



澳大利亚卡拉拉矿山润滑油与润滑脂项目

Lubricants and Greases Project for Karara Mine, Australia

技术规范书 / TECHNICAL SPECIFICATION

中英对照重制版 / Bilingual Re-created Version

Karara Mining Limited / 卡拉拉矿业有限公司

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一、适用范围 / 1. Scope

中文	English
本规范用于澳大利亚卡拉拉矿山润滑油与润滑脂技术规范。	This specification applies to lubricants and greases for Karara Mine in Australia.

二、润滑油基本参数要求 / 2. Basic Parameter Requirements

1. 润滑油 / 2.1 Lubricants

中文	English
润滑油的各项指标必须与现场所有润滑油指标相同，包括润滑油桶装容量。供应商需将其润滑油的各项指标发送给卡拉拉矿山公司进行审核与确认。	All lubricant parameters must be the same as those of the lubricants currently used on site, including container capacity. The supplier shall submit all lubricant specifications to Karara Mining Limited for review and confirmation.
现场所有润滑油品牌与指标见附件 A。	The brands and specifications of all lubricants currently used on site are listed in Appendix A.

2. 润滑脂 / 2.2 Greases

中文	English
润滑脂的各项指标必须与现场所有润滑脂指标相同，包括润滑脂包装容量。供应商需将其润滑脂的各项指标发送给卡拉拉矿山公司进行审核与确认。	All grease parameters must be the same as those of the greases currently used on site, including package capacity. The supplier shall submit all grease specifications to Karara Mining Limited for review and confirmation.
现场所有润滑脂品牌与指标见附件 B。	The brands and specifications of all greases currently used on site are listed in Appendix B.

三、运输、验收 / 3. Transportation and Acceptance

中文	English
供应商须负责所有产品运输到现场的事宜，包括海运至澳大利亚港口，以及从港口运输至矿业现场。	The supplier shall be responsible for transporting all products to site, including sea freight to an Australian port and inland transport from the port to the mine site.
供应商应提供以下文件与数据：	The supplier shall provide the following documents and information:
<ul style="list-style-type: none"> • 润滑油与润滑脂各项检测报告。 • 润滑油与润滑脂的安全使用说明。 	<ul style="list-style-type: none"> • Test reports for the lubricants and greases. • Safe-use instructions for the lubricants and greases.

四、文档与标识 / 4. Documentation and Labelling

中文	English
供应商须在交付前提供完整的技术文件（英文版和中文版），包括但不限于：	Before delivery, the supplier shall provide complete technical documentation in both English and Chinese, including but not limited to:
<ul style="list-style-type: none">• 产品性能和质量合格证书。• 装箱单。	<ul style="list-style-type: none">• Certificates of product performance and quality conformity.• Packing list.

五、其他 / 5. Other Requirements

中文	English
供应商需具备 ISO 9001 质量管理体系认证。	The supplier shall hold ISO 9001 quality management system certification.

附件 A: 润滑油各项指标 / Appendix A: Lubricant Specifications

注 / Note: 空白字段表示原始文件中未列明数据。 / Blank fields indicate that no value was stated in the source document.

A1 基本信息及物理特性 / A1 Identification and Physical Properties

序号 No.	生产厂家 Supplier	产品名称 Product	体积/质量 Pack	每年使用量 (件) Annual Qty	ISO 粘度等级 ISO Grade	运动粘度@40°C KV @40°C	运动粘度@100°C KV @100°C	粘度指数 VI	密度 Density	倾点 Pour Point	闪点 Flash Point	主要/次要设备 Classification
1	Castrol	ALPHA SP 150	1000L	83	150	150 cSt @40°C	14.5 cSt @100°C	95	890 kg/m³ @15°C	-21°C	249°C	Primary / 主要
2	Castrol	ALPHA SP 150	205L	17	150	150 cSt @40°C	14.5 cSt @100°C	95	890 kg/m³ @15°C	-21°C	249°C	Primary / 主要
3	Castrol	ALPHA SP 150	20L	112	150	150 cSt @40°C	14.5 cSt @100°C	95	890 kg/m³ @15°C	-21°C	249°C	Primary / 主要
4	Castrol	ALPHA SP 220	20L	48	220	220 cSt @40°C	18.7 cSt @100°C	95	890 kg/m³ @15°C	-21°C	249°C	Secondary / 次要
5	Castrol	ALPHA SP 320	1000L	17	320	320 cSt @40°C	24.0 cSt @100°C	95	900 kg/m³ @15°C	-21°C	255°C	Primary / 主要
6	Castrol	ALPHA SP 320	205L	24	320	320 cSt @40°C	24.0 cSt @100°C	95	900 kg/m³ @15°C	-21°C	255°C	Primary / 主要
7	Castrol	ALPHA SP 320	20L	69	320	320 cSt @40°C	24.0 cSt @100°C	95	900 kg/m³ @15°C	-21°C	255°C	Primary / 主要
8	Castrol	ALPHA SP 460	205L	12	460	460 cSt @40°C	30.5 cSt @100°C	95	900 kg/m³ @15°C	-6°C	255°C	Primary / 主要
9	Castrol	ATF Dex III	4L	8		32 mm²/s @40°C	7.9 mm²/s @100°C	186	861 kg/m³ @15°C	-43°C		Secondary / 次要
10	Castrol	Axle EPX 80W-90	20L	5		134 mm²/s @40°C	14.0 mm²/s @100°C	101	896 kg/m³ @15°C	-33°C	222°C	Secondary / 次要
11	Castrol	GTX PROFESSIONAL 15W-40	205L	2		113 mm²/s @40°C	14.7 mm²/s @100°C	133	875 kg/m³ @15°C	-36°C	202°C	Secondary / 次要
12	Castrol	GTX PROFESSIONAL 15W-40	20L	8		113 mm²/s @40°C	14.7 mm²/s @100°C	133	875 kg/m³ @15°C	-36°C	202°C	Secondary / 次要
13	Castrol	HYSPI AWH 46	20L	13		46 mm²/s @40°C	8.19 mm²/s @100°C	150	876 kg/m³ @15°C	-34°C	216°C (open cup) / 204°C (closed cup)	Secondary / 次要
14	Castrol	HYSPI AWH 46	205L	19		46 mm²/s @40°C	8.19 mm²/s @100°C	150	876 kg/m³ @15°C	-34°C	216°C (open cup) / 204°C (closed cup)	Secondary / 次要
15	Castrol	HYSPI AWH 46	1000L	152		46 mm²/s @40°C	8.19 mm²/s @100°C	150	876 kg/m³ @15°C	-34°C	216°C (open cup) / 204°C (closed cup)	Secondary / 次要
16	Castrol	HYSPI AWS 100	20L	17		100 cSt @40°C	11.1 cSt @100°C	97	880 kg/m³ @20°C	-21°C	220°C (closed)	Secondary / 次要
17	Castrol	HYSPI AWS 100	205L	8		100 cSt @40°C	11.1 cSt @100°C	97	880 kg/m³ @20°C	-21°C	220°C (closed)	Secondary / 次要
18	Castrol	HYSPI AWS 32	20L	11		32 cSt @40°C	5.3 cSt @100°C	102	870 kg/m³ @20°C	-30°C	200°C (closed)	Primary / 主要
19	Castrol	HYSPI AWS 32	205L	13		32 cSt @40°C	5.3 cSt @100°C	102	870 kg/m³ @20°C	-30°C	200°C (closed)	Primary / 主要
20	Castrol	HYSPI AWS 46	20L	21		46 cSt @40°C	6.65 cSt @100°C	102	875 kg/m³ @20°C	-21°C	220°C (closed)	Secondary / 次要
21	Castrol	HYSPI AWS 46	1000L	7		46 cSt @40°C	6.65 cSt @100°C	102	875 kg/m³ @20°C	-21°C	220°C (closed)	Secondary / 次要
22	Castrol	HYSPI AWS 68	20L	27		68 cSt @40°C	8.6 cSt @100°C	102	880 kg/m³ @20°C	-21°C	220°C (closed)	Secondary / 次要
23	Castrol	HYSPI AWS 68	205L	7		68 cSt @40°C	8.6 cSt @100°C	102	880 kg/m³ @20°C	-21°C	220°C (closed)	Secondary / 次要
24	Castrol	HYSPI AWS 68	1000L	2		68 cSt @40°C	8.6 cSt @100°C	102	880 kg/m³ @20°C	-21°C	220°C (closed)	Secondary / 次要
25	Castrol	AIRCOL SR 46	20L	8		46 mm²/s @40°C	7.8 mm²/s @100°C	137	840 kg/m³ @15°C	-54°C	264°C	Primary / 主要
26	Castrol	AIRCOL SR 46	205L	3		46 mm²/s @40°C	7.8 mm²/s @100°C	137	840 kg/m³ @15°C	-54°C	264°C	Primary / 主要
27	Castrol	ALPHASYN EP 220	20L	13		223 mm²/s @40°C	26.4 mm²/s @100°C	152	860 kg/m³ @15°C	-45°C	240°C	Secondary / 次要
28	Castrol	ALPHASYN EP 460	20L	17		455 mm²/s @40°C	46.5 mm²/s @100°C	159	860 kg/m³ @15°C	-39°C	248°C	Secondary / 次要
29	Castrol	ALPHASYN EP 320	20L	71		326 mm²/s @40°C	35.5 mm²/s @100°C	155	860 kg/m³ @15°C	-42°C	242°C	Primary / 主要
30	Castrol	RX SUPER 15W-40 CJ-4/E9	20L	18		117 mm²/s @40°C	15.0 mm²/s @100°C	134	877.7 kg/m³ @15°C	-39°C	200°C	Secondary / 次要
31	Castrol	MAGNATEC PROFESSIONAL C2 0W-30	20L	3		53 mm²/s @40°C	9.8 mm²/s @100°C	174	842 kg/m³ @15°C	-51°C	207°C	Secondary / 次要
32	Castrol	MAGNATEC PROFESSIONAL C2 0W-30	208L	2		53 mm²/s @40°C	9.8 mm²/s @100°C	174	842 kg/m³ @15°C	-51°C	207°C	Secondary / 次要
33	Castrol	ALPHA SP 460	1000L	21	460	460 cSt @40°C	30.5 cSt @100°C	95	900 kg/m³ @20°C	-6°C	255°C	Primary / 主要
34	Castrol	OPTIGEAR BM 150	180KG	10		150 mm²/s @40°C	15 mm²/s @100°C	100	900 kg/m³ @15°C	-18°C	225°C	Secondary / 次要

A2 性能指标 / A2 Performance Properties

序号 No.	产品名称 Product	抗乳化性 Demulsibility	FZG 载荷等级 FZG Load Stage	Timken OK 负荷 Timken OK Load	承载能力 (布鲁格试验) Load Capacity (Brugger)	泡沫序列 I: 趋势/稳定性 Foam Sequence I	防锈测试: 合成海水 (24 小时) Rust Test	主要/次要设备 Classification
1	ALPHA SP 150	210	12+	60	51 N/mm ²	10/0 (ml/ml)	Pass	Primary / 主要
2	ALPHA SP 150	210	12+	60	51 N/mm ²	10/0 (ml/ml)	Pass	Primary / 主要
3	ALPHA SP 150	210	12+	60	51 N/mm ²	10/0 (ml/ml)	Pass	Primary / 主要
4	ALPHA SP 220	270	12+	60	51 N/mm ²	10/0 (ml/ml)	Pass	Secondary / 次要
5	ALPHA SP 320	330	12+	60	51 N/mm ²	10/0 (ml/ml)	Pass	Primary / 主要
6	ALPHA SP 320	330	12+	60	51 N/mm ²	10/0 (ml/ml)	Pass	Primary / 主要
7	ALPHA SP 320	330	12+	60	51 N/mm ²	10/0 (ml/ml)	Pass	Primary / 主要
8	ALPHA SP 460	360	12+	60	51 N/mm ²	10/0 (ml/ml)	Pass	Primary / 主要
9	ATF Dex III							Secondary / 次要
10	Axle EPX 80W-90							Secondary / 次要
11	GTX PROFESSIONAL 15W-40							Secondary / 次要
12	GTX PROFESSIONAL 15W-40							Secondary / 次要
13	HYPIN AWH 46						Pass	Secondary / 次要
14	HYPIN AWH 46						Pass	Secondary / 次要
15	HYPIN AWH 46						Pass	Secondary / 次要
16	HYPIN AWS 100		12			30/0 (ml/ml)		Secondary / 次要
17	HYPIN AWS 100		12			30/0 (ml/ml)		Secondary / 次要
18	HYPIN AWS 32		11			30/0 (ml/ml)		Primary / 主要
19	HYPIN AWS 32		11			30/0 (ml/ml)		Primary / 主要
20	HYPIN AWS 46		12			30/0 (ml/ml)		Secondary / 次要
21	HYPIN AWS 46		12			30/0 (ml/ml)		Secondary / 次要
22	HYPIN AWS 68		12			30/0 (ml/ml)		Secondary / 次要
23	HYPIN AWS 68		12			30/0 (ml/ml)		Secondary / 次要
24	HYPIN AWS 68		12			30/0 (ml/ml)		Secondary / 次要
25	AIRCOL SR 46		9			10/0 (ml/ml)	Pass	Primary / 主要
26	AIRCOL SR 46		9			10/0 (ml/ml)	Pass	Primary / 主要
27	ALPHASYN EP 220		>14			20/0 (ml/ml)	Pass	Secondary / 次要
28	ALPHASYN EP 460		>14			20/0 (ml/ml)	Pass	Secondary / 次要
29	ALPHASYN EP 320		>14			20/0 (ml/ml)	Pass	Primary / 主要
30	RX SUPER 15W-40 CJ-4/E9							Secondary / 次要
31	MAGNATEC PROFESSIONAL C2 0W-30							Secondary / 次要
32	MAGNATEC PROFESSIONAL C2 0W-30							Secondary / 次要
33	ALPHA SP 460	360	12+	60	51 N/mm ²	10/0 (ml/ml)	Pass	Primary / 主要
34	OPTIGEAR BM 150		>12				Pass	Secondary / 次要

附件 B: 润滑脂各项指标 / Appendix B: Grease Specifications

注 / Note: 空白字段表示原始文件中未列明数据。 / Blank fields indicate that no value was stated in the source document.

B1 基本信息、稠度及锥入度 / B1 Identification, Consistency and Penetration

序号 No.	生产厂家 Supplier	产品名称 Product	质量/体积 Mass/Volume	每年使用量 (件) Annual Qty	稠度等级 Consistency	锥入度 Penetration	主要/次要设备 Classification
1	Henkel	Loctite LB 8150	500g	691	1; ISO 6743-99, NLGI Class	310-340; ISO 2137, 1/10 mm, 60 strokes @25°C	Primary / 主要
2	Castrol	AC SPIDER BEARING GREASE	180kg	17	0; ASTM D217, NLGI Grade	415; ASTM D217, 1/10 mm, worked 60 cycles	Primary / 主要
3	Castrol	Spheerol AP3	450g	624	3; NLGI	235	Secondary / 次要
4	Castrol	PREMIUM HEAVY DUTY GREASE	450g	2675	2; ASTM D217, NLGI Grade	265-295; IP 50, 1/10 mm, worked 60 strokes	Primary / 主要
5	Castrol	PREMIUM HEAVY DUTY GREASE	20kg	31	2; ASTM D217, NLGI Grade	265-295; IP 50, 1/10 mm, worked 60 strokes	Primary / 主要
6	Castrol	MINEGREASE LM EP 680	20kg	35	2; NLGI Grade	290; ASTM D217, 1/10 mm, worked	Primary / 主要
7	Castrol	SBX1 GREASE	450g	4	1; ASTM D217, NLGI Grade	310-340; ASTM D217, 1/10 mm, 60 strokes @25°C	Primary / 主要
8	Castrol	SBX1 GREASE	180kg	4	1; ASTM D217, NLGI Grade	310-340; ASTM D217, 1/10 mm, 60 strokes @25°C	Primary / 主要
9	Castrol	ENERGREASE LS-EP2	450g	184	2; NLGI	270-290; ASTM D217, 1/10 mm, 60 strokes, 100000 strokes @25°C	Primary / 主要
10	Castrol	SPHEEROL EPL 1	20kg	12	1; NLGI Grade	310-340; ASTM D217, 1/10 mm, 60 strokes @25°C	Primary / 主要
11	SKF	LGEV 2	180kg	19	2; NLGI Grade	265-295, 50; ASTM D217, 1/10 mm, 60 strokes, 100000 strokes @25°C	Primary / 主要
12	CBC	LMX	250cc	1429	2; NLGI Grade	265; ASTM D217, 1/10 mm, 60 strokes @25°C	Secondary / 次要
13	SKF	LGWA2	420ml	4	2; NLGI Grade	265-295, 50; ASTM D217, 1/10 mm, 60 strokes, 100000 strokes @25°C	Primary / 主要
14	REXNORD	Falk Long Term Grease	35 lbs (15.875 kg)	11	1; NLGI Grade	325; ASTM D217, 1/10 mm, worked	Secondary / 次要
15	BROMIC	LOXEAL Silicone tap grease	80g	4	2-3; ASTM D217, NLGI Grade	240-300; ASTM D217	Primary / 主要
16	LUCAS OIL	WHITE LITHIUM GREASE	226g	46		265-295; ASTM D217, 1/10 mm, @77°F, worked	Primary / 主要
17	MOLYKOTE	Longterm 2 Plus	400g	11	2; DIN 51818, NLGI consistency class	265-295; ISO 2137, 1/10 mm	Primary / 主要
18	KLUBER	Isoflex Topas L 32	370g	3	2; DIN 51818, NLGI Grade	265-295; ISO 2137, 1/10 mm @25°C	Primary / 主要

B2 承载能力及其他典型特性 / B2 Load-carrying and Other Typical Characteristics

序号 No.	产品名称 Product	承载能力测试 (四球法) Loading Test (Four-ball)	铜腐蚀 Copper Corrosion	稠化剂类型 Thickener Type	基础油 Base Oil	基础油粘度 Base Oil Viscosity	主要/次要设备 Classification
1	Loctite LB 8150	Weld load: 4400 N; Weld scar @4400 N: <4.0 mm; Wear, 1 h/400 N: 0.95 mm; Four-ball, ASTM D2596	1b; ISO 2160, 3 h @100°C				Primary / 主要
2	AC SPIDER BEARING GREASE			Lithium		410 mm ² /s; ASTM D445 @40°C	Primary / 主要
3	Spherol AP3						Secondary / 次要
4	PREMIUM HEAVY DUTY GREASE	Weld load: 500 kg; Weld load: 500 kg; Weld scar diameter: 0.39 mm; Four-ball, ASTM D2596	1b; ASTM D4048	Lithium	Mineral	247 cSt / 24 cSt; ASTM D445 @40°C / @100°C	Primary / 主要
5	PREMIUM HEAVY DUTY GREASE	Weld load: 500 kg; Weld load: 500 kg; Weld scar diameter: 0.39 mm; Four-ball, ASTM D2596	1b; ASTM D4048	Lithium	Mineral	247 cSt / 24 cSt; ASTM D445 @40°C / @100°C	Primary / 主要
6	MINEGREASE LM EP 680	Weld load: 420 kg; M.W.S.D., 1 h @40 kg: 0.46 mm; Four-ball, IP 239				680 cSt; ASTM D445 @40°C	Primary / 主要
7	SBX1 GREASE	Weld load: >800 kg (ASTM D2596); M.W.S.D., 1 h @40 kg, 75°C, 1200 rpm: 0.52 mm		Lithium	Mineral	1000 mm ² /s; ASTM D445 @40°C	Primary / 主要
8	SBX1 GREASE	Weld load: >800 kg (ASTM D2596); M.W.S.D., 1 h @40 kg, 75°C, 1200 rpm: 0.52 mm		Lithium	Mineral	1000 mm ² /s; ASTM D445 @40°C	Primary / 主要
9	ENERGREASE LS-EP2					155 cSt; ASTM D445 @40°C	Primary / 主要
10	SPHEEROL EPL 1		1b; ASTM D4048, 24 h @100°C	Lithium	Mineral Oil	150-200 mm ² /s; ASTM D445 @40°C	Primary / 主要
11	LGEV 2			Lithium/calcium	Mineral	1300 mm ² /s / 49 mm ² /s; ASTM D445 @40°C / @100°C	Primary / 主要
12	LMX	Weld load: 350 kg; Four-ball, ASTM D2596		Lithium	Mineral	180 cSt; ASTM D445 @40°C	Secondary / 次要
13	LGWA2			Lithium	Mineral	250 mm ² /s / 17 mm ² /s; @40°C / @100°C	Primary / 主要
14	Falk Long Term Grease		1a; ASTM D4048			680 cSt @40°C	Secondary / 次要
15	LOXEAL Silicone tap grease						Primary / 主要
16	WHITE LITHIUM GREASE					227 mm ² /s / 15 mm ² /s; ASTM D445 @40°C / @100°C	Primary / 主要
17	Longterm 2 Plus					265 mm ² /s; DIN 51562 @40°C	Primary / 主要
18	Isoflex Topas L 32						Primary / 主要

本规范书结束。 / End of Specificatio