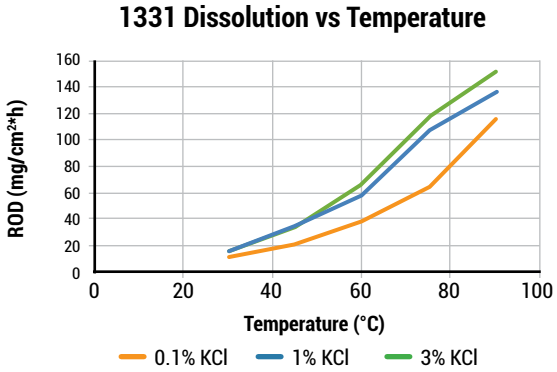
PRODUCT DESCRIPTION: LOW SALINITY DISSOLVABLE ALLOY

TervAlloy™ 1331 is **the latest *freshwater*** low temperature version of Terves' patented dissolvable magnesium for oil and gas applications. This new alloy successfully bridges the gap between existing low salinity alloys and true freshwater-dissolvable alloys. **TervAlloy 1331** is unique in that it has the dissolution characteristics of our TervAlloy 1530 (FW), but unlike 1530, is available in both tubulars and solids, and offers mechanical performance not only superior to our 1530 product.

TervAlloy 1331 can be purchased in the same variety of shapes offered across the TervAlloy range (including cost-saving tubulars) in lengths up to 48 inches (in increments of 6 inches), and also in frac ball configurations up to 4.95 inches in diameter.



Physical Data	
Density	1.9 g/cm³

Dissolution Rates in Common Mediums for TervAlloy 1331 (mg/cm² hr)			
Temp (°C)	0.1% KCl	1% KCl	3% KCl
30	11	16	16
45	22	35	35
60	38	59	66
75	64	109	119
90	116	137	152

Mechanical Data	4" Solid Rod 5:1 Extrusion Ratio
Ultimate Tensile Strength (ksi)	34.4
Yield Strength (ksi)	24.1
Elongation[1] (%)	8.0
Double Shear (ksi)	18.7
Compressive Strength (ksi)	60.2

[1]Longitudinal values

TervAlloy™ 1331
machined parts and frac ball

1 Based on the standard solution of KCl the TervAlloy dissolves in ranked from **0 to 3** (3 requires the highest salinity)
- 0: 0.01% KCl
- 1: **0.1% KCl**
- 2: 1.0% KCl
- 3: 3.0% KCl

2 Based on the rate of dissolution in the determined solution (see first number as noted above) at 60°C, ranked from **0 to 5** (5 being the highest/fastest)
- 0: 0-9 mg/cm²hr
- 1: 10-19 mg/cm²hr
- 2: 20-29 mg/cm²hr
- 3: **30-39 mg/cm²hr**
- 4: 40-49 mg/cm²hr
- 5: 50-59 mg/cm²hr

3 Based on the average ultimate tensile strength (UTS) ranked from **0 to 6** (6 being the highest) **(3)**

4 Based on the elongation, ranked from **0 to 4** (4 being the highest rate of average elongation) **(1)**

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TERVALLOY SELECTION GUIDE

TervAlloy™ 1331 is **the latest *freshwater*** low temperature version of Terves' patented dissolvable magnesium for oil and gas applications. Below are some comparative charts outlining mechanical properties and dissolution rates for our TervAlloy product line:

TervAlloy Comparative Dissolution Rates (mg/cm²hr)

Salinity (%KCl)	Temp (°C)	TervAlloy 3241 (TAx 100E)	TervAlloy 3042 (TAx 50E)	TervAlloy 1530 (TAx FW)	TervAlloy 1132 (TAx FW+)	TervAlloy 3133 (TAx HD)	TervAlloy 1343 (TAx HT)	TervAlloy 1331
0.1	30	-	-	17	4	-	17	11
	45	5	-	34	6	3	21	22
	60	9	-	52	11	9	38	38
	75	12	1	84	15	12	43	64
	90	17	3	118	37	16	51	116
1	30	3	-	24	13	2	26	16
	45	10	-	48	25	8	33	35
	60	18	2	70	48	14	58	59
	75	25	3	132	74	19	67	109
	90	33	8	187	75	25	69	137
3	30	4	-	24	16	2	29	16
	45	13	-	51	29	9	36	35
	60	22	3	91	56	17	61	66
	75	34	5	148	90	24	69	119
	90	46	9	233	117	33	93	152

DISCLAIMER: The information provided in this document is intended to assist manufacturers and specifiers in the selection and use of Terves' products. All data noted should be understood to be average and expected performance, and is provided to serve as a general guideline only. This information **does not represent and is not to serve as minimum specification standards.** For further information contact Terves directly. All Terves commercially available products have patents or patents pending in the United States and in a variety of countries. For the latest patent information on this specific product contact Terves directly.

US Patent no.s: US9903010B2, US10150713B2, and US9757796B

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