

Lubricants in the Manufacturing of Automotive Exhaust Systems

Introduction

Automotive exhaust systems are critical assemblies that channel engine gases safely while reducing noise and emissions. These systems include pipes, resonators, catalytic converter shells, and connectors, typically manufactured from stainless or aluminized steel. Production involves tube forming, bending, expansion, perforation, welding, and assembly. Specialized lubricants are essential throughout these processes to ensure precision, durability, corrosion resistance, and efficient mass production.

1. Why Lubricants Matter in Automotive Exhaust Manufacturing

Exhaust components must withstand high temperatures, vibration, and corrosive gases. Manufacturing operations generate intense friction and deformation forces. Proper lubrication helps to:

Enable Smooth Tube Forming & Bending

Prevents wrinkling, cracking, or ovality in exhaust pipes.

Protect Mandrels, Dies & Tooling

Reduces wear on expensive forming tools and bending equipment.

Maintain Surface Cleanliness

Ensures contamination-free interiors for optimal gas flow.

Improve Weld Integrity

Low-residue lubricants prevent porosity and weak joints.

Provide Temporary Corrosion Protection

Safeguards parts before coating, assembly, or shipment.

2. Types of Lubricants Used

Process Stage	Typical Lubricant	Key Benefits
Tube Forming & Bending	Water-based or polymer drawing lubricants	Smooth bends, reduced thinning, tool protection
Expansion & Swaging	High-lubricity synthetic or EP-additive lubricants	Prevents cracking, maintains dimensional accuracy
Cutting & End Forming	Light cutting oils / water-miscible coolants	Clean edges, burr control, longer tool life

Welding Preparation	Low-residue, weld-friendly lubricants	Strong, defect-free welds
Assembly & Fitment	Anti-seize or anti-wear greases	Smooth installation, prevents galling
Storage & Transport	Thin-film rust preventive coatings	Corrosion protection before installation

3. Benefits to Manufacturers

Consistent Exhaust Geometry → Accurate fitment across vehicle platforms

Extended Tool Life → Lower maintenance and replacement costs

Superior Weld Quality → Reliable joints for high-temperature service

Reduced Cleaning Requirements → Faster production cycles

Enhanced Durability → Longer service life in corrosive environments

4. Industry Trends

Dry-Film Lubricants → Cleaner processes with minimal residue

Eco-Friendly Formulations → Low-VOC, chlorine-free solutions

Automated Lubricant Application → Uniform coverage and reduced waste

Multi-Function Fluids → Combine forming performance with rust protection

Weld-Optimized Lubricants → Designed for robotic high-speed production lines

Automotive Exhaust

Description:	replaced chlorinated oil, easier washing...2 x 1.75		
Product:	LUBform, B	Company:	FAURECIA
Industry:	Automotive Tier One	Material:	Stainless Steel
Thickness:	1.75	Concentration:	100
Author:	Jo Lulsdorf, GERMANY	Tags:	tube, bending, SS, automotive
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