TRANZ LUBRICANTS FOR EXTREME SERVICE

RESEARCH
ANALYSIS
CONSULTING
DEVELOPMENT
MANUFACTURE

TRANZ Q26

For ALL your cable drawing needs, especially

SLOPES & DIFFICULT AREAS

UNIQUE 'SLIP & GRIP' CABLE HAULING LUBRICANT

Helps move your cable at the rate of your draw, up hill down dale, & along the flat.

- Excellent, economical, 'all rounder' cable hauling media
- The slip & grip (thixotropic) qualitites make this cable pulling product a 'must use' on hills & difficult slopes
- Easy application - pump or hand applied
- Made to order for 'best before' 3 year shelf life
- Does not 'age' - it will remain fully functional for many years
- Suitable for all cable types & conduit types. Protects as it works
- Effective for conduit lubrication & pre lubrication in concrete conduits
- High load carrying for heavy & roughly sheathed cable in rough or wet conduits.
- Suitable for vertical pulls
- Stays thick, smooth & ready to apply.
- All climates - all weather
- Non staining
- Non toxic, environmentally neutral
- Minimum packaging, recyclable containers

PROUDLY 100% AUSTRALIAN FORMULATED, MADE & OWNED

Available in 2 Lt, 5 Lt, 20 Lt

BRIEF TECHNICAL NOTES

In 1963, Field Performance were contacted to solve a problem, and from this *TRANZ* Q26 was born.

We were invited to attend a 350 yards draw of 100 mm cable up a street on the steep Eastern slope of a Northern Beaches suburb in Sydney, NSW. This cable was hand 'greased' with a water/gum solution via a shaped sponge as it looped from the cable reel on the back of a 5 ton truck, drawn up the hill by a similar vehicle with the towing winch. For one reason of haste, or another, about fifteen minutes after completion of the draw, the tied off end at the winch was released 'too soon'. Within a second the cable tie disappeared back down into the conduit and in the distance down the hill, more than half the cable disgorged backwards into the road.

From contemplation of this event, the concept of a minimal water containing, hydrophilic / lipophillic balanced, true 'Bi-Phase' structured cable lubricant was born. Since such a material can be made with almost unlimited control of its Rheology the aspect of a high degree of 'stick slip' could be established. Such a material has no single constant coefficient of friction; rather this coefficient can be structured to vary with internal shear. So it is that we have coined the term 'Grip and Slip' .

A particular Rheological characteristic, called a substance's 'Thixotropy' is what stands *TRANZ* Q26 completely apart from its industry competitors. Cable sheathing as hydrophobic and impossible to wet with watery materials, as are polyethylene and PVC, is smoothly and evenly wet by the viscous invert emulsion *TRANZ* Q26. This total wetting - i.e. of both water repellent and water accepting surfaces and hence easy spreading across both organic plastics - cable sheathings and conduit alike - and inorganic metallic surfaces, is created by making the compound as a dispersion of structural micelles, that is has the characteristics of a 'soap', with an equal balance of 'oily surface' wetting and 'water- accepting surfaces' wetting capacities, and after it slips, it grips.

So it is, that under drawing shear, following a momentary initial phase we called 'lumpy lubricity', a steady state lubricity follows called 'thin film transfer' where the strings of our compound micelles align themselves in an orientation parallel to the direction of the draw, resulting in the internal coefficient of friction stabilising at its lowest. In *TRANZ* Q26 this coefficient minimises as low as 0.005 with 0.01 attainable for >98% of draws. The very moment that draw-induced shear ceases, there is a virtual 'freeze' in the structure and the co-efficient level peaks. This has been measured at 8 to 12 times increase, meaning a high degree of control over cable movement.

In making comparisons between actual draw work, the coefficient of friction data for each sheathing is required before the difference can be calculated. But observations based on the intensely applied technology of 'suck-it and see', generally indicates an initial pull of 15-20% of dry, and a continuous pull of about 4 -7%.

Email technical@tranzlubricants.com or phone 02 62811085

TRANZ Q26	"*Slip and Grip*" Cable Drawing lubricant HAULING UNDERGROUND CABLES Through every type of conduit with unique damping and "Stick-Slip" effect Visco-elastic Gel Lubricant

TRANZ Q26 "*Slip and Grip*" Cable Drawing lubricant

Performance Area: Biodegradable water-dispersible, inert, viscoelastic lubricant for controlled drawing of all sizes of Power & Communication Cables through PVC & Polyethylene plastic, reinforced fiber, concrete and ductile iron piping and conduit.

FIELD PERFORMANCE has been developing commercial applications of products resulting from its Principal's studies in applied Tribophysics in the manufacture of high performance functional compounds and specialty lubricants for a wide range of manufacturing and service industries since 1951. Among many, the present range of TRANZ Q Series Energy Transfer Control compounds covers a wide range of performance materials developed to enable the influence of Light, Electrical, Thermal, Acoustic and Kinetic (Mechanical) energy, within the capacity of the films.

These widely differing products include the TRANZ Q20-Q29 Series, a range of highly active Damping and Viscoelastic fluids and compounds. These individual materials are purpose-driven synthetic preparations developed with a wide range of molecular weights yet retaining the enhancement of narrow structural (i.e. linear) configuration. By their specific design these fluid polymer materials can store diverse impact or supercritical energy inputs by smoothly accepting winding and then compression of the immensely long helices of their molecules. The energy "storage" is accompanied by little energy loss, enabling a smooth energy release, over time, eventually, or when the power input is interrupted or terminated. The characteristics of this energy absorption and release are such that the cycle is perceived as complete peak "damping", or at least, as a damping effect and over the years many significant industrial applications have been developed.

In the course of this work, a series of "Chemical Tools" (TM) for use in Power Generation and Distribution under our TRANZ brand, had been developed during the 1960's. Following collaboration with Power Authorities, the need was revealed for a versatile lubricant, able to draw the lightest wiring through plastic and metal conduit, as well as *slip* the very high loading imposed by heavy power cables during extended draws through metal, high polymer, concrete and metal piping and forms. Further, very extended stability data from trials contact with all known insulating materials and conductors to generate real-time data, was required to verify the critical "nil effects", on all known plastic and metal sheathing for conductors and later, on the new polymer developments including sheathed optic fiber bundles.

History:

Following five years of close collaboration with the principal power authorities firstly in Western Sydney then Newcastle and Warringah, plus extended cooperation with all the manufacturers of cable sheathing materials and the conduits themselves, TRANZ Q26 was brought to the market in 1967 under its Developmental number 1362

and offered for field trials. The results of these trials were critically appraised over the next seven years and so in 1974, this carefully developed Cable Slipping Lubricant, TRANZ 1362, was released for general use and twenty years later, renumbered TRANZ Q26 and brought to the full sales range.

After more than 30 years of successful service in every kind of application including the drawing of the largest cables made, the Development Product TRANZ 1362, was placed in our Sales Range as TRANZ Q26, a member of the TRANZ Q Series for Energy Transfer and Control. Since its inception, proof abounds of the quite exceptional load carrying capacity and point loading capabilities of the Q26 product in long and complex draws of all cable sizes including up to 150 mm diameter.

But, most importantly, sophisticated development of the Q26 Compound's internal structuring, has enabled this excellent lubricity to be accompanied by a unique control characteristic which means that TRANZ Q26 exhibits reproducible control simply from varying the power input requirement over the draw.

This characteristic was resolved during the extensive Industry consultation phase, when the original 1362 compound was being designed. Here, repeated warnings about the problems of over-lubrication, were sounded by field crews. These applied to the perils experienced from spontaneous disgorgement of lubricated cable after being drawn into conduit lying in steep country, upon detachment of restraint from the winch.

This dangerous phenomena, from the unrestrained and unlimited "over-lubrication" effects, inherent to all simple lubricants, was the incentive for FIELD PERFORMANCE to devise the first shear-responsive and dependent, cable drawing lubricant compound, exhibiting what we call the "stick-slip" effect. This characteristic places precise control of the draw rate in the hands of the winch crews and maintains TRANZ Q26 as unique among products offered for this role.

The "stick-slip" structure means that when TRANZ Q26 is used to lubricate cable, the winch operator can initiate power induced slip in the compound, (as a consequence of a designed instantaneous reduction in net structural internal shear friction, designed within the compound), the moment the cable moves at the commencement of the draw. But when draw rate (and hence internal shear), is reduced or terminated, the lubricant film on the cable undergoes a reversely disproportional increase in internal friction, so that lubricity of the cable is sharply reduced and therefore remaining under control as movement slows.

Further more since TRANZ Q26 is a biphasic compound and not just a simple gum-in-water solution with all the disadvantages of such, its strong oleophillic phase ensures that it evenly wets and clings substantively to every type of cable insulation, no matter how oily or waxy the surface and spreads readily along the conduits where the cable bears on them. Simple, water solution lubricants, cannot even wet, let alone level out on, the extremely water repellent surface on typical high polymer plastic or other organics sheathing or coatings.

These exceptional features of TRANZ Q26 result in adherent, non-drip retention of the lubricant film on the cable, showing benefits, both from economy in use and environmental responsibility through a major reduction in soil intrusion from absence of dripping. Even if accidental spills into soil or water occur, the TRANZ Q26 imposes an almost negligible bio-burden and is rapidly and totally digestible by soil and water borne organisms.

After more than 30 years of Power Industry use, the only changes needed in TRANZ Q26 over the last 10 years has been the necessary progressive determinations and refinement in raw materials to ensure the entire lubricant remains biodegradable, together with extended trialing on all the new types of insulation materials and cables, including the new sheathed optical fiber bundles.