

WAY OIL BASICS

What is Way Oil?

Way oil is a type of hydraulic oil formulated with tackifiers or other adhesive additives in order to help maintain lubrication for a machine's sideways.

There are several key attributes that a quality way lube should have. They are:

- Proper viscosity
- Adhesion properties
- High lubricity
- Coolant compatibility

These properties are far more important than you may realize. If you can find a product with the right mix of the above, then you can ensure proper tolerances are met on parts. Plus you can dramatically lengthen coolant life.



Proper Viscosity

You want to make sure you are using a way lube with the correct weight for your application/way system. For example, many horizontal ways call for ISO 68, while vertical & highly loaded ways typically require ISO 220. And while one size does not typically fit all when it comes to way lube, ISO 220 is becoming more popular for all ways to protect & reduce usage.

Stop the Stick-Slip Issue

Due to the start & stop nature of plain ways, they have a tendency to stick at take-off then slip, causing erratic motion. This is known as "chatter" or stick-slip and can be a real problem, interfering with accuracy, resulting in poor surface finishes and even shortening tool life. However, it can easily be taken care of with a reputable way oil.

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Any way oil worth its weight should pass the Cincinnati Milacron stick-slip test. This test basically ensures the dynamic and static coefficient of friction are both at a low enough level: < 0.8. These results are best when a way oil is formulated with high quality friction modifiers.

Wash On, Wash Off

Slide way systems are meant to be once through...meaning the way lube is going to have to leave the machine in the coolant. If that is the case,



we want to make sure the way oil is sticking to the slide ways the best it can. This is known as the oil’s tackiness. In other words, we want this oil to contain a good amount of high-quality tackifier in order for the way lube to stick to the slide way.

One way you can test this is by rubbing your fingers in the way lube and pressing them together. As you spread your fingers apart you should see a lot of strings connecting between your fingers...almost like the melted cheese on a slice of pizza. That’s the tackifier. The more strings, the more tackifier, leading to better adhesion.

Way Oil Needs to Be Coolant Compatible

The last important attribute of your way lube to consider is how it interacts with your coolant. Most coolant manufacturers will formulate their way lubricants with their coolant’s compatibility in mind.

There are a couple important pieces to this. One, is using a paraffinic base oil. These demulsify better than naphthenic base oils.

Additionally, the coolant manufacturer will ensure the way lube’s raw materials and additives positively interact with the coolant’s raw materials and additives. If this is done correctly, the way lube shouldn’t be entrained in the coolant for very long, which will make it easier for you to skim it off. And that will ultimately enhance the life of the coolant.

Here are some key benefits in having low oil entrainment in your coolant.

IMPROVED PART QUALITY	REDUCED TOOLING COSTS	LOWER COOLANT COSTS
Increased cutting fluid performance	Reduce premature dulling and breaking of tools	Reduce biocide and chemical usage
Lower temperatures at the point of cut	Longer cycles on tools before any re-sharpening is required	Longer sump life
Reduce “burrs” on parts		Fewer change-outs and reduced treatment
Reduce/eliminate “smut” build-up on tools		

Way Oil Summary

Way Oil is basically a hydraulic oil with tackiness used primarily to lubricate machine tool slide ways. A well formulated way oil should have enough friction modifiers to stop stick-slip, be adhesive enough to keep from being washed off the slide ways and be compatible with the coolant you are using.