

ICEmini
4mm assembly 1.4t @ 60°

**ICE
120**

ICEBOLT

RUD ID System

EXPERTS IN INNOVATION

Delivering improved safety features, wear indicators and higher working load limit all at a full chain diameter smaller than GR 80 systems ensures that RUD ICE 120 is the most superior chain system available on the world market today. Combined with improvements in tensioning, connecting and shortening, ICE 120 significantly reduces manual handling risks.

- ✓ 60% increase in Working Load Limit (WLL) means the same load can be lifted by a chain one full diameter size smaller
- ✓ Double the impact toughness of AS 2321 GR 80
- ✓ Can be used at -60°C at 100% WLL in comparison to -10°C for AS 2321 GR 80
- ✓ ICE Chain and components dynamically loaded to 20,000 cycles @ 1.5 x WLL as per PAS 1061 and EN 1677
- ✓ Corrosion tested in accordance with PAS 1061 for improved resistance to stress corrosion cracking and hydrogen embrittlement
- ✓ Duplex surface protection provides greater protection against corrosion
- ✓ ICE features higher guaranteed elongation compared to GR 80 AS 2321 chain (25% vs. 17%)
- ✓ Significantly increased life due to the superior CrNiMo alloy and RUD special heat treatment procedure - surface hardness (460 - 470 HV) is 28% higher than GR 80
- ✓ Patented and specially heat treated material provides increased resistance to sharp edges
- ✓ Radio Frequency Identification System (RFID) provides full traceability throughout the life of the product

RUD - the first chain manufacturer with approval of Grade 120



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RUD received from the responsible employer's insurance association (BG Metall Nord Süd) as first chain manufacturer the permittance stamp "D" for round steel link chains in the quality grade 120.



The BG Metal and surface treatment Technical Committee have tested and issued – Test certificate PZNM.

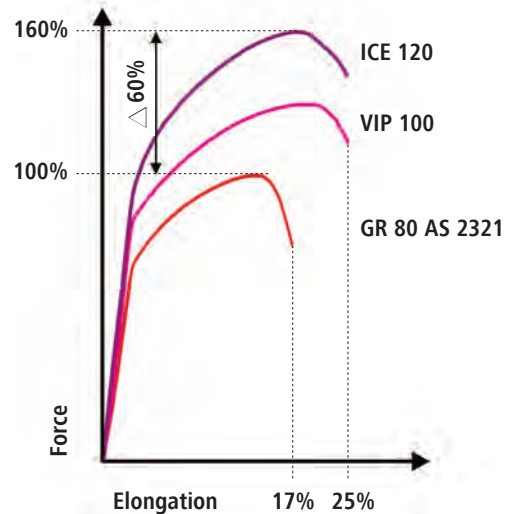
Every ICE chain and component is marked with the stamp D1 – 12.

ICE GR 120 - 16mm 2 links = 0.65kg @ 6.72kg/m	GR 80 - 20 mm 2 links = 1.07kg @ 8.9kg/m
	
WLL 12.5t	WLL 12.5t
8m x GR 120 - 16mm	8m x GR 80 - 20mm
8 x 6.72	8 x 8.90
53.7kg	71.2kg
ICE >30% lighter for same WLL!	

Patented Heat Indicator

In high temperature environments, the special fluorescent ICE powder coating permanently changes its colour. Above 300°C the colour changes permanently to black and the chain assembly should be taken out of service (see picture right).

ICE 120 - up to 60% higher breaking force / Working Load Limit (WLL) than GR 80



ICE
120



225°C 250°C 275°C 300°C

ICE GR 120 V's GR 100					
CHAIN GRADE COMPARISON	Grade 80 (AS 2321)	Grade 100 (AS 2321:2014 - V200)	Grade 100 (AS 2321:2014 - V400)	RUD VIP Grade 100 PAS 1061 (exceeds AS 2321:2014 - V400)	RUD ICE Grade 120 PAS 1061 (exceeds AS 2321:2014 - V400)
CrNiMo steel	Typically Boron alloy	0.4% Ni 0.4% Cr 0.15% Mo	0.7% Ni 0.5% Cr 0.30% Mo	High quality CrNiMo 0.7% Ni 0.5% Cr 0.30% Mo	Patented CrNiMo steel with VIP and some additions
Link bend test	YES	YES	YES	Bend & reverse bend	Bend & reverse bend
Elongation	17%	20%	20%	20% coated 25% uncoated	20% coated 25% uncoated
Hardness	Typically 360 HV and below	Varies by manufacturer. Typically better than GR 80	Varies by manufacturer. Typically better than V200	Approx 430 HV	460 HV
Toughness	28J @ -20°C	28J @ -20°C	28J @ -20°C	Avg 42J @ -40°C	Avg 55J @ -60°C
Cycle test chain (20,000 @ 1.5 WLL)	NO	NO	NO	YES	YES
Stress corrosion test	NO	NO	NO	YES	YES
Temperature limit	Typically -10°C to 400°C	-10°C to 200°C (as per AS 2321)	-10°C to 380°C (as per AS 2321)	-40°C to 380°C	-60°C to 300°C

For more information on how RUD can help meet your performance demands with the high-strength-low-weight ICE 120 range, please email salesupport@rud.com.au or call 07 3809 1300.