伸强度U	高耐热性：-30°C 至 +250°CU耐臭氧性和耐气候性U	耐化学性方面 (酸、碱、油、烃…)的最佳弹性性U	

1 要获取上述任何一种产品的技术数据表，请通过 WWW.GRANDOGROUP.COM 或 INFO-NIVELLES@BOYDCORP.COM 联系我们

2 在上表中给出的数据都是有关在工业中最常用的弹性体的一般信息，并且可能并不完全表示 **BOYD** 提供或市场上出售的完整的弹性体产品组合U

3 标准缩写符合国际标准 ISO R1629 和 ASTM D1418

4 所有颜色均未必适用于所有产品

5 聚酯聚合物聚赖氨酸数

6 适用于 FDA 批准的应用的白色 EPDM

7 适用于 FDA 和 ACS 批准的应用的白色 NBR

8 白色半透明和透明硅也适用于 FDA 批准的应用

表 2: 弹性体的特殊应用 - 适用于抗磨损和地板 / 地垫的 GRUB 产品系列[1]

	应用[2,3]	品质	硬度 (邵尔 A)	颜色	每卷厚度 (毫米)	每卷长度 (米)
特殊应用 橡胶地板和地垫[2]	防滑保护、保护、装饰	SBR/NR	± 65-70	黑色、白色、灰色、蓝色、绿色、橙色	3 , 5	10, 20
	电气绝缘	SBR/NR	± 75	浅灰色	3 , 5	10, 20
	阻燃性和低烟毒性	SBR/NR	± 80-90	黑色, 深灰色	3 , 5	10, 20
	耐烃性	SBR/NR	± 70	黑色, 白色	3 , 5	10, 20
	耐磨性	SBR/NR	± 65-70	黑色	3 , 5, 12	6, 10, 20
	设计、功能性、人机工程学	SBR/NR	± 55-80	黑色	根据要求	根据要求

	应用[2,3]	品质	硬度 (邵尔 A)	颜色	比积 (G/CM³)	4耐磨性 (mm³)
耐磨性橡胶[4]	严重磨损	NR	± 70	黑色	1.12	≤ 100 mm³ (负载: 1 daN)
	严重磨损	PARA	± 35	红色	0.95	≤ 60 mm³ (负载: 5 N)
	严重磨损	PARA	± 40	黄色	1.05	≤ 100 mm³ (负载: 5 N)
	中度磨损	NR	± 60	黑色	1.14	≤ 130 mm³ (负载: 1 daN)
	中度磨损	NR	± 65	黑色	1.15	≤ 100 mm³ (负载: 1 daN)
	特定磨损	CR	± 65	黑色	1.47	≤ 200 mm³ (负载: 1 daN)
	特定磨损	NBR	± 70	黑色	1.19	≤ 120 mm³ (负载: 1 daN)
	特定磨损	NR	± 40	白色	1.15	≤ 180 mm³ (负载: 5 N)
	特定磨损	IIR	± 60	黑色	1.10	≤ 450 mm³ (负载: 1 daN)

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2 型材类型: 细罗纹、中罗纹、阔罗纹、镶嵌型材、复合材质...所有反面均带有布印纹U

3 可将最终产品作为卷、片材或特别定制切割的零件

4 橡胶耐磨性符合以下国际规范: DIN 53 516 和 NFT 46 012U

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