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日信化学工业株式会社

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CHALINE
R Series



English



中文

<https://www.nissin-chem.co.jp/english/products/0015/>
<https://www.nissin-chem.co.jp/chinese/products/0015/>

CHALINE
E Series



English



中文

<https://www.nissin-chem.co.jp/english/products/0147/>
<https://www.nissin-chem.co.jp/chinese/products/0147/>

CHALINE
1800 Series



English



中文

https://www.nissin-chem.co.jp/files/catalog/SiVAc1800_E.pdf
https://www.nissin-chem.co.jp/files/catalog/SiVAc1800_C.pdf

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CHALINE

Silicone Group Hybrid Resin
有机硅类混合树脂



CHALINE

Silicone Group Hybrid Resin
有机硅类混合树脂

Hybrid Resin that takes advantage of Silicone graft polymerization's special properties.

充分利用有机硅类接枝聚合物特性的混合树脂

CHALINE is a graft polymerization resin mainly composed of silicone. Our proprietary polymerization technology enables polymerization with resins such as acrylic and vinyl acetate. Our products have a lineup of CHALINE R series in powder form and CHALINE E series in emulsion form. We provide high value-added products that meet the needs of our customers.

CHALINE是以有机硅成分为主的接枝聚合物树脂。

通过我司独有聚合技术，实现与丙烯酸、醋酸乙烯酯等树脂进行聚合反应。

产品阵容有粉末状的CHALINE R系列、乳状的CHALINE E系列。

结合客户的需求，提供附加值高的产品。

Additive effects and uses of CHALINE

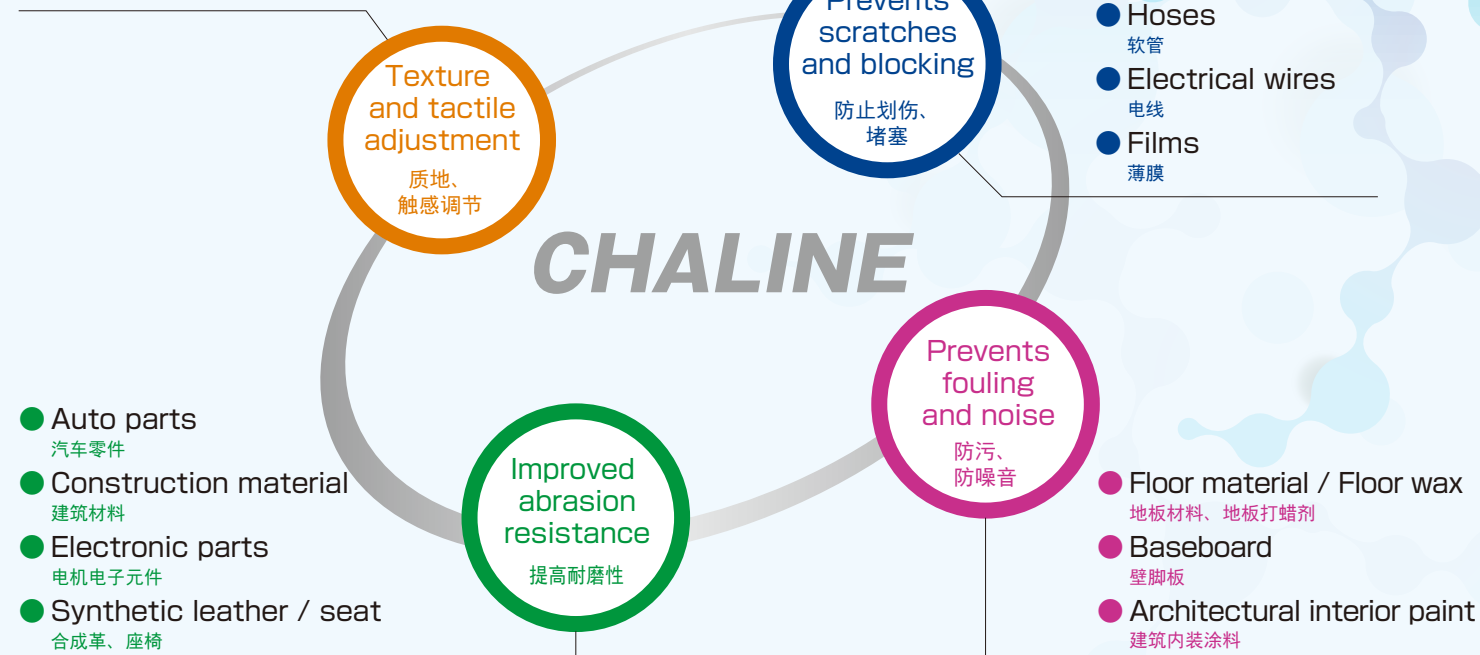
CHALINE的添加效果与用途

● Treatment agent for synthetic leather

合成革处理剂

● Various coating agents

各种涂层剂



Series system of CHALINE

CHALINE的分级体系

R Series

CHALINE R 系列

Powder type CHALINE. Acrylic is modified in the side chain. It can be used for compounding various plastics and solvent-based paints.

粉末状的CHALINE。对侧链丙烯酸进行改性。可用于各种合成树脂的化合物、溶剂型涂料。

E Series

CHALINE E 系列

Emulsion type CHALINE. Normally, acrylic is modified in the side chain. Can be used for water-based paints and coating applications.

乳状的CHALINE。通常对侧链丙烯酸进行改性。可用于水性涂料、涂层。

1800 Series

CHALINE 1800 系列

This series is an emulsion type CHALINE with modified vinyl acetate in the side chain. Can be used for water-based paints and coating applications.

通过乳状的CHALINE，对侧链的醋酸乙烯酯进行改性的系列。可用于水性涂料、涂层。

Structure of CHALINE

CHALINE的结构

It has a structure of the main chain silicone with the graft-polymerized acrylic or vinyl acetate on the side chain.

作为主链有机硅的侧链丙烯酸、醋酸乙烯酯进行接枝聚合反应的结构。



Side chain 侧链

CHALINE R, CHALINE E : Ac (acrylic)

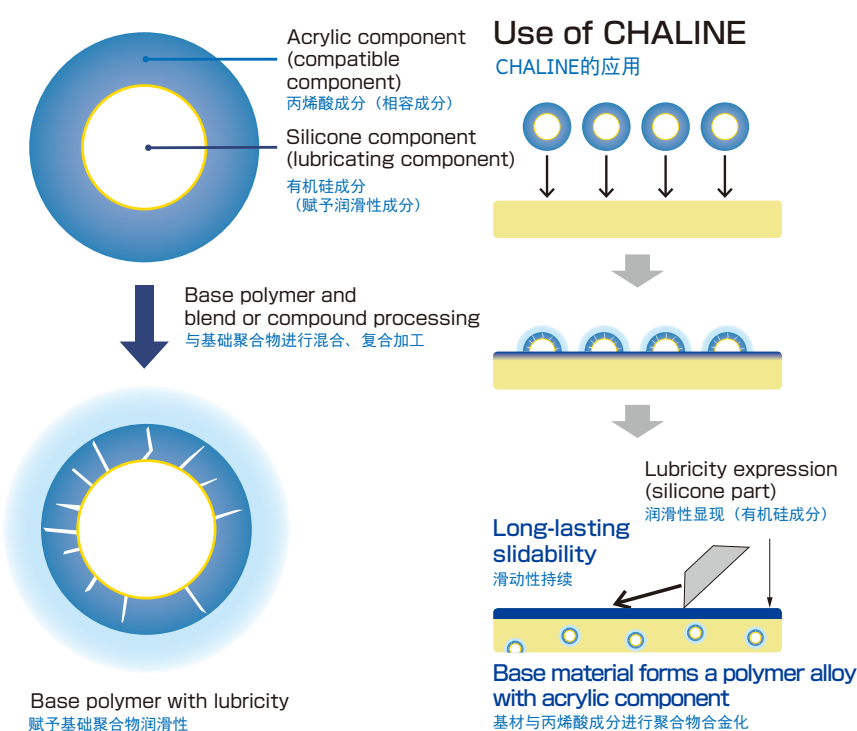
CHALINE R、CHALINE E : Ac (丙烯酸)

CHALINE E (1800 series) : VA (vinyl acetate)

CHALINE (1800系列): VA(醋酸乙烯酯)

Features of CHALINE

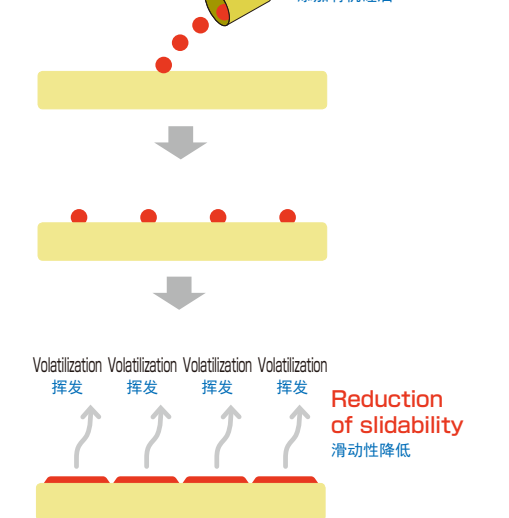
CHALINE的特性



Use of wax or silicone oil

蜡、有机硅油的用途

Addition of silicone oil
添加有机硅油



Silicone content bleeds out to mating base material
有机硅渗出至另一侧的基材

Features

特性

- 1

Can be used with a wide range of synthetic resins

可适用于多种合成树脂

It contains an acrylic group with excellent compatibility, and can be used with many resins.

含有亲和性卓越的丙烯酸基，可适用于众多树脂。
- 2

Excellent long-lasting sliding property

持续性卓越的滑动特性

Features a high level of sliding performance provided by silyl groups and lends prolonged improvement to sliding property.

含有滑动性卓越的丙烯酸基，可提高滑动特性，且具有持续性。
- 3

Excellent abrasion resistance

卓越的耐磨性

Excellent sliding effect improves abrasion resistance.It is also effective in preventing abnormal sounds such as vibration noise and squeak noise.

通过卓越的滑动效果，提高耐磨性。此外，还可以有效防止振动声、嘎吱声等噪音。
- 4

Excellent anti-blocking properties

卓越的防堵塞性

In addition to blocking prevention, it is also excellent in adhesion prevention.

除防堵塞外，防附着性也十分卓越。



Example of use

使用示例

1

Solvent-based paint/coating
(treatment agent for synthetic leather)

溶剂型涂料、涂层
(合成革处理剂)

Standard addition amount :10~20%
标准添加量

Solvent
CHALINE
溶剂
CHALINE

+

Base polymer
Various additives
基础聚合物
各种添加剂

➡

Stirring machine
搅拌机

➡

Solvent-based paint
Solvent-based coating
溶剂型涂料
溶剂型涂层

Examples of base polymer 基础聚合物示例

Acrylic, Urethane
丙烯酸类、聚氨酯类

Examples of solvents 溶剂示例

Hydrocarbon, Ester, Ketone, DMF, etc.
烃类、酯类、酮类、DMF等

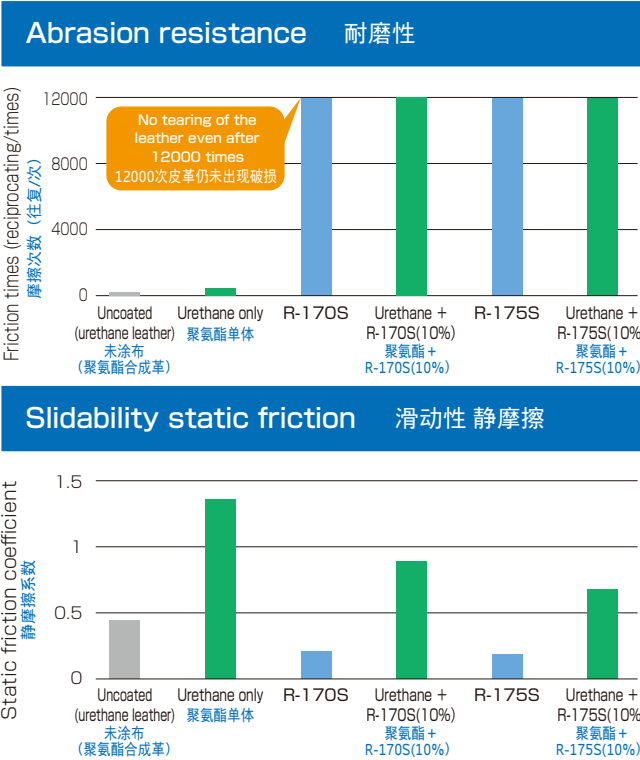
Usage 用途

Processing agents for synthetic leather (bags, shoes, furniture, notebooks, car seats)Automobile interior paint, Adhesion adjustment, Ink ribbon back coat, Waterproof spray for shoes

合成革处理剂（包、鞋、家具、笔记本、汽车座椅）
汽车内饰涂料、粘性调节、色带背涂、鞋子防水喷雾

Performance evaluation

性能测定



CHALINE dissolving method (e.g. lab scale)

CHALINE溶解方法（例：实验室规模）

① Stir at about 100-200 rpm with only the solvent in the dissolution tank.

② Gradually add Chaline so that it does not become lumpy.

③ After adding Chaline, raise the temperature to 40°C (Once the temperature reaches 40°C set a timer, begin measure the time).

④ Viscosity increases gradually. Raise the agitation to about 400 rpm while being careful not to cause bubbles to form.

⑤ It will be near completely dissolved in about 2 to 3 hours from the start, but just in case, stir for 4 hours.

⑥ Filtrate the solution through 250 mesh to complete.

① 在溶解槽内仅加入溶剂的状态下，以100~200rpm的转速搅拌。

② 逐渐加入CHALINE，以防止结块。

③ 加入CHALINE后，将温度升高至40℃（到达40℃时为溶解开始时间）。

④ 粘度逐渐上升。以400rpm的转速进行搅拌，注意切勿搅入气泡。

⑤ 溶解开始2~3个小时左右，大部分均被溶解，但为了确保全部溶解而搅拌4个小时。

⑥ 将溶解液使用250目筛网进行过滤，即告完成。

Slidability static friction 滑动性 动摩擦

Dynamic friction coefficient
动摩擦系数

基 材：聚氨酯类合成革

涂 布：在MEK中溶解10%，然后使用棒涂机进行涂布。

含粘合剂的固体组分比：聚氨酯：CHALINE = 9：1

干燥温度：室温×1小时、105℃×3分钟

膜 厚：约10μm（干燥时）

测定方法：耐磨性为令进行涂层的合成革与棉布接触，并施以1kg载荷的学振型磨耗试验，比较直至基材破损的次数。

Physical properties table

物理性质表

Developed product 开发品	Grade 分类	Silicone content (%) 有机硅含量 (%)	Shape 形 状	Average particle size (μm) (note) 平均粒径(μm) (注)	Volatile content(%) 挥发性成分 (%)	Features 特 性
	R-170	70	Amorphous 不定形	350	2 ~ 7	Standard products, Standard molecular weight 标准品、标准分子量
	R-170S	70	Spherical 球形	30	Less than 5 5 以下	Standard products, Standard molecular weight, Dispersion 标准品、标准分子量、分散性
	R-175S	70	Spherical 球形	30	Less than 5 5 以下	High slidability, Low molecular weight 高滑动性、低分子量
●	R-170HS	70	Spherical 球形	30	Less than 5 5 以下	High molecular weight, Improved melt viscosity 高分子量、提高熔体粘度
●	R-180S	80	Spherical 球形	30	Less than 5 5 以下	High slidability, Heat resistance 高滑动性、耐热性
●	R-150HGS	70	Spherical 球形	30	Less than 5 5 以下	Solvent-based coating adhesion, Flex resistance, Flexibility 溶剂型涂层附着力、抗弯性、柔软性
	R-570S	70	Spherical 球形	30	Less than 5 5 以下	Solvent-based coating adhesion, Flex resistance, Flexibility 溶剂型涂层附着力、抗弯性、柔软性
●	R-774S	70	Spherical 球形	30	Less than 5 5 以下	Transparency 透明性
	R-200	More than 90 90以上	Spherical 球形	2	Less than 5 5 以下	Heat resistance, Solvent insoluble, Light diffusion 耐热性、不溶于溶剂、光扩散性

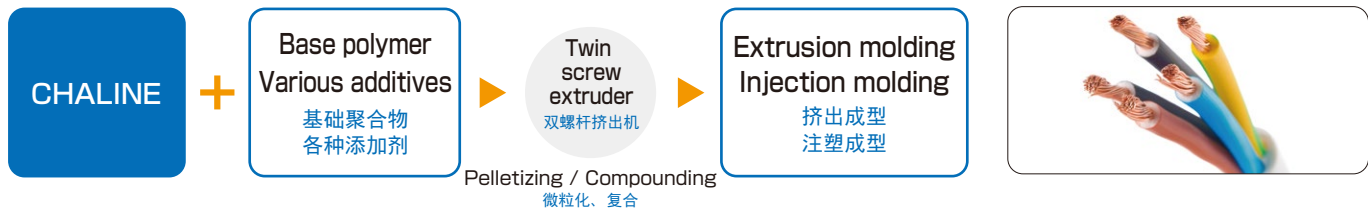
*Please note that the specifications of developed products may be changed, improved, or discontinued without notice.
* 开发品可能进行规格变更、改进或停产，恕不另行通知，敬请周知。
(Note) Primary particle size : 0.2 to 0.3 μm (注) 一次粒径: 0.2~0.3 μm

Base material : Polyurethane synthetic leather
Coating : 10% dissolved in MEK and coated using a bar coater.
With a binder, the solid content ratio is urethane : chaline = 9: 1
Drying temperature : Room temperature x 1 hour, 105°C x 3 minutes
Film thickness : About 10 μm (dry)
Evaluation method : Abrasion resistance is measured by contacting coated synthetic leather with cotton cloth, applying a load of 1 kg, and conducting a Gakushin abrasion test, comparing the number of times until the base material breaks.

Example of use

使用示例

2 Plastic 合成树脂
Standard addition amount :1~15%
标准添加量



●Example of base polymer 基础聚合物示例 ●Usage 用途

PVC, TPU, TPS, TPO, TPV (Various thermoplasticelastomers)
PP, PE, EVA, EEA, ABS, PC, PC/ABS, PA etc.
PVC、TPU、TPS、TPO、TPV (各种热塑性弹性体)
PP、PE、EVA、EEA、ABS、PC、PC/ABS、PA等

Auto : Glass run channels, weather strips, various moldings, instrument panels
Building materials : Gaskets for window frames, baseboards, various types of packing
Electric wires : Power line sheaths, cabtyre sheaths, wire harnesses, marine electric wire sheaths
Hoses and miscellaneous goods : Civil engineering hoses, industrial hoses, high-grade garden hoses, shock absorbing materials (improved workability)
汽车: 玻璃导槽、耐候密封条、各种饰条、仪表板
建材: 窗框密封垫、壁脚板、各种垫片
电线: 电源线护套、橡皮绝缘护套、线束、船舶电缆护套
软管、杂货: 土木工程软管、工业软管、高级花园软管、冲击缓冲材料 (提高加工性)

3 Synthetic leather 合成革
Standard addition amount :1~15%
标准添加量



●Example of base polymer 压延成型 ●Usage 用途

TPU, PVC
TPU、PVC

Synthetic leather base material (auto seat, notebook, furniture),
Films, Table cloths, Tape substrates, Tarpaulins, Mats, Flooring materials
合成革基材 (汽车座椅、笔记本、家具)、薄膜、桌布、胶带基材、防水布、厚垫、地板材料

4 Synthetic rubber 合成橡胶
Standard addition amount :10~20%
标准添加量



●Example of base polymer 基础聚合物示例 ●Usage 用途

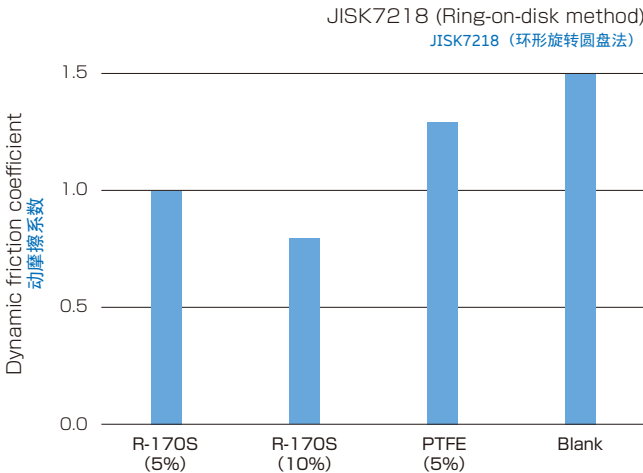
EPDM, NBR, NR, FKM, FEPM, FFKM (Fluoroelastomers)
EPDM、NBR、NR、FKM、FEPM、FFKM (氟橡胶)

Stabilizer bushes, O-rings, Various packings, OA rolls, Cleaning blades for OA equipment, Wipers
稳定器衬套、O型圈、各种垫片、OA辊、OA设备清洁刀片、汽车雨刷

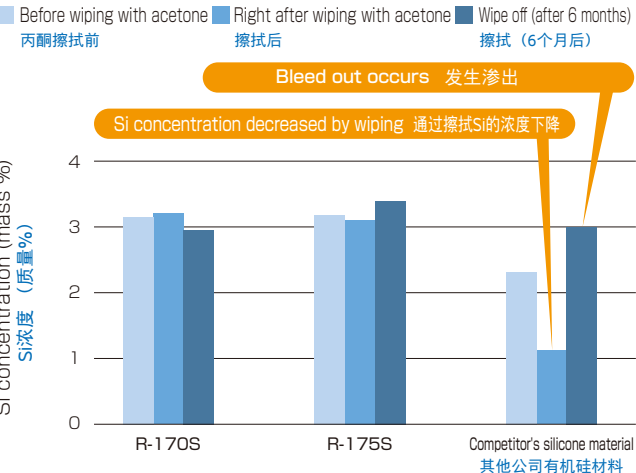
Performance evaluation

性能测定

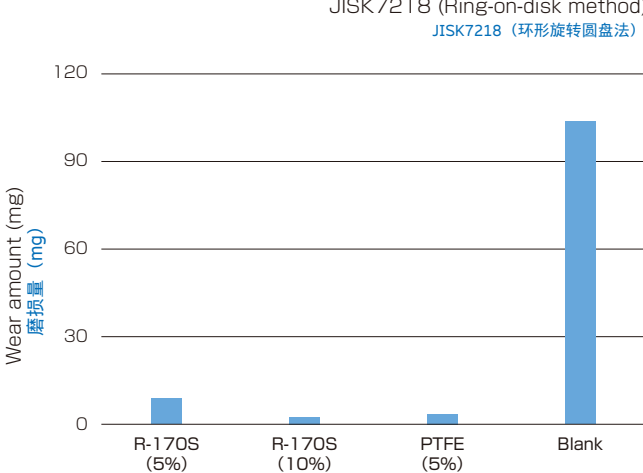
TPU slidability TPU 滑动性



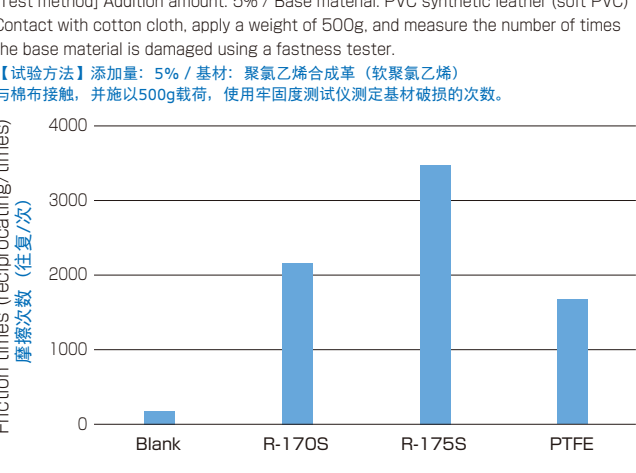
TPU bleed-out TPU 渗出性



TPU abrasion resistance TPU 耐磨性



PVC abrasion resistant PVC 耐磨性



Transparency (R-774S) 透明性 (R-774S)
Film thickness : 200μm
薄膜厚度

●It is possible to provide slidability without impairing transparency. 可在不影响透明性的情况下赋予滑动性。

Addition amount 添加量	TPU blank TPU 透明	R-774S 1%	R-170S 1%
Film appearance 薄膜外观			

Features

特性

- ①

It has an excellent safety record thanks to it is a water-based emulsion.
为水基乳剂，因此安全性卓越。
- ②

Features a high level of sliding performance provided by silyl groups and lends prolonged improvement to sliding property.
含有滑动性卓越的丙烯酰基，具有持续性。
- ③

Excellent sliding effect improves wear resistanc.
通过卓越的滑动效果，提高耐磨性。
- ④

Excellent anti-blocking properties.
具有卓越的防堵塞性。
- ⑤

Because of its high silicone content, it is effective even with a low additive amount.
有机硅含量高，因此以较低的添加量即可发挥效果。



Physical properties table

物理性质表

Grade 分类	Solid content 固体组分	Viscosity 粘度	PH PH	Average particle size 平均粒径	Tg Tg	MFT MFT	Lonic 离子性	Acid value 酸性值	Remarks 备 注
	(%)	(mPa·s)		(nm)	(℃)	(℃)		(KOHmg/g)	

Silicone/acrylic graft polymerization type 有机硅、丙烯酸接枝聚合物型									
FE-230N	29-31	≤50	8	300	-50	10	Anion 阴离子	7.7	Provides flexibility・The coating film is hydrophobic・Film can be formed independently 赋予柔软性、涂膜具有疏水性，且可单体成膜
FE-502	29-31	≤500	6	300	-16	10	Anion 阴离子	17.3	Provides flexibility・The coating film is hydrophilic・Film can be formed independently 赋予柔软性、涂膜具有亲水性，且可单体成膜
E-370	43-46	≤500	7	300	105	60	Anion 阴离子	0.2	Standard grade 标准等级
E-371	43-46	≤500	7	300	105	60	Anion 阴离子	0.3	Low molecular weight 低分子量
LC-190	42-45	≤500	7	300	105	5	Anion 阴离子	0.2	High proportion of silicone 有机硅比例高
E-790	42-45	≤500	7	300	105	5	Anion 阴离子	0.3	High proportion of silicone 有机硅比例高

Silicone/vinyl acetate graft polymerization type (1800 series) 有机硅、醋酸乙烯酯接枝聚合物型（1800系列）									
1807	29-31	≤50	6	300	30	20	Anion 阴离子	1.6	The coating film is hydrophilic・Film can be formed independently 涂膜具有亲水性，且可单体成膜
1815MP	29-31	≤50	5	300	30	30	Anion 阴离子	1.4	The coating film has excellent alcohol resistance 涂膜具有卓越的耐酒精性
1817	29-31	≤50	6	300	30	20	Anion 阴离子	1.6	Film can be formed independently 可单体成膜
1827	29-31	≤50	6	300	30	20	Anion 阴离子	1.6	The coating film is water repellent・Film can be formed independently 涂膜具有疏水性，且可单体成膜

Others (blend type) 其他（混合型）									
RU-911	34-38	≤2000	6-9	200	-20	5	Anion 阴离子	2.2	Urethane containing・Film can be formed independently 配合聚氨酯、可单体成膜

Performance evaluation

性能测定

Evaluation method 测定方法

Sample preparation 样品准备

Independent evaluation : Add Solid content adjustment Water to adjust the solid content to 30%.
Blend evaluation : Add each emulsion as the solid content ratio in the aqueous urethane dispersion becomes 10%, and add the adjustment water to adjust the solid content to 30%.
* 0.1% silicone surfactant in emulsion ratio to adjust wettability
(Nissin Chemical Industry product: Silface SAG-503A) was added.

- ①

单体测定：添加固体组分调节水，将固体组分调节为30%。
- ②

混合测定：添加各种乳剂将水性聚氨酯分散液的固体组分比调整为10%，再添加调节水将固体组分调节为30%。
- ※为调节湿润性，添加乳剂比为0.1%的有机硅类表面活性剂（日信化学工业产品：SILFACE SAG-503A）。

Base material : PET
Application amount : Wet36g/m²
Drying conditions : 105℃ x 3 minutes
Slidability : Load 30g
Contact angle : 2 μL, after 1 s
Abrasion resistance : Load 49N, friction element cotton cloth
Transparency : Turbidity (HAZE)

基材：PET
涂布量： wet36g/m²
干燥条件： 105℃×3分
滑动性： 载荷30g

接触角： 2μL、1s后
耐磨性： 载荷49N、摩擦对象 棉布
透明性： 浊度（HAZE）

Features table

性能表

Grade 分类	Slidability 滑动性		Water repellency Contact angle 疏水性 接触角	Wear resistance 耐磨性	Transparency HAZE value 透明性 HAZE值	Remarks 备 注
	Static friction coefficient 静摩擦系数	Dynamic friction coefficient 动摩擦系数	(°)	(Times) (次)	(%)	

Silicone/acrylic graft polymerization type 有机硅、丙烯酸接枝聚合物型						
FE-230N	0.473	0.295	110.6	5	3.6	①Independent evaluation 单体测定
FE-502	0.208	0.160	45.9	1	5.4	①Independent evaluation 单体测定
E-370	0.340	0.144	73.7	9000	4.8	②Blend evaluation 混合测定
E-371	0.331	0.133	71.1	11000	5.0	②Blend evaluation 混合测定
LC-190	0.238	0.092	85.1	13000	6.2	②Blend evaluation 混合测定
E-790	0.120	0.069	88.0	15000	5.7	②Blend evaluation 混合测定

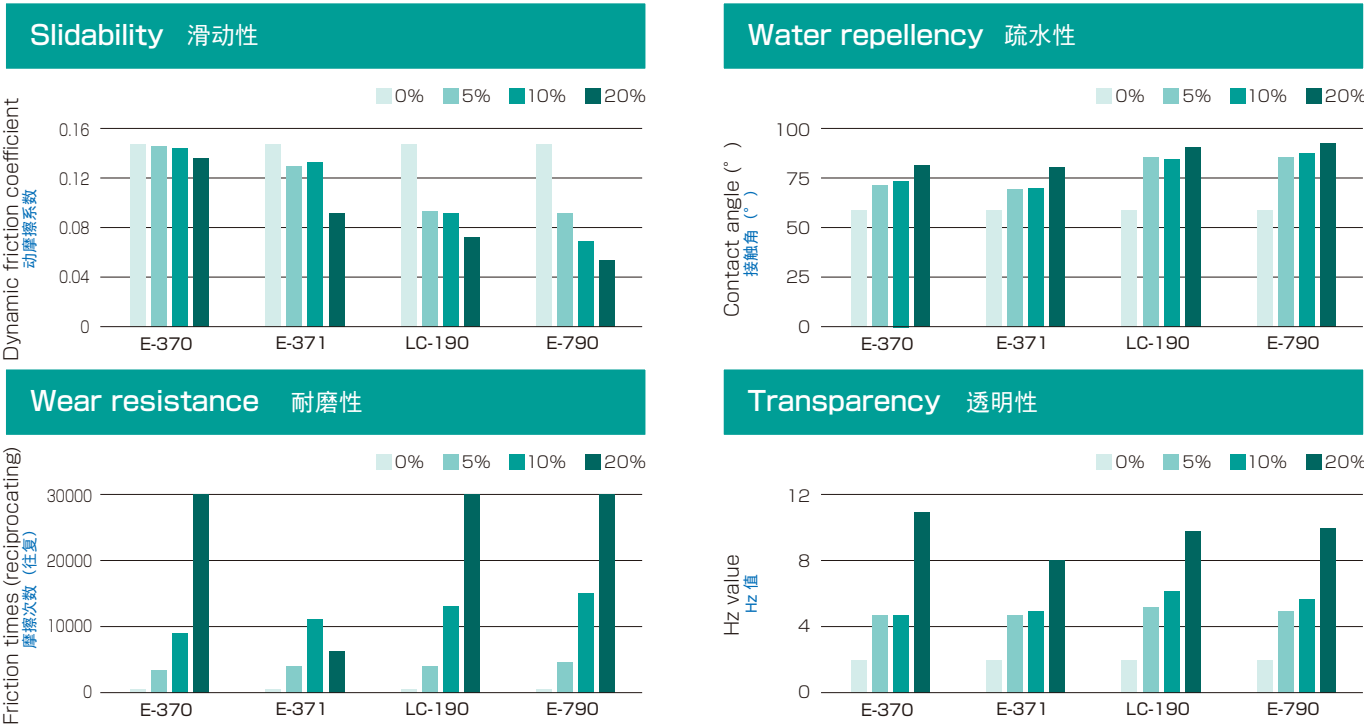
Silicone/vinyl acetate graft polymerization type (1800 series) 有机硅、醋酸乙烯酯接枝聚合物型（1800系列）						
1807	0.156	0.096	16.8	1200	3.1	①Independent evaluation 单体测定
1815MP	0.186	0.133	60.6	800	8.0	①Independent evaluation 单体测定
1817	0.115	0.079	84.9	600	3.3	①Independent evaluation 单体测定
1827	0.101	0.049	106.0	400	8.7	①Independent evaluation 单体测定

Others (blend type) 其他（混合型）						
RU-911	0.088	0.043	54.1	400	8.1	①Independent evaluation 单体测定

Comparative material 比较数据						
PUD (blank) PUD（透明）	0.376	0.148	59.4	100	2.0	①Independent evaluation 单体测定

Performance comparison by addition amount

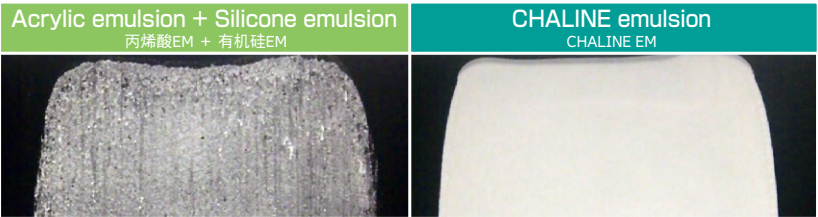
根据添加量进行的性能比较



Grades with a high silicone component exhibit their performance when used as additives in binder resins such as urethane and acrylic.
有机硅成分高的等级可用作聚氨酯、丙烯酸等的粘合剂树脂的添加剂，从而发挥其性能。

Other special features 其他特殊性能

CHALINE has high dispersibility for inorganic materials such as titanium oxide, and by adding it to acrylic resin, etc., it improves the solar reflectance of the coating film.
CHALINE对二氧化钛等无机材料具有高分散性能，通过添加至丙烯酸树脂等，可提高涂膜的太阳反射率。



E-370	—	20%	50%	100%
Acrylic emulsion 丙烯酸乳剂	100%	80%	50%	—
2000-2500nm average reflectance (%) 2000~2500nm 平均反射率 (%)	20	36	40	49
800-2500nm average reflectance (%) 800~2500nm 平均反射率 (%)	27	57	62	69
Dispersion stability (appearance) 分散稳定性 (外观)	×	○	○	○
Average particle size (μm) 平均粒径 (μm)	152	11	1	1

Coating conditions 涂布条件
Base material : Black and white test paper/Coating equipment : Bar coater/titanium oxide pigment volume concentration : 30wt%
film thickness : 40μm (dry)/Drying temperature : 105°C/drying time : 5 minutes
基材：黑白试验纸 / 涂布设备：棒涂机 / 二氧化钛颜料体积浓度：30wt% / 膜厚：40 μm (dry) / 干燥温度：105℃ / 干燥时间：5分钟

Example of use

使用示例

Field 领域	Usage 用途	Grade 分类	Features 特性
Coating agent 涂层剂	●Treatment agent for synthetic leather 合成革处理剂 ●Treatment agent for natural leather 天然皮革处理剂 ●Treatment agent for PVC leather PVC合成革处理剂	E-370 LC-190 E-790 RU-911	●Improves abrasion resistance and scratch resistance, and strengthens the base material surface 提升耐磨性、耐摩擦性，强化基材表面 ●Exhibits excellent slidability and improves the feeling "to the touch" 发挥卓越的滑动性，提升触感 ●Improves antifouling (denim color transfer) 提升抗污性（牛仔布掉色）
Industrial paint 工业涂料	●Interior paint 内装涂料 ●Exterior paint 户外涂料 ●Paint for roof 屋顶涂料 ●Baseboard paint 壁脚板涂料 ●Wood paint 木工涂料	LC-190 E-790 1800 series 1800系列	●Provides high wear resistance and scratch resistance with low addition amount 通过较低的添加量，赋予较高的耐磨性、耐刮擦性 ●Addition of water repellency 赋予疏水性 ●Reduces adhesion of household stains such as water-based pens and lipsticks 降低家庭污渍的附着力，如水性笔、口红等
Wax related 蜡相关产品	●Automotive wax 汽车蜡 ●Wax for flooring 地板蜡	E-370 LC-190 E-790 1800 series 1800系列	●Addition of water repellency 赋予疏水性 ●Addition of scratch resistance 赋予耐损伤性能
Fiber treatment agent 纤维处理剂	●Clothing processing agent 衣料处理剂	FE-230N FE-502	●Excellent flexibility, imparting hydrophilic to water-repellent performance depending on the grade. 柔软性卓越，感觉分类赋予亲水~疏水性能 Hydrophilic type 亲水型 → Water repellent type 疏水型

Performance comparison

性能比较

